NEOEN

Goyder North Wind Farm





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Disclaimer

This submission relies on information and includes major inputs and information from our consultants. To the best of our knowledge, the information presented is true and correct.

Note on currency

Where possible, information contained in this Document is up to date as at October 2025. This was not possible for supporting appendices, and information based on those appendices, which were prepared by third parties (as discussed in the second paragraph in the Disclaimer above) prior to the Document being finalised.

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EXECUTIVE SUMMARY

ES1 Overview

Neoen Australia Pty Ltd (Neoen) is developing the Goyder North Wind Farm (GNWF) (the Action, the Project), approximately 5 kilometres (km) north-east of Burra, and approximately 150 km north of Adelaide, in the Mid North of South Australia. The GNWF would occur over approximately 17,700 hectares (ha) of private freehold and crown land. The GNWF is comprised of the Wind Farm (WF) area, inclusive of up to 99 Wind Turbine Generators (WTGs), an Overhead Transmission Line (OTL), and Battery Energy Storage System (BESS), and an extension to the existing Bundey Substation near Bundey. The GNWF will accommodate up to 99 WTGs generating approximately 600 MW of wind and up to 225 MW / 900 megawatt hours (MWh) within the BESS.

The GNWF will be an integral component of Neoen's broader Goyder Renewables Zone (GRZ), wholly located in the mid north of South Australia, with the area renowned for its world-class wind resources and complementary land uses. The GRZ is comprised of two key developments; the Goyder South Hybrid Renewables Energy Project (GSHREP) located to the south and south-west of Burra (currently in development) and the GNWF. The GRZ is ideally located to complement Project EnergyConnect (PEC), a large interconnector transmission line which connects the SA transmission network to New South Wales (NSW), which currently under construction by ElectraNet and TransGrid.

The GNWF would represent a significant contribution towards the SA Government's goal of 100% net renewable electricity generation by 2027 and, and the Australian Government's commitment to 'net zero emissions' by 2050.

ES1.1 GNWF referral under the EPBC Act

The Project was referred to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the Environment Protection and Biodiversity Act (EPBC Act) (Cth) on 8 July 2024, then entitled the Goyder North Renewable Energy Facility Stage 1, Burra, SA (EPBC 2024/09929). The Project, as it was submitted in the referral, incorporated a proposed Project Area of 15,400 ha, inclusive of 92 WTGs, and two proposed routes for an OTL (OTL and OTL-Alternative, noting only one would be constructed), with additional stages noted at that time to be progressed pending feasibility studies/investor support.

Following the EPBC referral, the Project was considered a Controlled Action, with relevant controlling provisions being listed threatened species and communities (under sections 18 and 18A of the EPBC Act), and that the assessment approach under the EPBC Act would be through Preliminary Documentation. Following this, DCCEEW issued a *Request for Additional Information Required for Assessment on Preliminary Documentation* (hereafter referred to as the RFI) on 5 December 2024. The RFI requested clarification on a number of aspects of the Project that required further information, including specific responses to questions regarding the Project's potential impacts to Matters of National Environmental

Significance (MNES), and updated information from additional targeted threatened species surveys and assessments.

Subsequent to the Project's referral and Controlled Action decision, a Request for Variation, under Environment Protection and Biodiversity Conservation Regulations (2000), Regulation 5.08, was submitted to DCCEEW on 9 April 2025. The Variation decision was accepted on 4 June 2025 and reflects a refined design of the GNWF inclusive of up to 99 WTGs, a single OTL, BESS, and other associated infrastructure as described in the preliminary documentation herein and associated updated attachments. The varied proposal is the subject of this Preliminary Documentation.

ES1.2 Key Project Details

The GNWF would be comprised of four key components; the Wind Farm, the BESS, the OTL, and extension of the existing Bundey Substation (located at Bundey), each with respective supporting ancillary infrastructure, as summarised below:

Wind Farm: Up to 99 WTGs with a capacity of approximately 600 MW (depending on turbine supplier and size), inclusive of supporting infrastructure such as internal roads, operations and maintenance facilities, hardstand areas, construction compounds and facilities (laydown areas, site security, batch plants, stockpile areas), meteorological masts, underground cabling, and a collector substation. The substation within the Wind Farm would connect to the Bundey Substation via the OTL. WTGs would have a minimum sweep height of approximately 20 m and a maximum sweep height of approximately 240 m, and footings approximately 30 m in diameter, with a permanent footprint for each WTG slightly less than 0.4 ha.

BESS: A fenced compound of approximately 5 ha located in close proximity to the collector substation within the Wind Farm, with an approximate capacity of 225 MW/900 MWh. The BESS would comprise of a fenced compound located approximately 400 m south-west of the collector substation with an approximately footprint of 6 ha.

OTL: A 275kV or 330 kV multi-circuit OTL connecting the Wind Farm substation to the Bundey Substation, over an alignment of approximately 48 km, inclusive of roads and tracks. Transmission towers would be up to 65 m high with a permanent footprint of approximately 27 m x 27 m, and spaced approximately 300 m to 500 m apart. Where possible, the alignment would utilise public roads and existing tracks (including the tracks installed for the Goyder South Transmission line) to minimise unnecessary disturbance to the environment. To avoid or mitigate impacts to MNES or high-quality vegetation, non-conventional conductor stringing will be undertaken for the entire length of the OTL.

Bundey Substation Extension: An extension adjacent to and north of ElectraNet's existing Bundey Substation, with a footprint of approximately 220 m x 440 m.

ES1.3 Benefits to South Australia, the Mid North Region, and the Local Community

The Goyder North Wind Farm will deliver substantial benefits to South Australia, contributing to the State's goal of 100% net renewable electricity generation by 2027 and net zero emissions by 2050. Once operational, the project will provide net-positive, zero-emission electricity for 20–30 years after a short energy payback period of around six months, helping to place downward pressure on electricity prices and supporting decarbonisation of the electricity grid and industry. High-value environmental offsets will result in a net gain in biodiversity, while targeted research will advance scientific knowledge, including on the conservation of the Endangered Pygmy Blue-tongue Lizard.

For the Mid North, the project represents a significant long-term economic and skills boost. Construction and operational phases will create a wide range of local employment opportunities, supported by commitments to prioritise regional workers, suppliers, and training programs. It is anticipated that the project will create up to 500 full-time equivalent jobs during construction and around 15 ongoing operational roles. Neoen has set ambitious local participation targets, including 50% of Balance of Plant labour hours from South Australia, 5% of hours for apprentices, cadets and trainees, and 5% for First Nations workers. Local procurement commitments, worth more than $200 million for Balance of Plant contracts alone, will boost regional suppliers and services, while long-term income for host landowners will strengthen resilience to drought and climate change. This investment will strengthen local supply chains, enhance workforce capability in specialist renewable energy skills, and provide stable, long-term income streams for host landowners, building resilience to drought and climate change. The project also opens new possibilities for tourism and branding around renewable energy and environmental restoration.

At the local community level, benefits will be delivered through a tailored Community Benefit Sharing Program, including annual community grants, funding for multi-year projects, a Future Fund, and a Neighbour Benefit Scheme. The project will stimulate local economies through increased demand for goods, services, and hospitality, and drive upgrades to infrastructure in partnership with councils and road agencies. On-ground environmental works, including Significant Environmental Benefit delivery near Caroona Creek Conservation Park and along Dares Hill Tourist Drive, will provide lasting ecological and amenity gains, ensuring the project leaves a positive legacy across towns such as Burra, Eudunda, Hallett, and Robertstown.

ES1.3.1 Survey Effort

A significant body of technical studies and on-ground surveys have been undertaken to identify and assess broad constraints, including ecological values, to the development of the Project, which were used to inform a multi criteria analysis and the iterative design of the Project. This includes a suite of assessments and reports associated with various Project elements, which have been relied upon to determine siting and design of the Project, particularly in regard to ensuring that avoidance and mitigation of impacts to threatened species and threatened species habitat has been achieved as far as practicable, when considering viability of the wind farm and constraints such as topography.

This breadth of works includes:

- ecological studies, particularly associated with flora and fauna
- noise
- visual amenity
- heritage (Aboriginal and non-Aboriginal heritage)
- aeronautical
- electromagnetic interference
- traffic
- wind turbine facilitated shadow flicker and blade glint
- flood modelling
- contaminated lands.

Specifically in relation to ecological surveys and assessments, a significant effort has been made to rigorously search for, identify, and assess the presence of a number of threatened flora and fauna species and threatened ecological communities (TEC) that have been identified as potentially occurring within the Project Area. This includes adherence to a number of Australian and South Australian survey guidelines (such as the survey guidelines for Australia's threatened bats, birds and reptiles respectively), policies (including DCCEEW's Onshore Wind Farm Guidance: Best practice approaches when seeking approval under Australia's national environmental law, and the Commonwealth's Significant Impact Guidelines 1.1), and other guidelines and relevant literature (such as recovery plans and conservation advices). Of note, the survey effort undertaken in relation to this Project has typically exceeded that outlined in relevant documentation for particular methods or species, and surpasses that of other similar projects in the region. Additionally, Neoen has committed to liaising with, and working collaboratively with, relevant Government and industry leaders and key stakeholders to share information and knowledge relevant to threatened species and communities on a local and regional level. Ecological survey work undertaken in relation to the Project includes:

- A number of desktop assessments over the course of the Project to identify potentially relevant threatened species (flora and fauna) and ecological communities within and near to the Project Area. This includes ensuring species listing events under the EPBC Act have been reflected in search effort and assessments.
- Baseline ecological field surveys, including survey techniques to infill knowledge required to support Native Vegetation Clearance requirements under South Australian legislation and guidelines.
- Targeted species flora and fauna surveys undertaken in accordance with species or TEC specific guidelines and other relevant literature (such as recovery plans and conservation advice), for:
    - Iron-grass Natural Temperate Grassland (INTG) of South Australia TEC.
    - Mallee Bird Community (MBC) of the Murray Darling Depression Bioregion TEC.

  - A suite of targeted Pygmy Blue-tongue Lizard (PBTL) (*Tiliqua adelaidensis*) surveys, including targeted surveys for burrowing spiders such as trapdoor (Mygalomorphae) and wolf (Lycosidae) spiders, both which are considered a pre-cursor and necessity for habitat suitable for the PBTL.
  - Extensive targeted survey for the Flinders Ranges Worm-lizard (FRWL) (*Aprasia pseudopulchella*).
  - Threatened flora surveys for flora species, in particular seven species identified as potentially occurring within the Project Area, as listed under the EPBC Act.
- Eight bird and bat utilisation surveys (BBUS) undertaken across a period of two years in accordance with DCCEEW's (2024b) Onshore Wind Farm Guidance - best practice approaches when seeking approval under Australia's national environment law.
- Native vegetation surveys and broad vegetation mapping associated with prospective offset area properties within the broader region.

Collectively, these surveys and assessments have provided a rigorous body of knowledge of the ecological characteristics occurring within and adjacent to the GNWF, and have been relied upon to assess the Project's likely impacts, including to the amenity and surrounding environment, with particular reference to MNES.

Two MNES in particular have been identified as likely to be impacted by the Project, and as such, additional survey effort has been undertaken to ensure that accurate data is available to assess the level of impact arising from the Project. These two MNES are the INTG TEC and the PBTL.

ES1.4 Iron-grass Natural Temperate Grassland of South Australia within Project Area

Baseline surveys and preliminary vegetation mapping identified a number of patches of Lomandra Grassland vegetation association within the Project Area which included the presence of two key Lomandra species: *Lomandra multiflora* ssp. *dura* (Many-flowered Mat-rush), which is endemic to South Australia, and *Lomandra effusa* (Scented mat-rush) which is widely distributed from Western Australia to the western parts of NSW and Victoria. Both species are associated with the Iron-grass Natural Temperate Grassland of South Australia (INTG) threatened ecological community (TEC).

These patches of Lomandra Grassland were further assessed during a targeted field survey in October 2024, which aimed to determine the condition class of the INTG in these previously identified patches, and to ground-truth and refine existing INTG boundaries. The targeted survey used the recommended survey methods as outlined in the National Recovery Plan for the Iron-grass Natural Temperate Grassland of South Australia ecological community, and to determine whether the Lomandra Grassland patches matched the benchmark criteria for Classes A to C, data from the survey addressed the criteria outlined in EPBC Act Policy Statement 3.7: Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia and Iron-grass Natural Temperate Grassland of South Australia.

ES1.5 Pygmy Blue-tongue Lizard habitat within Project Area

The Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*) is endemic to South Australia, with the species' current known range occurring between Peterborough to the north, Bagot Well to the south, and east towards Bute. The GNWF Project Area is broadly known to contain suitable habitat for PBTL, comprising large areas of uncultivated native and exotic grasslands on hillslopes within their known distribution, and a known population occurring within the Wind Farm at Tiliqua Nature Reserve. Baseline ecological studies associated with the development of infrastructure within or adjacent to the Project Area have occurred since late 2010, informing the presence of PBTLs and suitable PBTL habitat within the area.

PBTLs are known to occupy both native perennial grassland habitats, and highly degraded mixed grasslands dominated by exotic species, including those subjected to heavy livestock grazing. Key and unique PBTL habitat prerequisites include soils where the soil structure is intact, and those that have not been recently ploughed. PBTLs are known from a range of soil types, but more frequently found in greater abundance at sites with more free-draining grey-brown or red calcareous soils which are suitable for constructing spider burrows. The species has been associated with sites dominated by vegetation such as *Austrostipa* spp. (Spear-grasses), *Rytidosperma* spp. (Wallaby Grasses), *Maireana* spp. (Bluebush), *Aristida behriana* (Brush Wire-grass) and *Lomandra* spp. (Iron-grasses).

More recent studies, specifically within the last three years (2022 to 2025 inclusive) have further refined vegetation mapping and PBTL habitat suitability mapping within the Project Area. Habitat suitability was mapped using a combination of vegetation associations and conditions assessed throughout the Wind Farm, and then categorised as known, likely or unlikely using specific habitat suitability definitions. A total of six targeted surveys have been undertaken in relation to the distribution of PBTLs within the Project Area (with the most recent surveys undertaken between February to March 2024, July 2024, January to March 2025, and April 2025). These surveys were undertaken specifically in relation to locating individual PBTLs using intensive field survey methods to further refine PBTL habitat mapping across a range of vegetation associations, inclusive of active searches and assessment of 21,641 spider burrows across the Project Area.

Combined data inclusive of EBS/Umwelt records undertaken for the Project, recent unpublished Flinders University records, and all BDBSA records, provide a rigorous assessment of PBTL occurrence in the Project Area, which has resulted in a total of 55 known PBTLs records in the Disturbance Footprint, 119 PBTL records in the Development Envelope, and 1,466 records within the broader Project Area (i.e. outside of the Disturbance Footprint or Development Envelope). These records have provided for a detailed understanding of the species occurrence within the Project Area, inclusive of the species occurrence across a range of habitat types, including known PBTL habitat including: Lomandra Grassland and Native *Austrostipa* spp. Grassland +/- emergent trees, and atypical habitat such as *Maireana rohrlachii* open shrubland over *Austrostipa* sp. and exotics +/- *Lomandra* spp., as well as small areas of agricultural land currently or historically utilised for cropping (i.e. two records of PBTL occurring within cropped agricultural land adjacent to known habitat). Given the widespread and patchy distribution of PBTL across the WF, habitat suitability mapping indicates that most of the WF is conservatively considered as 'likely' PBTL habitat, with 'known' habitat restricted to areas within 50 m of recent and historical records of PBTL.

ES1.5.1 Assessment of Relevant Impacts, including Avoidance, Management and Mitigation

Potential short-term and long-term impacts to MNES (inclusive of direct, indirect, facilitated, and cumulative impacts) that may occur as a result of all Project components and phases were identified and include consideration of several potential impact pathways, differing across various stages of the Project's development including pre-construction, construction, operation, and through to eventual decommissioning activities. Identified impacts consider those resulting from both Temporary Disturbance and Permanent Disturbance activities.

A comprehensive assessment of the identified potential impacts of the Project was undertaken, inclusive of avoidance, and management and mitigation measures included during the Project's rigorous multi-criteria assessment, and Project redesign and refinement over time, to ensure potential impacts to MNES have been considered, avoided, mitigated and managed as far as practicable. Where the mitigation hierarchy has been implemented but impacts to MNES are still considered, these have been assessed in accordance with DCCEEW's significant impact assessment guidelines, and in accordance with the EPBC Act environmental offsets policy.

ES1.6 Direct impacts and application of the mitigation hierarchy

The GNWF design has progressed to a higher level of detail for the process of approvals than has been done in past projects resulting in significant footprint optimisation as well as increased certainty in the proposed level of clearance.

With considerations and mitigations in place, a total maximum Disturbance Footprint of approximately 536.82 ha is required for the safe and efficient construction and operation of the Project, which is comprised of 261.31 ha of Permanent Disturbance to native vegetation and 192.55 ha of Temporary Disturbance to native vegetation. Impacts to non-native vegetation (amenity, exotic, cropped, or cleared/unsurveyed vegetation) account for 46.25 ha of Permanent Disturbance and 36.71 ha or Temporary Disturbance respectively. A total of 15,197.40 ha of native vegetation and 1,968.99 ha of non-native vegetation will be retained within the Project Area and unimpacted by clearance activities.

Direct impacts on MNES have been considered for those MNES which are known to occur or likely to occur within the GNWF Project Area. Significant residual impacts (principally as a result of direct impacts, once mitigations have been applied) are considered to impact two MNES; the INTG TEC and PBTLs, with impacts resulting from the development of the Project principally associated with clearance activities (Permanent Disturbance and Temporary Disturbance), i.e. habitat loss. A summary of the significant impact assessment is provided in Section ES2.

A summary of the key elements of the mitigation hierarchy (avoid, mitigate, offset) applied to the Project are presented in Table ES 1.

Table ES 1: Key elements of Neoen's application of the mitigation hierarchy

Mitigation hierarchy and Project phase	Avoidance, mitigation and management measures	Outcome
Avoid		
Design	Ongoing, iterative design process has been applied to avoid MNES and other ecologically sensitive matters, informed by a significant and extensive number of technical and ecological studies.	Reduced impacts to Lomandra grasslands from 29.64 ha (EPBC Referral Application submitted in 2024) to 8.59 ha (inclusive of an additional 3.85 ha reduction made in August 2025 through refinement of access roads, the OTL, and construction compounds). This represents approximately 0.44% of the 1931.24 ha of Lomandra grassland mapped within the GNWF Project Area and less than 0.02% of the estimated 50,000 ha of Lomandra grassland across the Mid North region.
	Establishment of voluntary setbacks and policy-required setbacks.	Avoidance of all conservation areas, including Mokota Conservation Park and Tiliqua Nature Reserve, including August 2025 refinements that achieved a 450 m setback for WTG tower centres.
	Extensive consultation with neighbours, landowners, Local Council and other interest groups.	Removal of turbines most visible from the town lookout to minimise the visual, heritage and environmental impacts of the project. Feedback received through broad and extensive consultation with the community (including community open days, one on one meetings, feedback through website and dedicated phone line). Consultation with the Northern and Yorke Landscape Board (NYLB) and conservation and interest groups have informed application of the mitigation hierarchy and incorporation of best practice principles for species specific impact reduction, construction environmental management plans and offset outcomes (including PBTL, INTG and wombats). Social acceptance gained through meaningful benefit sharing and consultation with host communities through established and nurtured long term relationships including with landholders and Local Council. These relationships are built on long term partnerships focused on aligning and optimising regional outcomes.
	Consideration of commercial and technical requirements for energy and the electricity system.	Site selection based on highest performing wind yields and proximity to Bundey Substation which is the terminus of Project Energy Connect in South Australia and a strong network location with a reduced chance of network congestion therefore having a high capacity factor. These factors contribute to the site having high wind generation efficiency for the footprint disturbed.

Mitigation hierarchy and Project phase	Avoidance, mitigation and management measures	Outcome
Advanced civil design	Culture of environmental stewardship to ensure Disturbance Footprint does not include excessive buffers.	Avoidance of potential blow-out due to topography or other factors, thereby minimising or eliminating impacts.
Alignment with existing infrastructure and cleared areas	Alignment with existing infrastructure and cleared areas, thereby avoiding impacts to native vegetation and MNES habitat.	More than 40 km of existing roads and access tracks have been utilized within WF and OTL. 6.76% of Disturbance Footprint (36.31 ha) occurs within existing cleared areas (such as existing roads), despite only ~1.19% of the GNWF Project Area comprising existing cleared areas.
	Alignment with existing infrastructure and cleared areas, thereby avoiding impacts to native vegetation and MNES habitat.	5.37% of the Disturbance Footprint within existing cropped areas (28.85 ha), in proportion to the 7.79% of GNWF Project Area comprising cropped land.
	Alignment with existing infrastructure and cleared areas, thereby avoiding impacts to native vegetation and MNES habitat.	3.30% of the Disturbance Footprint within areas mapped as exotic grassland (17.73 ha), comprising <5% native species cover, of 0.93% of total GNWF Project Area.
Non-conventional stringing methods	Removal of the requirement for a temporary line stringing corridor (typically 10 m width) to be cleared along the OTL.	Removal of entire stringing corridor from design resulting in avoidance of a total 39.25 ha of high value native vegetation, with 27.31 ha reduction between initial Referral application (October 2024) and Referral Variation (March 2025), and a further 11.94 ha of native vegetation in August 2025, thereby significantly reducing impacts on potential habitat for Southern Whiteface, South-eastern Hooded Robin, Diamond Firetail, MBC TEC, INTG and PBTL.
Transmission tower height adjustment	Increased height of transmission towers thereby avoiding requirement to trim or remove vegetation.	Avoidance of the requirement for a permanent vegetation maintenance zone, effectively avoiding 10.52 ha of high value native vegetation, particularly mallee woodland, with avoidance of habitat likely to be suitable for Southern Whiteface, South-eastern Hooded Robin, Diamond Firetail and Mallee Bird Community of the Murray Darling Depression Bioregion TEC.
Alignment of electrical cabling	Consolidated use of Disturbance Footprint to site underground electrical cabling in areas of Temporary Disturbance.	Optimisation of the design of underground electrical cabling to overlap as much as possible with the temporary Disturbance Footprint, resulting in avoidance of approximately 18 ha of vegetation clearance and fragmentation.
Site access selection	Optionality of three proposed site access roads, with selection of two site access roads to be used to avoid impacts to MNES	Avoidance of one of three proposed access roads, thereby avoiding impacts to Spiller's Wattle.

Mitigation hierarchy and Project phase	Avoidance, mitigation and management measures	Outcome
OTL optimisation	A number of desktop assessments undertaken to inform selection of OTL route to avoid and reduce potential impacts to MNES.	Removal of OTL-Alternative from Project design to avoid impacts (up to 30.66 ha) to MBC TEC. Avoidance of Lomandra Grasslands along OTL alignment, ensuring no Condition Class A or Condition Class B INTG TEC are impacted by the transmission line or towers.
Construction exclusion zones and buffers	Maintenance of a register of infrastructure exclusion zones and construction buffers.	Protection of sensitive locations, including (but not limited to): • aboriginal and non-aboriginal heritage sites • conservation areas and heritage agreements • Condition Class A INTG TEC • Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia TEC • Burra National Heritage Area
Micro siting	The majority of micro siting has already been achieved through the design development process to date, and the design layout and Disturbance Footprint (submitted as part of the EPBC Referral) reflects a largely complete design layout and infrastructure footprint.	Further minimise impacts to MNES by applying: • Pre-clearance checks • Micro siting assessment • Relocation of individual PBTLs if impacts are unable to be avoided within the current Disturbance Footprint.
Minimise		
Design	Minimisation of impacts to MNES and other sensitive issues.	Reduction in impacts to vegetation from 595.78 ha (October 2024) to 544.15 (March 2025) and finally, 536.82 ha (August 2025).
Construction Environmental Management Plan (CEMP)	Specific environmental management and mitigation measures to address impacts to the environment, MNES, and MNES habitat during the construction phase of the Project.	Specific monitoring and management measures for MNES and MNES habitat, with thresholds for actions, and implementation of adaptive management strategies.
PBTL Management Plan	Management plan specific to the management of PBTL within the GNWF.	Documentation of specific procedures in place to protect, avoid and minimise impacts to PBTL, inclusive of timeframes, permitting requirements, pre-clearance checks, micro siting, relocation procedure for PBTL, management targets and performance indicators, response measures and corrective actions.
INTG Management Plan	Management plan specific to the management of INTG TEC within the GNWF.	Documentation of specific procedures in place to protect, avoid and minimise impacts to INTG TEC, inclusive of timeframes, permitting requirements, pre-clearance checks and micro siting, targets and performance indicators, INTG specific rehabilitation measures in areas of Temporary Disturbance activities.

Mitigation hierarchy and Project phase	Avoidance, mitigation and management measures	Outcome
Mitigate		
Rehabilitation of native vegetation	Rehabilitation Management Plan (subplan of CEMP)	Program stating rehabilitation methods for temporarily disturbed area and monitoring requirements, including measurement of rehabilitation success using appropriate indicators.
Offset (and reporting)		
Offset	Mitigation of impacts to native vegetation/MNES, and MNES habitat	A 1,300-ha property has been secured as a Significant Environmental Benefit (SEB) site, required to offset impacts to native vegetation in accordance with *the Native Vegetation Act 1991* (SA). The site is located adjacent to two existing Heritage Agreement areas and within 1 km of Caroona Creek Conservation Park, ensuring that the site has high importance in a landscape context. The site contains potentially suitable habitat for MNES impacted at GNWF including PBTL, INTG, Southern Whiteface, South-eastern Hooded Robin, Diamond Firetail, Flinders Ranges Worm Lizard and Blue-winged Parrot, as well as a number of State listed threatened species (flora and fauna).
Offset	Mitigation of impacts to native vegetation/MNES and MNES habitat	EPBC Offset Strategy for residual impact to INTG TEC and PBTL, inclusive of a research plan (in development) to fund scientific research and address current gaps in knowledge regarding potential indirect impacts to PBTL, and potential option to enhance and support existing PBTL and INTG programs in region.
Monitoring and Reporting	Management plans and subplans associated with construction and operation of the wind farm, as well as for offset sites, outline monitoring and auditing requirements.	Monitoring and reporting in line with documented requirements, inclusive of reporting of progress, activities and implementation of management measures.
Adaptive Management	Adaptive management of impacts to the environment, MNES and MNES habitat.	A structured iterative process to ensure timely and effective review of management of MNES and MNES habitat within the GNWF.

ES1.7 Indirect impacts

A number of potential indirect impacts associated with the Project were identified and assessed, including changes in habitat suitability, edge effects, weeds and pathogens, and others, and were inclusive of those associated with construction, operation, and decommissioning. All indirect impacts associated with the Project are considered to be addressed through relevant management measures and mitigations outlined in the CEMP, INTG Management Plan, or PBTL Management Plan, with most indirect impacts considered minimal and/or mitigated for.

The assessment of these potential indirect impacts included the identification and adoption of effective management and mitigation measures, which resulted in the following outcomes:

- No changes in habitat suitability due to change in land use. Low probability of occurrence, no significant impacts. Impacts effectively managed under the CEMP / OEMP.
- No significant impacts resulting in 'edge effects'. Impacts effectively managed under the CEMP / OEMP.
- No degradation of habitat through weeds or pathogens. Low probability of occurrence, no significant impacts. Impacts effectively managed under the CEMP / OEMP.
- No degradation of habitat due to dust deposition. Low probability of occurrence, no significant impacts. Impacts effectively managed under the CEMP.
- No reduction of, or change to, natural genetic dispersal of fauna species. Low probability, no significant impacts expected. Fauna expected to continue to navigate throughout the landscape, including continued genetic exchange in small species such as Flinders Ranges Worm Lizard (FRWL) (*Aprasia pseudopulchella*) and PBTL.
- No changes to the microclimate within the Project Area. Low probability, no significant impacts or changes within the landscape that would impact or affect MNES.
- No significant changes to surface water flows or altered hydrology. Impacts effectively managed under the CEMP / OEMP.
- No significant changes to MNES or MNES habitat as a result of increased human activity in undisturbed areas. A number of roads and tracks, and human activities already occur within the Project Area. Impacts effectively managed under the CEMP / OEMP.
- No potential impacts due to wind turbine generated shadow flicker across the majority of the Wind Farm for PBTL, no significant impacts to other MNES. Moderate to high potential impact to PBTL in extremely localised areas directly under WTGs (however PBTL would be relocated outside of Disturbance Footprint) and potentially within a single, discrete area of 0.20 ha to the south of WTG 017 (should the species occur in this area at all). Neoen have committed to, in partnership with the Flinders University of South Australia, a research program aimed to address current gaps in knowledge as part of the Goyder South Hybrid Renewable Energy Project (GSHREP).

ES2 Significant Impact Assessment

A significant impact assessment was undertaken for a number of ecological MNES (flora, fauna and TECs) that were considered known to occur, likely to occur, or which may possibly occur within the GNWF (inclusive of those MNES that were considered relevant to the OTL-Alternative transmission line which has subsequently been removed from the Project design). The significant impact assessment for each MNES was undertaken in accordance with the criterion as outlined in the Commonwealth's Significant Impact Guidelines 1.1 (DoE 2013) and in accordance with information documented within relevant conservation advices, recovery plans or other relevant literature (for example literature published by BirdLife Australia).

The Significant impact assessments undertaken for the MNES included herein, identified that potential significant residual impacts are considered likely to occur for one TEC; the INTG, and one threatened species; the PBTL due to the development of the Project (as summarised in Section ES2.1 below), with impacts to these MNES principally due to habitat disturbance and clearance activities. A range of management and mitigation measures are documented herein to avoid, manage and mitigate impacts to these MNES, as well as to offset the predicted impacts in accordance with State and Commonwealth requirements.

Although potentially present within the WF and/or OTL, the GNWF is considered unlikely to have a significant impact on the following TEC, threatened flora and fauna species, and migratory bird:

- Mallee Bird Community of the Murray Darling Depression Bioregion (Endangered)
- *Acacia spilleriana* (Spiller's Wattle) (Endangered)
- *Dodonaea subglandulifera* (Peep Hill Hop-bush) (Endangered)
- *Acacia glandulicarpa* (Hairy-pod Wattle) (Vulnerable)
- *Codonocarpus pyramidalis* (Slender Bell-fruit, Camel Poison) (Vulnerable)
- *Dodonaea procumbens* (Trailing Hop-bush) (Vulnerable)
- *Olearia pannosa* subsp. *pannosa* (Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush) (Vulnerable)
- *Senecio megaglossus* (Superb Groundsel) (Vulnerable)
- *Melanodryas cucullata cucullata* (South-eastern Hooded Robin, Hooded Robin (south-eastern)) (Endangered)
- *Aphelocephala leucopsis* (Southern Whiteface) (Vulnerable)
- *Aprasia pseudopulchella* (Flinders Ranges Worm-lizard) (Vulnerable)
- *Neophema chrysostoma* (Blue-winged Parrot) (Vulnerable)
- *Stagonopleura guttata* (Diamond Firetail) (Vulnerable)
- *Apus pacificus* (Fork-tailed Swift) (Migratory Marine) (noting this species was not required to be addressed specifically within the RFI, but has been included due to a single record of occurrence within the Project Area).

ES2.1 Residual Impacts

Whilst the Project has undergone extensive iterative design reviews and changes, based upon a suite of technical assessments, impacts to INTG TEC and PBTL cannot be fully avoided or mitigated. Consequently, significant residual impacts are considered for the INTG TEC and PBTL, as outlined below.

ES2.1.1 INTG

A total of 1,931.24 ha of Iron Grassland (all Lomandra Grassland) has been mapped within the GNWF, with approximately 1,498.09 ha considered to meet the Criteria Class A or B, with approximately 259.66 ha occurring within the Development Envelope. Over the course of planning of the Project, a number of multi criteria analyses have been undertaken, particularly with consideration to the application of the mitigation hierarchy (i.e. avoid, mitigate, offset). Consequently, a considerable effort has been made to refine and reduce the Project's Disturbance Footprint, with the Project impacting a maximum of approximately 6.14 ha of Condition Class B INTG TEC, which is comprised of a number of smaller areas across the Wind Farm portion of the Project Area, where impact to the TEC are unavoidable due to other constraints (e.g. topography, distance to other WTGs, geotechnical limitations). Disturbance to this TEC (Class B) would include up to a maximum of 2.43 ha of Permanent Disturbance (i.e. the area required for the safe and efficient construction of permanent infrastructure), and a maximum of 3.72 ha of Temporary Disturbance (i.e. areas that would require temporary clearance or disturbance but would be allowed to naturally regenerate following completion of construction activities). Areas subjected to Permanent Disturbance of Temporary Disturbance would be offset in accordance with requirements set out under the EPBC Act and EPBC Regulations.

An overview of direct impacts to the INTG TEC within the GNWF is provided in Table ES 2.

Table ES 2: Overview of direct impacts to the Iron-grass Natural Temperate Grassland of South Australia (all condition classes)

Habitat impacted	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Total per INTG Condition Class
Condition Class A	No direct impacts	No direct impacts	No direct impacts
Condition Class B	6.14	No direct impacts	6.14
Condition Class C	1.07	1.37	2.44
Total	**7.21**	**1.37**	**8.59***

* Total disturbance is inclusive of 3.57 ha of Permanent Disturbance and 5.02 ha of Temporary Disturbance of all condition classes.

ES2.1.2 PBTL

PBTL habitat is considered widespread across the Project Area, with a total of 11,154.12 ha identified and mapped as potentially suitable. Similarly to INTG TEC, a considerable effort has been made to refine and reduce the Project's Disturbance Footprint. As such, the Project is considered to impact a maximum of approximately 18.98 ha of known habitat and 338.41 ha of likely habitat within the Wind Farm, and approximately 1.06 ha of known habitat and 9.65 ha of likely habitat within the OTL. Similarly to the INTG TEC, this area is comprised of a number of smaller areas across the Wind Farm portion of the Project Area, where impacts to the TEC are unavoidable due to other constraints (e.g. topography, distance to other WTGs, geotechnical limitations). Whilst Temporary Disturbance is considered equivalent to Permanent Disturbance for this species, areas subjected to Permanent Disturbance of Temporary Disturbance would be offset in accordance with requirements set out under the EPBC Act and EPBC Regulations.

An overview of direct impacts to PBTLs is provided in Table ES 3.

Table ES 3: Overview of direct impacts to PBTL habitat

Habitat impacted (ha)	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Total per PBTL habitat category (ha)
Known PBTL habitat	18.98	1.06	20.04
Likely PBTL habitat	338.41	9.65	348.06
Total	357.38	10.71	368.10

* Temporary Disturbance is considered equal to Permanent Disturbance for this species. However, over time it would be expected that areas subjected to Temporary Disturbance and allowed to naturally regenerate would provide habitat for PBTL in the long-term.

ES3 Offset Strategy

Under the EPBC Act, where a project is considered likely to have a significant residual impact on a protected matter, even with the mitigation hierarchy having been applied to the maximum extent possible, any remaining (i.e. residual) impacts are required to be offset. Offsets must be undertaken in accordance with the EPBC Act Environmental Offsets Policy and associated guidance documents.

Neoen has committed to ensuring environmental offsets that are scientifically robust and meaningful are implemented to offset significant residual impacts to the INTG TEC and PBTL and has worked collaboratively with technical specialists and stakeholders to develop an offset package that addresses a range of aspects associated with these two, often co-occurring, MNES. This includes ensuring that offsets are executed in a manner in which offsets will be effectively managed for the long-term and protected in perpetuity.

Neoen's proposed offsets package includes:

- A PBTL Offset Strategy which focuses on the protection and improvement of existing known and likely habitats for the PBTL through acquisition of private land within the PBTL area of occupancy, and formal protection of the PBTL Offset Area in perpetuity through establishment of a Heritage Agreement. Whilst PBTL offsets can be difficult to achieve due to a genuine scarcity of available potential on-ground offset sites, Neoen have proposed the following strategy:
    - Lease or securement of a parcel(s) of land which contains known (current or historical) PBTL habitat, or likely habitat directly adjoining a known population of PBTL. Land under investigation includes either unaffected parcels within GNWF or any parcels that may become available on the open market. This may include parcels with minor portions which have historically been used for cropping where a focus on grassland restoration would occur, pending suitability to be agreed with DCCEEW and the PBTL Recovery Team. The secured parcel(s) would be protected in perpetuity through application of a Heritage Agreement and then improved for PBTL occupation and carrying capacity over time through applied grazing management, weed control, and artificial burrow installation (if deemed suitable). A monitoring program will evaluate the effectiveness of management and detect trends which may require a management response.
    - Additionally, a research project is proposed as a compensatory component equivalent to nominally 10% of the offset in accordance with the EPBC Offset Policy (or potentially up to 20-30% with agreement from DCCEEW), to investigate the relocation success of PBTL. The research would be conducted by Flinders University and aim to gather scientifically robust data to inform the viability of relocation as a mitigation method to reduce impacts to PBTL, including specific questions around survivorship, behaviour (i.e. dispersal patterns), influence on local genetics, and relocation methodology. As an extension to this Neoen may also explore options to support and enhance existing established local or regional PBTL conservation programs such as those managed by the Northern Yorke Landscape Board through financial contributions.
    - All direct and indirect compensatory measures proposed will be in addition to what is already required and / or determined by SA law or planning regulations (other offset requirements) and will be additional to any existing environmental schemes or programs, to ensure a net environmental gain for the species.
- An INTG Offset Strategy, which outlines approach for acquisition or leasing of private land within suitable INTG habitat, and formal protection of the INTG Offset Area in perpetuity through establishment of a Heritage Agreement. To offset significant residual impacts to the INTG TEC within the GNWF, Neoen proposes:
    - Lease or securement of a parcel(s) of land which contains suitable INTG habitat, either within GNWF or any that may become available on the open market and provide suitable conditions for INTG. Neoen's preferred method would be to use an existing patch or patches of Class C INTG at GNWF to establish and implement a direct offset in the form of an on-ground INTG Offset Area, protected in perpetuity via a Heritage Agreement, to offset residual significant impacts and achieve a measurable conservation gain for INTG TEC. There are six patches of

Class C INTG within the GNWF Project Area which are being considered in detail for the proposed INTG Offset, having been determined the most suitable to achieve a conservation gain. If a patch (or patches) of INTG within the Project Area cannot be used for the INTG Offset, or these patches do not contain enough INTG for the entire INTG Offset, Neoen will investigate the potential to use a patch or patches of INTG located within the surrounding region, or other patches identified within the GNWF Project Area.

- Management of the INTG TEC Offset Area in accordance with the INTG Offset Management Plan (INTG OMP) for the duration of the action to maintain and increase (where possible) the condition/quality of the INTG Offset Area (with the start quality yet to be determined. The INTG OMP would focus on management of livestock associated with grazing regimes based on best practice methods and in consultation with experts, weed control, pest/exotic animal control (with a focus on pest herbivores such as rabbits and goats), fire prevention activities, and revegetation activities to increase native species diversity.
- Contribution to the INTG Offset through financial contributions to existing established local or regional programs aimed at enhancing the health and resilience of INTG. This would be a compensatory type offset rather than a direct offset and if implemented, would likely only form part (<10%) of the overall INTG Offset obligation. Any contribution would be additional to the existing program and aim at increasing the duration or scope of that program.

Each of the options presents a viable pathway to securing appropriate offsets for the PBTL and INTG TEC, with a focus on habitat protection, habitat restoration, land management, and monitoring to support effective long-term conservation.

The final selected offsets are likely to include a combination of options to achieve the best environmental outcome for both INTG and PBTL, both of which will be developed in Offset Management Plans for the Project with close consultation with DCCEEW, the PBTL Recovery Team and other experts.

Additionally, Neoen has purchased 1,300 ha of private land of equivalent habitat within the Mid North region of South Australia as the Project's Significant Environmental Benefit (SEB) offset, required under the *Native Vegetation Act 1991* (NV Act), which Neoen propose to execute a Heritage Agreement over, in accordance with the NV Act (SA). A Heritage Agreement will ensure the offset is effectively secure for conservation in perpetuity and also would provide a net benefit for conservation within the region, likely facilitating the protection of non-target threatened species (inclusive of both State and Commonwealth listed species).

ES4 Conclusion

Neoen has undertaken rigorous and detailed assessment of all MNES potentially relevant to the GNWF Project Area over a number of years, and concludes that:

- Survey activities undertaken to date have been fit for purpose for all species and communities of interest, and meet or exceed the standards set in relevant guidelines, conservation advices, recovery plans, and other literature.
- The impact assessments undertaken have been deliberately conservative and assumptions made often reflect 'worse case' scenarios.
- The mitigation hierarchy has been applied at all stages of project development, and will continue to be employed.
- PBTL and INTG are the only MNES which are expected to be significantly impacted by the Project.
- Neoen has committed to ongoing research and monitoring, as part of the offset strategy and threatened species/TEC management plans, in an on-going collaboration with Finders University and the PBTL Recovery Team, and commits to working with relevant regional organisations such as NYLB to share knowledge with relevant experts to improve outcomes for threatened species and communities and reduce uncertainty around potential impacts arising from the current, and future, development(s).
- A credible and valuable offset strategy, underpinned with long-term conservation strategies, has been proposed which will enable offsetting of impacts to INTG and PBTL which are commensurate with the conservative assessment of impacts which arise from the Project.

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Appendix A. DCCEEW RFI Details

Appendix B. Supporting Letters from technical experts (PBTL recovery team)

1 INTRODUCTION

1.1 Goyder North Renewable Zone

Neoen Australia Pty Ltd (Neoen) is developing the Goyder North Wind Farm (GNWF) (the Action, the Project) as part of its wider Goyder Renewables Zone (GRZ), wholly located in the Mid North of South Australia. The area is characterised by world-class wind resources and complementary land uses primarily of marginal grazing land for sheep and cattle, and some dryland cropping. The GRZ is comprised of two key developments; the Goyder South Hybrid Renewables Energy Project (GSHREP) (currently close to construction and commissioning completion) located to the south and south-west of Burra, and the GNWF located to the north-east of Burra and east of the Mount Bryan township (Figure 1.1) The GRZ is ideally located to complement Project EnergyConnect (PEC), a large interconnector transmission line which connects the SA transmission network to New South Wales (NSW), currently under construction by ElectraNet and TransGrid (pers. comms. Neoen 2024).

1.1.1 Goyder South Hybrid Renewables Energy Project

The GSHREP was referred under the EPBC Act as two separate stages; Stage 1A (EPBC 2021/8958) and Stage 1B (EPBC 2021/8957) and was associated with two additional referrals under the EPBC Act for the development of an associated BESS (EPBC 2021/8960) and overhead transmission line and substation (EPBC 2021/8959). The GSHREP received planning consent by the Government of South Australia in 2021 under the *Planning, Development and Infrastructure Act 2016* (PDI Act) (SA), and by the Commonwealth in July 2022 under the EPBC Act. Construction of Stage 1 of the GSHREP commenced in 2022 following state and Commonwealth approval, consisting of 412 Megawatts (MW) of wind turbine power generation.

1.1.2 Goyder North Wind Farm

The GNWF represents the Action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) which is the subject of this report. It comprises approximately 17,700 hectares (ha) of land (private freehold and crown land). The Project is located approximately:

- 5.5 kilometres (km) north-east of Burra;
- 4 km east of the Mount Bryan township in the Goyder Regional Council area; and
- 150 km north of Adelaide, in South Australia (SA).

The GNWF is comprised of the Wind Farm (WF) area, inclusive of the proposed 99 Wind Turbine Generator (WTG) layout, and an associated Overhead Transmission Line (OTL) which will connect the WF to the Bundey Substation near Bundey (Figure 1.2). The GNWF will accommodate approximately 600 MW of wind generation and up to 225 MW / 900 megawatt hours (MWh) within the BESS, and is inclusive of infrastructure required for wind generation, transmission and connection to the energy grid and the BESS.

The Project received planning consent under the name Goyder North Renewable Energy Facility (GNREF) by the Government of South Australia in October 2024 under the PDI Act. The GNREF referred to the development of renewable energy facilities and associated facilities, including:

- 135 WTG and associated OTL,
- three substations;
- three BESS;
- temporary construction facilities; and
- six permanent meteorological masts, over a Project Area of approximately 21,500 ha.

At the time, it was proposed that the GNREF would be constructed in a number of stages. Since the GNREF received state planning consent, the Project has since been redesigned and refined over time to accommodate both economic, socioeconomic and ecological considerations. As such, while the Project has received state approval under the name GNREF to accommodate up to 135 WTGs, the Project herein refers solely to the GNWF (the subject of this Preliminary Documentation). The GNWF is proposed to be developed within a smaller Project Area boundary, with up to 99 WTGs and one OTL (as well as refinement of other Project components described herein). There is no current plan to develop further stages but if additional stages were to be progressed in the future, they would be subject to their own approval processes and stakeholder engagement.

1.2 EPBC Referral and Controlled Action Determination

The Project was referred to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the EPBC Act on 8 July 2024, entitled the Goyder North Renewable Energy Facility Stage 1, Burra, SA (reference EPBC 2024/09929). This iteration of the Project incorporated a proposed Project Area of 15,400 ha, inclusive of 92 WTGs, and two proposed routes for an OTL (noting that only one option would be constructed).

On 23 August 2024, DCCEEW requested clarification regarding some aspects of the Project. These items were addressed in relevant documentation and submitted to DCCEEW on 10 October 2024. Following this, on 14 November 2024, Neoen was provided a Notification of Referral Decision specifying that the Project was considered a controlled action, with relevant controlling provisions being listed threatened species and communities (under sections 18 and 18A of the EPBC Act). DCCEEW evaluated the Project as being assessed by Preliminary Documentation, under the EPBC Act.

As such, a *Request for Additional Information Required for Assessment on Preliminary Documentation* (hereafter referred to as the RFI) was issued on 5 December 2024 by DCCEEW to Neoen. The RFI outlined a number of aspects of the Project that required further information, including additional specifics regarding the Project's potential impacts to Matters of National Environmental Significance (MNES), including information based upon additional targeted species surveys.

Subsequent to the referral (for 92 turbines) and the receipt of the RFI, the Project has been redesigned to incorporate a total of up to 99 WTGs. Refinement of the Project has enabled removal of 36 WTGs from the northern-most portion of the originally proposed broader GNREF and refinement of the existing

project boundary (i.e. the subject of the Variation Letter), to facilitate an addition of up to 7 WTGs. A request for Variation under the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth), Regulation 5.08: *Information for a request to vary a proposal to take an action*, was submitted to DCCEEW on 9 April 2025. The Variation decision was accepted on 4 June 2025, inclusive of:

- expansion of the proposed action area (approximately 2,300 ha).
- addition of up to 7 WTGs (i.e. total of up to 99 WTGs) – located to the north of White Hill Road.
- removal of an OTL option from the proposal (referred to as the Overhead Transmission Line Alternative/OTL-Alt).
- changes to layout of WTGs and infrastructure components.
- addition of meteorological masts.

Since the acceptance of the Variation decision, further refinements have been made to reduce the Project's Disturbance Footprint and minimise impacts to MNES and native vegetation. These refinements include:

- removal of one of the main site access road options from the Barrier Highway, resulting in avoidance of all known populations / individuals of Spiller's Wattle (Acacia spilleriana) within the Project Area.
- realignment of access roads and construction compounds within wind farm and access tracks along OTL, as well as adjustment of ten towers along the OTL, further reducing direct impacts to Lomandra Grasslands by approximately 31%, including an approximate 2.29 ha reduction to Lomandra Grassland (Class C) and an approximate 1.56 ha reduction to Class B TEC.
- adoption of non-conventional stringing methods for the entire OTL alignment (rather than just a large proportion), removing requirement for a 10 m-wide stringing corridor along relevant sections, reducing disturbance of native vegetation impact by 11.94 ha and reducing overall fragmentation.
- relocation of construction compounds, including fill stockpile areas, laydown areas and concrete batching plants to maximise distance from TECs and conservation parks.
- repositioning of one WTG to achieve 450m setback from Mokota Conservation Park.

The Preliminary Documentation response to the Controlled Action Decision provides additional and updated information compared with the original referral and supporting documents, and revised assessments of potential impacts of the Project on a number of MNES (potentially relevant to the GNWF Project Area).

1.3 Structure of this Document

This document has been prepared to address DCCEEW's RFI, dated 5 December 2024. A copy of DCCEEW's RFI for GNWF is provided in Appendix A, inclusive of specific details regarding where each item is addressed within the Preliminary Documentation. A schedule which summarises the additional information requested by DCCEEW, relevant to the GNWF, together with the location of the corresponding response is presented in Table 1.1.

Table 1.1: Schedule of additional information required for assessment on Preliminary Documentation

Detail of Additional Information Request	Location of Response (linked)	Page (Linked)	Brief Summary of Content
Description of the Action	Section 1.6	Page number 10	Details the Action including its purpose, components, associated activities and proposed timelines, as well as maps of the proposed activities and Action area.
Description of the environment	Section 3	Page number 41	Details the ecological studies which have been undertaken within the Project Area, including methodology as it relates to various survey guidelines and an assessment of limitations. Includes an overview of the environmental setting of the Project Area and the broad ecological findings of the ecological assessments.
Matters of National Environmental Significance (MNES)	Section 4	Page number 88	Summarises the MNES which are relevant to the Project. A section is provided for each relevant MNES thereafter which, provides detailed species-specific information on the ecology and threats to the MNES from the relevant Conservation Advice and literature review, findings of the ecological assessments as they relate to the MNES in the Project Area and a concise regional assessment.
Project Impacts	Section 5	Page number 244	Describes the direct and indirect impacts associated with the Project in a broad sense and includes a detailed cumulative impact assessment for the Project.
Consideration of the Mitigation Hierarchy	Section 6	Page number 291	Describes the primary considerations and methods of avoidance, minimisation and mitigation for the GNWF.
Assessment of Impacts on MNES	Section 7	Page number 323	Details the residual direct and indirect impact expected to MNES as a result of the Project, and how the mitigation hierarchy has been specifically applied to MNES to fully reduce this impact. Provides relevant case studies where required, to further support the assessment. Contains details of the Significant Impact Assessment (SIA) and a significant impact determination for each MNES, as well as a discussion on the acceptability of impacts (where relevant).
Impact to Non-ecological MNES	Section 8	Page number 473	Summarises the non-ecological MNES which were addressed under the Referral, for which no significant impact is expected to occur.
Offsets for Residual Impacts	Section 9	Page number 476	Summarises the residual significant impacts detailed in Section 7, and summarises the contents of the EPBC Offset Strategy which has been developed for the Project, namely for Pygmy Blue-tongue Lizard (PBTL) and Iron-grass Natural Temperate Grassland (INTG) of South Australia Threatened Ecological Community.

Detail of Additional Information Request	Location of Response (linked)	Page (Linked)	Brief Summary of Content
Social and Economic Matters	Section 9.6	Page number 490	Provides a summary of the social and economic matters which have been considered for the Project.
Ecologically Sustainable Development	Section 11	Page number 507	Details how the principles of ecologically sustainable development have been and will continue to be applied throughout the Project.
Neoen Environmental Record	Section 12	Page number 516	Provides a summary of Neoen's environmental record, including existing Projects which have been approved or are currently under development.
Other approvals and conditions	Section 13	Page number 518	Briefly summarises any concurrent approvals or conditions for the Project which may be relevant to this assessment.
Response to RFI	Appendix A	Page number 543	DCCEEW RFI details, with each RFI item linked to the relevant section.

1.4 Relevant Policies and Publications

A suite of polices, guidelines and other relevant literature and publications have been used during the preparation of this Preliminary Documentation, and area outlined in Table 1.2.

Table 1.2: Policies, guidelines and other relevant literature and publications

Policies, guidelines and other relevant publications
Survey Guidelines
National Parks and Wildlife South Australia (NPWSA) biological survey methods Guidelines for Vertebrate Surveys in South Australia (NPWSA 2000)
Native Vegetation Bushland Assessment Method (NVC 2024a)
NSW Survey Guide for the Biodiversity Assessment Method (DPIE 2020)
Scattered Tree Assessment Method (NVC 2024b)
Survey guidelines for Australia's threatened birds: Guidelines for detecting birds listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (DEWHA 2010a)
Survey guidelines for Australia's threatened bats: Guidelines for detecting bats listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (DEWHA 2010b)
Survey guidelines for Australia's threatened reptiles: Guidelines for detecting reptiles listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (DSEWPaC 2011a)
Survey guidelines for Australia's threatened mammals: Guidelines for detecting mammals listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (DSEWPaC 2011b)
Vegetation Survey Guideline EHTM Attachment 4A (DIT 2021)
South Australian Policies and Guidelines
Guidelines for the use of the Environment Protection (Commercial and Industrial Noise) Policy 2023 (EPA 2023)
Wind farms environmental noise guidelines (EPA 2021)

Policies, guidelines and other relevant publications
Commonwealth Policies and Guidelines
Clean Energy Council Best Practice Guidelines (CEC 2018)
Draft Onshore Wind Farm Guidance: Best practice approaches when seeking approval under Australia's national environmental law (DCCEEW 2024b)
Draft referral guideline for 14 birds listed as migratory species under the EPBC Act (DotE 2015)
Environment Protection and Biodiversity Conservation Act 1999 (Cth): Policy Statement Translocation of Listed Threatened Species—Assessment under Chapter 4 of the EPBC Act (DSEWPaC 2013)
Environmental management plan guidelines (DCCEEW 2024a)
EPBC Act Policy Statement 2.3. Wind Farm Industry (DEWHA 2009a)
Significant Impact Guidelines 1.1 - Matters of National Environmental Significance (DotE 2013a)
Conservation Advice, Recovery Plans and Action Plans
Approved Conservation Advice for *Acacia spilleriana* (Spiller's Wattle) (DEWHA 2009b).
Approved Conservation Advice for *Aprasia pseudopulchella* (Flinders Ranges Worm-lizard) (DEWHA 2008a).
Approved Conservation Advice for *Codonocarpus pyramidalis* (Slender Bell-fruit) (DEWHA 2008b).
Approved Conservation Advice for Iron-grass Natural Temperate Grassland of South Australia (DEWHA 2008c).
Approved Conservation Advice for Mallee Bird Community of the Murray Darling Depression Bioregion (DAWE 2021a).
Approved Conservation Advice for *Olearia pannosa* subsp. *pannosa* (silver daisy-bush) (DotE 2013b).
Approved Conservation Advice for *Senecio megaglossus* (Superb Groundsel) (DEWHA 2008e).
Conservation Advice for *Acacia glandulicarpa* (Hairy-pod Wattle) (DAWE 2021b).
Conservation Advice for *Aphelocephala leucopsis leucopsis* (Southern Whiteface) (DCCEEW 2023a).
Conservation Advice for *Melanodryas cucullata cucullata* (South-eastern Hooded Robin) (DCCEEW 2023b).
Conservation Advice for *Neophema chrysostoma* (blue-winged parrot) (DCCEEW 2023c).
Conservation Advice for *Tiliqua adelaidensis* (Pygmy Blue-tongue lizard) (DCCEEW 2023d).
National Recovery Plan for the Iron-grass Natural Temperate Grassland of South Australia Ecological Community. South Australia (Turner 2012).
Recovery Plan for the Peep Hill hopbush *Dodonaea subglandulifera* 2010 (Moritz and Bickerton 2010).
Recovery Plan for the Pygmy Bluetongue Lizard *Tiliqua adelaidensis* (Duffy et al. 2012).
The Action Plan for Australian Birds 2020 (Garnett and Baker 2021)
Threat Abatement Plans
Threat abatement plan for competition and land degradation by rabbits (DotEE 2016).
Threat abatement plan for competition and land degradation by unmanaged goats (DEWHA 2008d).
Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* (DotEE 2018).
Threat abatement plan for predation by feral cats (DCCEEW 2024c)
Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*) (2017) (DotEE 2017)

1.5 Associated Documents and Attachments

In addition to this document, over 20 supporting documents, summarised in Table 1.3, have also been prepared for the Project and are referred to throughout the PD. Supporting documents should be referred to for specific and more detailed information (as suggested at various points within this document). Not all documents associated with the Project are supplied as an attachment, but may be available upon request, if deemed necessary to inform an aspect of the Project.

Note that supporting documents were written at point in time during the extended Project development phase, and therefore varying terminology and definitions (including Project Area descriptions and Disturbance Footprint dimensions) are referred to which may not reflect the current Project Area description and Disturbance Footprint.

Table 1.3: Additional documentation prepared for the GNWF Project

Attachment ID	Document Title	Detail
Att01_GNWF_Project Description	Goyder North Wind Farm Project Description	Provides a comprehensive overview of the proposed Project including Project components, phases, site context, project evolution from an ecological and heritage consideration and stakeholder engagement. This document also breaks down impact assessment and management for key areas including noise and vibration, water quality, air quality, erosion and sedimentation, weeds pest and disease, materials fuels and waste management, sites of cultural and national heritage significance, fire management, transport management and lighting.
Att02a_GNWF Ecological Assessment	Goyder North Wind Farm Ecological Assessment (Umwelt 2025b)	Provides a comprehensive evaluation of the ecological impacts associated with the proposed Project. The report includes results of detailed desktop assessments and field surveys of native vegetation, threatened species, and ecological communities within the Project Area. It outlines potential impacts on MNES and state-listed species. The report also proposed mitigation measures and recommendations for ongoing environmental management.
Att02b_GNWF Ecological Assessment Redacted	Goyder North Wind Farm Ecological Assessment (redacted) (Umwelt 2025b)	Provides a version of the above document with sensitive information redacted for public use.
Att03_GNWF SIA	Goyder North Wind Farm Project Significant Impact Assessment under the EPBC Act (Lathwida 2025)	Significant Impact Assessment (SIA) to assess the significance of potential residual impacts of the Project on MNES protected under the EPBC Act. The SIA takes into consideration all expected Project disturbance activities, be it temporary or permanent, using supporting information from publicly available data sources and Project specific surveys.

Attachment ID	Document Title	Detail
Att04_GNREF Community Engagement Plan	GNREF Community Engagement Plan (Neoen 2025)	This document details Neoen's community engagement approach and strategy along with outlining engagement activities which have been implemented since Project commencement. This document goes on to discuss the appropriate tools used by Neoen such as stakeholder register, Project website, 1800 number, and the complaints management process. It also outlines the framework for the community benefit sharing scheme.
Att05_GNREF Visual Impact Assessment	GNREF Visual Assessment (GBD Landscape Architecture 2024)	This document provides an assessment of the visual impacts arising from the GNREF and address landscape and statutory requirements from the Government of South Australia planning and Design code Planning and Objectives.
Att06_GNREF Cultural Heritage Assessment	GNREF Cultural Heritage Assessment (IHC 2024)	Outlines the heritage assessment which has occurred for the Project looking at historical heritage, Aboriginal heritage, and Native Title. Throughout the report, sensitive information has been redacted for public use.
Att07_GNREF Heritage Impact Assessment	GNREF Heritage Impact Assessment (Biosis 2024)	Provides a review of heritage listings within the locality of the Project and undertakes a heritage impact assessment detailing national and state heritage values. This document also outlines the Conservation Management Plan and details measures to avoid or reduce potential impacts as a result of the Project.
Att08_GNWF INTG Assessment	Goyder North Wind Farm Targeted INTG TEC Assessment Report (Umwelt 2025d)	Detail of survey methodology and results of targeted INTG surveys within the GNWF Project Area.
Att09a_GNWF PBTL Assessment	Goyder North Wind Farm Targeted Pygmy Blue-tongue Lizard (PBTL) Survey Report.	Detail of survey methodology and results of multiple survey sessions within the GNWF Project Area, including WF and OTL.
Att09b_GNWF PBTL Assessment Redacted	Goyder North Wind Farm Targeted Pygmy Blue-tongue Lizard (PBTL) Survey Report (Umwelt 2025c).	Redacted version of the GNWF PBTL Assessment
Att10_GNWF FRWL Assessment	Goyder North Wind Farm Targeted Flinders Ranges Worm-lizard (FRWL) Survey Report (Umwelt 2025h)	Detail of survey methodology and results of targeted FRWL surveys within the GNWF Project Area.
Att11_GNWF CEMP	Goyder North Wind Farm Construction Environmental Management Plan – Draft (Umwelt 2025k)	The draft CEMP outlines control measures to avoid, manage and / or mitigate impacts to the environment during construction. The draft CEMP states that an Operational Environmental Management Plan (OEMP) will be prepared prior to the commencement of commercial operations.
Att12a_GNWF INTG MP	Goyder North Wind Farm INTG Management Plan (Umwelt 2025m)	Sub-plan of GNWF CEMP, which details management actions specific to avoiding and minimising impacts to retained INTG in the Project Area during construction and operation of the Wind Farm.
Att12b_GNWF INTG MP Redacted	Goyder North Wind Farm INTG Management Plan (Redacted) (Umwelt 2025m)	Redacted version of the GNWF INTP Management Plan

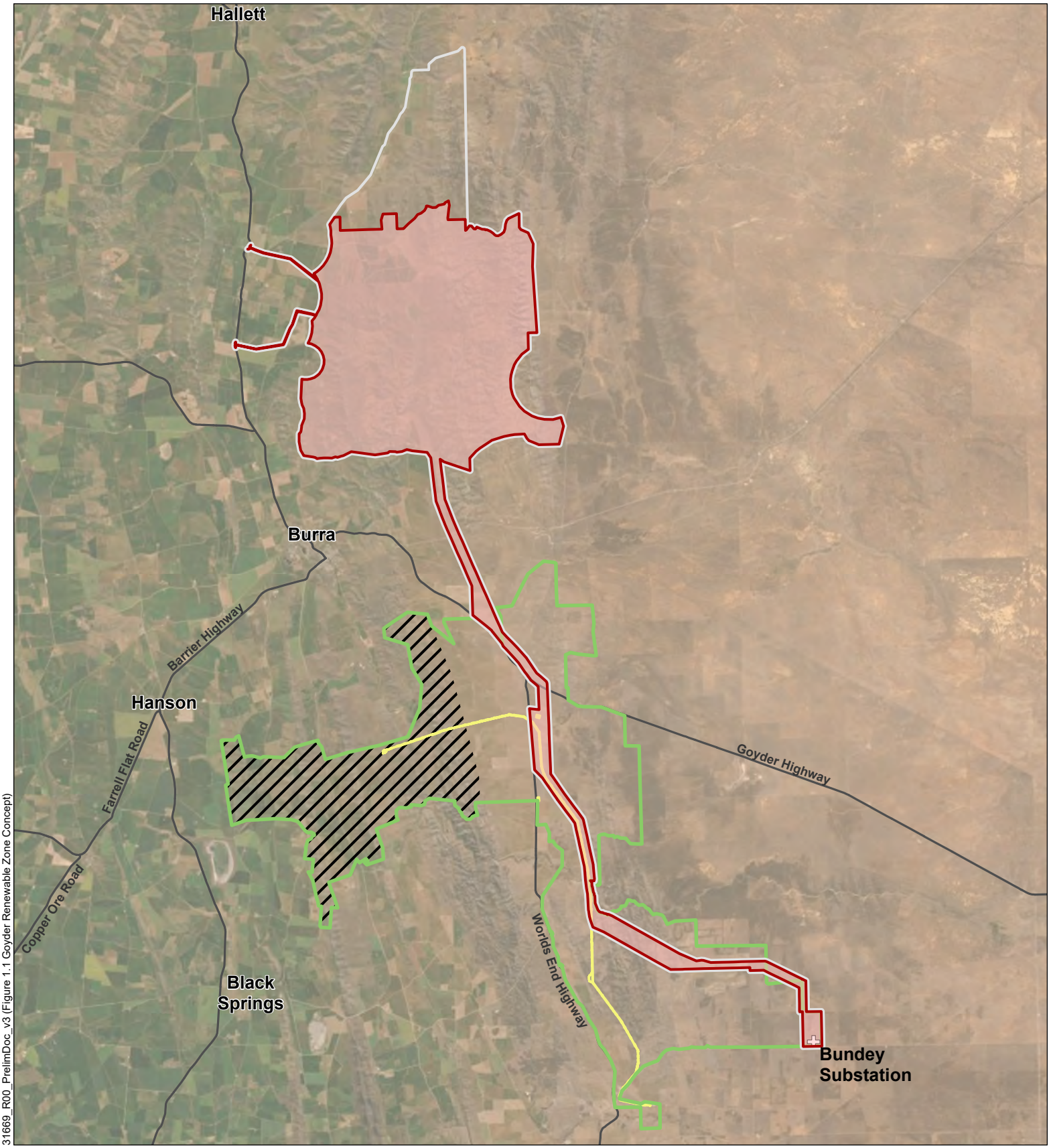
Attachment ID	Document Title	Detail
Att13a_GNWF PBTL MP	Goyder North Wind Farm PBTL Management Plan (Umwelt 2025l)	Sub-plan of GNWF CEMP, which details management actions specific to avoiding and minimising impacts to PBTL and PBTL habitat in the Project Area during construction and operation of the Wind Farm. Includes a micro siting and relocation procedure.
Att13b_ GNWF PBTL MP Redacted	Goyder North Wind Farm PBTL Management Plan (Redacted) (Umwelt 2025l)	Redacted version of the GNWF PBTL Management Plan
Att14a_GNWF EPBC Offset Strategy	EPBC 2024/09929 Goyder North Wind Farm EPBC Offset Strategy (Umwelt 2025n)	Details a strategy to achieve an EPBC Offset for residual impacts to MNES, specifically INTG and PBTL. Includes Offset estimation using the Offset Assessment Guide, statement of expected outcomes for the offset, a description of how the proposed offset(s) meet the requirements of the EPBC Offset Policy, as well as a risk assessment and details on how the Offset would be achieved and implemented.
Att14b_GNWF EPBC Offset Strategy Redacted	EPBC 2024/09929 Goyder North Wind Farm EPBC Offset Strategy (Redacted) (Umwelt 2025n)	Redacted version of the GNWF EPBC Offset Strategy
Att15_Neoen Sustainability Framework	Neoen Sustainability Framework	Sets out Neoen's commitment to creating renewable energy projects that deliver enduring environmental, social, and economic value. Guided by principles of stewardship, transparency, and innovation, the framework ensures sustainability is embedded into every stage of development, construction, and operation.
Att16_Land Tenure	Land Tenure information for GNWF	A summary of the land parcels relevant to the GNWF Project Area
Att17_Planning Consent Decision Notification Form	Plan SA – Decision Notification Form	Planning Consent for the Goyder North Renewable Energy Facility and associated facilities including 135 wind turbines, overhead transmission line, three substations, three batteries, temporary construction facilities and six meteorological masts. The document outlines a number of planning consent reserved matters and conditions relevant to the development.
Att18_EPBC Referral Proforma	Goyder North Renewable Energy Facility Stage 1 Project (Application number: 02493)	The original referral pro forma submission containing all details submitted through the online portal. Note that details in this document are now superseded.
Not attached	PBTL Preliminary Study: Impact of Shadow Flicker, Noise and Vibration	Results of a short study at Goyder South Wind Farm to assess initial response of PBTL to wind farm infrastructure, to provide early indications on response to shadow flicker, noise and a vibration.
Not attached	PBTL Preliminary Study: Translocation Success (Umwelt 2025o)	Results of a short study at the Goyder South Wind Farm EPBC Offset site where 60 PBTL were translocated as part of the mitigation and offsetting requirements of EPBC Approval. The study examines the short-term results including survivorship, two years post translocation.
Not attached	GNWF BBUS Reports (eight reports))	Eight individual BBUS survey summary reports including detailed methodology and findings of each survey.

Attachment ID	Document Title	Detail
Not attached	Indigenous Participation Plan	Outlines Neoen's commitment to respectful partnerships with First Nations peoples, creating opportunities through consultation, employment, procurement, and cultural heritage protection.
Not attached	GNREF Flood Modelling Report (WGA 2023)	Assesses local catchments and drainage patterns to identify potential flood risks, inform project design, and ensure resilience and compliance with regulatory requirements.
Not attached	Goyder North Stage 1 and Stage 2 Native Vegetation Clearance Data Report (Umwelt 2025g)	Data report, as a clearance application, outlining the GNWF Project impacts to native vegetation, and addressing requirements for application to clear native vegetation, under the *Native Vegetation Act 1991* in South Australia.
Not attached	Goyder North Native Vegetation Supplementary Document. (Umwelt 2025p)	Supporting document providing additional information regarding application of the mitigation hierarchy, and details regarding proposed measures to reduce the amount of clearance of native vegetation required for the GNWF Project. Report prepared as a supplement to the Native Vegetation Data Report, as part of the application to clear native vegetation for the GNWF Project under the *Native Vegetation Act 1991*.
Not attached	Native Vegetation Management Plan for a Significant Environmental Benefit: 92 Civilization Gate Road, Mount Bryan East. (Umwelt 2025o)	Significant Environmental Benefit offset management plan, outlining the approach to environmental offsets for the disturbance of native vegetation, as required under the *Native Vegetation Act 1991*.

1.6 Maps of Proposed Action Area

The Goyder Renewable Zone Concept is provided as Figure 1.1 and the EPBC Application Area is shown on Figure 1.2.

Figure 1.1: Goyder Renewable Zone Concept



Goyder North Renewable Energy Facility (GNREF)
Goyder North Wind Farm (GNWF)
Goyder South Project Area
Goyder South Stage 1a and 1b Project Area (in construction)
Goyder South Stage 1a and 1b Overhead Transmission Line
Main road
Bundey Substation (existing)



31669_R00_PrelimDoc_v3 (Figure 1.1 Goyder Renewable Zone Concept)

umwelt

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
Date Exported: 1/10/2025 10:13 AM
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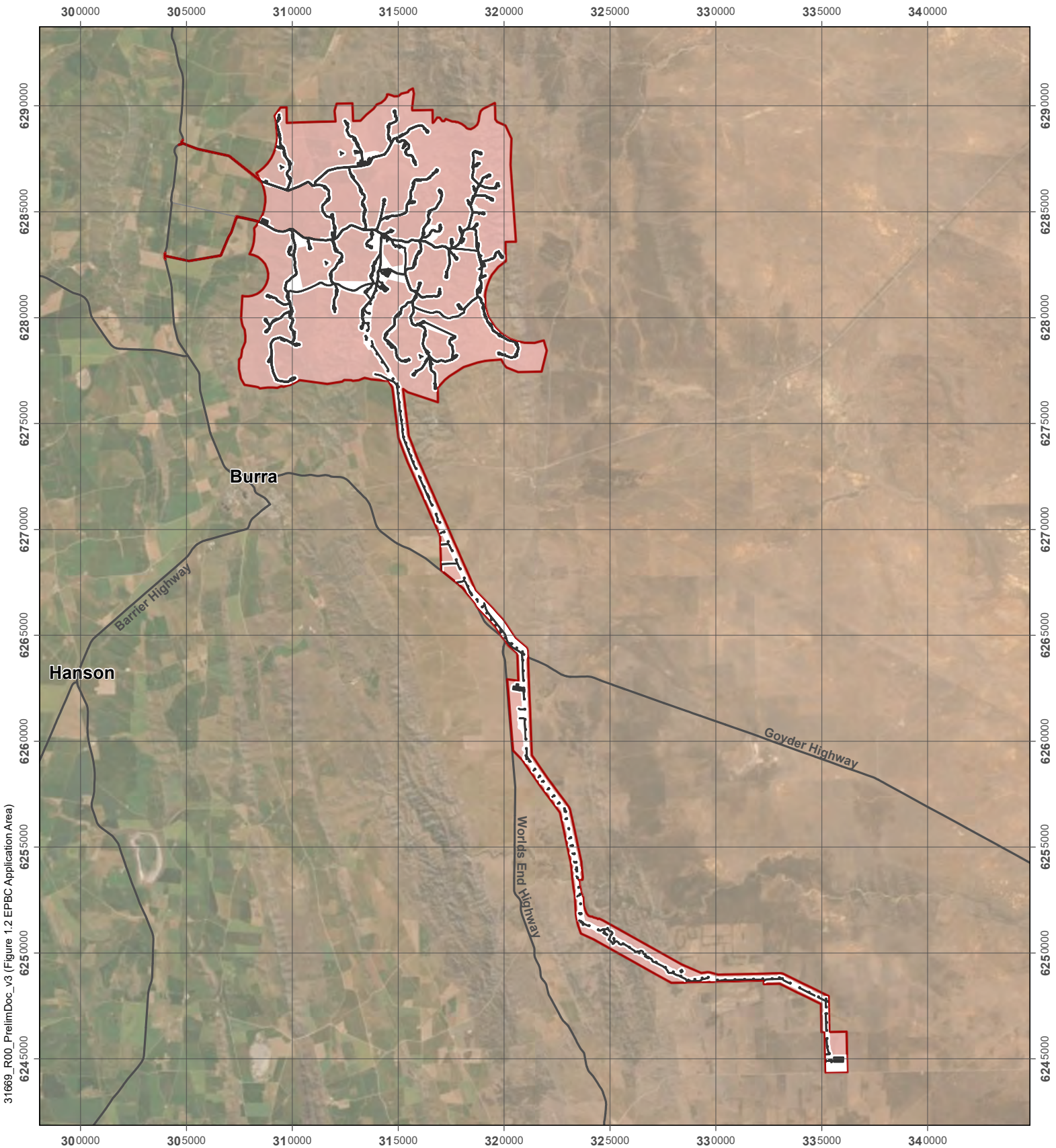
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GDA2020 MGA Zone 54

N

0 2.5 5 km

Figure 1.2: EPBC Application Area



Application Area
Development Envelope
Disturbance Footprint
Main road



31669_R00_PrelimDoc_v3 (Figure 1.2 EPBC Application Area)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

N

0 2.5 5 km

2 DESCRIPTION OF THE ACTION

2.1 Purpose of the Proposed Action

1. Description of the action
a) State the purpose of the proposed action.

As part of the broader Project drivers, Australia has committed to reducing greenhouse gas emissions to 43% below 2005 levels by 2030, with plans to achieve net zero emissions by 2050 (DCCEEW 2024d). South Australia's aspiration is to achieve 100% net renewables by 2027 (Government of SA 2024). Investment in renewable energy through endeavours such as the GNWF Project, demonstrates Neoen's commitment to decarbonising the country and state's energy sector.

The Project is expected to provide a range of economic benefits to the Mid North region, including an investment of approximately $2.2B AUD of capital expenditure for the initial stage. It is also expected to create approximately 450-500 direct jobs during construction and 15 permanent jobs during the 30 years of operation. These numbers were informed by data from the newly constructed Goyder South Wind Farm (GSWF).

Considering the driver to decarbonise the energy sector, Neoen is seeking approval under the EPBC Act to develop and operate the GNWF. Development of the Project would see construction of a network of roads and tracks to connect infrastructure and provide site access, underground cabling (power and communication), 99 WTGs and hardstands, operations and maintenance buildings, concrete batching plants, a 48 km OTL, collector substation, expansion of the existing Bundey Substation, a BESS, and temporary construction facilities including compound and laydown areas. The OTL will connect the GNWF Wind Farm to the Bundey Substation, which is currently being built as part of the SA-NSW Interconnector PEC.

The Project would see generation of approximately 600 MW (dependent on the WTG technology used with a decision yet to be finalised), and up to 225 MW/900 MWh of battery energy storage capacity.

2.2 Components of the Action

1. Description of the action
b) A summary of all components of the proposed action
e) Plans or maps to delineate the position of all activities and components of the proposed action
f) An indicative layout plan for the proposed action area, including the location and type of land use, key infrastructure, revegetation areas, open space and conservation areas.
g) The location, boundaries and size (in hectares) of the disturbance footprint and any adjoining areas which may be indirectly impacted by the proposed action. The disturbance area should be clearly identified. Information should outline the proposed construction activities associated with each activity (pre-construction, construction, and operation).

Project definitions and key terms used throughout this document to describe the Action include:

- **Project Area:** comprises approximately 17,700 hectares (ha) of rural land located within South Australia's Mid North Region. The area lies entirely within the Regional Council of Goyder and contains mainly freehold farmland, five Crown land parcels, and local road reserves. Land use is predominantly dryland cropping and grazing, with some remnant vegetation across varied, but mostly hilly, terrain.
- **Disturbance Footprint**: Defined as the area where permanent and temporary infrastructure is proposed. Hence, it is the maximum extent of clearing that will take place as part of the proposed Action. The Disturbance Footprint represents the total on-ground disturbed area that the Neoen is seeking approval for which covers up to 536.82 ha within the Project Area. Neoen have also identified the Disturbance Footprint as either having permanent or temporary disturbance.
    - **Permanent Disturbance**: represents the area which will not be rehabilitated following construction and are elements required for the life of the Project, requiring either land acquisition and / or agreements which will likely result in changes to existing land use. Permanent Disturbance represents 307.56 ha of the total Disturbance Footprint.
    - **Temporary Disturbance**: disturbed areas which are only required to support the construction phase of the Project and will be rehabilitated to meet or exceed their original condition following construction, where it is practical and reasonable to do so. Temporary Disturbance represents 229.26 ha of the total Disturbance Footprint.
- **Development Envelope**: A 'buffered' version of the Disturbance Footprint that represents the outer spatial extents within which the Disturbance Footprint will occur. Design is well developed and optimised to minimise cut and fill, avoid known sites of significance or value, and to minimise the disturbance footprint. The Development Envelope is an extra measure to enable final adjustments to the Disturbance Footprint in alignment with the Mitigation Hierarchy to avoid or minimise impacts on environmental values, cultural heritage or any other potential constraints that emerge during design finalisation and construction.

A summary of the Project and associated components is outlined in Table 2.1, and presented in Figure 2.1, Figure 2.2, Figure 2.3, and Figure 2.4.

Table 2.1: GNWF Project Components

Project Component	Description	Disturbance Footprint (rounded to nearest 0.5 ha)
Wind Turbine Generators, hardstands and access roads.	Wind turbines are manufactured in separate components and sections and will be assembled on the site. Specifications include: Maximum number – 99 Minimum swept height – approx. 20 m Maximum swept height – approx. 240 m Maximum blade length – approx. 95 m Maximum rotor diameter – approx. 190 m Maximum rotation speed – approx. 9-10 revolutions per minute (rpm) Roads to each WTG including turnarounds. The Disturbance Footprint for WTGs includes internal wind farm roads which will be required for WTG construction and operation for the life of the asset based on a typical 5.5 m surface road width in straight sections. The Disturbance Footprint also includes batter and drainage design based on 3D civil modelling, with the final permanent road width therefore varying significantly across the site depending on slope; however, for the purpose of the assessment can be assumed to be nominally 11 m. In addition, 5 m of temporary disturbance is allowed on either side of the outer permanent footprint for road construction which overlaps with a high proportion of the medium voltage cable (MV Cable) temporary disturbance footprint located on either side of the road. Footings may be either a mass concrete footing (raft style), piled type rock anchors, or a combination of both at approximately 30 m in diameter. Permanent and temporary hardstand areas will be required for construction and operation of the Project. These are improved/stabilized areas with a prepared surface where plant and cranes can operate, vehicles can be parked, and material can be stored. Each WTG will have a crane hardstand area of approximately 78 m x 48 m to support crane operations during the erection of the towers and wind turbine components. These will also be used for scheduled maintenance activities during the wind farm operational and decommissioning phases. The final hardstand configuration at each WTG site will be determined by the topography and terrain. Each WTG will also have a laydown area and crane boom area at its base (both temporary infrastructure pads) which would be approximately 90 m x 20 m and 140 m x 17 m, respectively. These are required during construction for laydown of components and materials, as well as providing adequate space for the cranes to operate safely.	378.0 ha including wind farm access roads and a 5 m temporary civil construction disturbance buffer that overlaps with a high proportion of the MV underground cable temporary Disturbance Footprint, located either side of the road.

Project Component	Description	Disturbance Footprint (rounded to nearest 0.5 ha)
Battery Energy Storage System	Approximate capacity of 225 MW/900 MWh. A fenced compound of one approximately 5 ha within the wind farm area. This area also doubles up as a central construction laydown area in the first instance to avoid additional clearance. Construction sequence would therefore stagger construction of BESS to occur following the main use of the central temporary laydown.	6.0 ha including access track
Overhead Transmission Line	A 275kV or 330kV multi-circuit OTL connecting the wind farm substation to the Bundey Substation approximately 48 km south. Transmission lines would also connect the battery to the wind farm substation (approximately 400 m). Transmission towers on either would be up to 65 m high with a permanent footprint of approximately 27 m x 27 m enclosed with a 50 m x 50 m temporary construction footprint, spaced approximately 300 m-500 m apart. To minimise ecological impacts the OTL will employ practises of non-conventional conductor stringing negating the need for a stringing corridor. Some OTL tower heights will be increased (or optimally placed through detailed design phase) to achieve sufficient clearance from vegetation to negate the need for the Inner and Outer Maintenance Zones for the life of the project. Access tracks to each transmission tower are required for construction and operational access. Design for tracks are based on a width of 6m, with the Disturbance Footprint relating to the slope across each track. Where possible, these tracks have utilised public roads, farmers' tracks, or access tracks installed for the Goyder South transmission line. The footprint is based on concept design tower placement and access tracks to be further optimised for civil and ecological outcomes in detailed design phases. Temporary Brake and Winch sites are required for stringing of the line. These include two 45 m x 45 m pads and two 10 m x 60 m stringing corridors at each turn > 30 degrees or at a minimum of every 5.5 km. Disturbance Footprint totals include brake and winch sites, tower pads, access tracks and helicopter landing pads. Construction facilities for the transmission lines are itemised separately under Construction Compounds and Facilities below.	63.0 ha including access tracks, brake and winch, helicopter landing pads and tower pads
Electrical Substations and operation and maintenance facilities	Two fenced compounds of approximately 150 m x 150 m and 80 m x 180 m within the wind farm. An extension of the Bundey Substation of approximately 220 m x 440 m, including substation and ancillary equipment. Operation and maintenance facilities have a footprint of approximately 70 m x 50 m.	7.0 ha for the wind farm including access road. 10.0 ha at Bundey Substation including access tracks.

Project Component	Description	Disturbance Footprint (rounded to nearest 0.5 ha)
Construction Compounds and Facilities	Approximately 38 ha of footprint for construction Facilities associated with the WF: 150 m x 150 m Laydown Areas x 1 100 m x 100 m Laydown Areas x 3 150 m x 150 m Construction Compounds x 3 100 m x 100 m site security facility x 1 150 m x 150 m batch plants x 4 200 m x 50 m stockpile areas x 16 Approximately 7 ha additional for construction facilities associated with the OTL. 300 m x 150 m OTL compound x 1 150 m x 150 m OTL batch plant x 1	45.0 ha for the wind farm and OTL facilities
Access Tracks	Access tracks have been incorporated into each design element (i.e. wind farm, OTL, substations and BESS)	Incorporated into each element design for OTL and Wind Farm respectively
Underground cabling	Underground cabling for transmission (33-66 kV) and communications (fibre). Medium voltage cable preferentially placed adjacent to roads, within the 5 m civil construction buffer either side of the road (temporary disturbance footprint area for civil works). Up to four MV cables can be placed within the civil disturbance footprint for the access roads (two on either side). For cases where there are more than four cables, an additional 2 m per cable has been added to the Disturbance Footprint where they are aligned with the access roads. Where it is not practical for cables to run adjacent with roads, a 7 m wide corridor will be disturbed for up to three cables, with an additional 2 m for each cable thereafter. Trench widths will be approximately 0.5 m per circuit and a depth of approximately 1.2 m (0.9 m minimum typical coverage). All Disturbance Footprint associated with cable trenching and laying (including overlapping temporary civil construction buffer) will constitute temporary disturbance and will be rehabilitated after installation.	19.5 ha of temporary clearance required for MV cable that is additional to that which will overlap with the 5 m civil construction footprint
Meteorological masts	Up to 15 meteorological masts (nine temporary and six permanent) to calibrate wind speed across the site. Masts will be up to 140 m in height and nine guy wires anchored at a radius of around 120 m.	1.5 ha

Project Component	Description	Disturbance Footprint (rounded to nearest 0.5 ha)
Site access	Primary access route from Barrier Highway, utilising existing roads. Two access roads are included – White Hill Road and Belcunda Road. Site access roads will require widening in some locations and trimming of taller vegetation (limited to amenity vegetation only) to accommodate the transport of heavy machinery and large infrastructure components. The Disturbance Footprint includes areas at several intersection upgrade locations along the Barrier Highway to allow for upgrades and blade sweep. This represents estimated area where vegetation clearing and/or trimming may be required for the transport of equipment to site. An 11 m wide corridor has been allowed for, noting that this includes the existing 7 m wide road. The Project Area also includes land allocated for blade sweep.	7.0 ha
Total		**537.0 ha**

2.2.1 Wind Turbine Components

The Project is comprised of up to 99 WTGs, each with a maximum tip height of approximately 240 m. The final size will depend on specific wind resource characteristics of each portion of the site and the requirements of individual power purchasers and may be less than these maximums. Neoen are seeking approval for turbines with an approximate blade length of 95 m and approximate rotor diameter of 190 m. The turbine tower base diameter is expected to be around 6 m. Footings may be either a mass concrete footing (raft style), piled type rock anchors, or a combination of both. These will be approximately 30 m in diameter. The footprint of each wind turbine will depend on the unique topographical condition at each WTG location and are best represented in the spatial layer based on 3D civil design but the permanent footprint is typically approximately 0.4 ha per turbine, with a temporary footprint of just over 0.4 ha. Hardstand areas at the base of each turbine will be approximately 78 m x 48 m. Laydown and crane boom areas at the base of each turbine (both temporary infrastructure pads) would be approximately 90 m x 20 m and 140 m x 17 m, respectively. These are required during the construction phase for laydown of components and materials as well as providing adequate space for the cranes to operate safely.

2.2.2 Battery Energy Storage System (BESS)

As part of GNWF, Neoen is proposing to build one BESS with a total capacity around 225 MW/900 MWh to be located near to the collector substation and connected via an OTL. The BESS would comprise of a fenced compound located approximately 400 m southwest of the collector substation with an approximate footprint of 6 ha.

Construction of the BESS would be scheduled to occur following the main use of the central temporary laydown, as the BESS site is designed to double up as a central construction laydown area in the first stage of construction to minimise clearance.

2.2.3 Overhead Transmission Line

The proposed Action requires an electrical connection to the grid through construction of an OTL. This will allow the export of electricity from the wind turbines, transmitting approximately 600 MW for the Project. An OTL of approximately 48 km in length will transfer the energy from the collector substation at the wind farm to the proposed substation extension at Bundey, an ElectraNet substation which was constructed as part of PEC.

There will be a multi-circuit 275 kV or 330 kV OTL. Transmission towers will be up to 65m in height with a permanent footprint of approximately 27 m x 27 m, and a temporary clearance footprint of approximately 50 m x 50 m. They will be spaced approximately 300 m - 500 m apart.

Brake and winch sites are located along the OTL to allow for tensioning of the conductor after it is strung. These sites are comprised of two 45 m x 45 m brake / winch pads, along with a 10 m x 60 m stringing section between the closest tower and the pad. Due to the elimination of a stringing corridor, these have been placed at a maximum of 6 km apart to ensure that the conductor can be strung safely. Neoen have allowed for 16 brake and winch sites within the Disturbance Footprint.

Construction of the OTL will employ practises of non-conventional conductor stringing. Non-conventional conductor stringing methods include:

- Laying out the conductor using light vehicles, with manual guidance via guide wires and brake-and-winch equipment;
- Aerial stringing, either using drones or helicopters; and
- String shooting – a method where a pilot line is rapidly deployed across spans using devices such as compressed air guns, which is then used to pull the main conductor into place.

Some tower heights will be increased or towers optimally placed during detailed design to achieve sufficient clearance from vegetation. By analysing the vegetation regulation guidelines for maintaining vegetation below OTLs and assessing the type of vegetation present beneath sections of the line, it was concluded that the approach outlined above removes the need for vegetation maintenance below the line. This can be achieved by optimising tower placement, height, and hence conductor sag to maintain the required clearance between conductors and vegetation.

Access tracks are required for construction and operational access to each transmission tower. Tracks to OTL towers have been designed to have an approximate width of 6 m, with the Disturbance Footprint proportional to the slope across each track. Where possible, these have utilised existing tracks including public roads, farmers tracks, or access tracks installed for the Goyder South transmission line. Design assumptions have, where possible, incorporated topographical and known landholder constraints and avoided MNES. The footprint is based on concept design tower placement and access tracks to be further optimised for civil and ecological outcomes during detailed design.

2.2.4 Collector Substation

The proposed Action includes one Collector Substation located centrally within the wind farm area. The footprint of the substation has been developed to encompass the substation itself, along with the switchyard, control room(s), switch room(s), and maintenance shed(s). The substation itself would be comprised of two fenced compounds of 150 x 150 m and 80 x 180 m (the latter within a broader 120 x 180 m construction footprint) adjacent to each other. Additional land near this substation has been included within the Disturbance Footprint to accommodate operations and maintenance facilities and temporary construction-phase facilities. The operations and maintenance facilities will be approximately 70 x 50 m and will include buildings (office, staff amenities etc.), car park areas, workshops, and laydown areas. Supporting services would be small scale and involve standard electricity supply, waste connection (where available) or water tanks and wastewater disposal.

2.2.5 Bundey Substation Extension

The transmission line will connect to the existing ElectraNet Bundey Substation via a proposed substation extension. The Action will involve construction of a substation expansion comprising a footprint of 220 m x 440 m on the northern extent of the existing ElectraNet Substation.

2.2.6 Access Roads

Access roads are required for access to the wind turbines and substations for all project phases including construction, operation and maintenance and decommissioning, with the most onerous use of the roads occurring during construction phase. Access roads to the OTL towers will be mainly required during the construction phase, with design tailored to ongoing operational and maintenance needs for the remainder of the life of the Project.

Design of all access tracks have utilised existing tracks and roads as much as possible, following approximately 40 km of existing routes across the wind farm and the OTL.

The main access to the site will be via the Barrier Highway onto Belcunda Road and then following Lines Road to the north before heading east onto Gum Hill Road along the southern boundary of Mokota CP. Up to 90% of traffic will be directed through this route to minimise potential for indirect impacts, such as dust deposition, more widely. White Hill Road will also be utilised as a minor access road to the site. Neoen have also endeavoured to incorporate the use of existing roads / farm tracks for construction throughout the Project Area where possible to reduce the need for additional clearance.

Across the Wind Farm, the required access road clearance will be wider than the required final road width which is based on a typical surface width of 5.5 m, due to a range of factors including topography, cut and fill design, drainage requirements and 5 m temporary disturbance allowance at either external batter edge for the purposes of road construction. The spatial data which represents the Disturbance Footprint being sought is based on 3D model and design that incorporates these factors, showing the fluctuating road width across the full extent of the road. These roads are designed for the hydrological conditions in the area and to be of an acceptable gradient, and horizontal and vertical curvature to accommodate the over-sized over-mass transportation of turbine and electrical components. Based on the 3D modelling the road width is required to vary across the WF site, depending on topographical requirements. For the purposes of this assessment the typical road width is assumed to be nominally 11 m. The additional 5 m temporary construction corridor either side of the outer extents of the permanent road footprint has been minimised as much as possible and has also been designed to overlap with the placement of the underground MV cable in most locations to further reduce Disturbance Footprint.

Access roads to access each transmission tower along the OTL have not been detailed to 3D design maturity yet and are instead based on a surface width of 6m, with the total Disturbance Footprint correlated with the slope across each track. Wherever possible, these tracks have utilised public roads, farmers' tracks, or access tracks installed for the Goyder South transmission line to minimise any further disturbance.

Following construction, temporary cleared area for road construction will be rehabilitated but roads, including batter and drainage will be retained to meet operational, maintenance and decommissioning requirements for the life of the project. The ongoing operational and maintenance requirements for the OTL are typically less than those required across the Wind Farm and therefore the OTL tower access tracks will be maintained accordingly. Landholders and the local South Australian Country Fire Service will be consulted with to ensure that access is also suitable for their ongoing requirements, including fire-fighting equipment.

2.2.7 Underground Cabling

Underground MV cables are required to connect the wind turbines to the collector substations for transmission and communications (fibre). These cables will operate at an approximate capacity of 33 kV-66 kV, depending on the final design of the turbine components and layout. These are generally located adjacent (within 5 m) to the access tracks to overlap with the temporary construction footprint and minimise the Disturbance Footprint. The trench width is approximately 0.5 m per circuit with a depth of approximately 1.2 m (0.9 m coverage on top).

Through concept design, Neoen have adopted a strategy of minimising ground disturbance by preferentially placing MV cable adjacent to roads, within the 5 m civil construction buffer either side of the road. Up to four MV circuits can be placed within the civil Disturbance Footprint for the access roads (two on either side of the road). For cases where there are more than four circuits, an additional 2 m per cable has been added to the Disturbance Footprint when the cables are aligned with access roads.

In some situations, it is not practical for cables to follow the roads, and hence cabling is likely to occur outside of the roadways. Where it is not practical for cables to run adjacent to roads, a 7 m wide corridor will be disturbed for up to three cables, with an additional 2 m for each cable thereafter. MV cables that are decoupled from roads will be designed to take the most direct and practical route whilst minimising impacts to environmental values including MNES.

All Disturbance Footprint associated with cable trenching and laying (including that which overlaps with the temporary civil construction buffer) will constitute temporary disturbance and will be rehabilitated after installation.

2.2.8 Temporary Construction Facilities

Temporary construction facilities will be installed for the construction phase of the wind farm but will be decommissioned after construction is complete and, where practicable, areas will be rehabilitated.

One of the central construction facilities is designed to be utilised during construction phase of the Wind Farm, and later to be used as the proposed BESS site, minimising overall Disturbance Footprint.

Neoen have preferentially sited construction facilities that may have devoted stockpile areas to exceed 200 m from TECs to minimise dust impacts, where possible. This has been achieved in all cases except for two locations where additional dust management measures will be applied as outlined in the CEMP (Att11_GNWF CEMP), including maximising separation distances as much as possible, prompt redistribution of topsoils following construction, dust suppression through watering or covering of stockpiles with soil binders, and monitoring of stockpiles are to remain in place for more than seven days.

Neoen will ensure that contractors are aware of their statutory obligations including approval conditions, as well as stakeholder commitments to protect features of identified significance.

Neoen will ensure that construction contractors prepare all the necessary documentation for construction facilities including management plans, undertake the works needed to ensure that impacts are minimised, and rehabilitated sites to their original land use or as agreed with landholders following construction.

Through the design and early construction phases, Neoen will continue efforts to minimise the footprint required for temporary infrastructure. This infrastructure will likely comprise of the following:

- Construction vehicle and workforce vehicle parking.
- Concrete batching plants, crushing facilities and gravel pits.
- Construction laydown and stockpiles.
- Site office and staff amenities.
- Laydown areas at the base of each turbine.

2.2.9 Meteorological Masts

Up to fifteen (15) meteorological masts (Table 2.1) will likely be installed during construction phase for wind monitoring and calibration of wind speeds across the site. It is estimated that nine of these masts will be located in positions where turbines will be installed later in construction, with the remaining six masts remaining in their location for the duration of the Project as part of the operational protocols. The masts will be installed using guyed lattice structures of up to 140 m in height. Exact locations are still to be determined, as they are dependent on the turbine supplier's testing regime, but Neoen is committed to ensuring that any MNES and ecological features of high value, are avoided in their siting.

2.3 Activities Associated with the Action

1. Description of the action

c) A description of the activities associated with the potential development throughout its entire life cycle.

h) A description of the construction and operational activities of the proposed action, including but not limited to:

i. relevant pre-construction activities

ii. anticipated timing and duration (including start and completion dates) for both construction and operational components).

iii. construction activities of the action

iv. anticipated maintenance works, including predicted frequency

v. information about the maximum amount of people present on the proposed action area at any one time, including seasonal variations and accommodation requirements.

Activities associated with the Action include planning, pre-construction, construction, operation, maintenance, and decommissioning, are detailed below.

2.3.1 History of Site Selection

The Project has been in the pre-feasibility phase since 2012 when the prospective wind farm was acquired by Neoen. Active development of the Project commended in 2022. The location of the Goyder North Renewable Energy Facility is constrained by where favourable wind is and where land holders are amenable to having wind turbines on their property. The viability of wind farms is dictated by several factors including wind speed, constructability, and their proximity to transmitting energy and energy

loads. Hence, while alternative locations have been assessed through the GNWF development process, this location was deemed the most appropriate at that point in time.

The Mid North region of South Australia, identified as a Renewable Energy Zone by Australian Energy Market Operator's (AEMO) 2022 Integrated System Plan (AEMO 2022), boasts world-class wind resources, with high and consistent wind speeds (>7.3 m/s) (DEM 2025), making it a prime location for renewable energy projects. The Project Area is ideally located in proximity to existing grid infrastructure and planned infrastructure projects such as ElectraNet's PEC, an interconnector between Robertstown (SA) and Wagga Wagga (NSW) (ElectraNet 2023). It is also serviced by major transport routes to facilitate the delivery of turbines during construction. The site is also located in reasonable proximity to the State's existing transmission network. Increased distance from the existing transmission network leads to increased environmental, economic and social impacts associated with the installation of additional connection infrastructure required to connect the Project to the grid. This strategic site selection aligns with the broader goals of sustainable development and renewable energy expansion in the region.

The history of site selection for the GNWF is embedded in a strategic approach to maximize renewable energy potential while minimising environmental and social impacts. The site, located on the edge of Goyder's Line, was chosen in part, due to its marginal agricultural cropping land, which is at higher risk of losing financial output in the near to medium future due to climate change effects. This selection ensures that the Project does not significantly impede existing agricultural practices and provides alternative income streams for rural communities. Additionally, the low population density in the area reduces visual and noise impacts. Together, these factors suggest that the Project Area is favourable from an economic, ecological, and social perspective compared to other potential sites, making it a considered and context-sensitive choice for development. Alternatives to the current location were carefully evaluated but were found to present higher risks or costs in terms of environmental disturbance, community disruption, energy yield potential, and proximity to the existing energy transmission network.

The predominantly historically cleared land (i.e., derived grassland) reduces the need for additional woodland clearance, with most infrastructure able to be sited in areas that are less likely to support high ecological value for many common and threatened species. However, it is recognised that grassland habitats in this region can provide important habitat for species of conservation concern, including the nationally threatened Pygmy Blue-tongue Lizard (PBTL), with higher quality pockets also supporting several State and nationally threatened flora species and ecological communities such as Iron-grass Natural Temperate Grassland (INTG).

Although native grasslands within the broader Mid North region were known to provide habitat for PBTL, at the time of the initial site selection, including at Tiliqua Nature Reserve within the Project Area, the full extent of the PBTL's distribution in more degraded native and exotic grasslands subject to long-term sheep and cattle grazing, was not fully understood. Learnings from Goyder South Wind Farm and more recently published literature prompted the intensive targeted survey effort undertaken at GNWF during the design development phase, which further increased knowledge and understanding of the distribution and habitat requirements of PBTL in the region.

The current Disturbance Footprint incorporates avoidance of MNES such as the PBTL and INTG, as much as practicable as well as avoiding all known populations of nationally threatened flora species such as *Dodonaea procumbens* (Trailing Hop-bush), and incorporates minimum setbacks from protected areas (i.e. Mokota Conservation Park and Tiliqua Nature Reserve), dwellings, property boundaries, residential zones, tourist accommodation, uninvolved dwellings, National Heritage Areas, state heritage areas and Electromagnetic Interference (EMI) no go zones.

Based on the range of constraints and alternatives already considered over such a large Project Area, the Development Envelope (micro siting corridor) is considered the optimal location for the GNWF Project, and there is a high level of confidence in the ecological values within this area based on extensive on ground survey work. Any alternatives or further updates to the design, outside of this Development Envelope, is not anticipated to provide any significant benefit or reduction in impacts to MNES or other matters of state significance.

2.3.2 Planning and Technical Investigations

Neoen have undertaken a significant and extensive number of technical investigations during the initial planning phase to identify potential impacts of the proposed action on the environment. Neoen have adjusted the design, particularly the location and layout of infrastructure, where practicable, to avoid and minimise impacts on the environment. This was guided by the findings of the following technical investigations, presented in Table 2.2.

Table 2.2: Technical Investigations (and associated reports) for the GNWF Project

Technical investigation type	Associated works including reports	Year	Reference	Attachment no. (if applicable)
Noise	Goyder North Wind Farm: Environmental Noise Assessment	November 2023	(Echo Acoustic Consulting 2023)	NA
	Goyder North Renewable Energy Facility – BESS: Environmental Noise Assessment	March 2024	(Echo Acoustic Consulting 2024)	NA
	Goyder North Wind Farm: Environmental Noise Assessment. Updated spatial modelling to reflect revised 99 WTG layout.	July 2025	(Echo Acoustic Consulting 2025)	NA
Visual amenity	Goyder North Renewable Energy Facility: Visual Assessment	April 2024	(GBD Landscape Architecture 2024)	Att05_GNREF Visual Impact Assessment
Shadow flicker and blade glint	Goyder North Renewable Energy Facility: Shadow Flicker and Blade Glint Assessment	March 2024	(GHD 2024a)	NA
	Goyder North Renewable Energy Facility, Shadow Flicker and Blade Glint Assessment. Updated spatial modelling data to reflect revised 99 WTG layout (January 2025).	January 2025	(GHD 2025)	NA
	Goyder South Wind Farm: Preliminary Study on the Impact of Shadow Flicker, Noise and Vibration on PBTL and Burrowing Spiders	2025	(Umwelt 2025a)	NA
Ecological studies for flora and fauna	Mt Cone Wind Farm Flora and Fauna Assessment - Investec	October – November 2010	EBS (2011)	NA
	Mt Cone Targeted PBTL Surveys -Investec	April-May 2012 (15 days)	EBS (2012)	NA
	Goyder Renewables Zone – Goyder 2 (Mount Cone Wind, Solar and Storage)	2019	EBS (2019)	NA
	GNREF on-ground flora assessment (GNREF excl. OTL)	November 2022	EBS (2022 – unpublished)	NA
	GNREF Ecological Constraints Mapping	July 2023	(EBS Ecology 2023a)	NA
	Desktop Flora and Fauna Assessment for OTL Options	July 2023	(EBS Ecology 2023b)	NA
	GNREF and OTL Ecological Risk Assessment Summary	September 2023	(EBS Ecology 2023c)	NA

Technical investigation type	Associated works including reports	Year	Reference	Attachment no. (if applicable)
	GNWF on-ground flora assessment	November 2023	(EBS Ecology 2024a) now superseded, replaced by (Umwelt 2025b)	Att02_GNWF Ecological Assessment
	GNWF (WF) spring bird and bat utilisation survey (BBUS) (1 of 8)	November 2023	(EBS Ecology 2024b)	NA
	GNWF targeted Mallee Bird Community (MBC) surveys	November 2023	(Umwelt 2025b)	Att02_GNWF_Ecological Assessment
	GNWF targeted Mallee Bird Community (MBC) surveys	February 2024	(Umwelt 2025b)	Att02_GNWF_Ecological Assessment
	GNWF targeted Pygmy Blue-tongue Lizard (PBTL) surveys	February – March 2024	(Umwelt 2025c)	NA
	GNWF targeted EPBC listed threatened plant surveys (GNWF, OTL)	March 2024	(EBS Ecology 2024a) now superseded, replaced by (Umwelt 2025b)	Att02_GNWF_Ecological Assessment
	GNWF on-ground flora assessment (OTL, WF, site access options)	February – March 2024	(EBS Ecology 2024a) now superseded, replaced by (Umwelt 2025b)	Att02_GNWF_Ecological Assessment
	GNWF (WF) summer BBUS surveys (2 of 8)	February 2024	(EBS Ecology (2024c)	NA
	GNWF (WF) autumn BBUS surveys (3 of 8)	May 2024	(EBS Ecology 2024d)	NA
	GNWF (WF) winter BBUS surveys (4 of 8)	July 2024	(EBS Ecology 2024e)	NA
	Goyder North Wind Farm Project Significant Impact Assessment under *the Environment Protection and Biodiversity Conservation Act 1999*	September 2025	Lathwida (2025)	Att03_GNWF SIA
	GNWF (WF) spring BBUS surveys (5 of 8)	September 2024	(Umwelt 2024a)	NA
	GNWF on ground flora assessment for design update	September 2024	(Umwelt 2025b)	Att02_GNWF Ecological Assessment
	On ground targeted INTG Condition Class Assessment	October 2024	(Umwelt 2025d))	Att08_GNWF INTG Assessment
	GNWF Native Vegetation Clearance Data Report for Geotechnical Investigations	August 2024	(Umwelt 2024b)	NA

Technical investigation type	Associated works including reports	Year	Reference	Attachment no. (if applicable)
	Significant Impact Assessment for Geotechnical Investigations	December 2024	(Umwelt 2025e)	NA
	GNWF (WF) summer BBUS surveys (6 of 8)	February 2024	(Umwelt 2025f)	NA
	GNWF Native Vegetation Clearance Data Report	February 2025	(Umwelt 2025g)	NA
	GNWF Targeted Flinders Ranges Worm-lizard Survey Report	March 2025	(Umwelt 2025h)	Att10_GNWF FRWL Assessment
	GNWF Targeted PBTL Survey	April 2025	(Umwelt 2025c)	Att09_GNWFPBTL Assessment
	GNWF Targeted Threatened Flora Survey (OTL)	May 2025	(Umwelt 2025b)	Att02_GNWF Ecological Assessment
	GNWF (WF) autumn BBUS surveys (7 of 8)	July 2025	(Umwelt 2025i)	NA
	Goyder North Renewable Energy Facility: Heritage Impact Assessment	October 2024	(Biosis 2024)	Att07_GNREF Heritage Impact Assessment
	GNWF (WF) winter BBUS surveys (8 of 8)	August 2025	(Umwelt 2025j)	NA
Heritage	Goyder North Wind Farm & OHL Transmission Route – Heritage Desktop Assessment Summary	January 2024	(IHC 2024)	Att07_GNREF Heritage Impact Assessment
	Goyder North Wind Farm: Aeronautical Impact Assessment including Aviation Impact Statement, Qualitative Risk Assessment and Obstacle Lighting Review	December 2023	(Chiron Aviation Consultants 2023)	NA
Aeronautical impact assessment	Goyder North Wind Farm: Electromagnetic Interference Assessment	January 2024	(GHD 2024b)	NA
Electromagnetic interference assessment	Goyder North Renewable Energy Facility: Traffic Impact Assessment	December 2024	(Jacobs 2024)	NA
Traffic impact assessment	Goyder North Renewable Energy Facility: revised Access Regime Assessment	April 2025	(Jacobs 2025)	NA
	Goyder North Wind Farm: Flood Modelling	November 2023	(WGA 2023)	NA
Flood modelling	Goyder Renewables Zone, Goyder North: Preliminary Environmental Site Assessment	July 2023	(Agon Environmental 2023)	NA

2.3.2.1 Offset Site Assessment and Selection

Although Neoen have sought to undertake development in areas of relatively low ecological significance (during the initial site selection process) and have applied the mitigation hierarchy to avoid and minimise impacts to native vegetation and MNES, not all impacts are avoidable. As a result, offsets are required under both state (South Australian) and national legislation to ensure that any environmental impacts are adequately compensated. Neoen is committed to securing high ecological value offsets, that are on-ground wherever possible, for both native vegetation and any residual impacts to MNES, where these impacts are unavoidable.

Neoen has previously demonstrated their commitment to achieving high value on-ground offsets. To offset impacts from Goyder South Wind Farm, Neoen negotiated with a private landholder and the South Australian Department for Environment and Water (DEW) to purchase a private property for conversion to Worlds End Gorge National Park. A recipient at the Australian Financial Review Sustainability Awards, it is recognised as a significant offset achievement in South Australia, and indicative of Neoen's commitment to achieving high quality environmental offset outcomes.

For GNWF, Neoen recognised the importance for achieving an offset or offsets of similarly high value, both to the environment and the community. Neoen engaged Umwelt to undertake a broad desktop and subsequent on-ground offset assessment survey at a number of locations, which had been identified as potentially suitable, and either available or with potential for negotiation with landholders.

Preliminary investigations identified the sites based on the Native Vegetation Council (NVC) Significant Environmental Benefit (SEB) guidelines (NVC 2024c) and *EPBC Act Environmental Offsets Policy* (DSEWPaC 2012), as well as practical on-ground formalities, to determine potential suitability of several sites. Criteria used to make the initial assessment included:

- Likelihood of containing similar vegetation associations and flora and fauna species assemblages as the impacted sites.
- Likely presence of impacted MNES or MNES habitat.
- Landscape context similarity (i.e. same Bioregion > Subregion > Association).
- Proximity to impact site.
- Habitat connectivity / value (i.e. proximity to existing protected areas such as Heritage Agreements or conservation areas).
- Parcel size (i.e. is it likely to meet SEB /EPBC requirements).
- Availability /amenability of landholders to participate.
- Potential for collaboration with experienced third parties for management of the area.

Six properties were assessed in detail based on the preliminary investigations and successful negotiations with landholders to access the areas. From this assessment one property was assessed as the most suitable, given the above factors, and was subsequently purchased by Neoen (settlement 29 August 2025). The property comprises 1,300 ha of previously grazed and a small portion of historically cropped land to meet approximately half of the SEB Offset requirements for native vegetation. The property represents

the potential for a significant conservation gain and includes like-for-like vegetation such as iron-grass grassland, mallee woodlands and native grassland with high restoration potential. The property complements conservation initiatives in the region through its proximity to existing protected areas, including Caroona Creek Conservation Park and multiple heritage agreements. Neoen is currently developing a detailed management plan for this property which will include actions to improve vegetation, including revegetation. Further, Neoen are pursuing an experienced third-party provider to manage the property and are in consultation with Ngadjuri traditional owners to investigate potential for ongoing involvement on Country, to achieve an ecologically, socially and culturally beneficial project.

Additionally, Neoen is actively scoping the remainder of the SEB offset requirements with a clear preference for on-ground properties which provide linkage between, or which adjoin, other conservation estates, to achieve best outcomes from a regional perspective. The SEB offset is in addition to exploring opportunities for on-ground PBTL and INTG EPBC Offset requirements under the EPBC Act (described further in Section 9) in partnership with the key experts in the region and state to ensure ongoing support, protection and population improvement of significant flora and fauna species.

This commitment reflects Neoen's dedication to environmental stewardship and sustainable development, ensuring that their projects contribute not only to achieving clean energy solutions, but also positively to the preservation of biodiversity and ecological integrity.

2.3.3 Construction and Operational Activities

2.3.3.1 Pre-construction

Pre-construction activities are generally limited to site studies including ongoing wind measurement and geotechnical investigations and surveys. These activities are excluded from the proposed Action.

Six meteorological masts (met masts) for obtaining ongoing wind measurements have already been installed at the site, three of these being prior to Neoen's acquisition of the Project. A further 15 met masts are expected to be installed at various stages throughout the Project. Each met mast has a footprint of < 0.2 ha and has been sited to capture the necessary measurements, and to avoid MNES. Where necessary (i.e. in suitable habitat), pre-clearance surveys (Umwelt 2024c) have been undertaken to micro site infrastructure and access routes around MNES (e.g. PBTL). For each met mast, clearance approval has been sought under the state authority, the Native Vegetation Council (NVC), according to the *Native Vegetation Act 1991* (NV Act).

Neoen has undertaken geotechnical (Geotech) investigations at the site, which are excluded from the proposed Action. Neoen has obtained State approval under the NV Act for native vegetation clearance associated with on-ground geotechnical investigations, for a small area of 0.47 ha. Additionally, due to the known presence of MNES at the site, an SIA was undertaken for the geotech works, which proposed mitigation measures to effectively reduce the residual impact to MNES to zero with no significant impact (Umwelt 2025f).

Careful micro siting was undertaken on site immediately prior to any Geotech works, in locations where PBTL may have occurred. A detailed Geotech plan and schedule was supplied to Umwelt, who undertook pre-clearance checks and micro siting (where required) at each proposed site, approximately one week prior to any impact occurring.

Access to site by heavy machinery was minimised, and where access was required over grassland, heavy machinery was not considered as an impact to native vegetation. However, as a precaution in these locations, pre-clearance checks were also undertaken to search for and mark the location of any PBTL (if detected) on or near to the proposed access route. The least impact track was mapped spatially and supplied to the Geotech contractor with details of any avoidance required. If PBTL were detected, additional measures were implemented to ensure that the preferred track was clearly visible, using bright coloured survey marker paint. Any PBTL detected, were marked using 2 x 2 m ecological exclusion zone fencing, to ensure that contractors avoided the location and immediate surrounds. Through this method, 19 PBTL were detected and effectively avoided.

2.3.3.2 Construction

Construction timing for the Project will be determined once approval is granted, and the procurement process is complete. Given the scale of wind energy generation associated with the GNWF, it is possible that the Project will be developed in two stages with each stage potentially having its own legal entity, construction contracts and financing packages. The exact size and timing of stages will be defined through the final Project development process and will be informed by the size and timing of Power Purchase Agreements dictated by customer electricity demand as well as the construction contractors' capability and capacity, and tendering negotiations. The GNWF (under application in this Preliminary Documentation) may be built in its entirety, or split into two stages comprising:

- Stage 1: Approximately 48 WTGs, proposed to commence construction from Q1 2026
- Stage 2: The remaining WTGs (constituting a total of up to 99) to begin construction in a 2–5 year timeframe

This Preliminary Documentation still seeks approval for the entire GNWF Project as described throughout Section 2, noting again that an additional 400 MW, or up to 36 additional WTGs, were proposed in the State Development Application (DA) which was approved in 2024. The design has since been refined to that described here as the GNWF, and there is no current plan to develop any additional stages beyond the 99 turbines proposed as part of GNWF. If any additional stages were to be progressed in the future, they would be subject to their own approval processes and stakeholder engagement.

The construction phase will be the busiest and most labour-intensive phase of the project, requiring the workforce at its peak of approximately 450-500 personnel and highest traffic use. To ensure the workforce can be accommodated in the region without overwhelming housing supply and negatively impacting on local tourism and other industries, Neoen are working with the local Council to develop an accommodation camp on the outskirts of Burra in a previously disturbed area that will still enable flow on benefits for local businesses. This option aligns with the Council's longer term aspirations for expanding tourism accommodation in the future. Note that initial environmental survey initiated by Goyder Regional Council has been conducted and determined that MNES were not detected on site and that habitat was

unlikely to support MNES. Neoen will work with Goyder Regional Council to minimise clearance of any high value vegetation in the site's design development and support Council in seeking State vegetation clearance approval as required.

A summary of the anticipated construction works associated with the GNWF Project and indicative timing (for entire GNWF Project, or stage 1 construction) is provided in Table 2.3. Should the Project be constructed in two stages, the indicative timeframe would likely be extended by approximately 1-2 years depending on start date.

Table 2.3: Construction activities and indicative timeframes (for full GNWF or Stage 1 works)

Activity	Indicative Timeframes
Site establishment and preliminary works	**Q2 2026 to Q3 2026**
Detailed design and construction	Q2 2026 to Q3 2027
Approvals and licensing	Q4 2025 to Q1 2026
Geotechnical assessment	Campaign 1: February to March 2025 Campaign 2: October to November 2025
Procurement	Q2 2025 to Q4 2027
Mobilisation on site and site office establishment	**Q2 2026 to Q3 2026**
Bench preparation	Q2 2026 to Q3 2026
Site office and facilities established	Q2 2026 to Q3 2026
Construction compound established	Q2 2026 to Q3 2026
Batching plant, installation, test and commission	Q2 2026 to Q4 2026
Upgrade site entry points	Q2 2026 to Q2 2027
Civil works	**Q3 2026 for 24-36 months** **Completion in Quarter 4 2027 and Quarter 1 2028**
Transport route roads and intersection upgrades	Q2 2026 to Q2 2027
Earthworks for establishment of access roads and WTG hardstands	Q2 2026 to Q4 2027
Excavations for the foundations and construction of WTG foundations (hardstands and footings)	Q2 2026 to Q4 2027
Installation of electrical and communications cabling and equipment.	Q2 2026 to Q2 2028
Arrival of WTG components to the Project Site and installation of WTGs.	Q3 2027 to Q3 2028
Construction Commencement, Completion, testing and Commissioning of Project	Q3 2026 to Q4 2028

Pre-construction micro siting

Pre-construction micro siting will be undertaken prior to the commencement of ground-disturbing works, such as, but not limited to, clearing and grubbing, vegetation clearance, earthworks, excavation and trenching. Refer to Section 6.1.3 for more information on pre-construction micro siting.

Commissioning

Once construction is completed, commissioning will begin. Commissioning generally includes all activities after all components of the WTG are installed and takes approximately two days per turbine. Commissioning tests will usually involve standard electrical tests for the electrical infrastructure as well as the turbine, and inspection of routine civil engineering quality records. Commissioning also incorporates the testing of how turbines interact with the electricity grid. This includes demonstrating that the Project meets the technical requirements that are agreed to with the Australian Energy Market Operator.

2.3.3.3 Operation and Maintenance

Approximately 15 employees will be involved in the operational maintenance and management of the WF. Proposed operational activities are summarised in Table 2.4.

Table 2.4: Operation and maintenance activities

Project Stage / Location	Description
Wind Farm	**Wind Farm has a warranted lifespan of 25 – 30 years. This may be extended depending on performance at the end of the warranted lifespan.**
Permanent on-site operations and maintenance of the wind farm, substations, and BESS.	Ongoing, regular for life of the wind farm
Routine inspection and maintenance by operational personnel travelling from the Operations and Maintenance Compound / Site Office.	Ongoing, regular for life of the wind farm
Replacement of project assets and equipment as required.	Ongoing, regular for life of the wind farm
Environmental auditing	Ongoing, regular for life of the wind farm
Rehabilitation works (for Temporary Disturbance Footprint during construction)	During and post-construction, as required (expected to occur throughout construction and the first 3-5 years of operations. Note that this timeframe is highly dependent on annual rainfall and seasonal conditions)
Overhead transmission line	**The OTL will have a design life of 40-50 years and will be operated by ElectraNet as a Designated Network Asset. Upon decommissioning of the Wind Farm, ElectraNet may choose to integrate the OTL into the wider South Australian electricity network.**
Routine inspection and ongoing maintenance of the OTL.	Ongoing, regular for the life of the OTL
Prescribed maintenance activities along the OTL corridor.	Include activities such as weed control along the OTL access tracks, as required. Ongoing vegetation maintenance beneath the OTL is not expected to be required as the design of OTL has deliberately incorporated the implementation of additional height transmission towers (i.e. ~65 m)) to enable sufficient clearance between conductors and vegetation. OTLs are expected to comply with the Electricity (Principles of Vegetation Clearance) Regulations 2021 (SA).

2.3.3.4 Decommissioning

Neoen acknowledges that the decommissioning of a wind farm site is an important consideration from the project outset. At the end of the wind farm's life, Neoen will assess the feasibility of renewing the facility and understand that repowering the site may involve obtaining subsequent approvals to do so if there are unknowns regarding the impact to MNES.

Alternatively, if the site is decommissioned, Neoen commit to obtaining the necessary state approvals, completing further survey work to inform a decommissioning plan, if required, and update the community of any plans. Should there be any expected impacts to protected matters during decommissioning, Neoen would obtain the necessary permits/approvals to do so. A site decommissioning and rehabilitation plan would also be prepared based on industry best practices at the time of writing, to ensure that all sites are remediated and rehabilitated to original condition (or better) post-removal of elements, detailing how roads and foundation pads would be covered and revegetated, allowing land to return to its former use. The decommissioning plan would also cover the removal of above-ground buildings, foundations and equipment, rehabilitation of disturbed land and recycling of all recyclable materials, including batteries.

To avoid additional soil disturbance, decommissioning does not typically include the removal of infrastructure located more than 0.6 m below ground level. This is a commonly used industry practice, as the infrastructure remaining underground would not cause harm to the environment or disrupt agricultural activities, whereas attempting to remove all infrastructure would necessitate far greater amounts of ground-disturbing works. Other infrastructure may also remain in place when the Project ceases to operate, such as access tracks, if requested by the landowners.

2.3.3.5 Personnel Details

Depending on final project capacity and construction schedule, during the peak of construction, it is expected that there would be a maximum workforce of between 450 to 500 people for around 36 months. During operation, there would be up to 15 permanent staff, depending on the timing and size of the project. This will be dependent on seasonal variations and accommodation availability, and it is expected to fluctuate through different stages of construction.

2.3.3.6 Timing and Duration

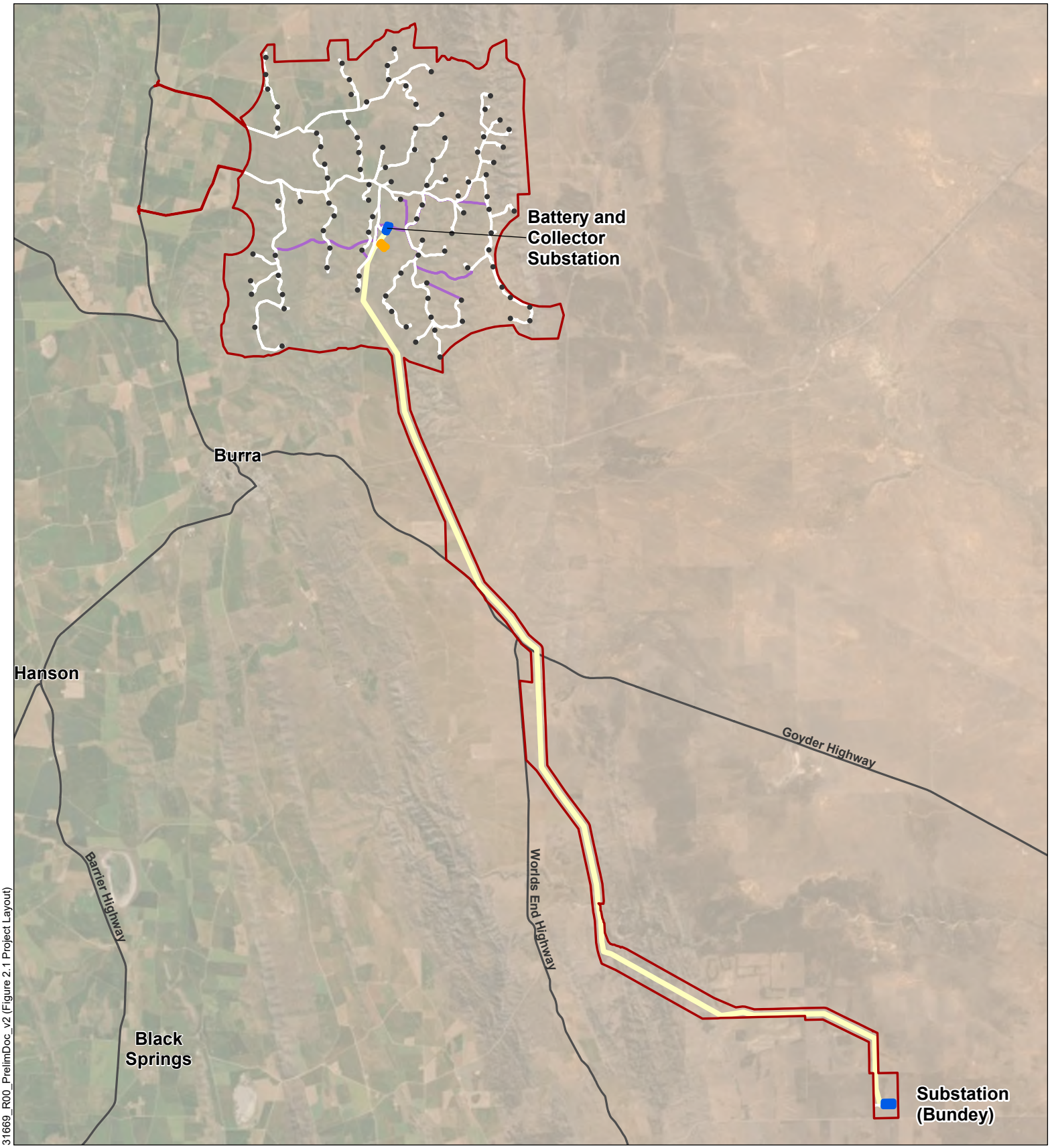
There are a number of factors that contribute to the indicative timeline for the GNWF. Neoen is currently aiming to issue a Notice to Proceed to the selected contractor in late Q1 2026, with construction anticipated to commence in Q2 2026. Construction is expected to take up to three years, with the operational phase of the project projected to begin in late Q1 2029. If the Project is constructed in two stages, the indicative timeframe would likely be extended by approximately one to two years, depending on the start date.

The wind farm will have a warranted operational lifespan of 25 to 30 years, depending on the technology selected. At the end of this period, the wind farm will be assessed to determine whether operations can continue, primarily based on its efficiency and mechanical performance. It is likely that operations will extend beyond the warranted lifespan; alternatively, the wind farm may be repowered. In that case, new approvals would be sought at the appropriate time, as previously noted.

2.4 Maps of Proposed Activities

The Project's proposed activities are presented in Figure 2.1, Figure 2.2, Figure 2.3, and Figure 2.4.

Figure 2.1: Goyder North Wind Farm Project Layout



Goyder North Wind Farm
OTL
Battery Energy Storage System (BESS)
Substation
Underground Electrical Cable (not road aligned)
Roads
Wind Turbine Generator Hardstand



Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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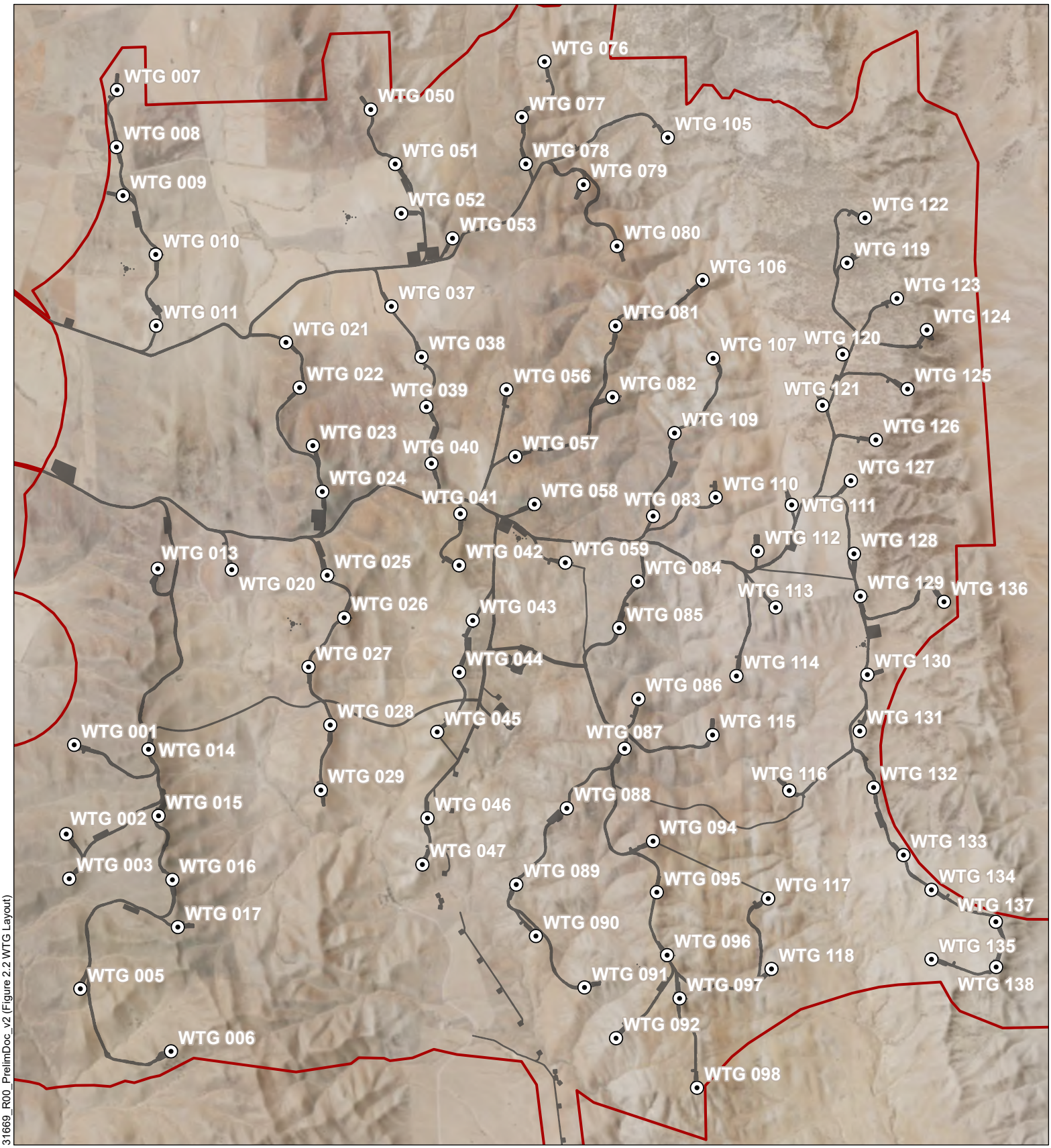
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31669_R00_PrelimDoc_v2 (Figure 2.1 Project Layout)

Figure 2.2: Goyder North Wind Farm WTF layout



Goyder North Wind Farm (GNWF)

Disturbance Footprint

WTG



31669_R00_PrelimDoc_v2 (Figure 2.2 WTG Layout)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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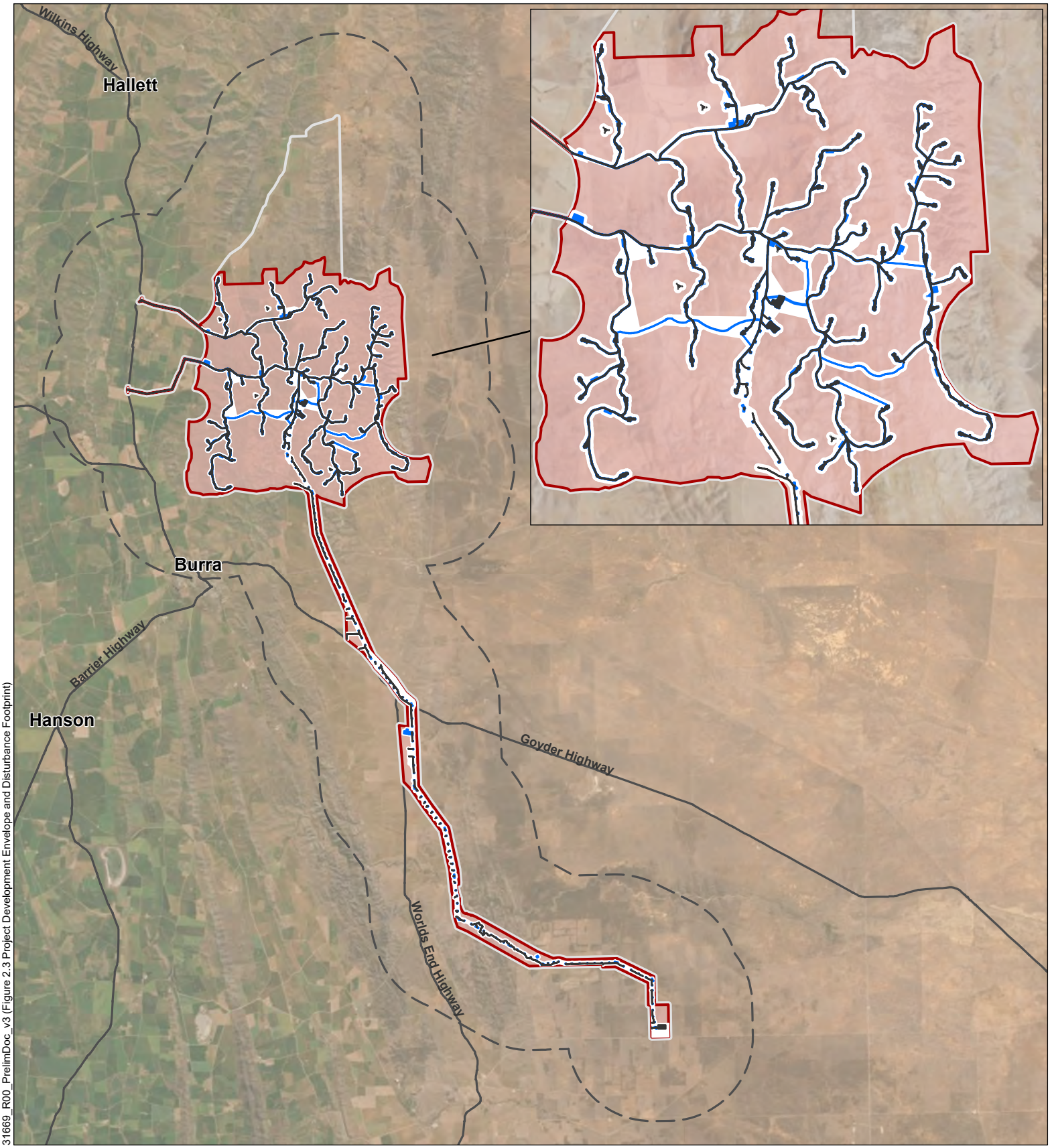
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Figure 2.3: Project Development Envelope and Disturbance Footprint showing Permanent and Temporary Disturbance



GNREF
Goyder North Wind Farm
Development Envelope
Search Area
Disturbance Footprint
Permanent clearance
Temporary clearance



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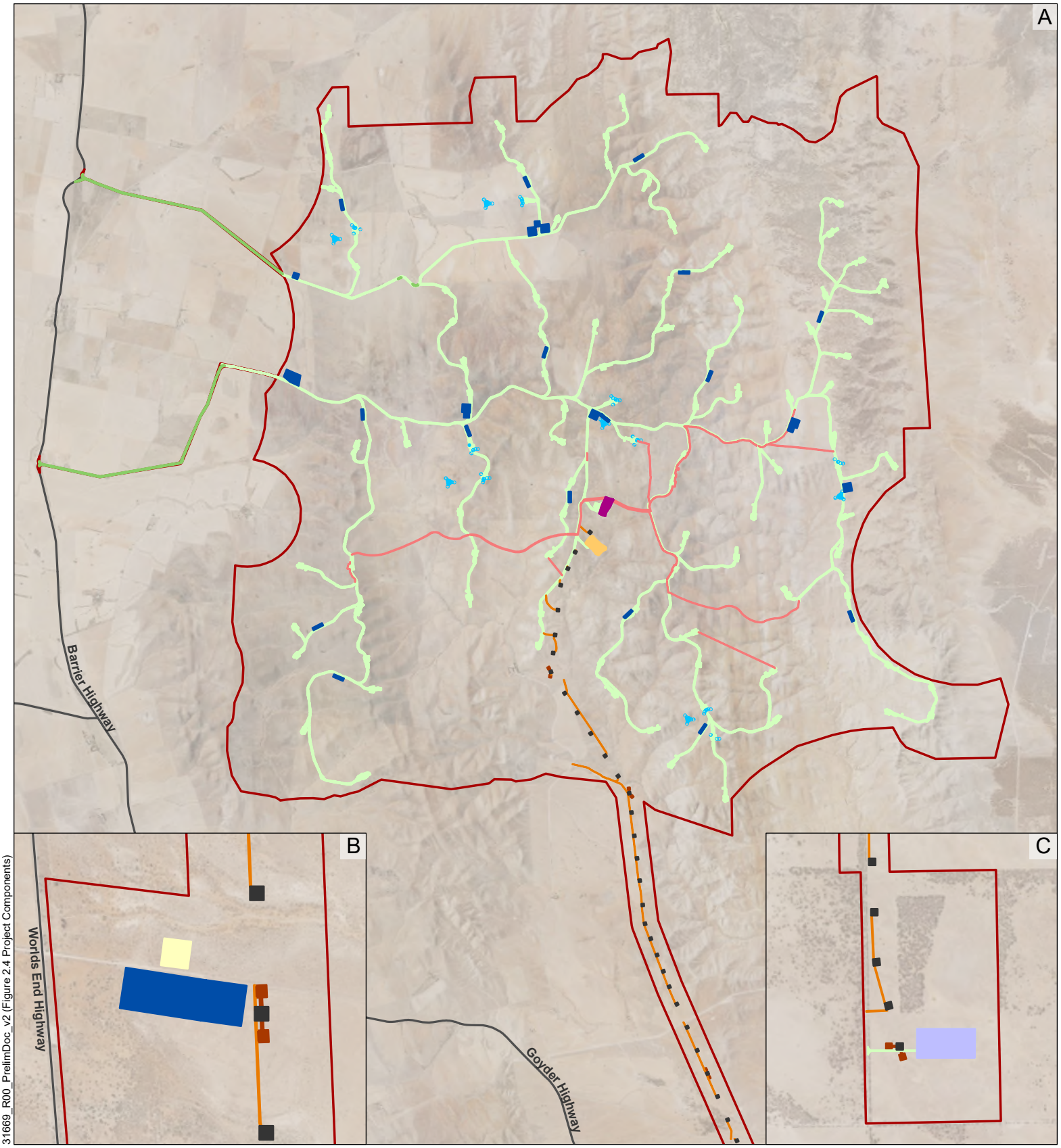
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31669_R00_PrelimDoc_v3 (Figure 2.3 Project Development Envelope and Disturbance Footprint)

Figure 2.4: Project Components



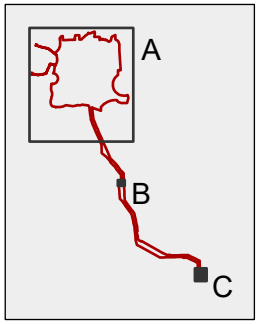
Goyder North Wind Farm

WF Infrastructure

- BESS
- Substation
- Bundey substation expansion
- Construction compound
- Access roads and hardstands
- Reticulation
- Site access road
- Met mast

OTL Infrastructure

- OTL transmission tower and clearance
- Brake and winch site
- OTL access tracks
- Helicopter pads



Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

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31669_R00_PrelimDoc_v2 (Figure 2.4 Project Components)

2.5 Associated Interdependent Developments

1. Description of the action

d) Provide details of any interdependent developments or proposals outside of the proposed action area.

There are no associated interdependent developments associated with the GNWF Project. Any potential future stages of development are dependent on a range of factors, including network capacity, market conditions, government policy, and the outcomes of ongoing environmental and technical assessments. Whilst future stages were included in the overarching Planning Consent application for GNREF (Att17_Planning Consent Decision Notification Form), there is low certainty on whether these stages will be progressed within the next 5-10 years and hence they would be subject to their own approval processes and stakeholder engagement, should they proceed.

3 DESCRIPTION OF THE ENVIRONMENT

3.1 Ecological Studies

This section addresses the following from the RFI:

2. Description of the environment and matters of national environmental significance

c) *For relevant threatened species and ecological communities that are, or have the potential to be present within the proposed action area and surrounds, provide a minimum of:*

ii. quantification of their extent of habitat within the proposed action area and surrounding areas, including field mapping of identified known and/or potential habitat and records.

iii. assessment of their quality, importance, and ecological function (i.e., for foraging, breeding, roosting or dispersal) of known or potential habitat within the proposed action area and surrounding areas.

vii. an assessment of the adequacy of all surveys undertaken (including survey effort and timing), in particular the extent to which these surveys were appropriate to the relevant threatened species and ecological communities. Surveys should consider the proposal's impact in the context of national, regional, district and site importance to establish the most effective survey technique(s). Justify where variation exists outside of departmental guidelines.

viii. information about the methods, data and scientific literature used to identify and assess the environmental values within the proposed action area and surrounds, including survey data and historical records. Survey data relating to the proposed action must be provided for the relevant listed species and be as recent as possible.

3.1.1 Desktop Assessments

Several desktop assessments have been undertaken for the Project, listed below:

- A desktop assessment was conducted to determine the potential for any threatened and protected species (both Commonwealth and State listed) to occur within the Project Area. This was achieved by undertaking database searches using a 5 km buffer from the boundary of the broader GNREF, (Search Area), in line with standard requirements of the Native Vegetation Bushland Assessment Method (NVC 2024a) and Scattered Tree Assessment Method (NVC 2024b) (where applicable) for Projects within agricultural areas. Online tools utilised for the desktop assessment included:
    - A Protected Matters Search Tool (PMST) report, generated on 6 February 2024 (as part of the Referral under the EPBC Act), and updated PMST report generated for GNWF only on 9 April 2025 (as part of the Variation Letter and revised SIA) to identify MNES listed under the EPBC Act relevant to the Search Area.
    - Biological Database of South Australia (BDBSA) extraction, to identify flora and fauna species that have been recorded historically within the Search Area (last extracted on 7 February 2024) (BDBSA 2024). Updated extracts from publicly available NatureMaps database (DEW) extracted on 14 February 2025.
    - Atlas of Living Australia (ALA) was utilised to cross check records of species which were found within the PMST as known to occur, but with no BDBSA record (for example *Acacia menzelii*). It is noted that ALA records do not have the same rigorous data standards as the BDBSA and may

be unverified. Therefore, these records are not displayed on maps, with only BDBSA records and EBS/Umwelt records presented on maps.

An assessment was undertaken to determine the likelihood of occurrence for threatened and migratory species and ecological communities. The following criteria were considered when assigning a likelihood rating:

- Date of the most recent record (taking into consideration the date of the last surveys conducted in the area).
- Proximity of the records (distance to the Project Area).
- Landscape location of the records, vegetation remnancy and vegetation type of the record location (taking into consideration the landscape, remnancy and vegetation type of the Project Area, with higher likelihood assigned to species that were found in similar locations/condition/vegetation associations).
- Knowledge of the species; habitat preferences, causes of its decline, the conspicuousness of the species and local population trends.
- An on-ground assessment of suitable habitat and resources.

3.1.2 Field Surveys

2. Description of the environment and matters of national environmental significance
c)For relevant threatened species and ecological communities that are, or have the potential to be present within the proposed action area and surrounds, provide a minimum of:
vii. an assessment of the adequacy of all surveys undertaken (including survey effort and timing), in particular the extent to which these surveys were appropriate to the relevant threatened species and ecological communities. Surveys should consider the proposal's impact in the context of national, regional, district and site importance to establish the most effective survey technique(s). Justify where variation exists outside of departmental guidelines.

A number of field surveys have been conducted within the Project Area over multiple years, summarised in Table 2.2, with the most up-to-date field surveys listed in Table 3.1 below. Field surveys have included a range of general and targeted vegetation and fauna surveys, undertaken in accordance with relevant guidelines including:

- Native Vegetation Council (South Australia):
  - Bushland Assessment Methodology (NVC 2024a).
  - Scattered Tree Assessment Methodology (NVC 2024b).
- Department for Infrastructure and Transport (DIT) Vegetation Survey Guidelines (DIT 2021).
- Biodiversity Assessment Method (DPIE 2020).
- Clean Energy Council Best Practice Guidelines (CEC 2018).
- Survey guidelines for Australia's threatened reptiles: Guidelines for detecting reptiles listed as threatened under the EPBC Act (DSEWPaC 2011a).

- Survey guidelines for Australia's threatened birds: Guidelines for detecting birds listed as threatened under the EPBC Act (DEWHA 2010a)
- Survey guidelines for Australia's threatened mammals: Guidelines for detecting mammals listed as threatened under the EPBC Act (DSEWPaC 2011b).
- Survey guidelines for Australia's threatened bats: Guidelines for detecting bats listed as threatened under the EPBC Act (DEWHA 2010b).
- Approved Conservation Advice for the Mallee Bird Community of the Murray Darling Depression Bioregion (DAWE 2021a).
- National Recovery Plan for the Iron-grass Natural Temperate Grassland of South Australia ecological community 2012 (Turner 2012).
- Onshore Wind Farm Guidance: Best practice approaches when seeking approval under Australia's national environmental law (DCCEEW 2024b).

Table 3.1: Field surveys (encompassing 3 years) undertaken within the Project Area

Survey Type	Dates	Objective	Project Area Covered
On-ground broad flora assessment	12 to 16 November 2022	Broadly map vegetation associations and condition and identify ecological constraints in the Project Area including threatened communities, flora and fauna species and species habitat.	GNREF (excluding OTL)
On-ground flora assessment (BAM)	20 to 24 November 2023	Native vegetation assessment in line with NVC standards (BAM, STAM).	GNWF (including accessible portions of OTL)
Spring Bird and Bat Utilisation Surveys (BBUS) (survey 1 of 8)	20 to 24 November 2023	Establish permanent monitoring sites across the Project Area and undertake a morning (AM) and afternoon (PM) survey at each site. Nine bird monitoring sites and three bat monitoring sites were established.	WF
Targeted Mallee Bird Community (MBC) surveys	20 to 24 November 2023	On-ground targeted spring MBC bird surveys within suitable patches of mallee vegetation along the OTL-Primary within the MDD Bioregion.	OTL / Bundey
Summer BBUS surveys (survey 2 of 8)	12 to 16 February 2024	Survey established BBUS sites (AM / PM) and established additional monitoring sites to ensure broader coverage of the Project Area. Installed seven additional bird monitoring sites (total 16 bird sites).	WF
Targeted Pygmy Blue-tongue Lizard (PBTL) surveys	12 February – 7 March 2024	Undertake targeted PBTL surveys within proposed Disturbance Footprint (including hardstands, access tracks, OTL-Primary, BESS, substation, laydown areas) (current at 12/02/2024).	GNWF

Survey Type	Dates	Objective	Project Area Covered
Targeted EPBC listed threatened plant surveys	4 to 7 March and 18 to 22 March 2024	Undertake on-ground searches for targeted threatened plant species along proposed OTL Disturbance Footprint in suitable habitat. Combined with on-ground surveys for PBTL.	WF and OTL
On-ground flora assessment	12 February to 22 March 2024 (discontinuous)	Native vegetation surveys on additional proposed access and infrastructure areas for GNWF (White Hill Road, Gum Hill Road, Belcunda Road, OTL-Primary remaining/ adjusted alignment, Bundey Substation).	GNWF
Autumn BBUS surveys (survey 3 of 8)	14 to 16 May 2024	BBUS monitoring at established sites.	WF
Winter BBUS surveys (survey 4 of 8)	16 to 19 July 2024	BBUS monitoring at established sites. Introduction of additional vehicle transect methodology to better capture size of Project Area.	WF
Spring BBUS surveys (survey 5 of 8)	30 September to 3 October 2024	BBUS monitoring at established sites and vehicular transects.	WF
Targeted Iron-grass Natural Temperate Grassland (INTG) Surveys	14 to 18 October 2024	Targeted INTG surveys undertaken in accordance with the methodology outlined in the National Recovery Plan for INTG (Turner 2012). Surveys undertaken within areas proposed to be impacted by the Project, and further afield where required to obtain thorough assessment of site condition.	WF
Offset Area Assessment	September 2024	Native vegetation surveys (BAM) and broad mapping on prospective Offset Area properties within the broader region. Surveyed locations based on initial scoping studies, brief desktop assessment and land parcel availability and / or landholder interest.	Regional
Flora assessment, updated design	September 2024	Native vegetation surveys (BAM) on additional proposed infrastructure areas for GNWF.	WF north of White Hill Road
Summer BBUS surveys (survey 6 of 8)	17 to 20 February 2025	BBUS monitoring at established sites and vehicular transects.	WF
Targeted PBTL surveys to microsite for Geotechnical Investigations	10 days between January 31 and March 3 2025	Targeted PBTL surveys within suitable habitat in areas planned to be impacted for early geotechnical investigations, with the aim to micro site works to avoid impacts to any individual PBTL. Included surveys along access tracks to minimize the impact of driving over suitable habitat.	WF, OTL
Targeted FRWL surveys	31 March to 4 April 2025	Targeted searches in potential FRWL habitat including 51 quadrats and 10 transects with an estimated 9,300 to 12,400 suitable rocks turned searching for FRWL or signs of habitation. Mapping of Suitable FRWL habitat within Project Area.	WF and OTL

Survey Type	Dates	Objective	Project Area Covered
Targeted PBTL surveys, updated design.	15 to 17 April 2025	Targeted PBTL surveys in updated Disturbance Footprint (current), including additional WTGs north of White Hill Road, MV cables and BESS.	WF
Targeted Threatened Flora searches	7 May and 22 May 2025	Targeted search for threatened flora species within suitable habitat in updated design along OTL.	OTL
Autumn BBUS surveys (survey 7 of 8)	12 to 15 May 2025	BBUS monitoring at established sites and vehicular transects.	WF
Winter BBUS surveys (survey 8 of 8)	Scheduled July 2025	Scheduled to be the last of eight seasonal surveys undertaken at the site over 24 months.	WF

3.1.2.1 Vegetation Surveys

Several flora assessments have contributed to the compilation of data used in this Preliminary Documentation and other associated reports, undertaken in accordance with the Bushland Assessment Method (BAM) and Scattered Tree Assessment Method (STAM) as required (NVC 2024a; NVC 2024b). General vegetation surveys which have contributed to this report are summarised in Table 3.1, and results of these surveys are summarised in Att02_GNWF Ecological Assessment.

3.1.2.2 Targeted Threatened Flora Surveys

Based on the results of database searches, previous studies and knowledge of the vegetation and habitats occurring within the Project Area, several nationally listed threatened plant species were determined as likely or possible to occur in the GNWF (hereafter, target species):

- *Acacia glandulicarpa* (Hairy-pod Wattle); EPBC Act Vulnerable, NPW Act Endangered.
- *Acacia spilleriana* (Spiller's Wattle); EPBC Act Endangered, NPW Act Endangered.
- *Codonocarpus pyramidalis* (Slender Bell-fruit); EPBC Act: Vulnerable; NPW Act: Endangered.
- *Dodonaea subglandulifera* (Peep Hill Hop-bush); EPBC Act Endangered, NPW Act Endangered.
- *Dodonaea procumbens* (Trailing Hop-bush); EPBC Act Vulnerable, NPW Act Vulnerable.
- *Olearia pannosa* ssp. *pannosa* (Silver Daisy-bush); EPBC Act Vulnerable, NPW Act Vulnerable.
- *Senecio megaglossus* (Superb Groundsel); EPBC Act Vulnerable, NPW Act Endangered.

No specific survey guidelines for Australia's threatened plants, or individual survey guidelines for the above plant species are available, and as such a combination of best practice methodology was utilised to search for threatened plant species, based around field survey techniques outlined:

- DPIE survey guide: *Surveying Threatened Plants and their habitats*, NSW guide for the Biodiversity Assessment Method (DPIE 2020).

Initially, opportunistic searches were conducted throughout the course of surveys at all dedicated survey sites, including BAM, targeted INTG and BBUS, as well as along all roads and tracks traversed by vehicle throughout the extensive field surveys. During all surveys ecologists searched for and recorded any locations of target plant species, or others listed as threatened under the EPBC Act or NPW Act. These methods equated to the recommended minimum methods of random meanders and random quadrats (DPIE 2020), however, were not considered adequate to confirm presence / absence within the Disturbance Footprint.

Subsequently, the GNWF Disturbance Footprint (current February 2024) was traversed on foot, using parallel transects during field surveys to ground truth vegetation and search for target species. Additional targeted surveys using parallel traverses were undertaken in the updated Disturbance Footprint (current April 2025) during April and May 2025, to ensure that all areas of the proposed Disturbance Footprint have equally high confidence in survey results.

Detectability of threatened plants is increased using the parallel field traverse method because it systematically covers the entire area of suitable habitat within a site and can be simultaneously applied to a diverse range of species, habitats and sites (DPIE 2020). Given that all threatened plant species of interest are trees, medium perennial shrubs or sub-shrubs, these parallel field transects were considered suitable for detection (Table 3.2).

Using a combination of opportunistic and targeted survey methods, high coverage of the Project Area was achieved and thus a high confidence in the likelihood assessment for all EPBC listed threatened flora species, was obtained.

Table 3.2: Maximum distance between parallel field traverses per life form and vegetation density, from DPIE (2020)

Lifeform	Target Species	Maximum distance between field traverse (separation widths) (m)	
		Open vegetation	Dense vegetation
Trees / Mallee / Tall Shrubs (>6 m)	*Codonocarpus pyramidalis*	40	20
Medium shrubs (1-6 m)	*Acacia glandulicarpa* *Acacia spilleriana* *Dodonaea subglandulifera* *Olearia pannosa* ssp. *pannosa*	20	10
Sub-shrubs (including chenopods <1 m)	*Dodonaea procumbens* *Senecio megaglossus*	15	10
Herbs and forbs	NA	10	5
Ferns (<1 m), grasses/sedges/ rushes/ orchids etc	NA	10	5
Aquatic plants	NA	Search the appropriate parts of the waterbody using a traverse coverage that equates to the relevant growth form.	

A corridor width of approximately 80 m was assessed with moderate to high confidence based on open vegetation and parallel transects walked with two to four ecologists in suitable habitat (min 596 km based on parallel traverse across WF and OTL and driven tracks. Areas traversed during BAM surveys (minimum 1 ha per site), BBUS (minimum 2 ha per site), targeted INTG and opportunistically while on site, or where >2 individuals traversed are not included in this estimate, but have been incorporated into the search area where spatial data was available. A moderate to high confidence rating for this corridor is based on the lower confidence associated with small (<1 m) perennial shrub species such as *Dodonaea procumbens*, which is also susceptible to heavy grazing and therefore may not be as readily visible in that search range, while high confidence is applied to trees and medium (>1 m) or otherwise showy shrubs. Areas outside of this search area, within suitable habitat for each species in the broader Project Area have a lower confidence, and analysis of potential impact area considers this area conservatively as 'unknown' and therefore incorporated into construction management measures for the Project. However, given the extensive and regular coverage of the Project Area, the lack of observations of all species outside of their existing known locations, and the general conspicuous and perennial habits of all flora species, it is considered unlikely that they occur elsewhere.

In addition to the abovementioned targeted surveys, any known locations with historical records of threatened flora species within the Project Area were verified on ground by visiting the site location and searching in the immediate surrounding location, until either a) the species was detected and confirmed to be present, or b) the species was not detected, and a more thorough search of the general location was undertaken to account for any inaccuracy in location of the record. This included a search for unverified records (ALA) of *Acacia menzelii* in the east of the WF, which was found not to be present, as well as records of *Senecio megaglossus* (not present) and *Dodonaea procumbens* (not present outside of Mokota CP fenced areas).

3.1.2.3 Targeted Iron-grass Natural Temperate Grassland Surveys

A targeted field survey was undertaken from 14-18 October 2024, to determine the condition class of INTG in patches of previously mapped Lomandra Grassland (VA6), and to ground-truth and refine any existing INTG boundaries, mapped during earlier vegetation assessments.

Surveys in areas of INTG followed the criteria outlined in:

- National Recovery Plan for the Iron-grass Natural Temperate Grassland of South Australia ecological community (Turner 2012).
- EPBC Act Policy Statement 3.7: Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia and Iron-grass Natural Temperate Grassland of South Australia (DEWR 2007).

Survey methodology as it relates to the above documents is presented in Table 3.3. Methodology was considered adequate to capture the extent of INTG within the Disturbance Footprint and Development Envelope, with the survey effort equating to approximately 5.75 ha of targeted survey area, from an impacted area of 8.59 ha, representing detailed coverage of 66.94 % of the proposed impacted area.

Table 3.3: Recommended and utilised INTG survey methodology

Recommended Survey Method1	Survey Method Utilised
Condition Class criteria assessed within a 50x50m quadrat (or equivalent to make 0.25ha if patch is narrower)	A total of 23 50 m x 50 m (0.25 ha) quadrats were assessed according to the criteria, including: • An active search to record species diversity. All species observed within the quadrats were then categorised (i.e. broad-leaved herbaceous plant, perennial grass / tussock, disturbance resistant species) and compared against the benchmark criteria for Classes A to C, as outlined in the EPBC Act Policy Statement (DEWR 2007). • A 50 m transect was laid at each site, with all perennial native grass tussocks intersecting the line, tallied to determine the density of native grass tussocks occurred. Earlier surveys using the Bushland Assessment Methodology (BAM) for assessing native vegetation under the *Native Vegetation Act 1991*, were undertaken in 100 m x 100 m (i.e. 1-ha) plots and therefore had less consistency with the specified dimensions of the Condition Class assessment. However, a compilation of these assessments was used, with the precautionary principle applied, to bolster targeted INTG assessments, where required.
To obtain accurate results, undertake surveys in mid to late spring, and if necessary, over multiple visits, to ensure accurate plant identification.	Multiple vegetation surveys have been undertaken across the Project Area between September 2022 and present (May 2025), including Bushland Assessment Method (SA Native Vegetation Council endorsed methods) and targeted INTG surveys. These surveys covered a range of seasonal conditions including: • Spring 2022: broad vegetation mapping and vegetation association surveys within the GNREF. • Spring 2023: detailed vegetation surveys using BAM within the GNWF (10 sites in Lomandra grassland). • Spring 2024: targeted INTG surveys within the GNWF. Targeted INTG surveys were undertaken in mid to late spring from 14-18 October 2024. Spring annuals were found to be present, and most grasses were able to be identified to species level. Multiple visits to individual sites were not considered necessary to obtain a more accurate assessment, as data was supplemented with information from earlier assessments, and the precautionary principle was applied to elevate the condition class assessment if criteria were close to meeting a threshold.
Assessed in good seasonal conditions or within two months of effective rain;	Seasonal conditions were not ideal at the time of the targeted INTG survey, with preceding dry conditions. Climatic conditions in the 12 months preceding the field survey included a higher-than-average mean maximum temperature (>1.03 degrees Celsius [°C]), and lower than average rainfall (<210 mm). The survey was undertaken within two months of effective rain (23.2 mm on 16 August 2024, Clare High School station 021131), however conditions observed on site were generally dry, with many short-lived annual species already dying off, suggesting that the July rainfall event had triggered an early proliferation of annual species, followed by a hotter than average August / September. Earlier surveys were varied, with good seasonal conditions with higher-than-average annual rainfall (706.8 mm, compared to the long-term average of 528.66 mm) in Spring 2022; and poor seasonal conditions with lower-than-average rainfall (443.6 mm) in Spring 2023.
Done at least two months after a disturbance (e.g. fire, grazing, slashing);	As the Project Area is utilised extensively for agricultural purposes, it was not possible to undertake surveys in areas which had no influence from external factors such as grazing. No slashing had occurred at any of the sites, and surveys were done more than two months after any bush fire or burn off.

Recommended Survey Method1	Survey Method Utilised
Located in the most intact (least modified) vegetation in the remnant;	Survey areas were prioritised first according to where patches of INTG intersected with the proposed Disturbance Footprint or Development Envelope.
Based on multiple quadrats and transect lines.	If initial survey quadrats undertaken within a patch were found to not meet the criteria based on the first survey site, additional survey sites were assessed within the same contiguous patch, if necessary to confirm the condition of the patch.
If site surveys are undertaken in poor seasonal conditions, during or soon after stock grazing or other disturbances, or at a sub-optimal time for plant identification, the precautionary principle should be applied to Condition Class ratings.	Based on the generally poor seasonal conditions and presence of stock grazing, the precautionary principle was applied to two sites which came close to meeting the condition criteria for listing as Class B INTG. LOM10 met all criteria except the number of disturbance resistant broad-leaf herb species, containing only two of the three required to meet the criteria for Class B INTG, while LOM23 met all criteria except for the number of perennial grass species (3 instead of 4, required to meet Class B).

1 Recommended survey methods from National Recovery Plan for INTG (Turner 2012).

3.1.2.4 Targeted Mallee Bird Community Surveys

Approximately (~) 9.5 km in the south of the proposed OTL alignment was determined to be within the Murray Darling Depression (MDD) Bioregion, in which mallee vegetation patches meet certain criteria which may qualify as a nationally listed TEC – Mallee Bird Community (MBC) of the MDD. The TEC is identified based on the size and quality of the mallee vegetation patch and the presence of an assemblage of specialist and mallee dependant bird species, recorded within 20 km within the last 10 years.

Targeted bird surveys were undertaken according to the guidelines for systematic bird surveys presented in the Approved Conservation Advice for the Mallee Bird Community of the Murray Darling Depression Bioregion (DAWE 2021a), detailed in Table 3.4.

Table 3.4: Recommended and utilised MBC TEC survey methodology

Recommended Survey Method1	Survey Method Utilised
All bird species observed should be recorded, not just species linked to the Mallee Bird Community.	All bird species detected during the field survey were recorded. Opportunistic observations of bird species were also recorded during all field surveys. These records were then collated to determine the bird species present within 20 km of the site, in addition to desktop findings.
Multiple standardised surveys should be undertaken with sufficient surveys to account for variable conditions. 2 ha 20-minute surveys 500 metre area searches >30-minute duration (preferred). A minimum of three repeat surveys should be undertaken in each area sampled, taking note of how large and fragmented the site is.	Seven targeted MBC surveys were completed across five days in Spring 2023 (November 15 and 20 to 23). Surveys methods were standardised 2 ha 20-minute surveys, as detailed in for Bird Utilisation Surveys in Section 3.1.2.7. Repeat surveys were not deemed necessary as the minimum requirement for MBC TEC had already been met using the combination of field survey results and desktop results.

Recommended Survey Method1	Survey Method Utilised
Surveys should be timed to maximise the diversity of bird species recorded: Survey during August to November Only survey in optimal weather conditions (low wind <25 km/hr, not too hot <32˚C, avoid rainy days). Survey in the morning, ideally between 30 mins before sunrise to 6 hours after sunrise.)	Surveys were undertaken during the recommended survey period from 20 to 24 November 2023. Survey conditions were optimal at this time, with clear, mild days and low wind. Where possible, surveys were undertaken in the morning or late afternoon.
Adjust the number of sites sampled by size of the mallee woodland fragment: < 200 ha = three sites >200-1,000 ha = 10 sites >1,000 ha = >20 sites. Select sites that are representative of the broader patch. Avoid surveys on the edge of patches, especially in smaller patches that adjoin modified landscapes.	Within the Project Area <200 ha of potential MBC vegetation occurs within the Project Area (Block C, within the MDD), connected to larger fragments further afield, including up to 645.03 ha within 1 km of the Project Area. Only 0.76 ha is proposed to be impacted. Seven survey sites are considered sufficient to meet the recommended sample size. Where possible, surveys were done on the interior of blocks, however, this was not always possible due to access permissions.
Where possible, avoid surveys in areas recently burnt (<1year) or affected by other recent disturbances.	No parts of the surveyed area had been recently burnt at the time of the survey.
In times and areas affected by drought, survey effort should be increased to account for the potential impacts of drought on the bird community.	Surveys were done in 2023 during reasonable spring conditions. Although it had been a drier than average year, drought conditions were not impacting the vegetation at the time of the surveys.

[1]Recommended survey methods from the Approved Conservation Advice for MBC TEC (DAWE 2021a).

3.1.2.5 Targeted Pygmy Blue-tongue Lizard Surveys

A total of six targeted PBTL field surveys have been conducted by Umwelt (and formerly EBS) within the Project Area as of June 2025 (Table 3.5), each contributing to the knowledge and understanding of the distribution of PBTLs within the Project Area. The primary survey (Field Survey 2) was undertaken within the proposed Disturbance Footprint current at the time of the survey (February 2024). Subsequent surveys were conducted with specific goals including micro siting for design, mitigation for geotechnical works and to survey additional areas added to the preliminary Disturbance Footprint.

The survey method was consistent with the Survey guidelines for Australia's threatened reptiles: Guidelines for detecting reptiles listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (DSEWPaC 2011a), however, given the limited details provided in these guidelines, additional technical knowledge on the species behaviour and ecology was utilised to ensure a more robust survey method was applied.

Experienced and suitably qualified ecologists were rotated throughout each survey period. Survey timing for Field Survey 2 was planned for late summer to enable maximum visibility in grassland vegetation (i.e. low grass and exotic pasture cover). Late summer is the typical birthing time for PBTL, with females and

their young sharing burrows from mid-January to mid-March, and some juvenile dispersal during this time. Subsequent surveys were also undertaken within the optimal time for surveying PBTLs.

The surveys aimed to:

- Provide an understanding of where PBTL are found in GNWF including the types and conditions of habitat they prefer.
- Identify areas with higher concentrations of individuals (PBTL hotspots) within the DF.
- Inform development of a density index, used to estimate the relative abundance of a species within a given area, based on the survey results.

Table 3.5: Targeted PBTL field survey summary

Survey	Timing	Duration	Staff	Description
Field Survey 1	November 2023	1 day	2	Micro siting for early works (met mast)
Field Survey 2	February 12 to March 8, 2024,	20 days	4	Intensive targeted survey of entire Disturbance Footprint (Current February 2024).
Field Survey 3	18 to 22 March 2024	5 days	2	Targeted survey at six alternative WTG locations and proposed access road, Belcunda Road.
Field Survey 4	July 2024	1 day	2	Micro siting for early works (met mast)
Field Survey 5	January 30 to March 3, 2025	10 days	2	Targeted surveys at multiple test pits and boreholes at WTGs, access roads, substation and OTL.
Field Survey 6	15 to 17 April 2025	3 days	2	Targeted survey of areas added to the Disturbance Footprint since Field Survey 1 (current April 2025), including MV cables, and the updated Disturbance Footprint including WTGs and access roads.

Survey Parameters

Prior to conducting the field survey, the most current infrastructure layout for GNWF was downloaded onto an offline ESRI ArcGIS Field Map, which was developed specifically to capture targeted PBTL survey data. Prior to undertaking the field survey, parameters were developed to define survey confidence based on grassland visibility, as detailed in Table 3.10 and Section 3.3.2.1 (pages 28 to 33) Att02_GNWF Ecological Assessment (Umwelt 2025a) and PBTL survey report (Umwelt 2025d).

Table 3.6: PBTL survey transect confidence definition

Visibility	Description	Example Image
Poor (low confidence) (i.e. <50% of burrows within the immediate search area detected)	Thick covering of thatched or tall grasses (i.e. oat grass). Ground not visible unless parted at each step.	
Moderate (moderate confidence) (i.e. estimated up to 75% of burrows within the immediate search area detected)	Moderate coverage of native and introduced grasses, ground between tussocks generally visible.	
Good (high confidence) (i.e. estimated >90% of burrows within the immediate search area detected)	Very low covering of grasses, almost completely open, especially areas which have been heavily grazed.	

Field Survey Method

All infrastructure which occurred within suitable (i.e. grassland) or marginal habitat (i.e. shrubland with grassy understorey), as identified in Conservation Advice (DCCEEW 2023d) or published literature, was assessed in detail. The survey used two experienced surveyors systematically searching parallel transects 5 to 10 m apart on foot and searching all encountered potential burrows (i.e. observed spider holes with diameter >8 mm) using an optic fibre endoscope (Yateks M Series), as recommended (DSEWPaC 2011a). Within the infrastructure layout, search effort included:

- A single pass (i.e. two transects 5 m to 10 m apart) along all access tracks and turn-around bays.
- Parallel transects at 5 m to 10 m intervals across all WTG hardstand, BESS, and substation infrastructure.
- A single pass along the OTL.

Where time permitted, surveys were also conducted where the infrastructure layout intersected habitat considered unsuitable or marginal for PBTL, such as mallee woodland. Several additional areas, outside of the current Disturbance Footprint were surveyed to enable potential micro siting to avoid mallee woodland habitat. At the start of each walking transect, one team member used the ESRI Field Map to start a 'live stream' track, which detailed the level of confidence as well as the surveyors, date of survey, and any relevant notes on survey conditions. Simultaneously, both surveyors would use the tracking function on their GARMIN GPS 62/64 handheld device to record all tracks walked. Each time the visibility / confidence level changed, or at any other logical time, a new ESRI Field Map track was started.

Each burrow encountered along the survey transect was searched using an optic fibre endoscope (Yateks M Series) to determine whether burrows were occupied by PBTLs. Potential burrows were defined as any spider burrow in which the endoscope was able to fit (typically >8 mm diameter). The endoscope is an illuminated articulating insertion probe, approximately 8 mm (or less, <) in diameter, with a digital video display screen. The probe can be easily directed into the burrow and bent around corners with the use of a 'joystick'. The optic fibre was slowly fed into each burrow, until a PBTL, spider or other fauna was observed, or until the bottom of the burrow was reached.

A handheld GPS was used to mark each burrow searched to provide an indication of burrow density and survey effort, even if upon investigation it was found that the burrow was not of required depth to host a PBTL. Therefore, the number of burrows searched does not indicate the density of potentially suitable burrows in the search area. Each time a PBTL was encountered the point was marked in the GPS as 'PBTL'.

Full details of the survey effort as it relates to Pygmy Blue-tongue Lizards at GNWF are presented in *Goyder North Wind Farm: Targeted Pygmy Blue-tongue Lizard Survey Report* (Umwelt 2025d).

Data Processing

Habitat suitability was mapped using vegetation associations and conditions assessed throughout the Wind Farm. Habitat suitability terminology and definitions are listed in Table 3.7.

Table 3.7: Habitat suitability definitions

Habitat Suitability	Definition
Known	All areas within 50 m of a known location of a PBTL including recent and historical records. Records include those collected by Umwelt and historical records sourced from the BDBSA (Recordset number: DEWNRBDBSA240207-2) (BDBSA 2024).
Likely	Vegetation associations in which there are no PBTL records but are considered potentially suitable habitat and preferred habitat parameters are available (including slopes and hills, suitable soil types without dense surface rock cover).
Unlikely	Vegetation associations in which there are no PBTL records and are otherwise not considered suitable habitat (i.e. mallee, woodland, areas with no grass component, rock outcrops, flats and plains, Murray Darling Depression Bioregion, areas with high surface rock cover).

Areas that were surveyed were assessed for the risk of impacting PBTL through the construction of GNWF infrastructure. Areas were mapped as either high risk, moderate risk, or low risk, with risk levels defined in Table 3.8. The assessment was based on the presence and proximity of PBTL records, both recorded during the survey and historical records, habitat suitability, and the confidence / visibility level of the search effort undertaken during the field survey.

GPS points of burrows and PBTL were correlated with the survey confidence parameters to assess the risk of a significant impact occurring on PBTL from the construction of infrastructure in the surveyed areas.

In summary, a 50 m buffer (conservatively based on typical 20 m foraging range of PBTL), was applied to all current and historical records of PBTL, determined to be 'high risk' areas. Where the survey confidence was high (i.e. minimal grass cover and good visibility) and no current or historical PBTL records were present, the survey area was determined to be 'low risk'. Mapped vegetation associations with no dominant grassy component to the understorey (i.e. woodland and chenopod shrublands) were also considered 'low risk'.

Additionally, the MDD bioregion is considered to not be within the known range of the species, and several vegetation associations do not provide suitable habitat resources for PBTL. These areas were also mapped as 'low risk' as indicated in Table 3.8.

This mapping can then be utilised in conjunction with technical considerations, when determining micro siting options to minimise and avoid impacts to PBTL population hotspots. Neoen is committed to the ongoing micro siting of infrastructure to avoid and minimise impacts to PBTL and other matters of national and state significance within the defined Development Envelope, allowing flexibility to further reduce impacts as the Project progresses through to and including construction.

Note: that it was not possible to assess risk of significant impact in areas of suitable habitat that have not been systematically surveyed. As risk within unsurveyed areas is not known, all vegetation associations not listed as 'low risk' in Table 3.8 are considered likely habitat for PBTL.

Table 3.8: PBTL habitat suitability and risk, based on proximity of records, survey confidence and habitat type

Survey Confidence	Recent PBTL Records (50 m Buffer)	Historical PBTL Records (50 m Buffer)	No PBTL Records High Burrow Density	No PBTL Records Low Burrow Density	Low Risk Vegetation Association (VA) / IBRA Bioregion Exclusions
Low Confidence	High risk	High risk	Moderate risk	Moderate risk	VA1, VA2, VA3, VA14, VA15, VA16, VA18, V19, VA20, VA21, VA22, VA23, Cropped. MDD Bioregion. Other parameters: flats and plains, high rocky cover or unsuitable soil (i.e. sand / shale / rock outcrop).
Medium Confidence	High risk	High risk	Moderate risk	Low risk	
High Confidence	High risk	High risk	Low risk	Low risk	
Risk Level	**Risk Definition**				
High Risk	Impact (death or injury) to individual PBTL almost certain. Removal and fragmentation of critical habitat almost certain. Significant impact to PBTL likely.				
Moderate Risk	Impact (death or injury) to individual PBTL possible. Removal and fragmentation of critical habitat is likely or possible. Significant impact to PBTL likely without undertaking mitigation measures.				
Low Risk	Impact (death or injury) to individual PBTL unlikely. Removal and fragmentation of critical habitat unlikely. No significant impact to PBTL.				

Population Estimates

Population estimates were based on a density index, which is a measure used to estimate the relative abundance of a species within a given area. It is not an exact count of individuals, but rather an indicator of population density. The density index was derived from the number of PBTL encountered per hectare of vegetation surveyed in each potentially suitable vegetation association, and extrapolated out to fit the Disturbance Footprint, Development Envelope and Project Area. To obtain minimum and maximum estimates, a range of parameters were explored, including average and weighted density calculations and exclusion of outliers (i.e. hotspots, records in 'unsuitable' habitat). A number of key considerations for the estimates include:

- Search corridor: the density index is based on PBTL detected in an estimated 10-meter search corridor (i.e. 2.5m either side of each surveyor) within each vegetation association (VA). However, it is acknowledged that the likelihood of observing every lizard within this corridor reduces at greater distances from the observer, in poor and moderate visibility (Table 3.6) vegetation, and by only surveying in one direction.
- Hotspot population: the highest density in VA9 is elevated by a hotspot population in one isolated location, resulting in an inflated population estimate for that VA.

- Patchy distribution: the population estimates do not factor in the patchy distribution of PBTL across the landscape, characterized by dense hotspots, sparsely distributed individuals, and large tracts with no known individuals.
- Environmental conditions: PBTL populations are known to fluctuate depending on environmental conditions, and therefore any estimates represent a snapshot in time.
- Habitat suitability: habitat within the Disturbance Footprint is generally considered less favourable than other parts of the Project Area and therefore the maximum estimate of PBTL in the broader GNWF is likely to be lower than in actuality, whilst the estimate in the Disturbance Footprint is likely to be higher.
- Visibility Conditions: The initial targeted survey was conducted under excellent visibility conditions, preceded by at least two years of good seasonal conditions.

Assessment of the appropriateness and validity of the approach in terms of survey methodology, survey effort, described limitations, habitat suitability mapping and population estimates has been validated by PBTL Recovery Team Chair, Professor Mike Gardner (see supporting letter in Appendix B).

3.1.2.6 Targeted Flinders Ranges Worm-lizard Surveys

A five-day targeted field survey for Flinders Ranges Worm-lizard (*Aprasia pseudopulchella*; FRWL) was completed from 31 March to 4 April 2025. It was undertaken by two ecologists, with experience in the active searching methods for the target reptile species.

Survey methods were based on those described in the *Survey guidelines for Australia's threatened reptiles* (DSEWPaC 2011a). Some minor variations to these methods were made, based on specific site conditions and observer's experiences in detecting the target species, see Table 3.9.

All accessible areas that were mapped as potentially suitable habitat for Flinders Ranges Worm-lizard within the Disturbance Footprint were surveyed. Areas of the Development Envelope and broader GNWF Project Area were also mapped where potentially suitable habitat was observed while traversing the site.

The survey was undertaken using diurnal hand searches, with searches undertaken systematically within defined survey quadrats and on transects, until at least the recommended minimum of 150 rocks / stones were turned, usually many more.

Table 3.9: Methods utilised for FRWL survey

Recommended Methods[1]	Suitability of Survey Methods Used
Searches should be restricted to areas of relatively homogenous habitat.	All surveys were undertaken in areas previously mapped as suitable habitat, according to vegetation association. Habitat suitability was further assessed on site, with surveys targeted to homogenous areas of stony cover. Where habitat variables such as stone cover density or vegetation cover differed, additional survey quadrats and transects were established to capture the range of potentially suitable habitat types in the Project Area.

Recommended Methods[1]	Suitability of Survey Methods Used
Stone cover density rather than fixed area should determine survey quadrat size. 150 – 200 rocks need to be turned to be confident of determining species presence.	Transects – were conducted throughout the Project Area and within the Mallee Woodlands where potentially suitable habitat was identified. Ten walking transects were surveyed, with a minimum of 150 rocks or rotting logs turned during each transect. Quadrats – at areas of suitable habitat, an approximate20 m x 20 m quadrat was established, within which a minimum of 150 suitable rocks (at least 10 cm diameter) were turned in each quadrat, with more turned if the area was extremely rocky. Where there was a lower density of rocks, additional area was covered outside of the quadrats until at least 150 rocks had been turned. A total of 52 survey quadrats were surveyed. Each quadrat was photographed, and its location recorded using FieldMaps. If a FRWL or skin was observed, its location was recorded on FieldMaps and the handheld GPS device. After turning a rock, it was placed back as close as possible to its original position, in such a way so as not to harm any FRWL or other species present.
Search success likely to be highest in spring and early summer on warm (not hot) days, preferably after a period of rainfall.	The survey occurred in early-mid autumn (March), outside of the optimal spring / summer period.
During late autumn and winter, surveys should occur on clear sunny days as warming of rocks appears to attract lizards to the soil surface.	Weather during the survey represented the ideal autumn survey conditions for the FRWL. This included mild to warm days and mostly sunny mornings and afternoons.

1 Survey guidelines for Australia's threatened reptiles (DSEWPaC 2011a).

3.1.2.7 Bird and Bat Utilisation Surveys

As per the *Onshore Wind Farm Guidance – Best practise approaches when seeking approval under Australia's national environmental law* (DCCEEW 2024b), bird and bat utilisation surveys (BBUS) are a requirement of all newly proposed wind farm projects in Australia and aim to provide a risk assessment for the cumulative impact wind farm infrastructure, such as WTGs, may pose to susceptible species, particularly EPBC listed threatened and migratory species. Bird surveys were conducted utilising methods consistent with BirdLife Australia Systematic Bird surveys (2-ha, 20 minute search) (BirdLife 2024) recommended survey method as per the *Guidelines for Detecting Birds Listed as Threatened under the Environment Protection and Biodiversity Conservation Act 1999* (DEWHA 2010a) and National Parks and Wildlife South Australia (NPWSA) biological survey methods *Guidelines for Vertebrate Surveys in South Australia* (NPWSA 2000).

Targeted 20 minute 2-ha bird surveys were undertaken in the morning and afternoon at nine sites in dominant vegetation associations within WF Project Area during the field survey in spring 2023. Surveys were repeated at these sites in summer 2024, and an additional seven sites were established, totalling 16 surveys sites. Additional survey methodology was implemented in winter 2024, using vehicular transects (as per guidelines; DEWHA 2010a), to better detect raptors across a large area, for a total of 16 2-ha point count sites and four 5 km long vehicle transects.

Regarding migratory birds, desktop assessments identified that Fork-tailed Swift may occur. Accordance with survey techniques outlined in the Migratory birds Draft Referral Guideline are outlined in Table 3.10.

Neoen has committed to undertaking seasonal BBUS for 24 months to fulfil expected requirements of the EPBC referral process. At the time of submission all of the eight proposed (i.e. 8 of 8) seasonal BBUS surveys have been completed.

More details on survey methodology are presented in Section 3.3.2.4 page 35-39 of Att02_GNWF Ecological Assessment.

Table 3.10: Methods utilised for migratory bird detection

Recommended Survey Guidelines	Accordance with Survey Guidelines
Surveys by experienced person from elevated viewpoints during Austral summer	Two summer BBUS surveys have been undertaken in the Project Area (February 2024 and February 2025), including 13 sites which occurred on elevated viewpoints. Surveys used 2-ha 20-minute point counts. Significant additional survey work has been undertaken during summer months in the Project Area during which any opportunistic records of the species would have been recorded if present.
Note prevailing weather conditions	Survey conditions were recorded during each session.
Examine long-term databases to find relevant historical records.	Searches of relevant databases including BDBSA and ALA were undertaken for the Project Area.
Counts per hour can be used on multiple days during migration period to calculate numbers of	No counts per hour were undertaken in the Project Area, as no evidence of significant or important populations was detected in desktop assessments or during BBUS surveys or other field work.

3.1.2.8 Opportunistic Observations

All native and exotic fauna species opportunistically encountered, at least for the first time, were recorded across the Project Area during all field surveys, including signs of animal presence (scats, burrows, nests, diggings and other traces). For each opportunistic observation, the species, number of individuals, GPS location, detection methodology (sight, sound, or sign) and habitat were recorded, resulting in a general species list for the Project Area.

Threatened species and raptors with a high risk of avian collision, were recorded at each encounter, with additional information collected as outlined in the BBUS survey methodology.

Habitat was broadly assessed for species suitability, including presence of hollows, leaf litter, food resources and refuge structures. Particular attention was paid to identifying habitat for threatened species.

3.1.3 Limitations

3.1.3.1 Desktop Assessment

Field and desktop assessments were based on flora and fauna records sourced from the BDBSA. The BDBSA only includes verified flora and fauna records submitted to DEW or partner organisations. It is recognised that knowledge is sometimes poorly captured, and it is possible that threatened species occur that are not reflected by database records. Although much of the BDBSA data have been through a variety of validation processes, the lists may contain errors and should be used with caution. DEW gives no guarantee that the data is accurate or fit for any particular purpose of the user or any person to whom the user discloses the information.

BDBSA flora and fauna records were limited to a 5 km buffer around the GNREF boundary. The reliability of the BDBSA data ranges from 100 m to over 100 km. Spatial reliability has not been filtered in this report to account for all potential records and provide a conservative assessment of species likelihood.

Fauna species, in particular birds, can traverse distances more than the 5 km search buffer, and therefore, additional species may occur, which have not been captured within the specified Search Area. It is also acknowledged that the presence of species may not be adequately represented by database records. Hence, the BDBSA results that have been clipped to a 5 km buffer of the GNREF may not highlight all potential threatened flora and fauna species that may occur.

A search of the DEW NatureMaps database finds that several historical Biological Survey Sites (including flora and fauna sites) occur within the Project Area boundary, which is likely to strengthen the confidence of historical records reported, for the area. This includes 25 flora site locations and nine fauna survey locations, with survey dates ranging between 1991 and 2003. Several additional sites occur within the 5 km Search Area, including 68 additional flora sites and 13 fauna sites. Thirteen additional Bushland Condition Monitoring sites occur in the Search Area.

When undertaking significant impact assessments for species determined as having high potential to occur in the Project Area, a variety of other resources were utilised to determine the broader context of each species on a regional scale. Other resources utilised included the Atlas of Living Australia (ALA), and local and regional flora and fauna assessments obtained from DEW NatureMaps resource (DEW 2025a). It is acknowledged that data from these resources may be outdated and / or not uphold rigorous data quality standards, however in the absence of dedicated studies on all species of concern, these data sources are considered suitable to broadly assess the local and regional context of species.

BDBSA data from a larger, 20 km buffer was extracted to enable an assessment of the presence of Mallee Bird Community species, as required under the assessment criteria for this nationally Threatened Ecological Community, however, this data was not utilised for the remainder of the likelihood assessment.

3.1.3.2 Field Surveys

Due to the large size of GNWF, surveys were aligned as closely as possible to the Disturbance Footprint as the design progressed, rather than covering the entire GNWF Project Area in detail on all occasions. However, given the number of surveys undertaken and the spread of survey sites across the Project Area, it is well understood. Targeted on-ground flora and fauna surveys for MNES were based on the design layout at the time of each survey, with efforts expanding to cover any subsequent refinements to the Disturbance Footprint up to July 2025. Although targeted surveys have not been conducted in all locations of the Project Area, ecologists have extensively traversed the area during numerous survey sessions since 2022. Consequently, ecological knowledge of the entire site is of moderate to high confidence, increasing to high confidence in proximity to the Development Envelope and Disturbance Footprint.

Whenever possible, surveys were conducted under conditions favourable to the task and representative of the expected seasonal conditions. However, due to the timeframes and the need for advance planning, this was not always feasible. Over a three-year period, numerous surveys conducted, encompassing a wide range of seasonal conditions. While climatic conditions during some survey periods may have affected the diversity of flora and fauna observed, the multiple site visits likely mitigated these impacts.

The survey period includes a period of drought, with 2024 noted to be one of the driest years on record for the agricultural region of SA (BoM 2025). Since all threatened flora species with potential to occur in the Project Area are long lived and larger perennial species, seasonal conditions are not expected to have impacted their detectability. For INTG, condition class assessment relies on the number of species present, which is likely to be lower during times of drought. In cases where INTG was on the cusp of classification as Class B INTG and other more stable measures such as density of Lomandra tussocks met the criteria, the precautionary approach was taken, and condition class was elevated to the higher level.

All surveys were conducted using methods outlined in the relevant and appropriate survey guidelines. Where necessary, these methods were modified to suit specific conditions or requirements, as detailed in the relevant sections above. This approach ensured that the surveys were both rigorous and adaptable, providing reliable data while accommodating the unique aspects of each survey situation.

The survey effort has been extensive, employing appropriate survey methods throughout the Project Area. However, there remains a possibility that some flora and fauna species may not have been detected or identifiable at the time of surveys. Consequently, the actual number of species present in the entire Project Area is likely more extensive than recorded. While threatened species assessed as possible, likely, or highly likely to occur have not been observed during field surveys to date, this does not categorically confirm their absence from the Project Area.

3.2 Legislation, Planning Frameworks and Policy Documents Relevant to the Project Area

3.2.1 Planning, Development and Infrastructure Act 2016

The PDI Act along with the Planning, Development and Infrastructure (General) Regulations 2017 and Planning and Design Code, provide the legislative framework for carrying out planning and development works within SA. The GNREF Project, which includes the GNWF (Application ID: 23036148) was originally submitted for Planning Approval in December 2023 (05/12/2023) and subsequently in January 2024 (15/01/2024) and was granted planning consent in October 2024 (Att17_Planning Consent Decision Notification Form).

The proposed development is predominantly within the Rural Zone of the Planning and Design Code (version 2023.15 dated 26 October 2023), except for the very southern extent where the OTL connects to the existing Bundey Substation, zoned as Rural Intensive Enterprise (Figure 3.1). There will be no change to zoning for this activity. Land tenure is predominantly freehold agricultural land, with several Crown Land parcels as well as unmade road reserves included. The Conservation Zone applies to one Conservation Park (CP) (Mokota CP) which occurs within Goyder North Wind Farm Project Area (but excluded from any Project activities), and Mimbara CP, which occurs directly adjacent the OTL. Neoen has designed the Development Envelope to ensure no clearance will occur on conservation land. The following Overlays apply to various allotments (sections) (but not all land parcels) within the Project Area:

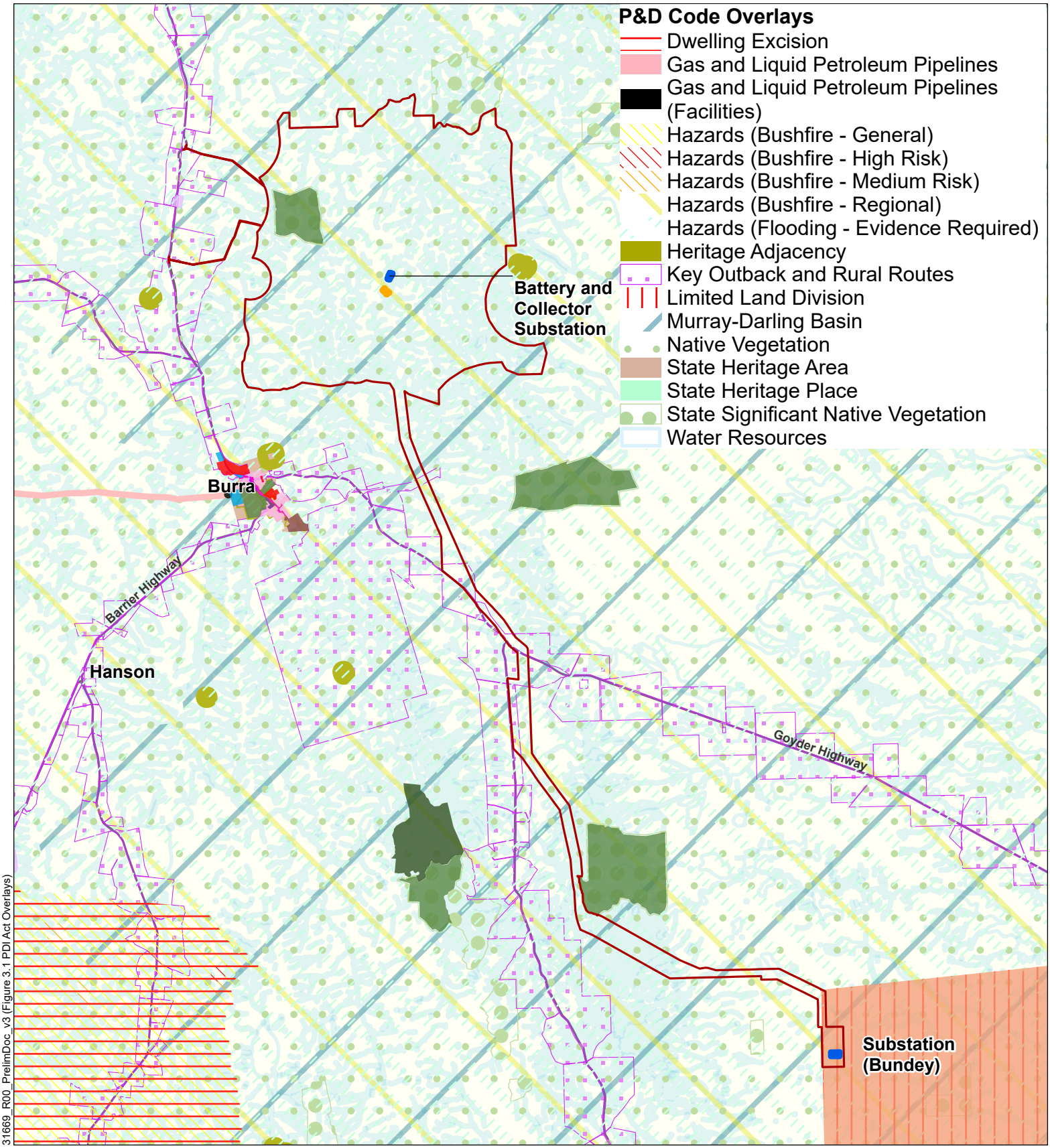
- Water Resources Overlay
- Native Vegetation Overlay
- State Significant Native Vegetation
- Hazards (Flooding – Evidence Required) Overlay
- Hazards (Bushfire – Regional Risk) Overlay
- Hazards (Bushfire – General Risk) Overlay
- Environment and Food Production Area Overlay
- Heritage Adjacency Overlay
- Local Heritage Place Overlay
- State Heritage Place Overlay
- Dwelling Excision Overlay
- Limited Land Division Overlay
- Murray-Darling Basin Overlay
- Key Outback and Rural Routes Overlay

Within the Rural Zone, a Renewable Energy Facility is assessed as Code Assessed – Performance Assessed unless sited within an Overlay that triggers an assessment as Restricted Development (either the Significant Landscape Protection or Character Preservation District Overlay). As the Project Area is not located within either overlay, the correct assessment pathway is Code Assessed – Performance Assessed under the PDI Act Planning and Design Code, which is how the project is currently being assessed.

In addition, two areas under conservation agreements occur within and adjacent to (respectively) to the Project Area; Tiliqua Nature Reserve which occurs within the southern portion of the Wind Farm (under Heritage Agreement 1715), and Mongolurring Nature Reserve which occurs adjacent to the north-east corner of the Project Area (under Heritage Agreement 1264). While both of these areas are considered conservation areas, they area both zoned as Rural.

Goyder's Line (established 1865) runs through the Project Area, meaning the land receives low rainfall and is therefore considered marginal for agriculture (Meinig 1961), with the primary land use grazing for sheep and cattle and minor use as dryland cropping of grains.

Figure 3.1: PDI Act Overlays



GNWF
Battery Energy Storage System (BESS)
Substation
Worlds End Gorge

P&D Code Zones

Conservation
Employment (Bulk Handling)
Neighbourhood
Open Space
Recreation
Rural
Rural Intensive Enterprise
Rural Living
Strategic Employment
Township
Township Activity Centre
Township Main Street

31669_R00_PrelimDoc_v3 (Figure 3.1 PDI Act Overlays)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
Date Exported: 1/10/2025 3:05 PM
Created by: sophie.haswell

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GDA2020 MGA Zone 54

0 2.5 5 km

N

3.2.2 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined in the EPBC Act as MNES. Under the environmental provisions of the EPBC Act, actions that are likely to have a significant impact on MNES are identified as 'controlled actions' and cannot be undertaken without referral to DCCEEW for consideration and approval under the EPBC Act. This Preliminary Documentation is Neoen's response to the controlled action decision for the GNWF and provides DCCEEW with information required to make an approval decision under the EPBC Act.

3.2.3 Native Vegetation Act 1991 (NV Act)

The NV Act and the associated *Native Vegetation Regulations 2017* (SA) outline incentives, education measures, and assistance to landowners in relation to the preservation and enhancement of native vegetation and acts to control the clearance of native vegetation. Under the NV Act, legal clearance of native vegetation may be permissible through one of two mechanisms: either by an application to the Native Vegetation Council (NVC), or under exemptions contained within the Native Vegetation regulations. Vegetation clearance applications must meet requirements of the Native Vegetation Regulations 2017 (Government of South Australia 2017).

The current Disturbance Footprint for the proposed Action will require clearing of up to 453.87 ha of native vegetation, including 261.31 ha of permanent clearance and 192.55 ha of temporary clearance. A Native Vegetation Clearance Data Report has been prepared by Umwelt, and submitted in March 2025 to State legislators, Native Vegetation Council (NVC) as required within the Planning Approval process. Neoen is undertaking ongoing engagement with the NVC regarding the native vegetation clearance process.

3.2.4 National Parks and Wildlife Act 1972 (NPW Act)

Under the NPW Act (SA) it is an offence to take a native plant or protected animal without approval. Threatened plant and animal species are listed in Schedules 7 (Endangered species), 8 (Vulnerable species) and 9 (Rare species) of the Act. Conservation rated flora and fauna species listed on Schedules 7, 8, or 9 of the NPW Act are known to occur within the Project Area. Persons must comply with the conditions imposed upon permits and approvals. Flora and fauna surveys conducted within the GNREF have been conducted under the required flora collection permits.

3.2.5 Landscape South Australia Act 2019 (LSA Act)

A water affecting activity permit may be required for the Project for construction of access tracks across creek lines (i.e. Burra Creek). Neoen will implement standard sediment and erosion control procedures as part of a Construction Environmental Management Plan (CEMP) which will ensure that actions will not alter the natural flow of water within the Project Area and mitigate against sediment and erosion occurring, particularly around creek lines. Several Declared Weeds exist in the Project Area. As part of the CEMP, Neoen (or the responsible construction contractor) will employ standard weed hygiene procedures

to ensure that Declared Weeds are not transported to, throughout, or away from the Project Area. The requirement for these permits will be discussed with the NYLB and permits will be obtained where necessary.

3.2.6 Aboriginal Heritage Act 1988

The protection and preservation of Aboriginal heritage within South Australia, and therefore surrounding the Project Area, falls under the *Aboriginal Heritage Act 1988*. The objective of this Act is to protect Aboriginal sites, objects and remains of significance to Aboriginal people, spanning across archaeology, anthropology, history and tradition. In line with the requirements of the Act, in conjunction with cultural heritage surveys to understand baseline conditions (via ethnographic survey conducted in 2024, and cultural heritage survey to be conducted in September and October 2025), Neoen will be required to gain authorisation for activities which may damage, disturb or interfere with Aboriginal heritage, and is required to report heritage discoveries. In accordance with this, under the guidance of Aboriginal Affairs and Reconciliation, Neoen have applied for Section 21/23 Approval under the *Aboriginal heritage Act 1988*.

The Project Area predominantly falls within the traditional lands of the Ngadjuri Nation, with the southern end of the OTL and Bundey Substation Area within the traditional lands of the First People of the River Murray and Mallee Region (FPRMMR#2). Neoen have been working closely with the Traditional Owners and relevant authorities to ensure that any potential impacts on Aboriginal heritage are managed appropriately in accordance with cultural and legal obligations, and that benefits from the project are shared with these communities. Neoen are currently developing Cultural Heritage Management Plans that will contain agreed protocols for appropriate management of Aboriginal heritage in accordance with industry best practice and the preferences of the Traditional Owners.

3.2.7 Heritage Places Act 1993

This Act makes provision for the Protection of all non-First Nations heritage places including those that might be unknown at this point in time. Neoen has avoided impacts on known places of heritage significance as identified in the South Australian Planning and Design Code. A 200 m micro siting allowance, will be implemented where practical to avoid and mitigate potential heritage impacts, for any undocumented built heritage and archaeological features of heritage significance which may be subsequently uncovered, such as through heritage survey scheduled to occur in Q3 2025.

3.3 Description of the Project Area

2. Description of the environment and matters of national environmental significance
a) The preliminary documentation must provide a general description of the environment of the development site, as well as the surrounding areas that may be impacted by the proposed action both in the short and long term.

The GNWF Project Area comprises approximately 17,700 ha of land (private freehold and crown land), located north-east of Burra and east of the Mount Bryan township in the Goyder Regional Council area in SA. The area is characterized by world-class wind resources and complementary land uses comprising primarily of marginal grazing land for sheep and cattle, and some dryland cropping. The wind farm is proposed to be connected to the existing energy network at Bunday Substation by an OTL which traverses approximately 48 km south from the Wind Farm.

The location of, and specifics of the proposed layout is based on the outcomes of various technical, visual, wind, environmental, social and cultural studies and assessments, including both Indigenous and European Heritage assessments. The total maximum Disturbance Footprint (on-ground clearance area) required for safe and efficient construction of the proposed GNWF Project is 536.82 ha, including OTL.

3.3.1 Project Location

The Project Area is in the Mid North of South Australia, within the Goyder Regional Council area. The southern boundary of the Wind Farm Component commences approximately 5.5 km to the north of the Burra township centre, extending approximately 13.2 km to the northern boundary of GNWF, adjoining Mount Bryan East Road. The Project Area is situated parallel and east of the Barrier Highway, with the western boundary approximately 4.5 km east of Mount Bryan township. The eastern boundary is approximately 1 km west of Mongolata Road. The OTL extends southward (from within the wind farm at the proposed substation) approximately 48 km, to Bundey.

3.3.2 Landscapes

The Project Area is dominated by ridges with occasional rocky outcrops, which fall away to low foot slopes and undulating hills, dissected by eroded drainage gullies. The Wind Farm is within the Wandalla Land System, characterised by moderately steep to steep range hills north of Burra and associated outwash fans, grading to lower hills, slopes and low rises in the north (DEWNR undated(a)). Rainfall averages 300-425 mm annually across the land system. Drainage from the range is mostly to the west and east. Elevation in this Land System is from 460 m above sea level in the southeast, to 789 m at Mount Cone (centre). Soils are often shallow and of moderately low fertility, with rocky outcrops common.

The OTL occurs across multiple distinct Land Systems, from north to south: Stone Chimney Creek, Hallelujah Hills, Thistlebeds and Mount Mary. Described further below:

- Stone Chimney Creek occurs south of the WF boundary along the route of the OTL to just west of Mimbara Conservation Park. Rainfall averages 275-400 mm annually across the land system. It comprises gently sloping outwash fans abutting the eastern edge of the Burra Hills and basement rock rises mainly in the north, with slopes of approximately 10% to 2%, interrupted by low rises of

basement rock (DEWNR undated(b)). Water originates in the hills and flows across the fans in an easterly direction. Elevation ranges from 550 m on the upper fan to 290 m where the Baldina and Stone Chimney Creek leave the system. The land is predominantly utilised for cropping and agriculture.

- Hallelujah Hills incorporates Mimbara Conservation Park and land to the south and west, with an annual average rainfall of 275 mm to 410 mm across the land system. It comprises steep low hills and undulating rises with shallow rocky soils on sedimentary rock, regularly dissected by Burra Creek tributaries (DEWNR undated (c)), and is largely uncleared and difficult to access. Elevation averages around 350m, up to 430 m in the south, with a low point around 240m occurring along the Burra Creek.
- Thistlebeds comprises gentle slopes adjacent to the ranges, low elevation (290 m to 210 m) pediments adjacent to the ranges, moderately to weakly dissected by creeks with shallow calcareous soil over calcrete (DEWNR undated(d)). Average annual rainfall is 200 mm to 375 mm across the land system.
- Mount Mary incorporates the very south of the OTL including Bundey Substation. It is predominantly flat to very gently undulating plains with shallow, calcareous rubbly soils (DEWNR undated(e). Rainfall averages 225 mm to 310 mm annually across the land system. Rangeland grazing has been the predominant land use; however substantial areas of the stony rises have not been cleared or have regenerated.

3.3.3 Hydrology

The south-western extent of the GNWF is within the Upper Burra Creek surface water catchment area. The estimated depth to water table across the Project Area is more than 200 cm (DEW 2025). No large natural water bodies occur in the GNWF however numerous constructed farm dams occur alongside an intersecting network of small named and unnamed ephemeral watercourses, fed by runoff from surrounding hills and ranges. Watercourses and wetlands intersecting each Project Area element are listed below and described in more detail in Att02_GNWF Ecological Assessment Section 4.1.5.

- Wind Farm – Newikie Creek, North Wiry Creek, South Wiry Creek, Wandalla Creek, Baldina Creek
- OTL – Wandalla Creek, Baldina Creek, Stone Chimney Creek, Burra Creek.

Most watercourses within GNWF, except for Burra Creek, are relatively small, eroded creeks or drainage lines which do not hold permanent water and are likely to have degraded vegetation, impacted by erosion and long-term agricultural practices. Several named creeks have Environment Protection Authority (EPA) water monitoring sites, with characteristics described further below.

Burra Creek is a large stream which rises near Hallet to the north of Burra and flows in a south easterly direction, connecting to the Murray River, east of Morgan. Flows disappear underground in the lower reaches, except during flooding. Monitoring in 2010 showed it to be in fair condition, with evidence of human disturbance such as nutrient enrichment and fine sediment deposition, however, some areas of intact riparian vegetation still occur (EPA 2025). The OTL is proposed to cross over Burra Creek, however no impacts are anticipated.

Baldina Creek is a small stream which rises north of Burra and drains in an easterly direction through Red Banks CP, where it includes several permanent springs, and then disappears underground into surrounding mallee vegetation. It is generally in poor condition, typically dry except following rainfall, with evidence of human disturbance, lack of remnant vegetation and impacts from livestock and erosion (EPA 2025).

Stone Chimney Creek is a small stream which rises east of Burra and drains in an easterly direction through Red Banks Conservation Park, before disappearing underground in the mallee. The creek is in fair condition, typically dry, retaining some riparian vegetation, but showing signs of erosion, stock damage and weed encroachment (EPA 2025).

No wetlands occur within the Search Area.

Major watercourses are displayed in Figure 3.2.

3.3.4 Existing or Proposed Land Uses

The Project Area is privately owned and primarily used for grazing of sheep and cattle with some areas utilised periodically for dryland cropping. The zoning of the land is not proposed to change due to the GNWF Project, and it is expected that the current land uses will co-exist with the Project.

The OTL is proposed to connect into the Bundey substation which is being built for the SA-NSW interconnector (Project EnergyConnect).

Several protected areas occur within the Search Area including Four state protected Conservation Parks and twelve privately managed Heritage Agreements of nature Reserves. State protected reserves include Mokota Conservation Park, Caroona Creek Conservation Park, Mimbara Conservation Park and Red Banks Conservation Park. No protected areas are proposed to be impacted by the Project; however, Mokota Conservation Park is directly adjoining the proposed primary WF access route. Tiliqua Nature Reserve is also located within the Project Area boundary, however, a 500 m WTG exclusion zone has been applied around this private reserve. More details of the relevance of these protected areas are presented in Att02_GNWF Ecological Assessment (Umwelt 2025b). Protected areas are displayed in Figure 3.2.

Two long-distance walking / shared use trails intersect with the Project Area, the Heysen Trail and the Mawson Trail. The Heysen Trail is a 1,200 km long trail which traverses from Cape Jervis in the south to Parachilna Gorge in the north, passing through National Parks and Conservation Reserves, public and unmade roads, private land and state forests. Section 27 (Burra to Wandallah) and Section 28 (Wandallah to Newikie Creek) intersect the Project Area.

The Mawson Trail is a 900 km long bicycle and walking trail, traversing minor and unmade roads from Gorge Road north of Adelaide, north to Blinman in the Flinders Ranges. Section 4 (Burra to Spalding) traverses the Project Area along the northern boundary (White Hill Road).

3.3.5 Regional Context

The Interim Biogeographical Regionalisation of Australia (IBRA) identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The bioregions are further refined into subregions and environmental associations.

The GNWF Project Area is primarily located within the Flinders Lofty Block (FLB) Bioregion, with the southern portion of the OTL in the MDD bioregion. Within the FLB, the Project Area crosses two subregions Broughton and Olary Spur within which four environmental associations occur: Burra Hill, Hansen (Broughton), Terowie and Mongolata (Olary Spur). Within the MDD, the Project Area is within the Murray Mallee subregion, and Sutherlands environmental associations. Details of each IBRA subregion and their associations is presented in Table 3.11 and displayed on Figure 3.3.

Table 3.11: IBRA Subregion and association vegetation remnancy details

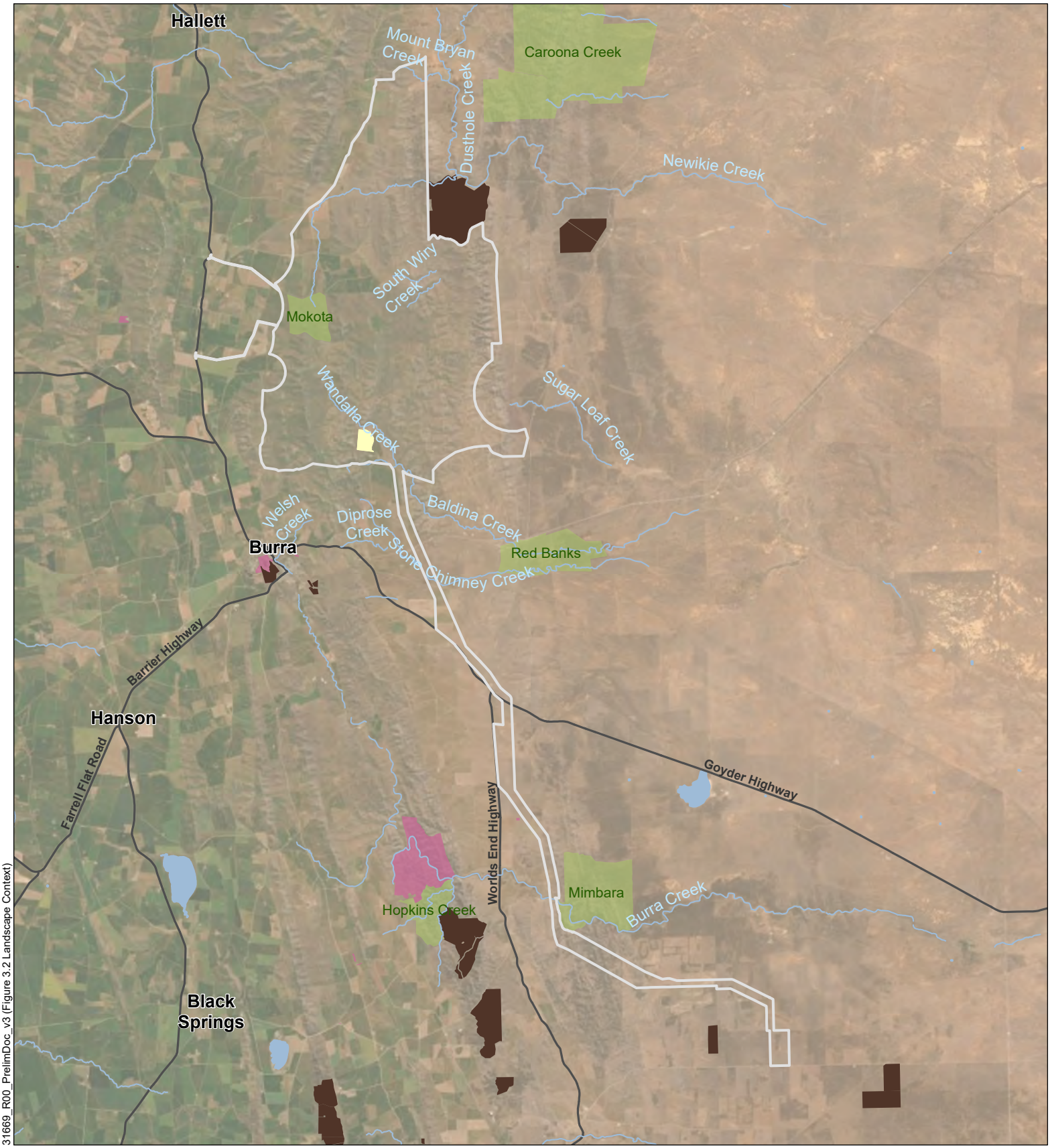
Subregion	Description		Total Area (ha)	Mapped remnant vegetation (ha)	Percent (%) vegetation
Broughton	This subregion is characterised by a series of wide undulating intramontane basins with red duplex soils, separated by low but distinct northerly trending strike ridges. In the north the region leads into the Southern Flinders Ranges with no sharply defined landform boundary but a land use boundary marking the northern extremity of wheat cultivation. Due to widespread clearing for farming the only significant remnant of native vegetation is found in the Mt Remarkable area, where an open forest dominated by *Eucalyptus cladocalyx* or by *E. goniocalyx* and *E. leucoxylon* on reddish dense loams remains. Degraded remnants of *E. leucoxylon* and *E. odorata* woodlands can still be found on stony crests and steep slopes.		1,028,759	106,330	10
	Burra Hill	Woodland of SA Blue gum (E. *leucoxylon* ssp. *pruinosa*) and Peppermint Box (*E. odorata*).	72,811	32,624	45
	Hansen	Low shrubland of samphire.	142,924	3,738	3
Olary Spur	A low easterly trending upland branching off the northerly trending Flinders Ranges. It comprises hogback ridges on metasediments and rounded granite hills, with shallow loamy soils supporting open shrubland of mulga (*Acacia aneura*), hopbush (*Dodonaea* spp.) and turpentine bush (*Beyeria* spp.), or a lower cover of saltbush (*Atriplex vesicaria*) and bluebush (*Maireana sedifolia*), locally with open mallee. Gentle footslopes and pediments commonly form extensive elongated intramontane plains with deeper duplex soils characteristically covered by saltbush and bluebush, commonly with scattered Mulga or False Sandalwood (*Myoporum platycarpum*).		1,737,276	1,685,213	97
	Terowie	No information available.	-	-	-

Subregion	Description		Total Area (ha)	Mapped remnant vegetation (ha)	Percent (%) vegetation
	Mongolata	Open scrub of beaked red mallee, white mallee and yorrell and open chenopod shrubland of bluebush.	-	-	-
Murray Mallee	Extensive calcreted plains overlain by a series of sand dunes. The calcreted ridges which form the undulating plain have a distinct west-north-westerly trend. The soils are shallow reddish sands on the plains and deep yellowish sands on the dunes. Fans bordering the Mt Lofty Ranges with low isolated hills rising above them have red duplex soils and calcareous earths subject to sheet erosion. Mallee is the dominant vegetation of the subregion. Its species composition reflects the diminishing coastal influence towards the north, especially in the understorey: Broombush (*Melaleuca uncinata*) gives way here to saltbush and bluebush (*Atriplex* and *Maireana* spp.) and hummock grass (*Triodia irritans*). Blue gum (*E. leucoxylon*) and peppermint box (*E. odorata*) are characteristic species in the west of the region. Although tracts of mallee still occur, most of the original vegetation has been cleared for agriculture.		2,115,785	444,401	21
	Sutherlands	Open scrub of beaked red mallee and low open woodland of false sandalwood and black oak.	68,891	32,682	47

3.3.6 Landscape Context Maps

The landscape context, including major watercourses and protected areas is provided as Figure 3.2, and the IBRA Landscape Regions are provided as Figure 3.3.

Figure 3.2: Landscape context including major watercourses and protected areas



GNREF
Tiliqua Nature Reserve
Vegetation Heritage Agreement
SEB
NPWSA reserve
Waterbodies
Watercourses
Main road



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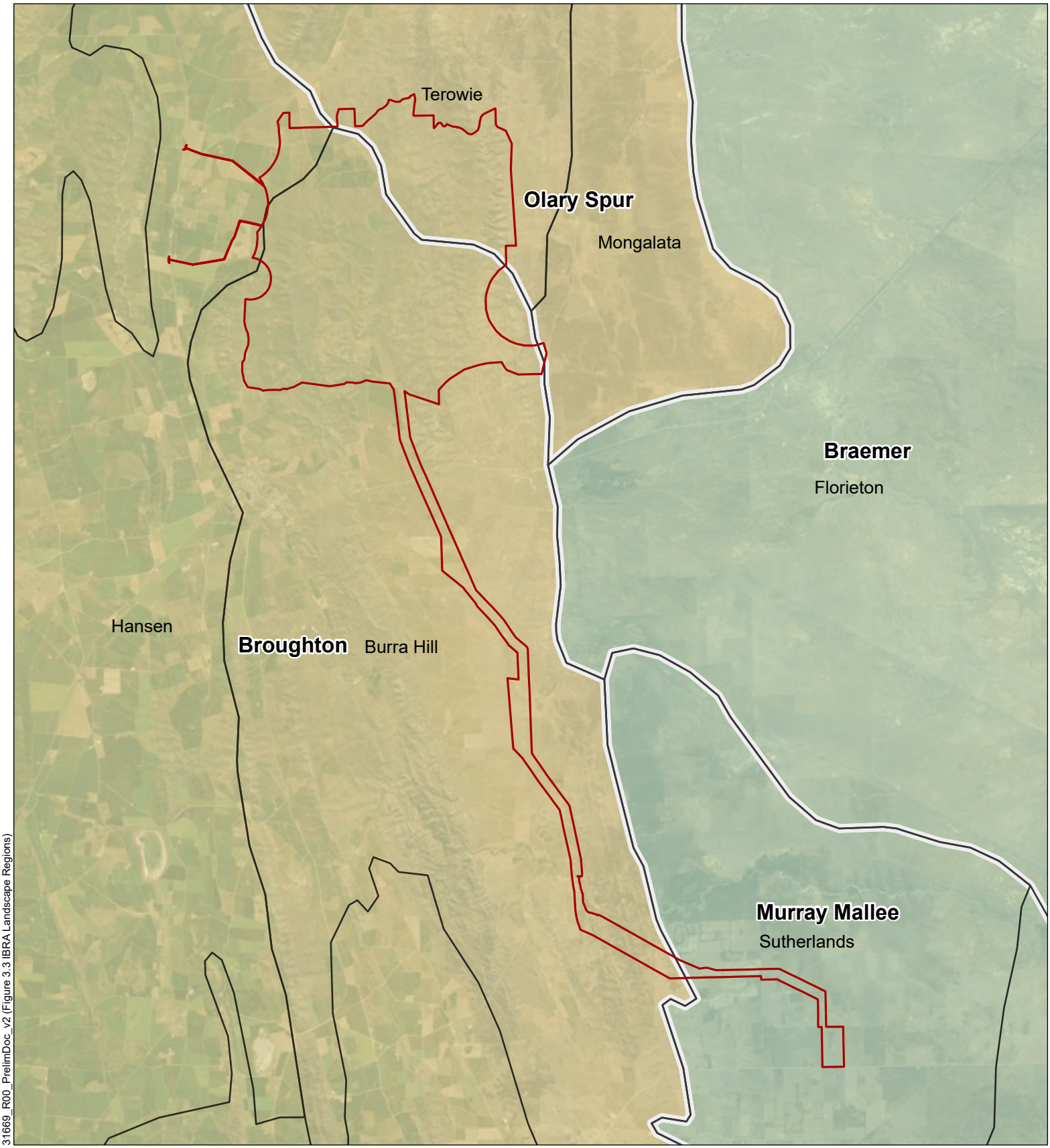
GDA2020 MGA Zone 54

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31669_R00_PrelimDoc_v3 (Figure 3.2 Landscape Context)

Figure 3.3: IBRA Landscape Regions



GNWF
IBRA Association
IBRA Subregion

IBRA Region

Flinders Lofty Block
Murray Darling Depression



Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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31669_R00_PrelimDoc_v2 (Figure 3.3 IBRA Landscape Regions)

3.3.7 Vegetation

3.3.7.1 Native Vegetation in the IBRA regions

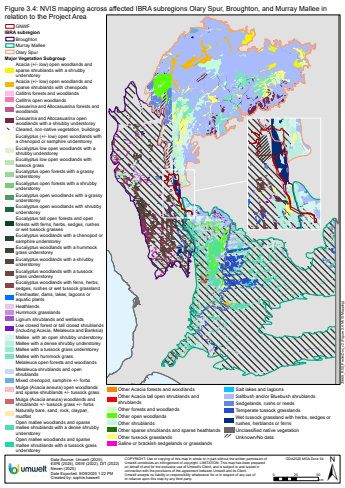
Major Vegetation Information System (NVIS) maps 39 major vegetation subgroups in the Broughton subregion, 45 in the Murray Mallee, and 25 in Olary Spur subregion (excluding areas mapped as Unknown / no data). These vegetation groups and their extent in the subregions within South Australia are presented in Table 3.12, and mapped in Figure 3.4.

Table 3.12: Major Vegetation Subgroups in the Broughton, Murray Mallee and Olary Spur IBRA Subregions (rounded to nearest hectare)

NVIS Major Vegetation Subgroup	Vegetation mapped in IBRA subregion (ha)			
	Broughton	Murray Mallee	Olary Spur	Grand Total
Acacia (+/- low) open woodlands and sparse shrublands with a shrubby understorey	17	0	37,458	37,475
Acacia (+/- low) open woodlands and sparse shrublands with chenopods	0	2,448	52,526	54,974
Callitris forests and woodlands	256	11	1,241	1,507
Callitris open woodlands	63	1,676	5	1,743
Casuarina and *Allocasuarina* forests and woodlands	785	1,529	51	2,365
Casuarina and *Allocasuarina* open woodlands with a shrubby understorey	1,500	7,784	53,817	63,101
Cleared, non-native vegetation, buildings	926,147	1,657,227	50,889	2,634,263
Eucalyptus (+/- low) open woodlands with a chenopod or samphire understorey	0	19	0	19
Eucalyptus low open woodlands with a shrubby understorey	2	196	0	197
Eucalyptus low open woodlands with tussock grass	169	885	17	1,070
Eucalyptus open forests with a grassy understorey	25	110	0	135
Eucalyptus open forests with a shrubby understorey	511	151	0	662
Eucalyptus open woodlands with a grassy understorey	322	26	0	348
Eucalyptus open woodlands with shrubby understorey	0	906	0	906
Eucalyptus tall open forests and open forests with ferns, herbs, sedges, rushes or wet tussock grasses	0	794	0	794
Eucalyptus woodlands with a chenopod or samphire understorey	142	771	9,128	10,041
Eucalyptus woodlands with a hummock grass understorey	279	0	0	279
Eucalyptus woodlands with a shrubby understorey	13,991	2,174	0	16,165
Eucalyptus woodlands with a tussock grass understorey	10,185	0	0	10,185
Eucalyptus woodlands with ferns, herbs, sedges, rushes or wet tussock grassland	204	2,341	0	2,545

NVIS Major Vegetation Subgroup	Vegetation mapped in IBRA subregion (ha)			
	Broughton	Murray Mallee	Olary Spur	Grand Total
Freshwater, dams, lakes, lagoons or aquatic plants	920	9,685	357	10,962
Heathlands	27	1,822	0	1,849
Hummock grasslands	1,008	213	0	1,221
Lignum shrublands and wetlands	8	1,935	0	1,944
Low closed forest or tall closed shrublands (including *Acacia*, *Melaleuca* and *Banksia*)	0	21	0	21
Mallee with an open shrubby understorey	1,209	20,417	56,838	78,464
Mallee with a dense shrubby understorey	8,380	36,185	22,154	66,718
Mallee with a tussock grass understorey	167	1,235	0	1,401
Mallee with hummock grass	253	18,183	102,412	120,848
Melaleuca open forests and woodlands	0	58	0	58
Melaleuca shrublands and open shrublands	24	7,925	0	7,948
Mixed chenopod, samphire +/- forbs	23	8,356	9,218	17,598
Mulga (*Acacia aneura*) open woodlands and sparse shrublands +/- tussock grass	0	0	1,618	1,618
Naturally bare, sand, rock, claypan, mudflat	0	150	0	150
Open mallee woodlands and sparse mallee shrublands with a dense shrubby understorey	1,355	155,919	0	157,274
Open mallee woodlands and sparse mallee shrublands with a tussock grass understorey	285	4,686	0	4,971
Other *Acacia* forests and woodlands	58	6	0	63
Other *Acacia* tall open shrublands and shrublands	171	3,741	320	4,232
Other forests and woodlands	0	6	0	6
Other open woodlands	0	33,000	40,303	73,303
Other shrublands	2,723	575	104,642	107,940
Other sparse shrublands and sparse heathlands	0	444	0	444
Other tussock grasslands	1,888	955	82,857	85,700
Saline or brackish sedgelands or grasslands	1,022	374	2	1,398
Salt lakes and lagoons	0	0	322	322
Saltbush and/or Bluebush shrublands	1,030	68,256	1,019,224	1,088,510
Sedgelands, rushs or reeds	3,215	950	42,310	46,475
Temperate tussock grasslands	4,731	51,602	415	56,748
Unclassified native vegetation	0	86	0	86
Wet tussock grassland with herbs, sedges or rushes, herblands or ferns	12,727	1,868	4,041	18,636
Grand Total	**995,824**	**2,107,698**	**1,692,164**	**4,795,686**

Figure 3.4: NVIS mapping across affected IBRA subregions Olary Spur, Broughton, and Murray Mallee in relation to the Project Area



3.3.7.2 Native Vegetation in Project Area

A total of 23 broad native Vegetation Associations (VAs) have been mapped and surveyed across the Project Area (Table 3.13, Figure 3.5 to Figure 3.7), in which up to 267 species of native plants have been identified (including some identified to only to Genus). Native vegetation throughout the Project Area is comprised predominantly of grasslands, with large tracts of Iron-grass (*Lomandra* spp.) in the central and eastern sections of GNWF. Remnant mallee woodland associations occur along the eastern side of the site, where they grade into chenopod dominated plains within the eastern rain shadow. The OTL traverses a variety of landscapes, and includes native vegetation including *Austrostipa* grassland, *Lomandra* grassland, Chenopod shrubland, and Mallee woodland. Vegetation was assessed according to the South Australian BAM. Details of each VA are presented in Att02_GNWF Ecological Assessment, Section 5.1 pages 65 to 103 (Umwelt 2025b).

Vegetation within the Project Area comprise a large contiguous patchwork of native vegetation bounding Goyder's Line, which demarcates the portion of the state where rainfall is unpredictable, and land therefore deemed unsuitable for cropping. As such there are very few gaps in the native vegetation coverage across the Project Area, and remnant woodland remains. It is likely that some areas of grassland and shrubland historically contained mallee vegetation, which has been cleared, however grazing has been the primary impact in this location, including of sheep and cattle as well as unmanaged populations of feral goats and native herbivores such as kangaroos. Grazing impacts vary across the site and includes species form and composition changes, limited regeneration of woody shrubs and trees and bare patches from resting animals.

Grasslands within the Project Area have a long history of grazing, and are predominantly in poor to fair condition, mapped as native grassland if more than (>) 5 % of the vegetation was considered to comprise native grasses, otherwise mapped as exotic grassland or cropped. Some clearance of woodland vegetation (Mallee and *Eucalyptus leucoxylon* +/- *E. odorata* woodland) is likely to have preceded, with the remaining areas considered derived grasslands.

Mallee woodland and chenopod shrublands have also been heavily grazed, acting predominantly as shelter areas for livestock and feral goats, as well as foraging areas when grassland conditions are poor. As a result, many mallee vegetation patches lack a diverse understorey shrub and forb component and have large bare patches under trees as a result of livestock resting. In some areas, chenopod shrublands have been heavily grazed, with visible livestock trails throughout and modified branches on shrubs.

Other vegetation includes planted amenity (such as windrows and gardens), agricultural cropped areas, exotic grasslands (comprising less than 5% native cover), and existing cleared areas such as roads or other infrastructure. Several areas within the Project Area are also mapped as 'unsurveyed' typically relating to areas surrounding homesteads or other locations which have been excluded from the Project Design and therefore not accessed for surveys.

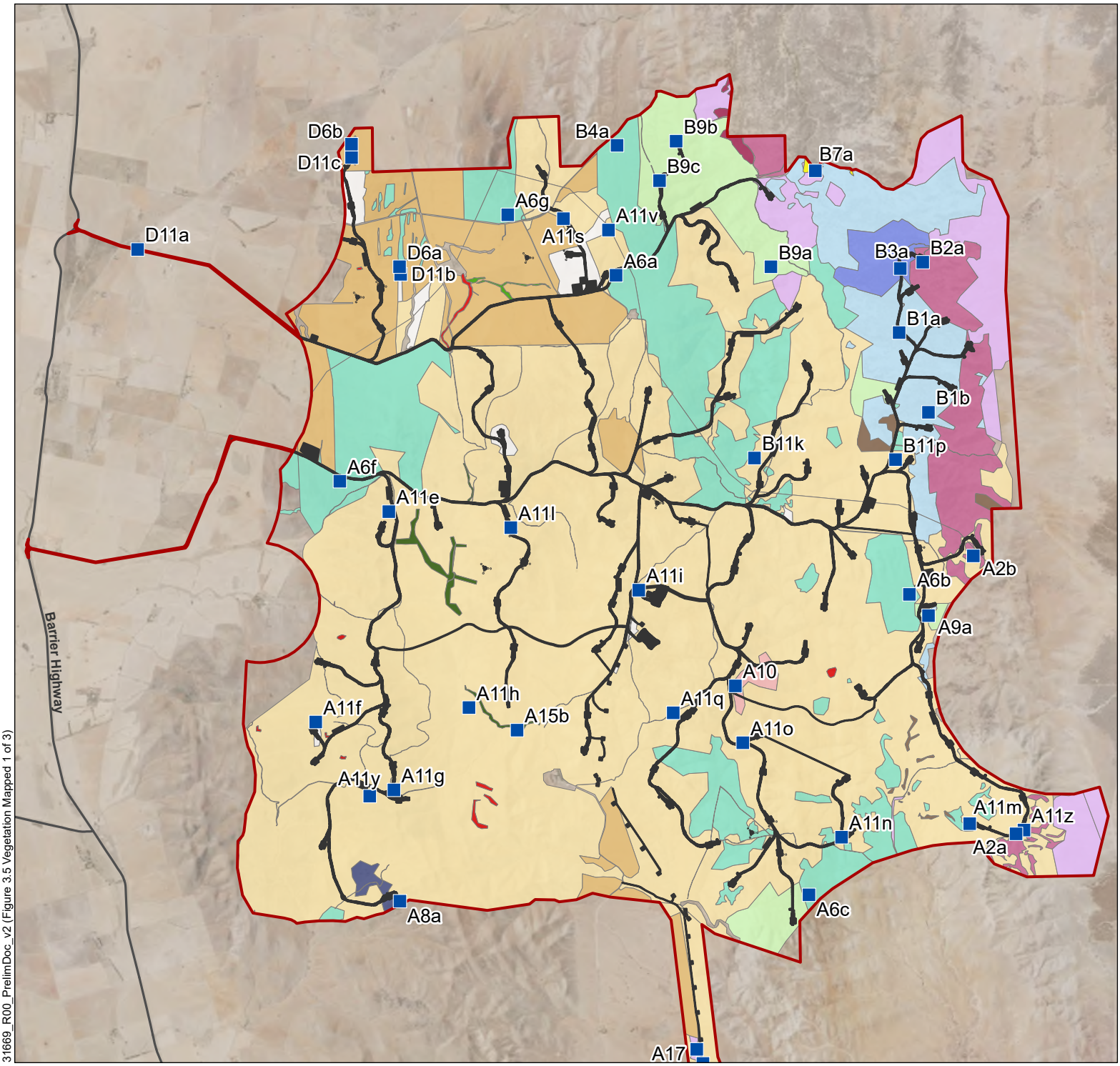
A detailed description of vegetation mapped within the Project Area is provided in Att02_GNWF Ecological Assessment Section 5.1.2 (pages 68 to 98).

Table 3.13: Summary of vegetation associations mapped and surveyed in GNWF

VA Code	VA Description	Number of BAM Sites	Area mapped in GNWF (ha)
VA1	*Eucalyptus porosa* +/- *E. gracilis* / *E. brachycalyx* Woodland over Chenopods.	3	725.89
VA2	'Smooth-barked Mixed Mallee' (*E. gracilis* +/- *E. brachycalyx* +/- *E. dumosa* +/- *E. leptophylla* +/- *E. socialis*) over Chenopods.	4	453.77
VA3	*E. porosa* Woodland over *Senna artemisioides* sp. coriacea and Sclerophyllous Shrubs.	1	119.53
VA4	*Acacia pycnantha* tall shrubland over grass	1	0.07
VA5	*Maireana aphylla* low shrubland	1	17.99
VA6	*Lomandra* spp. Grassland.	11	1,931.24
VA7	*Acacia spilleriana* Shrubland	1	4.02
VA8	*Eucalyptus leucoxylon* ssp. *pruinosa* Woodland over native and exotic grasses +/- *E. odorata*	1	28.37
VA9	*Maireana rohrlachii* open shrubland over *Austrostipa* sp. and exotics +/- *Lomandra* spp.	6	544.57
VA10	*Allocasuarina verticillata* over *Cymbopogon ambiguus* and herbs on steep rocky slopes.	1	33.16
VA11a	Mixed *Austrostipa* spp. and *Rytidosperma* spp. Grassland	26	9,486.27
VA11b	Mixed *Austrostipa* spp. and *Rytidosperma* spp. Grassland +/- emergent *Eucalyptus* (*E. porosa* / *E. socialis*) trees.	1	74.66
VA12	Mixed Chenopod Shrubland of *Maireana pyramidata* and *Atriplex stipitata* over native and exotic grasses +/- *Lomandra* spp.	8	1,103.46
VA13	VA13: *Hakea leucoptera* ssp. *leucoptera* tall shrubland	1	13.91
VA14	*Eucalyptus camaldulensis* Riparian Woodland over reeds and sedges	1	10.42
VA15	*Juncus* spp. Sedgeland +/- *Typha domingensis* associated with minor drainage lines and creeks.	1	33.16
VA16	*Acacia nyssophylla* shrubland	1	42.65
VA17	*Cryptandra* spp. Shrubland +/- *Lomandra* spp.	1	1.38
VA18	Mixed Mallee (inc. *E. oleosa* dominant) over Chenopods and native grasses.	9	519.66
VA19	*Dodonaea lobulata* Shrubland +/- Scattered Mallee *Eucalyptus* spp.	2	104.77
VA20	*Alectryon oleifolius* Low Woodland over Chenopods	2	30.55
VA21	*Senna* spp. Shrubland	1	16.06
VA22	*Scaevola spinescens* Shrubland over Grass	1	30.52
VA23	*Nitraria billardiera* Shrubland	2	325.20
Amenity	Vegetation planted for shelterbelts / windrows, revegetation or ornamental purposes.	NA	17.17
Exotic	Pastures dominated by exotic grasses with < 5% native component (i.e., *Hordeum vulgare*, Barley Grass)	NA	164.88

VA Code	VA Description	Number of BAM Sites	Area mapped in GNWF (ha)
Cropped	Agricultural land either presently or historically utilised for cropping.	NA	1,378.52
Cleared / Un-surveyed	Existing cleared land such as roads or infrastructure which have not been surveyed for native vegetation.	NA	491.37
Total			**17,703.22**

Figure 3.5: Vegetation mapped within the GNWF Project Area (Map 1 of 3)



GNWF
Disturbance Footprint
BAM site

Vegetation Association

VA1: *Eucalyptus porosa +/- E. gracilis* woodland over Chenopods
VA2: Smooth Barked mixed mallee
VA3: *E. porosa* low woodland over *Schlerophyllous* shrubs
VA4: *Acacia pycnantha* tall shrubland over grass
VA6: Lomandra Grassland
VA7: *Acacia spilleriana* Shrubland
VA8: *Eucalyptus leucoxylon ssp. Pruinosa* (Inland South Australian Bluegum) Open Woodland
VA9: *Maireana rohrlachii* open shrubland
VA10: *Allocasurina verticillata* over native grasses and herbs
VA11a: Native grassland
VA11b: Native grassland and emergent trees
VA12: Mixed Chenopod shrubland
VA14: *E. camaldulensis* Riparian Woodland
VA15: *Juncus sp.* sedgeland in minor drainage pipe
VA17: *Cryptandra companulata* open shrubland
VA18: Mixed Mallee over Chenopods and native grasses
Amenity Vegetation
Cropped
Exotic

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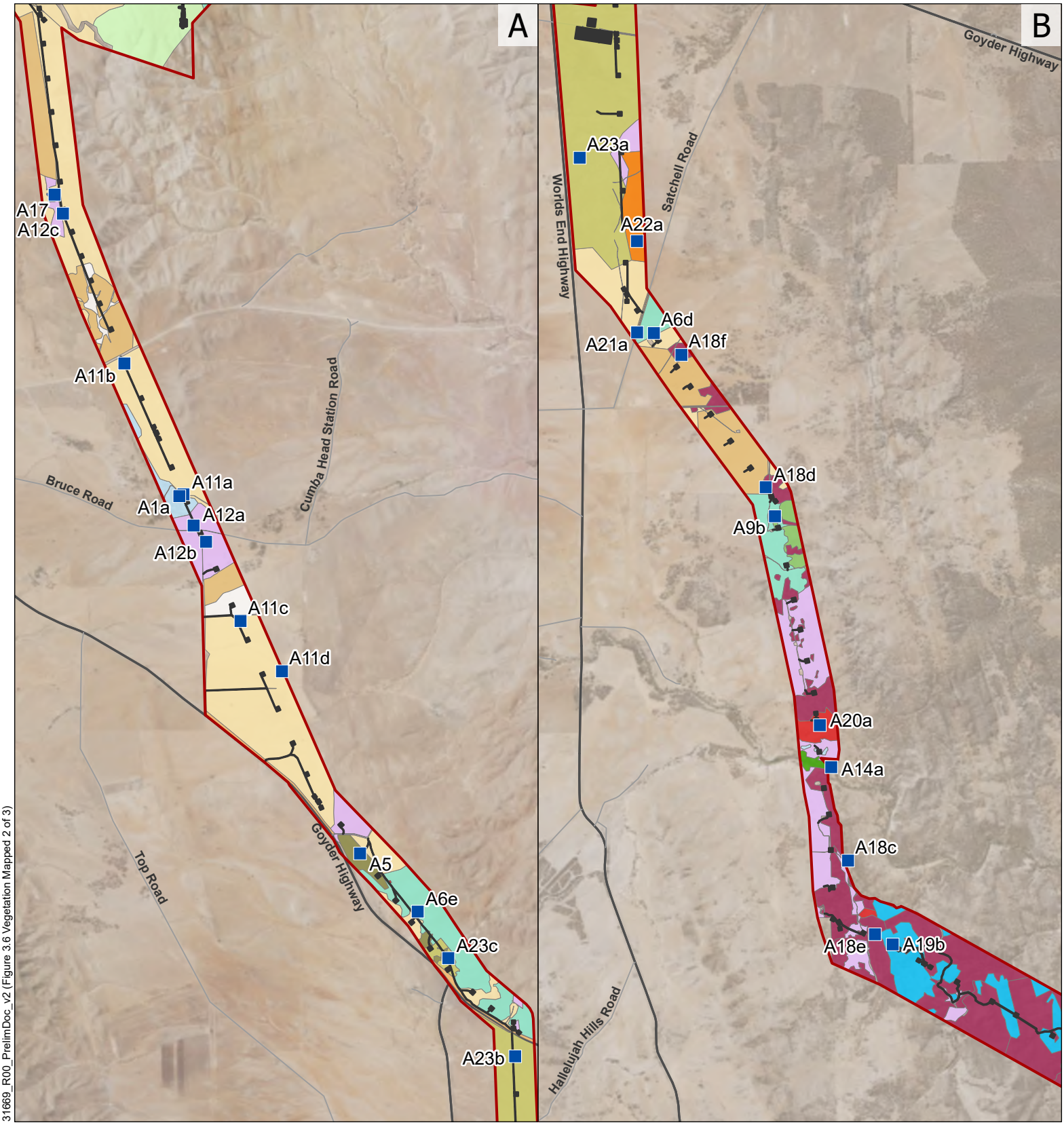
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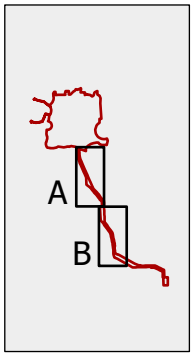
Figure 3.6: Vegetation mapped within the GNWF Project Area (Map 2 of 3)



GNWF
Disturbance Footprint
BAM site

Vegetation Association

- VA1: *Eucalyptus porosa +/- E. gracilis* woodland over Chenopods
- VA5: *Maireana aphylla* low shrubland
- VA6: Lomandra Grassland
- VA8: *Eucalyptus leucoxylon ssp. Pruinosa* (Inland South Australian Bluegum) Open Woodland
- VA9: *Maireana rohrlachii* open shrubland
- VA11a: Native grassland
- VA12: Mixed Chenopod shrubland
- VA13: *Hakea leucoptera ssp. leucoptera* tall shrubland
- VA14: *E. camaldulensis* Riparian Woodland
- VA17: *Cryptandra companulata* open shrubland
- VA18: Mixed Mallee over Chenopods and native grasses
- VA19: *Dodonaea lobulata* shrubland on rocky hills
- VA20: *Alectryon oleifolius* Low Woodland over Chenopods
- VA21: *Senna* spp. Shrubland
- VA22: *Scaevola spinescens* Shrubland
- VA23: *Nitraria billardiera* Shrubland
- Amenity Vegetation
- Cropped
- Exotic



31669_R00_PrelimDoc_v2 (Figure 3.6 Vegetation Mapped 2 of 3)

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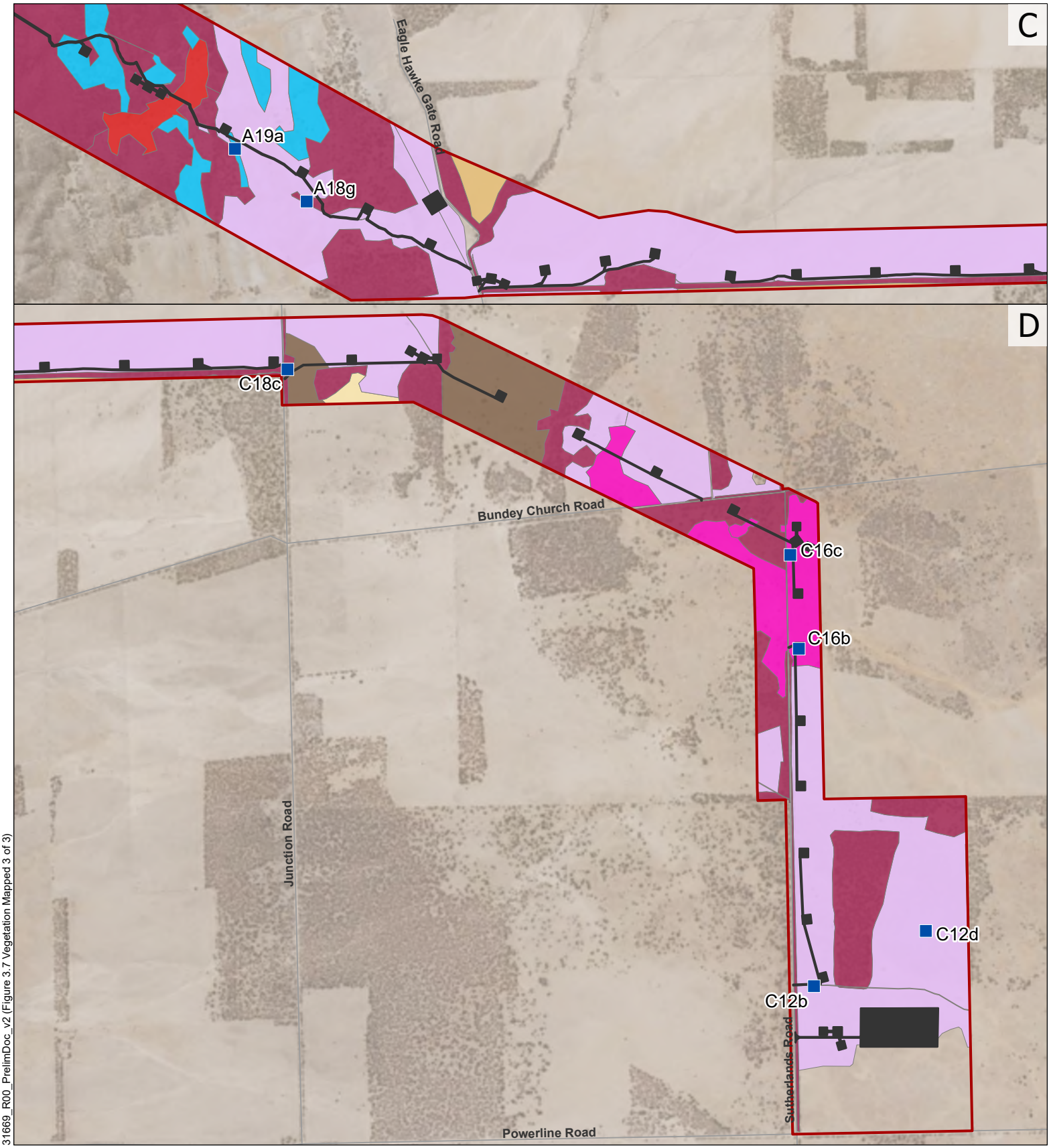
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GDA2020 MGA Zone 54

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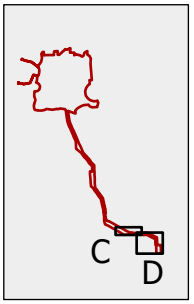
Figure 3.7: Vegetation mapped within the GNWF Project Area (Map 3 of 3)



GNWF
Disturbance Footprint
BAM site

Vegetation Association

VA11a: Native grassland
VA11b: Native grassland and emergent trees
VA12: Mixed Chenopod shrubland
VA16: *Acacia nysophylla* shrubland
VA18: Mixed Mallee over Chenopods and native grasses
VA19: *Dodonaea lobulata* shrubland on rocky hills
VA20: *Alectryon oleifolius* Low Woodland over Chenopods
Cropped



31669_R00_PrelimDoc_v2 (Figure 3.7 Vegetation Mapped 3 of 3)

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GDA2020 MGA Zone 54

0 250 500 m

N

3.3.7.3 Threatened Flora

Twelve threatened flora species were recorded in the Project Area during field surveys, including two EPBC listed species which are also listed under State (SA) NPW Act, and ten additional species which are only listed under State (SA) NPW Act:

- **Acacia spilleriana* (Spillers Wattle) (EPBC Act: Endangered; NPW Act: Endangered).
- *Austrostipa gibbosa* (Swollen Spear-grass) (NPW Act: Rare).
- *Cryptandra campanulata* (Long-flower Cryptandra) (NPW Act: Rare).
- **Cullen parvum* (Small Scurf-pea) (NPW Act: Vulnerable).
- *Dianella longifolia* var. *grandis* (NPW Act: Rare).
- *Dodonaea procumbens* (Trailing Hop-bush) (EPBC Act: Vulnerable; NPW Act: Vulnerable).
- **Eryngium ovinum* (Blue Devil) (NPW Act: Vulnerable).
- *Maireana excavata* (Bottle Fissure-plant)
- **Maireana rohrlachii* (Rohrlach's Bluebush) (NPW Act: Rare).
- *Ptilotus erubescens* (Hairy-tails) (NPW Act Rare).
- **Rumex dumosus* (Wiry Dock) (NPW Act: Rare).
- *Swainsona behriana* (Behr's Swainson Pea) (NPW Act: Vulnerable).

Of these, five species occur within the GNWF Project Disturbance Footprint (indicated by *), with the remainder being recorded in the Development Envelope or broader GNREF. Distribution and abundance of each species is described in Section 6.3 (EPBC Act) (page 153) and Section 7.1 (NPW Act) (page164) of Att02_GNWF Ecological Assessment.

3.3.7.4 Condition of Habitat for Threatened Species and Ecological Communities

Grasslands

The Project Area occurs on the edge of Goyder's Line and is considered marginal for cropping, with only 7.7% (approximately) of the GNWF Project Area comprising cropped land, and over 65.80% comprising grassland in varying condition (including exotic, and Lomandra grasslands). As cropping is a major threatening process for PBTL, which are seemingly unable to occupy mechanically disturbed ploughed soil due to the lack of suitable spider burrows, the Goyder North Project Area provides large areas of potentially suitable grasslands, which provide favourable habitat despite their often-high exotic pasture content and use for grazing by sheep and cattle.

Grasslands in the Project Area range from quality native grasslands with a diversity of native herbaceous species, to heavily degraded, intensively grazed grasslands dominated by exotic species or with little vegetation cover at all and a high surface rock covering. Most of the threatened flora species detected within the wind farm are associated with these grassland habitats, typically occurring as scattered individuals in higher quality grasslands on the wetter western slopes of the wind farm area.

Despite their generally degraded condition and limited floristic value (in most locations), well managed agricultural grasslands in the region, particularly those occurring on low to medium hills and slopes are known to provide important habitat for EPBC listed species, Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*; PBTL) (Gardner 2024). Furthermore, targeted surveys across the Disturbance Footprint have found PBTL to occur in grasslands of all conditions, except where they occur on outwash plains in the south-east of the WF and on the grassland flats along the OTL.

Prior to European settlement it is likely that a combination of fire and grazing by native fauna kept the grasslands open and suitable for PBTL. However, in the absence of historical fire regimes, suitable agricultural land management practices such as managed grazing are now considered vital to preserve both biodiversity (Earl et al. 2003; Kahn et al. 2005) and PBTL habitat in these grassland ecosystems (Gardner 2024; Schofield 2006).

Lomandra Grasslands are present across much of the Project Area, particularly the WF, with minor occurrence along the OTL and comprising 10.90% of the mapped area within GNWF. Lomandra grasslands are subject to the same agricultural practices employed across the Project Area, and in many areas showed heavy grazing of non-palatable tussocks and little evidence of tussock regeneration. Lomandra grassland was broadly mapped by condition in field survey in spring 2022, which identified areas of C Class, likely B Class and a small area of possible A Class INTG TEC. The preliminary design was modified based on the broad mapping undertaken in 2022, with the number of WTGs impacting Lomandra Grassland reduced from 41 to 16, and all infrastructure removed from areas mapped as likely B or A Class. Subsequent targeted surveys in spring 2024 found that up to 1,480.59 ha of GNWF classifies as Condition Class B INTG, and 18.02 ha of Condition Class A. The current design has only one WTG encroaching on the edge of Class B INTG and where it adjoins existing tracks which need to be widened to allow construction and access, or to cross narrow patches of INTG for access, for a total of 6.14 ha of impact to Class B INTG.

Woodlands

Remnant woodlands in the Project Area are generally intact in the upper storey, but with varying degrees of degradation from intensive grazing in the understorey. Woodland habitats comprise predominantly mixed mallee vegetation over chenopods, with a small area of open grassy *Eucalyptus leucoxylon* ssp. *pruinosa* (Inland Blue Gum) woodland in the southwest of the wind farm, and tall *E. camaldulensis* ssp. *camaldulensis* (River Red Gum) woodland along the Burra Creek and in several small pockets along creeks and drainage lines in the WF.

The open grassy Blue Gum woodland retains little to no native understorey, has limited regeneration and evidence of historically felled large trees (stumps), but otherwise provides nesting habitat in the form of large and small hollows, and sturdy branches for raptor nests, including Wedge-tailed Eagle. The area provides suitable perching and foraging habitat and matches the description of habitat for species such as Diamond Firetail, however the lack of diversity in the understorey limits the use, and its location as a small fragment in the largely cleared landscape provides limited opportunity for movement of these species. Multiple bird surveys at this site have not detected Diamond Firetail or other threatened bird species, with a range of more common species such as Miners (*Manorina* sp.), Australian Magpie (*Gymnorhina tibicen*), Galah (*Eolophus roseicapilla*) and Yellow-rumped Thornbill (*Acanthiza chrysorrhoa*) occupying the site.

Remnant and planted River Red Gum (*Eucalyptus camaldulensis*) occur as scattered trees along several small creeks within the WF and as a vegetation community along the Burra Creek, intersected by the OTL. The area provides a range of habitat features including hollows, nesting and foraging resources, and high structural diversity within the Burra Creek. No specific targeted bird surveys have been undertaken in these woodlands; however, it is expected they provide habitat for a range of fauna including potentially threatened bird species such as Diamond Firetail. Minimal disturbance to this VA is proposed, with 0.05ha of temporary impact on the edge of the Burra Creek.

Mallee woodlands vary across the Project Area, with areas of mallee occurring on steep slopes or otherwise remote terrain contained old and remnant trees, which provide important hollow resources for a range of hollow nesting fauna. In some areas, especially along the plains of the OTL, mallee woodlands had been subject to wood harvesting practices and comprised more dense whipstick formations with few hollows. *Eucalyptus porosa* (Mallee Box) woodlands occurred as a more open and sometimes grassy form in the vicinity of creeks, and as remnant scattered trees in eroded creek beds.

Where intensive agricultural grazing pressure has occurred, especially on the plains along the central portions of the OTL, understorey in mallee woodlands is limited to a few hardy chenopod species, with large bare patches and limited regeneration caused by repeated grazing and use of small patches as shelter by livestock and other fauna. Complex structural and grassy understorey components listed as components of critical habitat of threatened species such as South-eastern Hooded Robin (DAWE 2021a) or Diamond Firetail are lacking in most wooded areas, thus habitat suitability estimates are likely to be overstated.

Other areas of Mallee woodland which occur on steeper slopes, or less intensively grazed areas, contain higher species and structural diversity and intergrade with more diverse shrublands such including *Dodonaea lobulata* (Lobed Hop-bush) (VA19). These areas are suitable for a range of threatened and more common bird species including South-eastern Hooded Robin and Southern Whiteface. Impacts in these areas have been significantly reduced through application of non-conventional stringing methods for the OTL, along with careful consideration of access road alignments to follow existing roads or clearings.

Where mallee vegetation occurs in the MDD Bioregion, in the southern 9.5 km of the OTL, it has been found to meet the criteria for Mallee Bird Community of the MDD TEC. Based on this assessment, the OTL has been aligned specifically to avoid this vegetation type, with only minor residual impacts proposed, where it is required, for example, to cross narrow linear strips of roadside vegetation.

Although the mallee woodlands have been fragmented historically, patches are connected across the landscape by contiguous areas of native vegetation such as chenopod shrublands, which are likely to support short and longer distance dispersal of common and threatened bird species between patches. The southern 24 km of the OTL (south of the Goyder Highway) is a large, connected network of mallee vegetation incorporating Mimbara Conservation Park, the Hallelujah Hils and the Burra Creek. North from the Goyder Highway, there is an approximate seven-kilometre gap to the next patch of similar mallee woodland at Red Banks Conservation Park, connected by varying chenopod shrublands. Although vegetated, this gap is likely to provide a barrier to movement for many smaller bird species with limited range movements or specialised habitat requirements. The eastern hills of the wind farm comprise a contiguous patch of woodland, continuing further to the north along the hills, and on the plains to the

east. Thus, disturbance in these areas, especially of a narrow and linear nature is unlikely to impede the existing dispersal ability of the birds occurring in these areas.

Shrublands

Chenopod Shrublands are common in the eastern area of the Wind Farm, and along the OTL, either as naturally occurring shrublands or regenerated forms on areas which have previously been cleared of mallee vegetation. Shrublands include mixed chenopod shrublands with or without a grassy component, *Maireana aphylla* shrubland associated with low lying areas or drainage lines, and low diversity *Nitraria Billardiera* (Nitre bush) Shrublands on heavier soil subject to inundation. Although important in the vegetation matrix and likely providing habitat to a range of common and threatened species, these areas do not meet the critical habitat requirements for any MNES associated with the Project.

One exception for chenopod shrubland as habitat for MNES includes Vegetation Association (VA) 9 (*Maireana rohrlachii* shrubland over native and exotic grass), which in one location had a high density of PBTL. This VA was limited in extent within the Project Area, and PBTL occurrence was patchy, concentrated in one densely populated location in the south of the WF.

Furthermore, some low open chenopod shrublands in the northeast of the WF were highly degraded with Declared weed African Boxthorn (*Lycium ferocissimum*) often occurring in dense thickets or scattered throughout, likely associated with areas of historical clearance of mallee. However, despite their degraded and modified condition, these areas have been found to support populations of Southern Whiteface (*Aphelocephala leucopsis*) and are likely to support movement of fauna species across the landscape, between the more diverse mallee woodlands.

3.3.7.5 Introduced Flora

A total of 106 species of introduced flora (weeds) have been recorded throughout the Project Area during field surveys. This includes 14 weeds listed as Declared under the LSA Act and two species also listed as a Weed of National Significance (WoNS) (Table 3.14).

Common and widespread weeds across the Project Area included *Avena* sp. (Oat Grass), *Carrichtera annua* (Wards Weed), *Carthamus lanatus* (Saffron Thistle), *Hordeum* sp. (Barley Grass), *Medicago* sp. (Burr Medic) and *Salvia verbenaca* (Wild Sage). Other more serious invasive species included:

- *Echium plantagineum* (Salvation Jane) - which was widespread in most grassy VAs during spring surveys.
- *Lycium ferocissimum* (African Boxthorn) - which was dominant in some shrubland areas and otherwise scattered throughout.
- *Marrubium vulgare* (Horehound) which formed dense thickets on the tops and sides of hill slopes in many locations.
- *Xanthium spinosum* (Bathurst Burr) was primarily detected growing in creeks and drainage lines, especially in the south-east of GNWF.

Table 3.14: Declared weeds and WoNs detected in the Project Area during field surveys

Scientific Name	Common Name	WoNS	LSA Act Weed Status
Chondrilla juncea	Skeleton Weed		Declared
Chrysanthemoides monilifera	Boneseed	Yes	Declared
Lycium ferocissimum	African Boxthorn	Yes	Declared
Marrubium vulgare	Horehound		Declared
Moraea flaccida	One-leaf Cape Tulip		Declared
Reseda lutea	Cut-leaf Mignonette		Declared
Rosa canina	Dog Rose		Declared
Tribulus terrestris	Caltrop		Declared
Xanthium spinosum	Bathurst Burr		Declared
Convolvulus arvensis	Field Bindweed		Declared
Echium plantagineum	Salvation Jane		Declared
Gazania linearis	Gazania		Declared
Silybum marianum	Variegated Thistle		Declared
Olea europaeus	Olive		Declared

Further details and a full list of weed species detected in the Project Area can be found in Att02_GNWF Ecological Assessment (Section 5.1.7, page 103 and Appendix C).

3.3.8 Native and Introduced Fauna in the Project Area

In total, 128 species of native fauna have been recorded within GNREF by Umwelt (and formerly EBS) during field surveys (targeted and opportunistic) between September 2022 and March 2025. This includes 104 species of bird, four mammals, four native frogs, 15 reptiles and one crustacean. Additionally, up to eight species of bat have been detected, however their positive identification is pending specialist data analysis to confirm. A further 12 non-native fauna species have been detected on site, including four bird and eight mammal species.

Eleven fauna species listed as threatened or migratory were recorded during field surveys, including five EPBC listed species and one migratory species:

- Southern Whiteface (*Aphelocephala leucopsis leucopsis*) (EPBC Act: Vulnerable).
- Flinders Ranges Worm-lizard (*Aprasia pseudopulchella*) (EPBC Act: Vulnerable)
- Fork-tailed Swift (*Apus pacificus*) (EPBC Act: Migratory).
- Chestnut Quail-thrush (*Cinclosoma castanotum*) (NPW Act: Rare)
- White-winged Chough (*Corcorax melanorhamphos*) (NPW Act: Rare).
- Black Falcon (*Falco subniger*) (NPW Act: Rare).
- South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) (EPBC Act: Endangered, NPW Act: Rare).

- Restless Flycatcher (*Myiagra inquieta*) (NPW Act: Rare)
- Elegant Parrot (*Neophema elegans elegans*) (NPW Act: Rare).
- Diamond Firetail (*Stagonopleura guttata*) (EPBC Act: Vulnerable; NPW Act: Vulnerable).
- Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*) (EPBC Act: Endangered, NPW Act: Endangered).

Note that Diamond Firetail is included here, but was detected outside of the Project Area, within the Search Area enroute to site, in the south of the Project Area near the OTL.

Distribution and abundance of each threatened species is described in detail in Section 5.2 (survey results; page 104), Section 6.2 (EPBC Act) (page 131) and Section 7.2 (NPW Act) (page 168) of Att02_GNWF Ecological Assessment. EPBC listed species are also discussed in further detail in Section 4 below.

4 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

2. Description of the environment and matters of national environmental significance

b) A description of any protected matters that are, or have the potential to be, in the proposed action area and surrounds. From the information provided to date, the department considers that the protected matters that may be significantly impacted by the proposed action include, but are not limited to:

Birds

- South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) – Endangered
- Blue-winged Parrot (*Neophema chrysostoma*) – Vulnerable
- Southern Whiteface (*Aphelocephala leucopsis leucopsis*) – Vulnerable
- Diamond Firetail (*Stagonopleura guttata*) – Vulnerable

Reptiles

- Pygmy Bluetongue Lizard (*Tiliqua adelaidensis*) – Endangered
- Flinders Ranges Worm-lizard (*Aprasia pseudopulchella*) – Vulnerable

Plants

- Peep Hill Hop-bush (*Dodonaea subglandulifera*) – Endangered
- Spillers Wattle (*Acacia spilleriana*) – Endangered
- Slender Bell-fruit (*Codonocarpus pyramidalis*) – Vulnerable
- Silver Daisy-bush (*Olearia pannosa* ssp. *pannosa*) – Vulnerable
- Hairy-pod Wattle (*Acacia glandulicarpa*) – Vulnerable
- Superb Groundsel (*Senecio megaglossus*) – Vulnerable
- Trailing Hop-Bush (*Dodonaea procumbens*) – Vulnerable

TECs

- Iron-grass Natural Temperate Grassland of South Australia – Critically Endangered
- Mallee Bird Community of the Murray Darling Depression Bioregion – Endangered

c) For relevant threatened species and ecological communities that are, or have the potential to be present within the proposed action area and surrounds, provide a minimum of:

i. information on their abundance, distribution, ecology and habitat preferences. Provide this in both a regional and local context.

ii. quantification of their extent of habitat within the proposed action area and surrounding areas, including field mapping of identified known and/or potential habitat and records.

iii. assessment of their quality, importance, and ecological function (i.e., for foraging, breeding, roosting or dispersal) of known or potential habitat within the proposed action area and surrounding areas.

iv. assessment of the presence of population(s) of relevant species within the proposed action area with the number of individuals present, and the size of these populations including historical records within the proposed action area and surrounding areas

v. justification on how populations of threatened species and ecological communities are considered stable in a regional context.

vi. assessment detailing capacity for threatened species to disperse into surrounding suitable habitat and the ability of this suitable habitat to support displaced species. With evidence of:

- natural ability of the bird and reptile species to successfully disperse into surrounding habitat,
- success rates of their dispersion,
- considerations on the timing of dispersion (e.g. breeding and non-breeding season),
- the ecological quality of dispersion habitat,
- carrying capacity of dispersion habitat.

PMST searches (most recently generated on 9 April 2025 for the EPBC variation letter, and confirmed on 21 August 2025 for the SIA (Appendix A of Att03_GNWF SIA)) identified that 34 threatened species listed under the EPBC Act might (Known, Likely, May) occur within 5 km of the Project Area (not the defined Search Area which encompasses a 5 km buffer around GNREF), including the Development Envelope and/or Disturbance Footprint for GNWF. This included 13 flora and 21 fauna species, with an additional six species listed as Migratory only. Fourteen of these were found to have historical BDBSA records within the broader Search Area (GNREF).

One additional species was reported from BDBSA records, White-throated Needletail (*Hirundapus caudacutus caudacutus)* (EPBC Act: Vulnerable, Migratory (Marine)) however, the single record has low spatial reliability (1-5 km) and is outside of the DCCEEW (DCCEEW 2024e) listed range for the species, which occurs further to the south. As the species is a Migratory aerial forager and the record is over 50 km from the WF boundary, it is considered unlikely to occur or be impacted by the GNWF Project and is not considered further in this report.

Following field surveys, each species was assessed for its likelihood of occurrence in the Development Envelope and Disturbance Footprint. This assessment determined that seven flora and six fauna species, that are threatened under the EPBC Act, are either known to occur, considered highly likely to occur, likely to occur or to be possible occurrences in the Development Envelope and / or Disturbance Footprint. These species are listed in Table 4.1.

The following sections (Section 4.1 to Section 4.16) provide further detail on each MNES which has potential to occur within the GNWF Project Area, including information in their ecology, habitat, abundance, known threats, occurrence in the Project Area and the regional context of each species, with regard to NVIS vegetation mapping presented in Section 3.3.7.2.

Additionally, for each species a regional assessment is presented for the IBRA bioregions under development, indicating the 'status description' and 'trend' of that species. These assessments have been obtained from the South Australian Department of Environment and Water (DEW) NatureMaps resource. The regional assessments are based on results of a Regional Species Conservation Assessment Project which provides a framework for assigning a conservation status, based on the IUCN Red List Categories and Criteria, and population trend for all native vertebrate animals and vascular plant species in each departmental region (DEW, 2025b). The resulting assessment is based on a combination of quantitative and qualitative data, and specialist advice.

Table 4.1: Likelihood of occurrence of MNES potentially relevant to GNWF

MNES	EPBC Act[1]	Likelihood in Disturbance Footprint	Likelihood in Project Area
EPBC Act Threatened ecological communities			
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	EN	Unlikely	Unlikely
Iron-grass Natural Temperate Grassland of South Australia	CE	Known	Known
Mallee Bird Community of the Murray Darling Depression Bioregion	EN	Known	Known

MNES	EPBC Act[1]	Likelihood in Disturbance Footprint	Likelihood in Project Area
Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia	CE	Unlikely	Unlikely
EPBC Act Threatened Flora			
Acacia glandulicarpa (Hairy-pod Wattle)	VU	Unlikely	Possible
Acacia menzelii (Menzel's Wattle)	VU	Unlikely	Unlikely
Acacia spilleriana (Spiller's Wattle)	EN	Unlikely	Possible
Caladenia tensa (Greencomb Spider-orchid, Rigid Spider-orchid)	EN	Unlikely	Unlikely
Codonocarpus pyramidalis (Slender Bell-fruit, Camel Poison)	VU	Unlikely	Unlikely
Dodonaea procumbens (Trailing Hop-bush)	VU	Possible	Known (within Mokota CP only)
Dodonaea subglandulifera (Peep Hill Hop-bush)	EN	Unlikely	Possible
Lachnagrostis limitanea (Spalding Blown Grass, Spalding Blown grass)	EN	Unlikely	Unlikely
Olearia pannosa subsp. *pannosa* (Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush)	VU	Unlikely	Possible
Pterostylis xerophila (Desert Greenhood)	VU	Unlikely	Unlikely
Senecio macrocarpus (Large-fruit Fireweed, Large-fruit Groundsel)	VU	Unlikely	Unlikely
Senecio megaglossus (Superb Groundsel)	VU	Unlikely	Possible
Swainsona pyrophila (Yellow Swainson-pea)	VU	Unlikely	Unlikely
EPBC Act Threatened Fauna – Mammals			
Nyctophilus corbeni (Corben's Long-eared Bat, South-eastern Long-eared Bat)	VU	Unlikely	Unlikely
EPBC Act Threatened Fauna – Birds			
Amytornis striatus howei (Murray Mallee Striated Grasswren, Striated Grasswren (sandplain))	EN	Unlikely	Unlikely
Aphelocephala leucopsis (Southern Whiteface)	VU	Known	Known

MNES	EPBC Act[1]	Likelihood in Disturbance Footprint	Likelihood in Project Area
Calidris acuminata (Sharp-tailed Sandpiper)	VU, MW	Unlikely	Unlikely
Calidris ferruginea (Curlew Sandpiper)	CE, MW	Unlikely	Unlikely
Falco hypoleucos (Grey Falcon)	VU	Unlikely	Unlikely
Gallinago hardwickii Lantham's Snipe, Japanese Snipe	VU, MW	Unlikely	Unlikely
Grantiella picta (Painted Honeyeater)	VU	Unlikely	Unlikely
Leipoa ocellata (Malleefowl)	VU	Unlikely	Unlikely
Lophochroa leadbeateri leadbeateri (Major Mitchell's Cockatoo (eastern), Eastern Major Mitchell's Cockatoo, Pink Cockatoo (eastern))	EN	Unlikely	Unlikely
Melanodryas cucullata cucullata (South-eastern Hooded Robin, Hooded Robin (south-eastern))	EN	Likely	Known
Neophema chrysostoma (Blue-winged Parrot)	VU	Possible	Possible
Pedionomus torquatus Plains-wanderer	CE	Unlikely	Unlikely
Polytelis anthopeplus monarchoides (Regent Parrot (eastern))	VU	Unlikely	Unlikely
Rostratula australis Australian Painted Snipe	EN	Unlikely	Unlikely
Stagonopleura guttata (Diamond Firetail)	VU	Possible	Possible
EPBC Act Threatened Fauna – Reptiles			
Aprasia pseudopulchella (Flinders Ranges Worm-lizard)	VU	Known	Known
Tiliqua adelaidensis (Pygmy Blue-tongue Lizard, Adelaide Blue-tongue Lizard)	EN	Known	Known
EPBC Act Threatened Fauna – Amphibians			
Litoria raniformis (Southern Bell Frog, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog)	VU	Unlikely	Unlikely

MNES	EPBC Act[1]	Likelihood in Disturbance Footprint	Likelihood in Project Area
EPBC Act Threatened Fauna – Fish			
Galaxias rostratus (Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow)	CE	Unlikely	Unlikely
Maccullochella peelii (Murray Cod)	VU	Unlikely	Unlikely
EPBC Act Threatened Fauna – Migratory			
Actitis hypoleucos (Common Sandpiper)	MW	Unlikely	Unlikely
Calidris melanotos (Pectoral Sandpiper)	MW	Unlikely	Unlikely
Pandion haliaetus Osprey	MW	Unlikely	Unlikely
Motacilla cinerea (Grey Wagtail)	MT	Unlikely	Unlikely
Motacilla flava (Yellow Wagtail)	MT	Unlikely	Unlikely
Apus pacificus (Fork-tailed Swift)	MM	Likely	Likely

[1] EPBC Act Status: Critically Endangered (CE); Endangered (EN), Vulnerable (VU); Migratory Marine (MM); Migratory Terrestrial (MT); Migratory Wetland (MW).

It should be noted that a number of species have been included within the RFI, and consequentially Preliminary Documentation, that were potentially significantly impacted upon only due to the previously proposed OTL-Alternative within which targeted surveys had not been undertaken at the time of Referral. This OTL-Alternative alignment has since been removed from the Project (as per the Variation letter dated 9 April 2025). As such, while these MNES are conservatively reported as possibly occurring outside of the Disturbance Footprint, targeted surveys have ensured with high confidence that these MNES are unlikely to be impacted upon. These MNES are included herein, but discussion around impacts to these species is minimal. Provisions will be in place in a CEMP and any associated sub-plans to address the potential for 'unexpected finds' of MNES within the Project Area. These MNES include:

- *Acacia glandulicarpa* (Hairy-pod Wattle)
- *Codonocarpus pyramidalis* (Slender Bell-fruit)
- *Dodonaea subglandulifera* (Peep Hill Hop-bush)
- *Olearia pannosa* ssp. *pannosa* (Silver Daisy-bush)
- *Senecio megaglossus* (Superb Groundsel).

The following sections outline the conservation status and listing details of various threatened species identified as relevant to the Project Area. Each species is discussed in accordance with their listing status under the EPBC Act, followed by an alphabetical arrangement based on their scientific names. The sections provide detailed information about the legal status, related documentation, ecology, distribution and key threats for each species and threatened ecological community, as well as providing context around their occurrence in relation to the Project Area and at significance at a regional level.

4.1 Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*) – Endangered

4.1.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Pygmy Blue-tongue Lizard, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.2.

Table 4.2: Pygmy Blue-tongue Lizard conservation documentation

EPBC Status	**Listed as Endangered** (Date effective 16 July 2000)
Approved Conservation Advice	Department of Climate Change, Energy, the Environment and Water (2023d). Conservation Advice for *Tiliqua adelaidensis* (pygmy blue-tongue lizard). Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/1270-conservation-advice-31082023.pdf. In effect under the EPBC Act from 31-Aug-2023.
Listing Advice	The species is eligible for listing under the EPBC as it was listed as Endangered under Schedule 1 of the preceding Act, the *Endangered Species Protection Act 1992* (Cth). The species is eligible for listing due to its limited Area of Occupancy (AOO) estimated to be less than 500 km^2, severely fragmented occurrence, and continuing decline in AOO, the area, extent and / or quality of habitat and the number of locations or subpopulations and number of mature individuals.
Adopted / Made Recovery Plan	Duffy et al. (2012). *Recovery Plan for the Pygmy Bluetongue Lizard* Tiliqua adelaidensis. Department of Environment and Natural Resources, South Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/recovery-plan-pygmy-bluetongue-lizard-tiliqua-adelaidensis-2012. In effect under the EPBC Act from 24-Jul-2012.
Adopted / Made Threat Abatement Plan	Department of Climate Change, Energy, the Environment and Water (2024c). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24-Dec-2024.
Policy Statements and Guidelines	*Survey guidelines for Australia's threatened reptiles. EPBC Act survey guidelines 6.6* (Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC 2011a) [Admin Guideline]. Schofield (2006). Pygmy Bluetongue Lizards: Best Practice Management Guidelines for Land Holders, report for the Department for Environment and Heritage, Adelaide. (SA). Microsoft Word - PBT_Guideline_fixed_Sect_6_2006-11-28.doc

4.1.2 Ecology

The Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*) is the smallest member of the genus *Tiliqua,* colloquially referred to as the 'Blue-tongue Lizards'. A moderately sized skink, up to 20 cm in length, it has a relatively heavy body, a large head, and short limbs. Colouration varies from grey, brown to orange brown and includes a series of black flecks along the back and flanks and orange coloured eye with black pupil. Unlike other members of the genus, the PBTL has a pink tongue (Hutchinson et al.1994; Duffy et al. 2012).

The species has the unique habitat requirement of inhabiting vertical burrows dug by trapdoor (*Mygalomorphae*) and wolf (*Lycosidae*) spiders. Burrow entrances are circular in cross-section, up to 20 mm in diameter, and with an average depth of up to 25 cm. Only one adult is found per active burrow, with individuals utilising the same burrow for extended periods of time. Optimal burrow size is more than 13 mm diameter and more than 100 mm deep.

PBTLs are omnivorous, mostly feeding on medium-sized arthropods that they ambush from their burrow (Hutchinson et al.1994). Analyses of scats and stomach contents have recorded the remains of grasshoppers, ants, small spiders, beetles, snails, cockroaches and plant material (including *Dianella* spp. seed, possible chenopod material, and several leaves and flowers of introduced *Medicago* spp.) (Ehmann 1982; Hutchinson et al.1994; Milne 1999; Fenner et al. 2007).

The mating season occurs between October and November (Milne and Bull 2000), with females heavily gravid (pregnant) by January, subsequently bearing live young. Females are sexually mature from approximately three years of age and can have up to four young each season. The young will remain with their mothers from mid-January to mid-March, with neonate dispersal occurring thereafter (Clarke 2000; Duffy et al. 2012). Males are more active during the mating season as they away from their burrows in search of female mating partners, while neonates and females are comparatively more active during late summer as they disperse.

PBTLs go into brumation (a state of torpor exhibited by reptiles) over winter (June to August). Males are more active during the mating season, moving away from their burrows to seek female mating partners (Schofield et al. 2012). Neonates and females are more active during late summer (February and March) as they disperse, with females shifting burrows if neonates do not leave the maternal burrow.

4.1.2.1 Dispersal

The PBTL is a highly sedentary species with biological traits which limit their ability to disperse into surrounding habitats. They are thought to occupy small home ranges, rarely moving further than a metre from an established burrow, except during mating or juvenile dispersal times (Ebrahimi and Bull 2014a). A study by Milne (1999) found that within a small study population lizards usually dispersed less than 20 m and never more than 70 m. Outside of these dispersal events, they exhibit limited movement between habitat patches, restricting their natural dispersal. Studies have found that there is male biased movement during the mating season, however this is related to reproduction activity, not dispersal, with males and females tending to disperse a similar small distance from their natal burrow (Schofield 2015; Schofield et al. 2012).

Dispersal is restricted by the availability of suitable vacant burrows in the dispersal landscape, and the presence and density of these burrows determines the carrying capacity of the environment. Other factors which influence the success rates of dispersion include the heightened risk of predation during movements outside of burrows, and the existing density of populations in the surrounding habitat, with territorial interactions observed between conspecifics (Fenner and Bull 2011).

Genetic studies of PBTL indicate that populations are genetically isolated, with evidence of gene flow between widely separated populations likely to be indicative of historical population connectivity (Schofield et al. 2014), not recent movement between populations. The study found that there are distinct northern and southern population genetics and suggested that each population should be monitored and managed separately to preserve local evolutionary processes and the ecological viability of populations.

Another study found restricted gene flow between sample sites separated by distances ranging from 1.7 km to 71.6 km, as well as a significant genetic structure within sample sites at distances up to 30 m, suggesting restricted gene flow even in small patches of contiguous habitat (Smith et al. 2009). Regardless high genetic diversity has been maintained across small and large scales despite fragmentation and decline in area of native grassland habitats, and there appears to be inbreeding avoidance mechanisms in place (Schofield 2015; Smith et al. 2009). Low mobility of individual PBTL may lead to naturally distinct populations even without habitat fragmentation, though habitat decline and fragmentation caused by roads unsuitable habitat patchwork, is likely to reduce opportunity for this gene flow (Smith et al.2009), such as through infrequent successful longer distance dispersal movements by juveniles.

4.1.3 Habitat

PBTLs are known to occupy native perennial grassland habitats. Even highly degraded grasslands (dominated by exotic species and subject to heavy livestock grazing) are potential habitat, providing that the area is un-ploughed, and the soil structure remains intact (Milne 1999). The species has been recorded at sites dominated by species including *Austrostipa* spp. (Spear-grasses), *Rytidosperma* spp. (Wallaby Grasses), *Maireana* spp. (Bluebush), *Aristida behriana* (Brush Wire-grass) and *Lomandra* spp. (Iron-grasses) (Hutchinson et al.1994; Souter et al. 2007).

PBTLs are known from a range of soil types, but more frequently found in greater abundance at sites with more free-draining grey-brown or red calcareous soils which are suitable for constructing spider burrows (Souter 2003). Higher densities of PBTL are reported from lower slopes of hillsides where soil depth and therefore spider burrows are deepest (Duffy et al. 2012).

4.1.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

However, habitat attributes that are considered critical to the survival of the species include:

- Spider burrows of suitable diameter and depth.
- Open grassland with tussock grasses and inter tussock spaces allowing for basking and feeding.

- Intact soil profiles with free draining grey-brown or red calcareous soils.
- Topographic features with a combination of the above attributes on the lower slopes of hillsides are habitat critical to the survival of the species.

Therefore, all locations where PBTL are currently recorded or known to occur are considered critical habitat for the species.

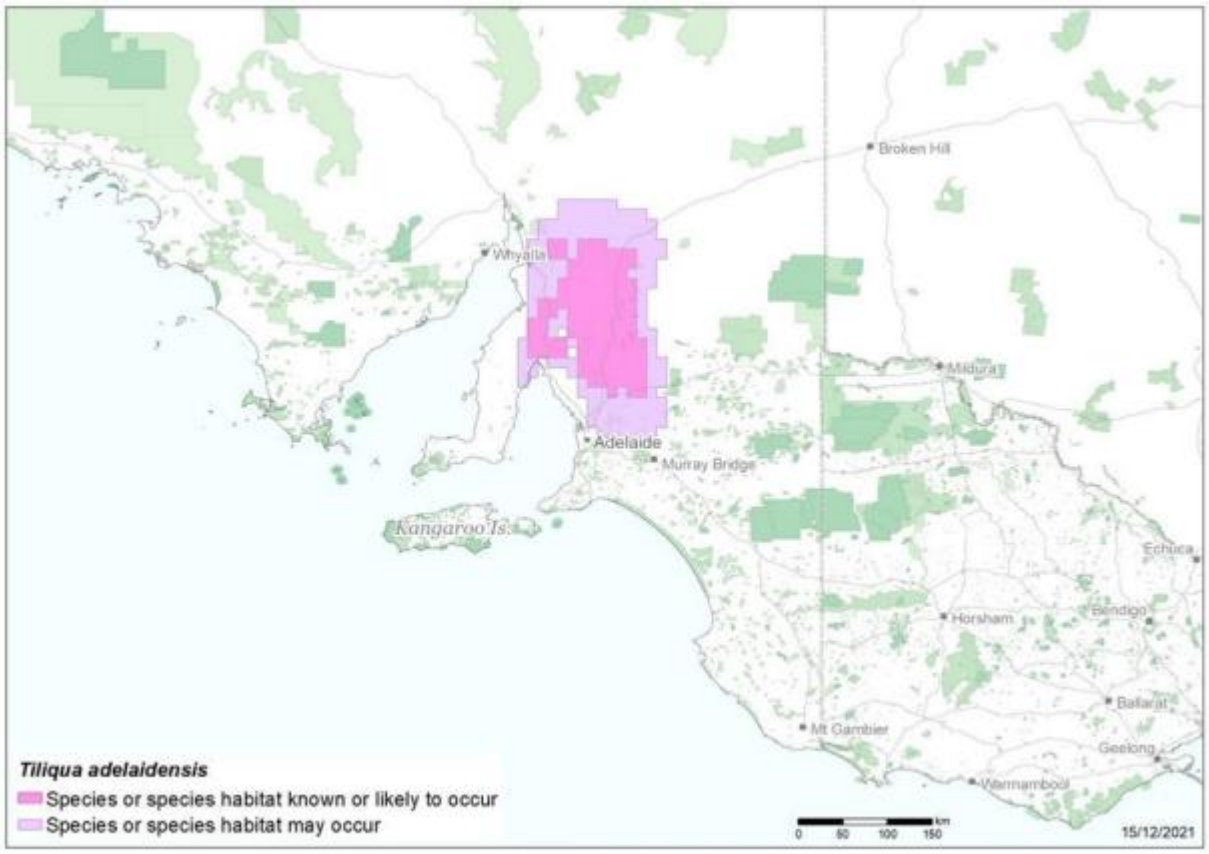
4.1.4 Distribution and Abundance

The Pygmy Blue-tongue Lizard is endemic to the Mid-North region of South Australia, with an estimated Extent of Occurrence (EOO) of 7,000 km^2 and a disjunct AOO of 500 km^2 (DCCEEW 2023d) (Figure 4.1). Distribution modelling suggests that the species' range may contract further in response to climate change, particularly in the more arid northern reaches of its range (DCCEEW 2023d). The extent of the historical natural range of the species unknown as prior to 1992 only 20 specimens, with imprecise location information, were collected (Smith et al.2009).

The total population of the species is unknown. A previous national estimate of 5,000 mature individuals was produced in 2000 based on the 10 subpopulations that were known to occur at the time (Milne et al. 2000). Further survey work has since been undertaken in the region which has resulted in the discovery of an additional 20 subpopulations across approximately 37 sites (Clayton et al.2020 in DCCEEW 2023d). More recently, due to PBTL Recovery Plan efforts, university studies and proposed wind farm flora and fauna assessments, surveys of PBTL habitat have increased and revealed several new populations which have not been captured in the existing literature for the species. Despite this, overall population size remains difficult to estimate with confidence, due to natural fluctuations and the cryptic nature of the species and species habitat.

A recent study at Tiliqua Nature Reserve (Bilby et al. 2025) developed a method for long-term monitoring of PBTL populations and estimated the local population within a 53-ha area of suitable habitat in broader the 81-ha reserve to be between 1,723 (±298) and 2,001 (±400) individuals.

Other sub-population estimates are limited, however a recent study by Michael et al. (2024) estimated a sub-population at Jamestown (~175 ha survey area), in high quality habitat, to have approximately 14 PBTL per hectare, whilst another population of lower quality habitat near Peterborough (~350 ha survey area) was estimated to have 8 PBTL per hectare.



Source: Base map Geoscience Australia; species distribution data Species of National Environmental Significance database.

Figure 4.1: Modelled distribution of PBTL (DCCEEW 2023d)

4.1.4.1 Important Populations

All Pygmy Blue-tongue Lizard populations including subpopulations, as described in the species' Conservation Advice, are considered important due to the species' restricted and fragmented distribution (DCCEEW 2023d).

Research suggests that the more southerly sub-populations may be of higher conservation significance due to the threat of climate change on more northern populations (Schofield et al. 2014).

4.1.5 Key Threatening Processes

The primary threats to the Pygmy Blue-tongue Lizard, as per the Approved Conservation Advice (DCCEEW 2023d), is the clearance of native grasslands for urban industrial and infrastructure development and the intensification of agricultural activities (i.e., the conversion of land previously used for grazing into cropping land). Other threats include:

- Climate change.
- The collection of individuals for the illegal wildlife trade.
- Invasive exotic grasses degrading remnant grassland habitat.
- Inappropriate fire regimes.

- Inappropriate use of pesticides, herbicides and fertilisers, changing the composition of habitat and food resource availability.
- Predation by native and introduced species.

4.1.6 Occurrence in Project Area

The Pygmy Blue-tongue Lizard is known to occur within the Disturbance Footprint and broader Project Area (Umwelt 2025d). The GNWF Project Area is broadly known to contain suitable habitat for PBTL, comprising large areas of uncultivated native and exotic grasslands on hillslopes within their known distribution, and a known population occurring within the WF at Tiliqua Nature Reserve.

Survey Findings

Targeted field surveys to detect to PBTL within the Project Area have identified a total of 186 PBTL from 21,641 spider burrows (Table 4.3, Figure 4.2). This includes 138 PBTL from within the Disturbance Footprint in 2024 and a further 10 PBTL within previously unsurveyed portions of the updated Disturbance Footprint current in April 2025. Other surveys have included micro siting surveys to allow for better understanding of local populations around proposed infrastructure and within the Development Envelope, which found 19 PBTL.

Additionally, pre-clearance micro siting surveys were undertaken within the Disturbance Footprint for PBTL prior to geotechnical investigations to ensure that no individuals were impacted, which resulted in a further 19 observations of PBTL, however, given that many of these areas had been previously surveyed, some of these observations may represent the same individuals already surveyed.

Table 4.3: Summary of PBTL targeted survey results

Survey	Survey Timing	Number of PBTL Detected	Number of Burrows Searched
Disturbance Footprint Targeted	February / March 2024	138	15,534
Micrositing in Development Envelope	February / March 2024	16	758
Geotechnical Investigations	January to March 2025	19	3,270
Updated Disturbance Footprint Targeted	April 2025	10	1,795
Other micro siting	Various	3	284
Total		**186**	**21,641**

The status of known PBTL records within the Disturbance Footprint, Development Envelope and GNWF Project Area, based on a compilation of recent Umwelt, University and historical BDBSA records, are presented in Table 4.4, with a total of 55 known records in the Disturbance Footprint, 119 in the Development Envelope, and 1,466 in the Project Area. These data are likely to be an overestimation as they reflect numbers of individuals at the time of the record collection, noting that records may no longer be current given that population numbers are known to fluctuate, and may also represent duplicate records of the same individuals on separate survey occasions.

Detailed findings of the PBTL targeted surveys are presented in Att09_GNWF PBTL Assessment.

Table 4.4: Number of known Pygmy Blue-tongue Lizard records in GNWF Project Area within Disturbance Footprint, Development Envelope and GNWF Project Area

Source of Records	GNWF Project Area	Development Envelope	Disturbance Footprint	Total
EBS / Umwelt	57	74	52	**183**
Recent Unpublished University records	351	7	0	**358**
BDBSA	1,058	38	3	**1,099**
Total	**1,466**	**119**	**55**	

Habitat Suitability

Prior to surveys commencing, and based on the information available in the literature, Vegetation Associations (VAs) which were found to broadly match the description of suitable habitat within GNWF included Lomandra Grassland (VA6) and Native *Austrostipa* spp. Grassland +/- emergent trees (VA11a/b), with possible suitability in areas of exotic grassland.

Following survey work, one additional VA was found to provide suitable habitat, *Maireana rohrlachii* Shrubland (VA9), which comprised low shrubs with an understory of native and exotic grass and somewhat stony surface covering. No PBTL were found in areas classified as exotic grassland, whilst two PBTL were found on the edge of cropped vegetation or in areas marked as cleared which correlated with farm tracks through areas of suitable habitat.

The location of PBTL records and burrow data was interrogated further to determine if factors such as slope, aspect, altitude, soil type, landform and a range of other factors could explain the distribution of PBTL within otherwise suitable habitat. There was no strong correlation between the location of PBTL records, or burrows, which could be explained by any of these factors.

Spider burrow density may provide an indication of the carrying capacity of a habitat, however, not all burrows are likely to be suitable, and other factors may influence the suitability of habitat. Based on the number of burrows encountered per area searched during targeted surveys, where PBTL were detected, the highest density of burrows was observed in VA9, with 83.93 potential burrows per hectare, followed by VA6 (71.34 burrows / ha) and native grassland (67.04 burrows / ha). This also correlates with the relative density of PBTL in each VA, described further in Table 4.6.

Given the widespread and patchy distribution of PBTL across the WF, habitat suitability mapping indicates that most of the WF will be considered as 'likely' PBTL habitat, with 'known' habitat restricted to within 50 m of recent and historical records of PBTL. 'Unlikely' PBTL habitat is restricted to patchy areas of cropped land, drainage lines and densely wooded mallee vegetation in the east of the WF and southern half of the OTL, as well as grassland areas which otherwise did not meet the habitat criteria. A total of 20.04 ha of 'Known' habitat and 348.06 ha of 'Likely' habitat is mapped within the Disturbance Footprint (Figure 4.3). This compares with a total of 11,154.12 ha of 'known' and 'likely' habitat across the whole GNWF Project Area (Table 4.5).

Based on the survey findings and the location of historical records within the GNWF Project Area, the south-central portion of the WF is deemed to be of the highest habitat suitability for the PBTL. The outwash areas in the far southeast corner of the WF and woodland habitats were found to be least suitable. In general, Chenopod shrublands were found to be unsuitable, except where a significant grassy understorey was present and the shrubland occurred on low to medium hills. No PBTLs were found in flat / low elevation areas, and it is considered unlikely to provide suitable habitat. The species is not known to occur outside of the Flinders Lofty Block IBRA bioregion, and therefore habitat that occurs in the far south of the Project Area, within the MDD Bioregion is also considered unlikely habitat.

Table 4.5: Summary of known, likely and unlikely PBTL habitat to be impacted and retained in the Project Area

Likelihood	Description	WF (ha)	OTL (ha)	Total in DF (ha)	Total in GNWF (ha)
Known	All areas within 50 m of a known location of a PBTL including recent and historical records. Records include those collected by Umwelt and historical records sourced from the Biological Database of South Australia (BDBSA) (Recordset number: DEWNRBDBSA240207-2).	18.98	1.06	20.04	181.86
Likely	Areas in which there are no PBTL records, but vegetation is considered potentially suitable habitat based on the literature and preferred habitat parameters are available (including slopes and hills, suitable soil types without dense surface rock cover).	338.41	9.65	348.06	10,972.26
Subtotal		**357.38**	**10.71**	**368.10**	**11,154.12**
Unlikely	Vegetation associations in which there are no PBTL records and are otherwise not considered suitable habitat including: • Areas where no burrows were detected. • Non-grassy shrubland, woodland and mallee vegetation associations. • Habitat which otherwise meets the suitability criteria but occurs within the MDD bioregion. • Habitat which otherwise meets the criteria but occurs on flats / plains, or on sandy / shaley soil, or which has high surface rock density.	109.48	59.23	168.71	6,268.85
Grand Total		**466.86**	**69.94**	**536.81**	**17,422.97**

Population Density Estimates

PBTL density estimates are likely to vary across the site according to availability of known (and unknown) habitat preference parameters. The previously referenced study at Tiliqua Nature Reserve (Bilby et al. 2025) estimated PBTL density of between 32.51 and 37.75 PBTL per hectare based on surveying approximately 11.79% of the suitable habitat and 7.72% of the total reserve area. However, this location has been actively managed for PBTL for over 15 years and contains ideal habitat, with gently undulating

open native tussock grassland and intermittent grazing regime appropriate for maintaining ideal vegetation cover for PBTL.

Estimates of population density within the Disturbance Footprint and broader Project Area are extrapolated based on a density index calculated per hectare for each vegetation association, based on targeted survey results. A range of calculations were undertaken to obtain a lower and upper estimate for PBTLs in the Disturbance Footprint and GNWF Project Area.

The Disturbance Footprint covers a range of habitat conditions and parameters, from steep and rocky hilltops where WTG hardstands are concentrated, to more gently sloping terrain for access tracks, OTL and electrical cabling. Surveys covered an estimated 360.33 ha of which 146.87 ha are within the current Disturbance Footprint, following design optimisation to minimise impacts to MNES. This search area is equivalent to 27.46 % of the entire current Disturbance Footprint, including up to 39.5 % of 'suitable' vegetation associations (VA6, VA9, VA11a/b and exotic), demonstrating an intensive search effort, well above that which was reported in Bilby et al. (2025) (see above). Regarding the Development Envelope, approximately 10.85 % of suitable vegetation has been surveyed, equivalent to the referenced study. This search effort provides a high confidence in estimates for both the Disturbance Footprint and Development Envelope, which can also be extrapolated into the surrounding habitat.

Mapped known and likely habitat within these 'suitable' vegetation associations further reduces the area of habitat that PBTL are likely to occupy. An extrapolation of PBTL density per hectare, based on the search area, applied to proportionally to vegetation associations within known and likely habitat, finds that the GNWF Project may directly impact an estimated 206 individuals (range 192 to 274), from an estimated total of 6,519 potential individuals (range 5,596 to 8,991) in GNWF. Estimates of habitat and individual impacts are detailed in Table 4.6, with additional ranges and assumptions listed above for both habitat and number of individuals, presented in Table 4.7, using a range of calculation methods. All calculations are based on survey findings and represent an estimate of the population at a snapshot in time.

Assessment of the appropriateness and validity of the approach in terms of survey methodology, survey effort, described limitations, habitat suitability mapping and population estimates has been validated by PBTL Recovery Team Chair, Professor Mike Gardner (see supporting letter in Appendix B).

Table 4.6: Coarse estimate of number of PBTL per hectare proportional to each Vegetation Association and projected estimate for Disturbance Footprint and GNWF Project Area based on mapped known and likely habitat

Vegetation Association	Approx. search area (ha)	No. PBTL detected (Umwelt)	PBTL density estimate per ha	Impacted known, likely and unlikely habitat (ha)	Known, likely and unlikely habitat in GNWF (ha)	Estimate of impacted PBTL individuals	Estimate of PBTL in GNWF
VA6	14.47	8.00	0.55	7.22	1,727.93	3.99	955.56
VA9	17.78	29.00	1.63	16.54	544.60	26.98	887.70
VA11a	262.43	141.00	0.54	325.44	8,699.14	174.86	4,673.99
VA11b	0.50	0.00	0.00	0.9	27.47	0.00	0.00
Exotic~	10.24	0.00	0.00	17.39	148.92	0.00	0.00

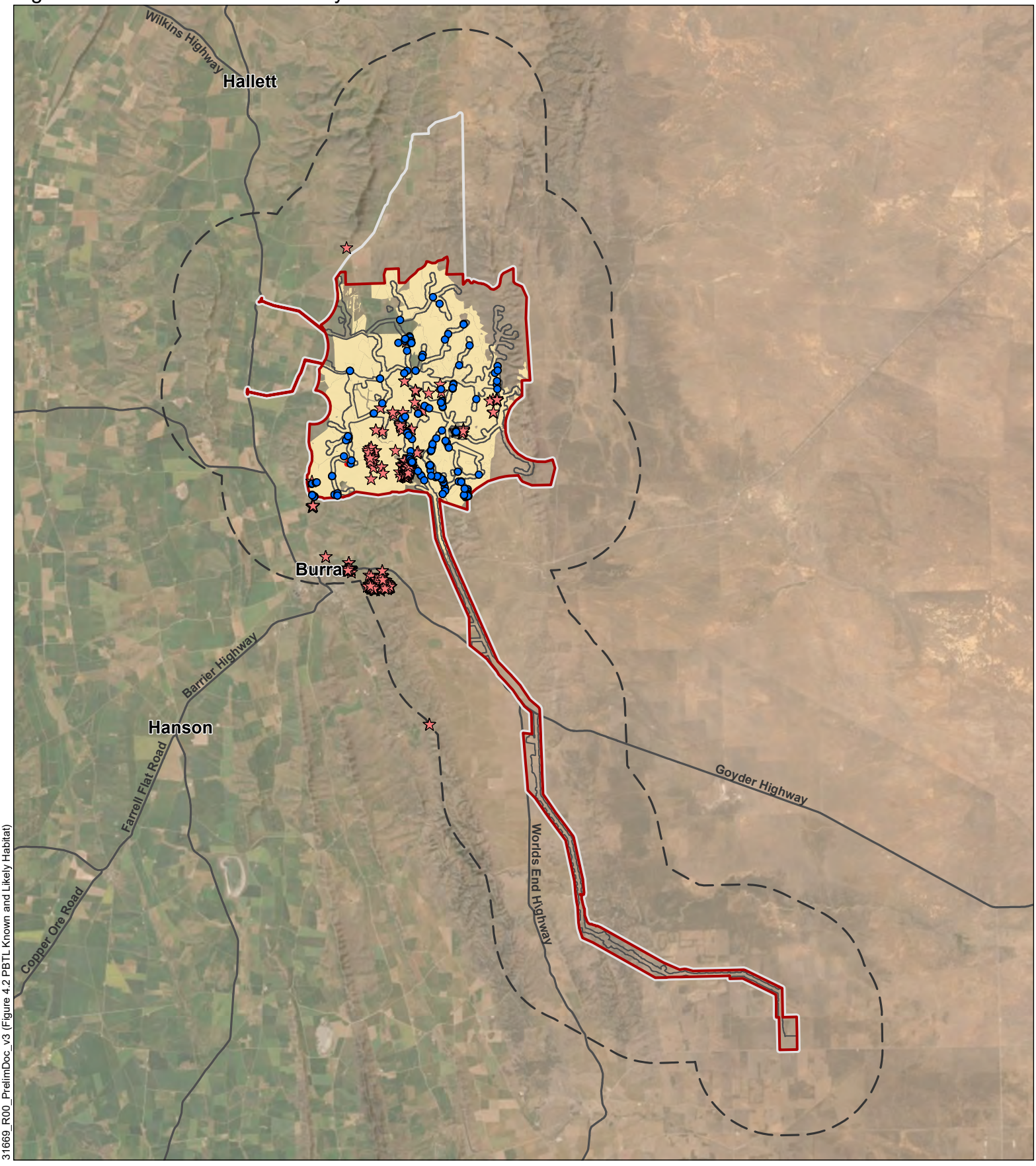
Vegetation Association	Approx. search area (ha)	No. PBTL detected (Umwelt)	PBTL density estimate per ha	Impacted known, likely and unlikely habitat (ha)	Known, likely and unlikely habitat in GNWF (ha)	Estimate of impacted PBTL individuals	Estimate of PBTL in GNWF
Cropped	5.54	2.00	0.36	0.01	1.98	0.00	0.71
Existing clearance*	24.99	3.00	0.12	0.6	3.02	0.07	0.36
All other VAs	24.39	0.00	0.00	168.72	6,549.49	0.00	0.00
Total or average^	**360.33**	**183.00**	**0.51^**	**536.82**	-	**205.90**	**6,519.04**

Note: Figures in this table have been rounded to two decimals, which may result in minor discrepancies when compared to unrounded totals

Table 4.7: PBTL habitat and population estimate assumptions

Parameter	Upper Estimate (ha)	Assumptions	Lower Estimate	Assumptions
PBTL known and likely habitat in Disturbance Footprint	368.10	Includes all likely and known mapped habitat in VA6, VA9, VA11a/b, Exotic grassland, and other minor occurrences. Based on habitat description.	349.20	Mapped likely and known habitat, further excluding exotic grassland, VA11b and other minor occurrences as no PBTL were detected in those VAs despite otherwise being considered potentially suitable.
PBTL habitat in Project Area	11,154.14	As above but for GNWF Project Area.	10,971.67	As above, but for GNWF Project Area.
Number of PBTL estimated in Disturbance Footprint	273.78	Not proportional to VA, based on the overall average density of PBTL per area searched (0.51) multiplied by the total Disturbance Footprint (536.82 ha) (not related to known and likely habitat)	191.75	Not proportional to VA, based on the overall average density of PBTL per area searched in known and likely habitat (0.52) multiplied by the total Disturbance Footprint within known and likely habitat (368.09 ha).
Number of PBTL in GNWF	8,991.03	Overall average density of PBTL per area searched (0.51) *total Project Area (17,703.63)	5,595.55	Average density of PBTL per area searched (0.51) in VA6/9/11a only * total DF in suitable habitat (based on known / likely mapping: 10,971.67 ha)

Figure 4.2: PBTL Known and Likely Habitat in GNWF and known records within the Search Area



GNWF
GNREF
Development Envelope
Search Area
Pygmy Blue-tongue Lizard record (Umwelt)
Pygmy Bluetongue record (BDBSA)

PBTL Habitat
Known
Likely

31669_R00_PrelimDoc_v3 (Figure 4.2 PBTL Known and Likely Habitat)

umwelt

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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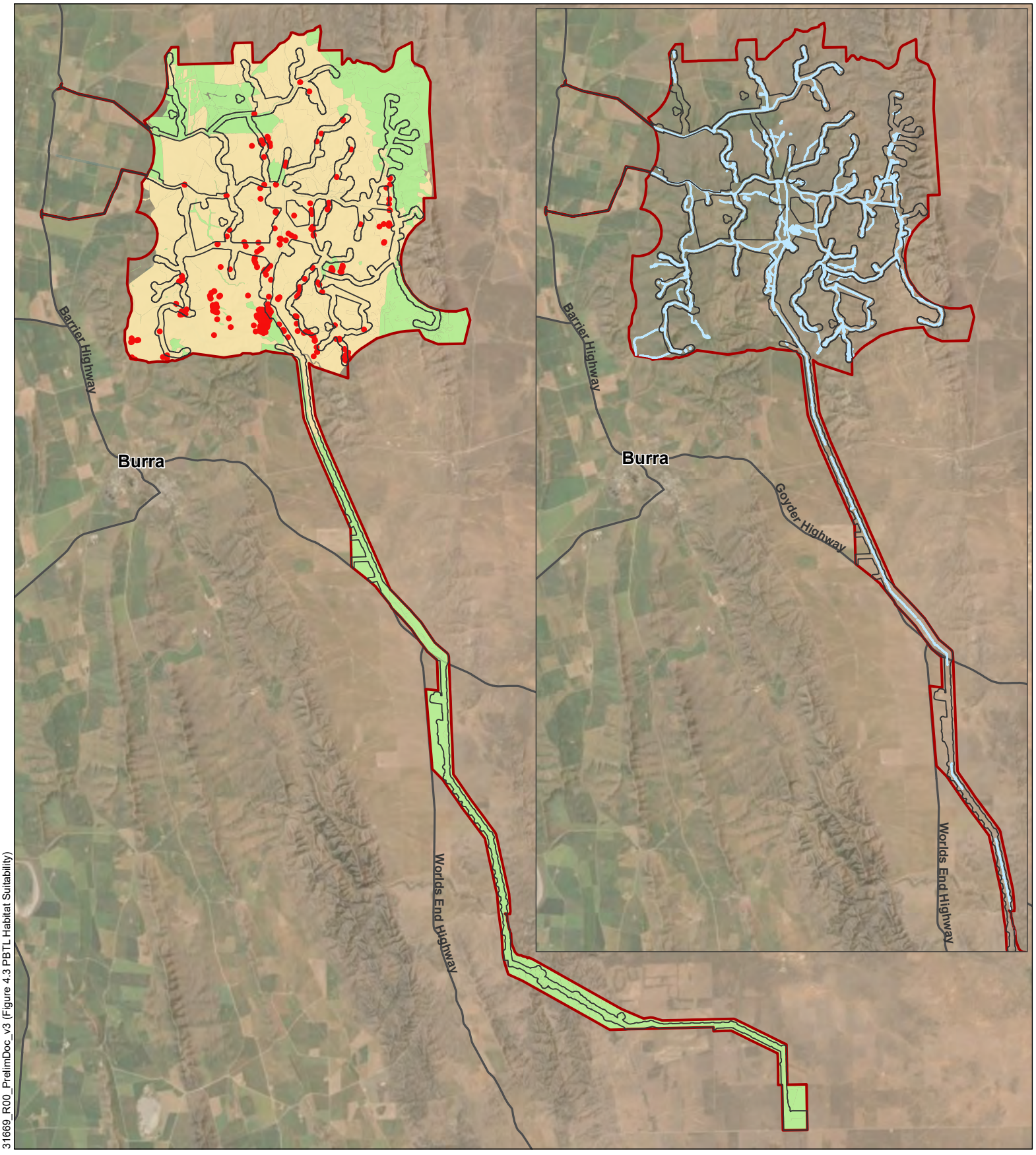
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GDA2020 MGA Zone 54

N

0 2.5 5 km

Figure 4.3: PBTL Habitat Suitability Mapping within the GNWF



GNWF
Development Envelope
Searched area

PBTL Habitat
Known
Likely
Unlikely

31669_R00_PrelimDoc_v3 (Figure 4.3 PBTL Habitat Suitability)

umwelt

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

N

0 2.5 5 km

4.1.7 Regional Context

The PBTL is endemic to South Australia where it has a restricted current and historical known range. It is only known to occur within the Flinders Lofty Block and Eyre Yorke Block (northern Yorke Peninsula only) Bioregions, and in four subregions incorporating the Mid-North (Olary Spur and Broughton) and Yorke Peninsula (St Vincent), south towards Adelaide where they are considered regionally Extinct in the Mount Lofty Ranges. The population at Burra, extending into the GNWF Project Area is central within their known north-south distribution (Figure 4.4), and occurring on the eastern extent, before suitable grassland habitat drops away into flat chenopod and mallee dominated plains.

The PBTL is known to occur in grasslands on slopes and hills, where they occupy a range of grassland conditions, including areas which are dominated by exotic pasture weeds and heavily grazed by sheep and cattle. The impacts of grazing on PBTL are not fully understood, however, some studies suggest that grazing practices help to maintain suitable grassland structure, which would otherwise be overrun by annual exotics (Gardner 2024). Other studies have found that while grazing may not directly impact PBTL occupying strong and deep burrows, there may be more subtle impacts on the digging behaviour of spiders leading to a net loss in burrow numbers over time (Clayton and Bull 2015).

PBTL have also been recorded in disturbed soil edging cropped land; however, it is thought that ploughed soil remains unsuitable due to the soil disturbance which limits the ability of burrowing spiders to build burrows of suitable integrity to house a PBTL (Ebrahimi and Bull 2015; Smith et al. 2009). Occupancy of burrows in crops may be indicative of PBTL dispersal behaviour, rather than permanent occupancy, however this has not been explored in detail in the available literature. It is not known what length of time is required to stabilise the soil such that it becomes suitable to be occupied by PBTL. The distribution of records across the Mid-North demonstrates that PBTL are resilient to agricultural practices, and many populations of the species occur on agricultural land in varying condition.

The area of potential habitat mapped within each broader subregion is presented in Table 4.8. Within the IBRA subregions of Olary Spur and Broughton, they are considered regionally Endangered and in Probable Decline (Table 4.9). Further to the west, in the St Vincent subregion, where the arable low hills and plains have been extensively cleared for cropping and agricultural activities, the species is considered Critically Endangered and in Probable Decline. The regional ratings, and area of potential habitat impacted by the Project compared to the area of potential habitat mapped in the affected subregion is presented in Table 4.9. Of the 152,184 ha of potentially suitable habitat in the affected subregions, 368.10 ha is proposed to be impacted, representing 0.24% of the potentially suitable habitat in the subregion. As PBTL have demonstrated their ability to persist in degraded agricultural lands, it is likely that additional areas of suitable habitat occur outside of the NVIS mapped area of native vegetation.

Table 4.8: NVIS Major Vegetation Subgroups which provide potentially suitable habitat for PBTL in Broughton and Olary Spur IBRA Subregions.

NVIS Major Vegetation Subgroup	Broughton (ha)	Olary Spur (ha)	Total Extent (ha)
Other tussock grasslands	1,888	82,857	84,745
Sedgelands, rushs or reeds	3,215	42,310	45,525
Temperate tussock grasslands	4,731	415	5,146
Wet tussock grassland with herbs, sedges or rushes, herblands or ferns	12,727	4,041	16,768
Grand Total	**22,561**	**129,623**	**152,184**

Table 4.9: Regional assessment of Pygmy Blue-tongue Lizard

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending	Area (ha) of potential habitat impacted by the Project	Area (ha) of potential habitat mapped in the subregion	% of suitable habitat in subregion in DF
Project Area					
Broughton (FLB2)	Endangered	Probable Decline	302.50	22,561	1.38%
Olary Spur (FLB3)	Endangered	Probable Decline	59.48	129,623	0.04%
Murray Mallee (MDD2)	Does not occur	N/A	N/A	152,184	N/A
Bordering Project Area					
St Vincent (EYB2)	Critically Endangered	Probable Decline	0.00	N/A	N/A

Source: DEW 2025b

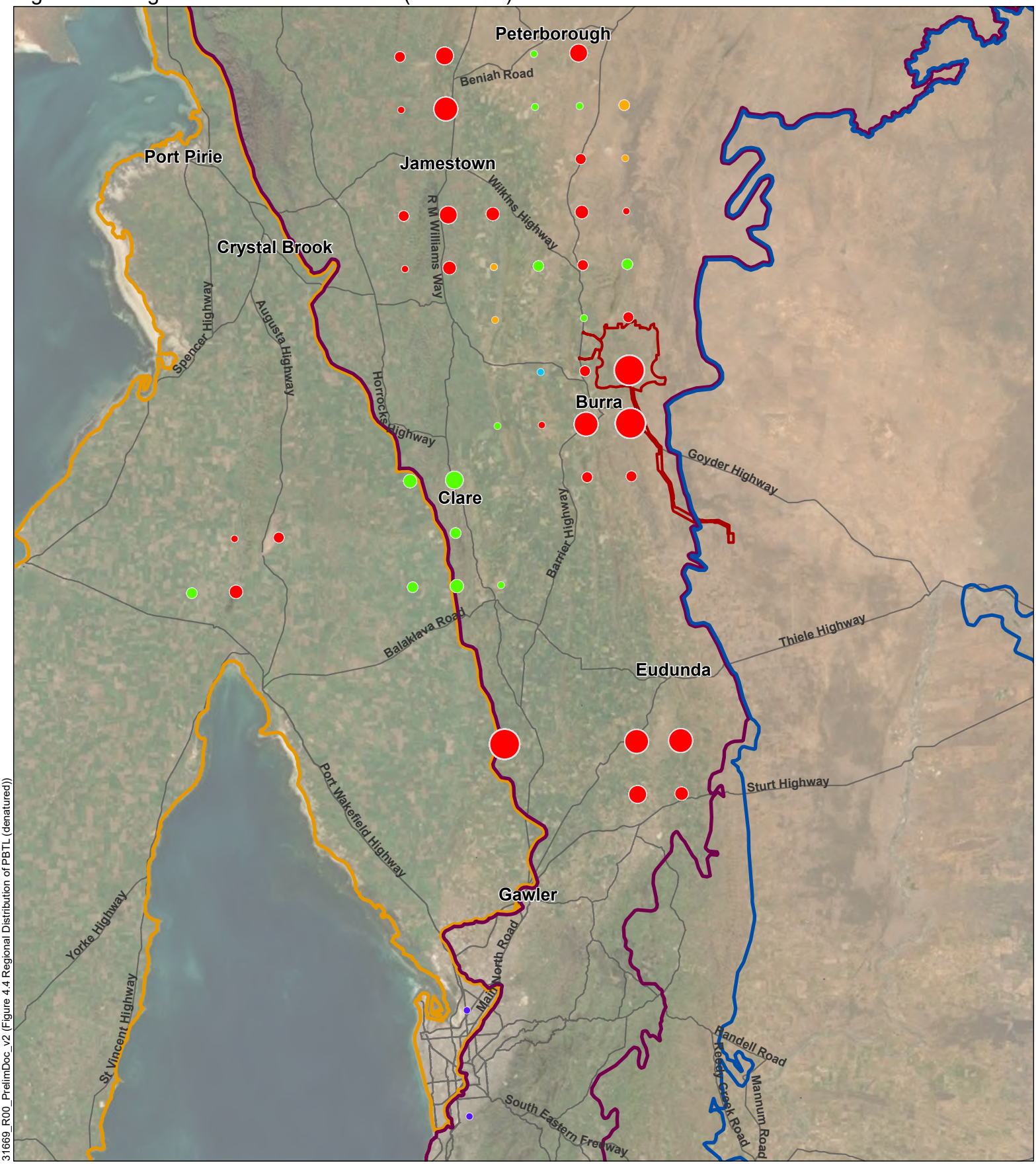
The species was thought to be extinct between 1959 until 1992, when it was opportunistically rediscovered in the stomach contents of a dead snake. Historically, it was known to occur in and around the southern suburbs of Adelaide, extending 220 km to the north near Mannanarie. However, the current range is thought to include extend from Peterborough in the north, to Bagot Well and Kapunda in the south and to the South Hummocks in the west (DCCEEW 2023d).

Historical records of PBTL including records from BDBSA, ALA (duplicates removed) and unpublished Flinders University and Umwelt records (i.e. recent records which have not yet been included in SA Government Department of Environment and Water databases) were grouped to a denatured point within a 10 km grid cell to represent the number of known records within that cell grid (hereafter referred to as a sub-population). Each point indicates the potential significance and / or level of survey effort at each approximate location at a regional level (Figure 4.4) and indicates the recency of these records. The figure shows that there are three very well studied sub-populations of PBTL, occurring west of Tarlee (>1500 records), near Burra (>1,500 records), and north of Burra at Tiliqua Nature Reserve (>750 records). The population near Tarlee represents a Flinders University translocation site, where all PBTL have been introduced to the site or bred from introduced PBTL. Five other sub-populations, including two south of

Eudunda, one at Burra and one north of Jamestown and one south of Jamestown, have between 250 and 750 records. Potentially significant populations also occur east and west of Peterborough, near Clare and the southernmost population south of Eudunda. Records around Clare are over 15 years old, and it is unknown what the present status of these populations is.

Survey findings thus far have demonstrated that PBTL are able to occupy land which is highly degraded and not representative of the favoured habitat listed in the literature, including areas under intense grazing pressure from both sheep and cattle. Almost all known suitable habitat for PBTL occurs on private agricultural land which is generally poorly surveyed outside of assessments for developments. This, coupled with the cryptic nature of the species and the intensive survey effort required to detect them, makes it likely that PBTL may be more widespread and occur in higher numbers than currently reported.

Figure 4.4: Regional Distribution of PBTL (denatured)



GNWF

IBRA Bioregion

- Eyre Yorke Block
- Flinders Lofty Block
- Murray Darling Depression

Date of latest record

- 1899
- 1990 - 1999
- 2000 - 2009
- 2010 - 2019
- 2020 - 2025

Record count

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1500
- 1501 - 3083

Data Source: Umwelt (2025), ESRI (2025), DEW (2025), DIT (2022) Flinders University, ALA (2025)
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GDA2020 MGA Zone 54

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N

31669_R00_PrelimDoc_v2 (Figure 4.4 Regional Distribution of PBTL (denatured))

4.2 South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) – Endangered

4.2.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for South-eastern Hooded Robin, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.10.

Table 4.10: South-eastern Hooded Robin conservation documentation

EPBC Status	**Listed as Endangered** (Date effective 31-Mar-2023)
Approved Conservation Advice	Department of Climate Change, Energy, the Environment and Water (2023b). Conservation Advice for *Melanodryas cucullata cucullata* (hooded robin (south-eastern)). Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/67093-conservation-advice-31032023.pdf. In effect under the EPBC Act from 31-Mar-2023.
Listing Advice	The species was assessed by the TSSC to be eligible for listing as Vulnerable under Criterion 1: Population size reduction.
Adopted / Made Recovery Plan	There is no adopted or made Recovery Plan for this species, however, DCCEEW note that a Recovery Plan is required as the threats facing the entity, and the recovery actions needed can most effectively be guided via an approved Recovery Plan for the species. The species is affected by serious threats, most notably habitat loss, degradation, fragmentation and removal, climate change, predation from invasive species, invasive weeds, firewood collection and competition with noisy miners (*Manorina melanocephala*). The entity has complex jurisdictional, land tenure and land manager situations, complex and multiple threats that vary in severity across their ranges and multiple conservation planning resources required to develop the plan, that require national, as well as local coordination with multiple stakeholders and complex recovery actions (23 March 2023).
Adopted / Made Threat Abatement Plan	Department of Climate Change, Energy, the Environment and Water (2024c). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24-Dec-2024.
Policy Statements and Guidelines	The Action Plan for Australian Birds (Garnett and Baker 2021)

4.2.2 Ecology

The South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) is one of four recognised subspecies, with three others including *M. c. melvillensis* (Tiwi Islands, Northern Territory), *M. c. westralensis* (south-western and arid zone), and *M. c. picata* (northern inland) (Morcombe 2011).

The South-eastern Hooded Robin is a large black and white coloured robin, with a bold black hood extending down a white breast. Females and juveniles are duller in colour, but still with the striking black and white wings (DCCEEW 2023b).

The species is typically sedentary, living in pairs or small groups. They forage on insects and small lizards on the ground by 'hawking' from nearby low branches, fallen timber or rocks in grassy clearings (DCCEEW 2023b). They have also been observed gleaning insects from bark and foliage (Recher et al. 2002).

South-eastern Hooded Robin form monogamous pairs which occupy territories year-round, including during the breeding season, which occurs between July and November. They utilise the same breeding site in consecutive years, where they may rear multiple broods in a season, actively defending their nest. The nest comprises a small, neat cup of bark and grass bound with webs, in a tree fork or crevice, generally between 1 and 5 metres from the ground (DCCEEW 2023b).

4.2.2.1 Dispersal

The species is known to be territorial, occupying the same area over a year or several years. The home range has been estimated at between 5 to 50 ha, with small territories defended in the breeding season (August to December), and larger home ranges occupied in the non-breeding season (ACT Government 1999). A study around Canberra found that Hooded Robin breeding territories were approximately 4 ha, with autumn and winter foraging habitat of the adult male and female ranging over 15 hectares (Sullivan 1993). In Armidale (NSW) Hooded Robins were reported to form breeding groups of 2-5 adults which occupied ranges of over 30 hectares (Debus 2013).

In South Australia, dispersal of the non-resident population has been recorded to occur primarily during autumn and winter, with limited information on the extent or nature of these movements (DEH 2008a). One 200 ha site in coastal scrubland was found to host eight to 10 breeding pairs between 1976 and 1983, suggesting territories of 20 to 25 hectares (DEH 2008a). It is likely that the territory and home range size varies according to the availability of habitat and quality of habitat which determines the carrying capacity.

4.2.3 Habitat

Habitat preferences include dry eucalypt and acacia woodland and shrublands with an open understory, some grassy areas and a complex ground layer including fallen timber (DCCEEW 2023b; Wilson and Bignall 2009). They generally avoid woodlands with tall trees or dense cover; however, they have been reported in tall dense heath with scattered open areas (DCCEEW 2023b). They can reside in patches as small as 2.9 ha (Montague-Drake et al. 2009), but in agricultural landscapes with patchy vegetation, they occupy larger areas of more than 10 ha (Watson 2011).

The carrying capacity of occupied habitats are likely to be influenced by seasonal variation in the availability of insect prey, which is typically higher during spring and summer; competition with conspecifics; as well as the presence of threatening processes such as livestock grazing, inappropriate fire regimes and nearby use of insecticides, which reduce the quality of ground foraging habitat (Recher et al. 2002).

4.2.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. However, the Approved Conservation Advice lists habitat critical to the survival of the species as:

- Dry eucalypt and acacia woodlands and shrubland remnants with an open understorey, some grassy areas and a complex ground layer, often in or near clearings or open areas.
- Structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.
- Standing dead or live trees and tree stumps are also essential for nesting, roosting and foraging.
- Moderately deep to deep soils, rocks and fallen timber which provides essential foraging habitat.

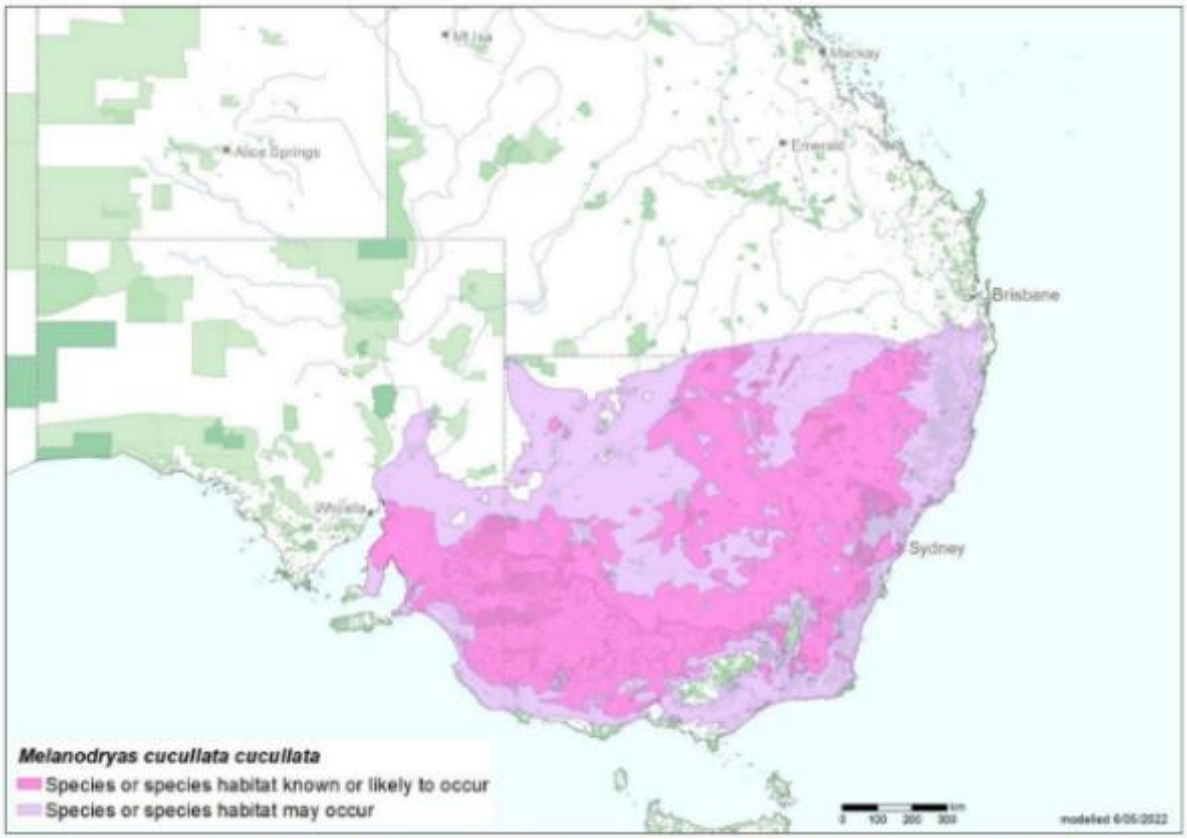
Additionally, any known or likely habitat should be considered as habitat critical to the survival of the subspecies.

4.2.4 Distribution and Abundance

The South-eastern Hooded Robin occurs in south-eastern Australia from far south-east Queensland to the Yorke Peninsula in SA, where it intergrades with M. c. picata in the southern Murray-Darling Basin (Garnett and Baker 2021).

The current population is estimated to be 70,000 mature individuals in the wild (range: 35,000 to120,000, with an EOO and AOO estimated at 1,200,000 km^2 and 30,000 km^2 respectively (DCCEEW 2023b; Ford et al. 2021) (Figure 4.5). The population has declined by more than 50% over the last 10 years, and reporting rates using standard survey methodology have declined by an average of 64% between 1999 and 2018, resulting in their assessment as Endangered under Criterion 1.

The Action Plan for Australian Birds 2020 (Ford et al. 2021) states that the main area of decline for the south-eastern subspecies is in the wetter portions of the distribution, particularly in the south and east, and in areas of more fertile soils where the land has been cleared or severely fragmented for agriculture. The largest declines have been reported in the Australian Capital Territory, with a decline of 93.3% from 1987-2017, in southern NSW (66% from 2002-2015) (Garnett and Baker 2021).



Source: Base map Geoscience Australia; species distribution data Species of National Environmental Significance database.
Caveat: The information presented in this map has been provided by a range of groups and agencies. While every effort has been made to ensure accuracy and completeness, no guarantee is given, nor responsibility taken by the Commonwealth for errors or omissions, and the Commonwealth does not accept responsibility in respect of any information or advice given in relation to, or as a consequence of, anything contained herein.
Species distribution mapping: The species distribution mapping categories are indicative only and aim to capture (a) the habitat or geographic feature that represents to recent observed locations of the species (known to occur) or habitat occurring in close proximity to these locations (likely to occur); and (b) the broad environmental envelope or geographic region that encompasses all areas that could provide habitat for the species (may occur). These presence categories are created using an extensive database of species observations records, national and regional-scale environmental data, environmental modelling techniques and documented scientific research.

Figure 4.5: Modelled distribution of the South-eastern Hooded Robin (DCCEEW 2023b)

4.2.5 Key Threatening Processes

The primary threat to the south-eastern Hooded Robin as listed in the Conservation Advice (DCCEEW 2023b) is habitat loss, degradation and fragmentation. This encompasses habitat clearance and subsequent fragmentation, and habitat degradation caused by livestock and/or invasive species. Other threats include:

- Altered fire regimes that promote a greater density in understory shrubs or weeds, cause secondary habitat loss / fragmentation, and threaten small or isolated populations.
- Firewood collection and tidying of farmland.
- Over-grazing by stock.

- Rabbits and over abundant kangaroos.
- Predation by cats and foxes.
- Invasive weeds.
- Climate change, in particular increase in frequency and intensity of droughts, especially in areas where habitat patches are small, isolated and / or under pressure.

4.2.6 Occurrence in Project Area

The South-eastern Hooded Robin is considered highly likely within the Disturbance Footprint and highly likely within the broader Project Area (Umwelt 2025b).

Survey findings

During field surveys, South-eastern Hooded Robin has been detected in the far south of the OTL during MBC targeted surveys, and opportunistically along Black Peake Road. Eight individuals were observed across three survey observations. A total of 24 historical BDBSA records for the species are reported between 1987 and 2005.

The species has not been previously recorded within the WF portion of the Project Area, despite extensive survey effort including seven seasonal BBUS surveys in potentially suitable habitat. The closest historical records to the WF occur approximately 2.5 km to the east of the Project Area boundary, within mallee woodland / chenopod shrubland plains. Given the lack of records in the WF area, and lack of observations over multiple survey periods, habitat within the WF portion of the Project Area is considered marginal and unlikely to support a resident population of the species.

Habitat Suitability

Areas where South-eastern Hooded Robin were detected included plains with very open woodland of *Myoporum platycarpum* (Sugarwood) over *Maireana sedifolia* (Pearl Bluebush), surrounded by larger areas of mallee woodland and extensive chenopod shrublands.

Suitable habitat in the Disturbance Footprint for GNWF has been mapped based on vegetation associations which match the description of habitat requirements outlined in the Conservation Advice (DCCEEW 2023b), and includes up to 41.07 ha of vegetation including mallee, open woodlands, tall acacia shrublands and sparsely treed grasslands (Table 4.11, Figure 4.6). This can be further separated into 28.81 ha in the WF, where the species is not currently known to occur, and 12.24 ha along the OTL. This area is presented as a worst-case scenario for potential impact to habitat, however, given the long history of agricultural grazing, overabundance of native and on-native herbivores, and subsequent denuded understorey with low structural complexity, much of this area does not meet the criteria for critical habitat. Other factors such as use of pesticides in nearby crops, collection of firewood and presence of weedy understorey species are likely to reduce the quality of this habitat, especially in smaller patches.

Extrapolating these vegetation associations out to the broader Project Area boundary, a total of 2,133.27 ha of habitat is potentially available, including 740.61 in the narrow OTL corridor, and 1,392.66 ha

in the WF which is not currently known to be occupied. All habitat in the Project Area is likely to be subject to similar threatening processes.

Table 4.11: Habitat for South-eastern Hooded Robin in GNWF and Project Area

Distribution and Habitat Requirements		VA	DF (ha)	GNWF (ha)
IBRA Bioregion	FLB, MDD	Block A/B/C/D		
Habitat Requirement	Dry *Eucalyptus* and *Acacia* woodlands and shrublands with an open or grassy understorey. Hooded Robins generally avoid woodlands with tall trees or dense tree cover and prefer patches greater than 10 hectares (ha) in agricultural landscapes. Critical habitat for the Hooded Robin includes areas of (DCCEEW 2023b): • Dry eucalypt and acacia woodlands and shrublands remnants with an open understorey, some grassy areas, and a complex ground layer, often in or near clearings or open areas. • Structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs, and a ground layer of moderately tall native grasses. • Standing dead or live trees and tree stumps are also essential for nesting, roosting, and foraging. • Moderately deep to deep soils, rocks and fallen timber which provides essential foraging habitat.	VA1	19.56	725.89
		VA2	5.34	453.77
		VA3	1.49	119.53
		VA4	0.06	0.07
		VA8	1.17	28.37
		VA10	0.67	33.16
		VA11b	1.50	74.66
		VA16	1.61	42.56
		VA18	6.92	519.85
		VA19	1.84	104.85
		VA20	0.91	30.55
		Total	**41.07**	**2,133.27**

Population Estimates

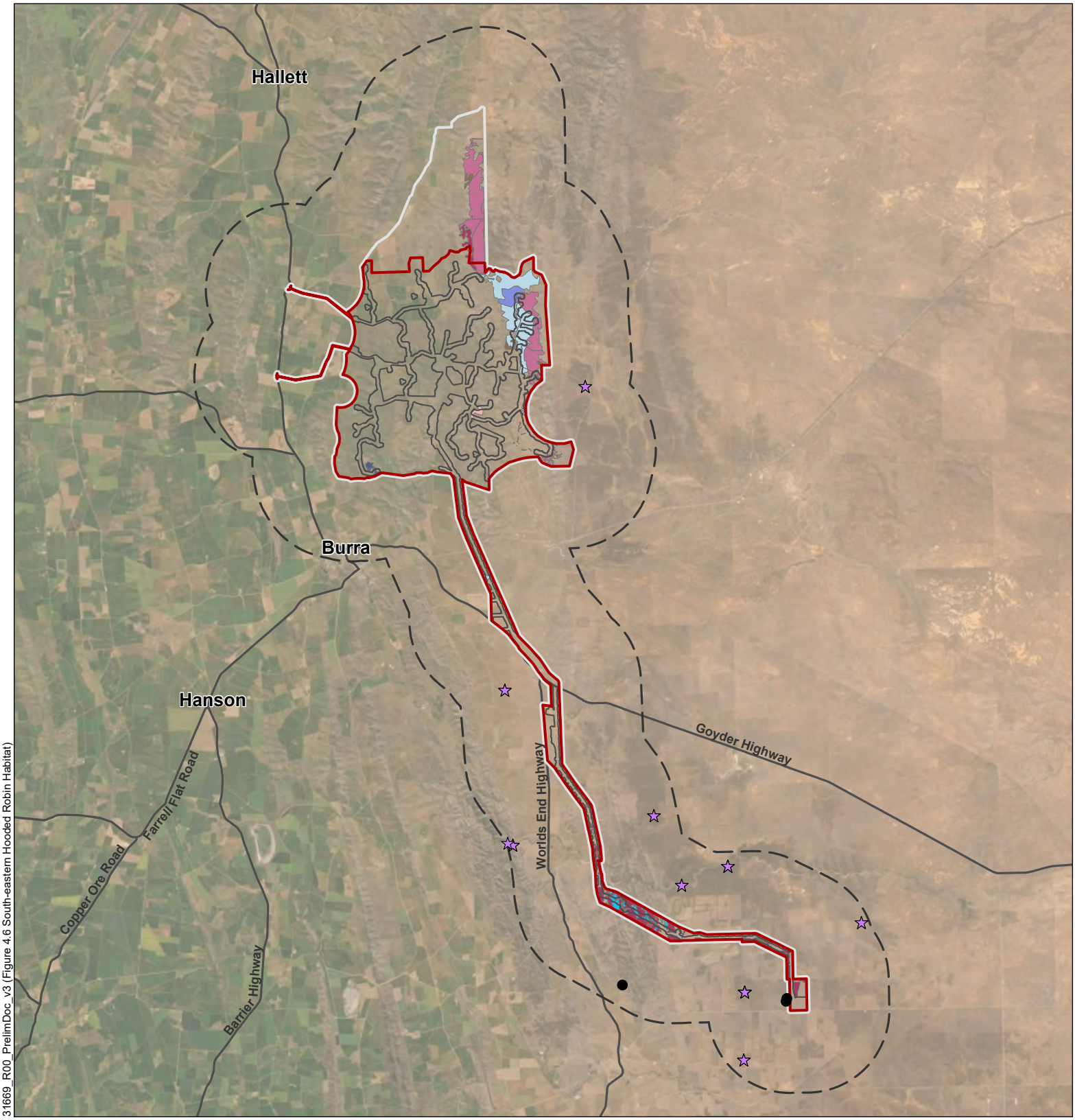
Population estimates for the Project Area have not been made to the limited number of observations. Based on the area of habitat available along the OTL and the reported territory size of Hooded Robins (4 to 30 hectares) <1 (0.4) to 3 breeding pairs may occur within the OTL Disturbance Footprint and 25 to185 pairs in the broader OTL Project Area in suitable habitat. Overlapping territories may also occur. Given the linear nature of the OTL (and WF) infrastructure, it is likely individuals' home range may overlap with the Disturbance Footprint but is unlikely to be entirely contained within it. Two years of targeted BBUS surveys in the WF suggest that the species does not currently occur there, and thus there are unoccupied territories within the WF. Given the contiguous nature of the native vegetation within the Project Area, the ability of the South-eastern Hooded Robin to disperse into suitable vegetation in the surrounding environment is likely to be high and present low risk to individuals.

It is acknowledged that the Preliminary Documentation RFI from DCCEEW requested information regarding the ability of relevant threatened species, including South-eastern Hooded Robin, to disperse into surrounding areas and the expected carrying capacity of the surrounding habitat. However, further literature reviews have confirmed that specific details of dispersal behaviour for South-eastern Hooded Robin, or information regarding the carrying capacity of the species at specific locations, is not available, and would take multiple years of mark recapture surveys to collect. Information currently available is

presented in the above sections and related to the Project Area in this Section 4.2.6 and in a regional context in Section 4.2.7.

Based on this information and the quality of habitat within the Project Area and surrounds, it is known that the species occupies territories which range significantly in size, which is likely to be influenced by the seasonal dynamics of the surrounding landscape, with smaller territories able to support breeding pairs during good seasonal conditions and larger territories required to obtain the necessary resources in poor conditions. Thus, measuring abundance and estimating carrying capacity in this area is unlikely to produce information that is material to the decision.

Figure 4.6: South-eastern Hooded Robin habitat in GNWF and records within 5 km



GNWF
GNREF
Development Envelope
Search Area
Hooded Robin record (Umwelt)
Hooded Robin record (BDBSA)

Hooded Robin habitat

VA1: *Eucalyptus porosa +/- E. gracilis* woodland over Chenopods
VA2: Smooth Barked mixed mallee
VA3: *E. porosa* low woodland over *Schlerophyllous* shrubs
VA4: *Acacia pycnantha* tall shrubland over grass
VA8: *Eucalyptus leucoxylon ssp. Pruinosa* (Inland South Australian Bluegum) Open Woodland
VA10: *Allocasurina verticillata* over native grasses and herbs
VA11b: Native grassland and emergent trees
VA18: Mixed Mallee over Chenopods and native grasses
VA19: *Dodonaea lobulata* shrubland on rocky hills
VA20: *Alectryon oleifolius* Low Woodland over Chenopods

31669_R00_PrelimDoc_v3 (Figure 4.6 South-eastern Hooded Robin Habitat)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

0 2.5 5 km

N

4.2.7 Regional Context

The Project Area occurs across three IBRA Subregions, from north to south, Olary Spur, Broughton, and Murray Mallee. The species status for each of these regions, using NatureMaps Regional Assessment is presented in Table 4.12 and Figure 4.7.

Within surrounding subregions, to the south (Mount Lofty Ranges) and west (St Vincent) of the Project Area, where land has been extensively cleared for agriculture and development, the species is listed as Critically Endangered and Endangered respectively. To the east (Braemer) and north (Southern Flinders), beyond Goyder's Line, the species is listed as Rare and Vulnerable respectively. Given that the Project Area is largely within the existing cleared portion of the Broughton subregion, habitat within this location is already depleted, and does not provide suitable habitat for the species. This species is considered naturally rare in the landscape, however in the wetter areas of its distribution, and those areas cleared extensively for agriculture and development, the species is declining (Garnett and Baker 2021).

In a broader SA context, western subspecies, *M. c. westralensis*, is considered Least Concern and / or Stable in the northern and far western semi-arid and arid regions. The Project Area occurs towards the western boundary of the known extent of the south-eastern subspecies, and it may intergrade with the *M. c. westralensis* or northern arid and semi-arid *M. c. picata* subspecies in this location (Garnett and Baker 2021).

The area of potentially suitable habitat being cleared within each of the affected subregions is listed in Table 4.12. Of the 756,979 ha of potentially suitable habitat in the affected subregions, 41.07 ha is proposed to be impacted, representing 0.005% of the potentially suitable habitat available in the subregions.

Table 4.12: Regional assessment for South-eastern Hooded Robin

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending	Area (ha) of potential habitat impacted by the Project	Area (ha) of potential habitat in the Subregion (NVIS mapping)	% of suitable habitat in subregion in DF
Project Area					
Broughton (FLB2)	Endangered	Definite Decline	13.24	34,700	0.03%
Murray Mallee (MDD2)	Rare	Probable Decline	2.97	261,904	0.00%
Olary Spur (FLB3)	Rare	Probable Decline	24.85	460,375	0.01%
Bordering Project Area					
Braemer (MDD7)	Rare	Probable Decline	N/A	N/A	N/A
Mount Lofty Ranges (FLB1)	Critically Endangered	Definite Decline	N/A	N/A	N/A
Southern Flinders (FLB4)	Vulnerable	Probable Decline	N/A	N/A	N/A

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending	Area (ha) of potential habitat impacted by the Project	Area (ha) of potential habitat in the Subregion (NVIS mapping)	% of suitable habitat in subregion in DF
St Vincent (EYB2)	Endangered	Definite Decline	N/A	N/A	N/A

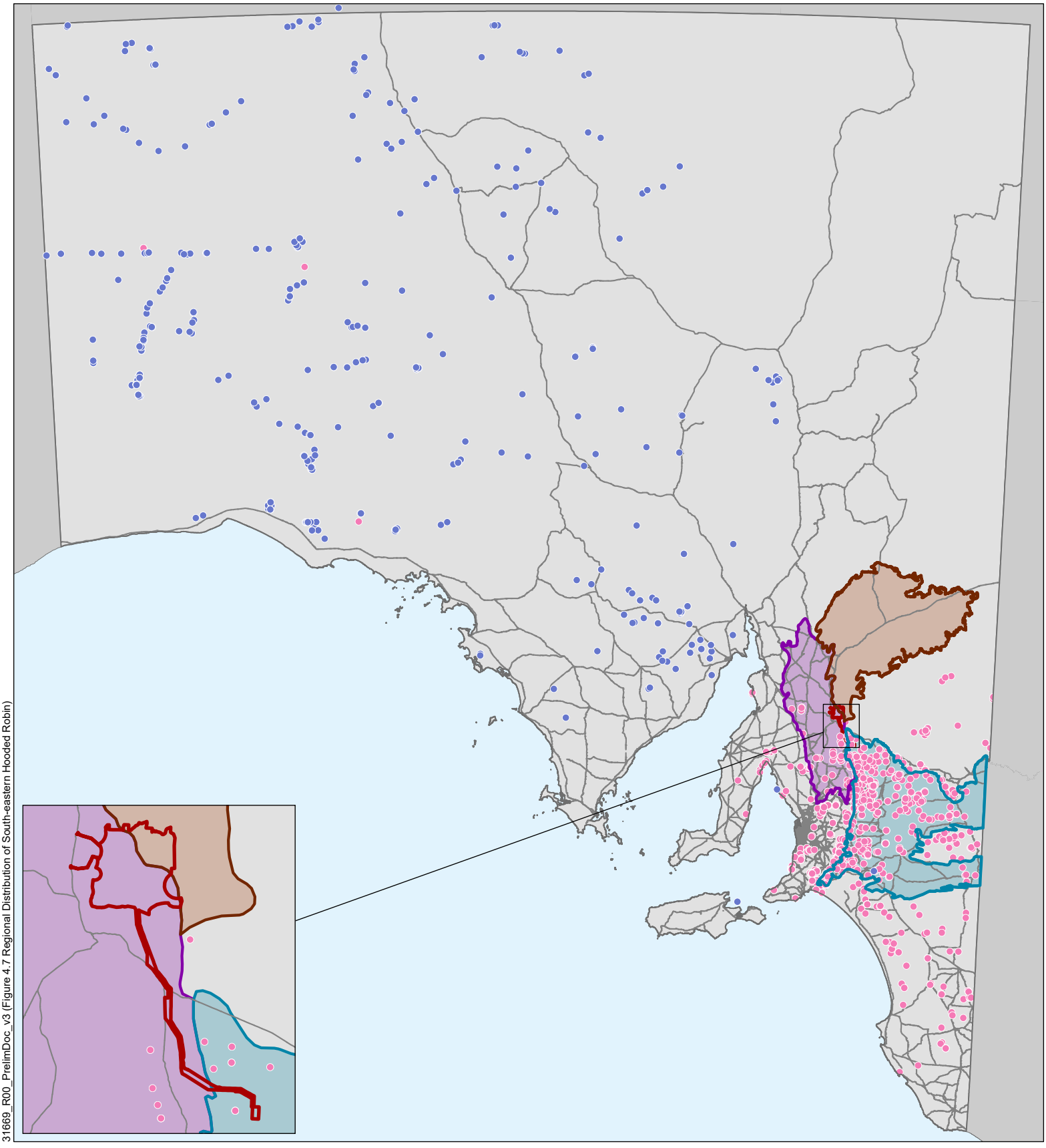
Source: DEW 2025b

Table 4.13: NVIS Major Vegetation Subgroups which provide potentially suitable habitat for South-eastern Hooded Robin in Broughton, Olary Spur and Murray Mallee IBRA Subregions

NVIS Major Vegetation Subgroup	Broughton (ha)	Murray Mallee (ha)	Olary Spur (ha)	Total Extent (ha)
Acacia (+/- low) open woodlands and sparse shrublands with a shrubby understorey	17	0	37,458	37,475
Acacia (+/- low) open woodlands and sparse shrublands with chenopods	0	2,448	52,526	54,974
Callitris forests and woodlands	256	11	1,241	1,507
Callitris open woodlands	63	1,676	5	1,743
Casuarina and *Allocasuarina* forests and woodlands	785	1,529	51	2,365
Casuarina and *Allocasuarina* open woodlands with a shrubby understorey	1,500	7,784	53,817	63,101
Eucalyptus (+/- low) open woodlands with a chenopod or samphire understorey	0	19	0	19
Eucalyptus low open woodlands with a shrubby understorey	2	196	0	197
Eucalyptus low open woodlands with tussock grass	169	885	17	1,070
Eucalyptus open forests with a grassy understorey	25	110	0	135
Eucalyptus open forests with a shrubby understorey	511	151	0	662
Eucalyptus open woodlands with a grassy understorey	322	26	0	348
Eucalyptus open woodlands with shrubby understorey	0	906	0	906
Eucalyptus tall open forests and open forests with ferns, herbs, sedges, rushes or wet tussock grasses	0	794	0	794
Eucalyptus woodlands with a chenopod or samphire understorey	142	771	9,128	10,041
Eucalyptus woodlands with a hummock grass understorey	279	0	0	279
Eucalyptus woodlands with a shrubby understorey	13,991	2,174	0	16,165
Eucalyptus woodlands with a tussock grass understorey	10,185	0	0	10,185
Eucalyptus woodlands with ferns, herbs, sedges, rushes or wet tussock grassland	204	2,341	0	2,545
Heathlands	27	1,822	0	1,849

NVIS Major Vegetation Subgroup	Broughton (ha)	Murray Mallee (ha)	Olary Spur (ha)	Total Extent (ha)
Mallee with an open shrubby understorey	1,209	20,417	56,838	78,464
Mallee with a tussock grass understorey	167	1,235	0	1,401
Mallee with hummock grass	253	18,183	102,412	120,848
Melaleuca open forests and woodlands	0	58	0	58
Mulga (*Acacia aneura*) open woodlands and sparse shrublands +/- tussock grass	0	0	1,618	1,618
Open mallee woodlands and sparse mallee shrublands with a dense shrubby understorey	1,355	155,919	0	157,274
Open mallee woodlands and sparse mallee shrublands with a tussock grass understorey	285	4,686	0	4,971
Other *Acacia* forests and woodlands	58	6	0	63
Other *Acacia* tall open shrublands and shrublands	171	3,741	320	4,232
Other open woodlands	0	33,000	40,303	73,303
Other shrublands	2,723	575	104,642	107,940
Other sparse shrublands and sparse heathlands	0	444	0	444
Grand Total	**34,700**	**261,904**	**460,375**	**756,979**

Figure 4.7: Regional distribution of South-eastern Hooded Robin, in South Australia



GNWF

South-eastern Hooded Robin (*Melanodryas cucullata cucullata*)

Western Hooded Robin (*Melanodryas cucullata westralensis*)

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

0 50 100 km

N

31669_R00_PrelimDoc_v3 (Figure 4.7 Regional Distribution of South-eastern Hooded Robin)

4.3 Southern Whiteface (*Aphelocephala leucopsis*) – Vulnerable

4.3.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Southern Whiteface, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.14**.**

Table 4.14: Southern Whiteface conservation documentation

EPBC Status	Listed as Vulnerable (Date effective 31-Mar-2023)
Approved Conservation Advice	Department of Climate Change, Energy, the Environment and Water (2023a). Conservation Advice for Aphelocephala leucopsis (southern whiteface). Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/529-conservation-advice-31032023.pdf. In effect under the EPBC Act from 31-Mar-2023.
Listing Advice	The species was assessed by the TSSC to be eligible for listing as Vulnerable under Criterion 1: Population size reduction. The population has declined by an estimated 30-50% every ten years since 1999.
Adopted / Made Recovery Plan	There is no adopted or made Recovery Plan for this species, however, DCCEEW note that a Recovery Plan is required as the threats facing the entity, and the recovery actions needed can most effectively be guided via an approved Recovery Plan for the species. The species is affected by serious threats, most notably habitat loss, degradation, fragmentation and removal, climate change, predation from invasive species, invasive weeds, firewood collection and competition with noisy miners (*Manorina melanocephala*). The entity has complex jurisdictional, land tenure and land manager situations, complex and multiple threats that vary in severity across their ranges and multiple conservation planning resources required to develop the plan, that require national, as well as local coordination with multiple stakeholders and complex recovery actions (23 March 2023).
Adopted / Made Threat Abatement Plan	Department of Climate Change, Energy, the Environment and Water (2024c). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24-Dec-2024.
Policy Statements and Guidelines	There are no Policy Statements or Guidelines for the species.

4.3.2 Ecology

Two subspecies of the Southern Whiteface are recognised based on their range, *A. l. castaneiventris* (south-west southern Whiteface) and *A. l. leucopsis* (south-east southern whiteface) (DCCEEW 2023a; Morcombe 2011), with the latter occurring in the Project Area and referred to in this report.

The Southern Whiteface is a small, finch-like, ground-dwelling bird characterised by its distinctive facial marking of a white band topped with a dark streak across the forehead above the beak, white belly, white eye, dark brown wings and black tail with narrow white tip. Male and female birds display the same markings (monomorphic).

Southern Whiteface primarily feeds on seeds and insects, foraging on the ground in small groups of 2-8 individuals, congregating in larger foraging groups of up to 70 birds during winter (DCCEEW 2023a). The species has been reported to spend up to 99% of its time on the ground (Recher and Davis 1997 in Razeng and Watson 2012). The species is known for its social behaviour and is often seen in mixed-species flocks. The species is considered sedentary, with some evidence of movement outside of their normal range during drought years.

Breeding typically occurs from July to October across most of its range, with more variability outside of this time in arid regions, affected by timing of rainfall. Nests are built in tree hollows, crevices, low bushes or sometimes artificial structures, with a clutch size of 3-4 eggs laid. The nest is typically tended to by breeding pairs; however, some evidence of cooperative breeding has been recorded (Robinson and Sandbrink 1994). The generation length is estimated at 2.8 years (DCCEEW 2023a).

4.3.2.1 Dispersal

There is limited information available in the literature regarding the home range size or dispersal ecology of the Southern Whiteface. The species is thought to be sedentary; however, they may move to wetter areas outside of their normal range in response to drought (Higgins and Peter 2002 in DCCEEW 2023a). A study of multiple bird species in an arid Acacia shrubland in central Australia, found insufficient data to classify Southern Whiteface as either sedentary or mobile, based on the results of a 10-year mark-recapture survey (Pascoe et al. 2019). It suggested that although it did not meet the criteria to be classified as having high site fidelity, it did show evidence of sedentary behaviour. Pascoe et al. (2019) compared to two other studies which found that Southern Whiteface were either core (Cody 1994) or resident (Pavey and Nano 2009) in *Acacia* shrublands in central Australia.

4.3.3 Habitat

The Southern Whiteface inhabits open woodlands, grasslands, and shrublands, often in areas with sparse ground cover and scattered trees or shrubs, typically dominated by acacias or eucalypts. It prefers habitats with a mix of native grasses and low shrubs, which provide foraging opportunities and nesting sites. The presence of fallen timber and leaf litter is also important for their foraging activities. Habitat quality is crucial for the species' survival, as it influences food availability and nesting success.

4.3.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for this species. However, the Approved Conservation Advice (DCCEEW 2023a) lists a broad range of habitat types which may be considered critical to the survival of the species, including:

- Relatively undisturbed open woodlands and shrublands which feature an understorey of grasses and/or shrubs which provide essential foraging habitat.
- Habitats with low tree density and an herbaceous understorey litter cover which provides essential foraging habitat.

- Habitats which contain living and dead trees with hollows and crevices which are essential for roosting and nesting.

4.3.4 Distribution and Abundance

The south-eastern Southern Whiteface is found across much of mainland Australia south of the tropics, with the southeastern subspecies (ssp. *leucopsis*) occurring in South Australia, Victoria, New South Wales, southern Queensland and the Northern Territory. There is a broad hybrid band between the two subspecies, extending from western South Australia to the western edge of the Nullarbor Plain (DCCEEW 2023a) (Figure 4.8).

Across the mainland of Australia, its distribution is patchy, with populations concentrated in areas that provide suitable habitat. Southern Whiteface is adaptable to various environmental conditions but relies on specific habitat features for foraging and nesting. The species is considered vulnerable due to habitat loss and fragmentation, which have led to declines in population size (DCCEEW 2023a).

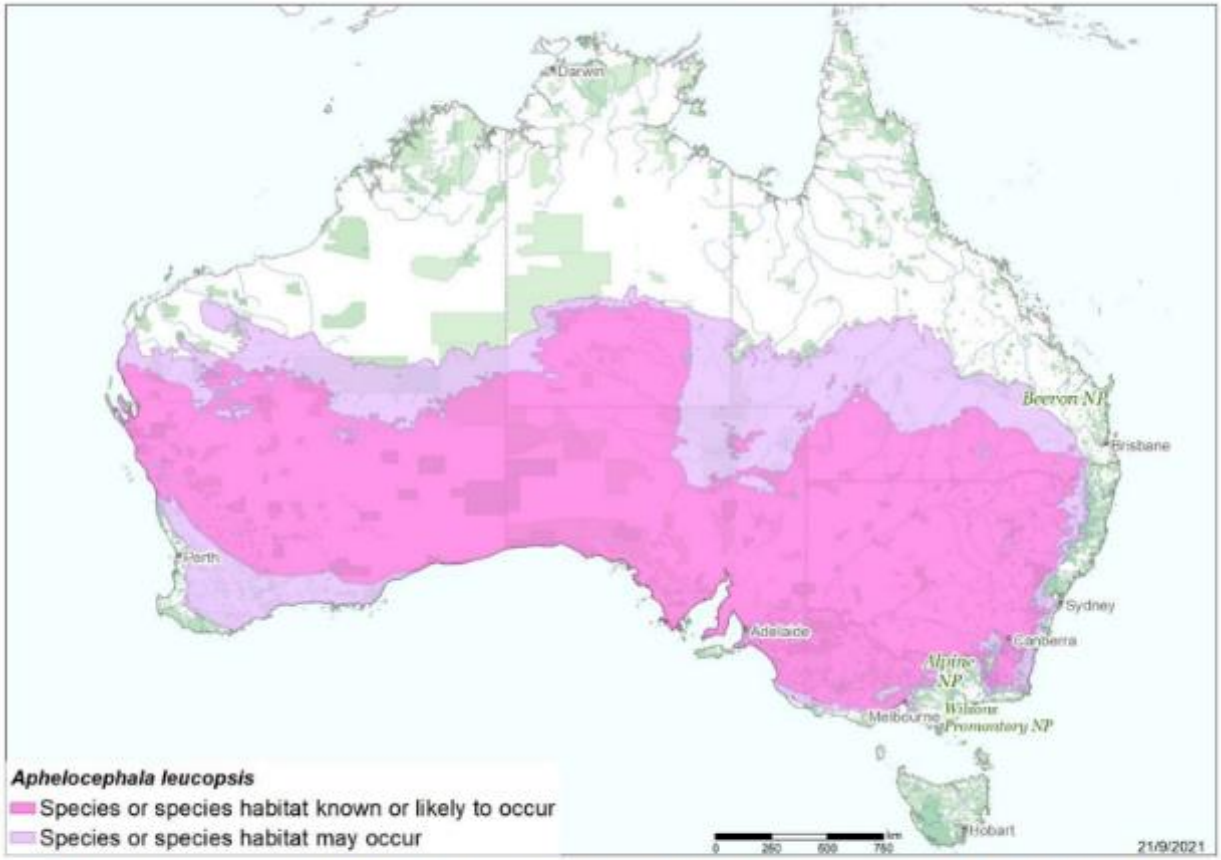
The estimate EOO for the eastern subspecies (ssp. *leucopsis*) is 3,800,000 km^2 (high confidence) and stable, with a contracting AOO of 60,000 km^2 (range 29,000-120,000 km^2) (low confidence) (Garnett and Baker 2021). The estimated number of mature individuals is 410,000 (range 200,000 – 820,000) (low confidence), with an estimated generation length of 2.9 years (Garnett in DCCEEW 2023a).

While reporting rates have fluctuated across its range, and between resources, overall declines across the range of both subspecies are 30- 50 % every ten years since 1999, however this decline in density is reported to occur across on 20% of its range (DEH 2008b). There is no clear reason for the decline except where there has been complete removal of habitat for intensive agriculture (DCCEEW 2023a). Conservation efforts focus on protecting and restoring habitats to support existing populations and facilitate their expansion.

4.3.4.1 Important Populations

No 'important populations' are defined in the Conservation Advice for the Southern Whiteface (DCCEEW 2023a); however the Significant Impact Guidelines 1.1 (DotE 2013a) identify important populations to include:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and / or
- populations that are near the limit of the species range.



Source: Base map Geoscience Australia; species distribution data Species of National Environmental Significance database.
Caveat: The information presented in this map has been provided by a range of groups and agencies. While every effort has been made to ensure accuracy and completeness, no guarantee is given, nor responsibility taken by the Commonwealth for errors or omissions, and the Commonwealth does not accept responsibility in respect of any information or advice given in relation to, or as a consequence of, anything contained herein.
Species distribution mapping: The species distribution mapping categories are indicative only and aim to capture (a) the habitat or geographic feature that represents to recent observed locations of the species (known to occur) or habitat occurring in close proximity to these locations (likely to occur); and (b) the broad environmental envelope or geographic region that encompasses all areas that could provide habitat for the species (may occur). These presence categories are created using an extensive database of species observations records, national and regional-scale environmental data, environmental modelling techniques and documented scientific research.

Figure 4.8: Modelled distribution of the Southern Whiteface (DCCEEW 2023a)

4.3.5 Key Threatening Processes

The primary threats to the Southern Whiteface include habitat loss and degradation due to agricultural expansion and livestock grazing and climate change. Invasive species, such as feral cats and foxes, pose significant predation risks. Additionally, changes in fire regimes and grazing pressure can alter habitat structure and reduce food availability. Conservation strategies aim to mitigate these threats through habitat protection, restoration, and management, as well as controlling invasive species and promoting sustainable land-use practices.

4.3.6 Occurrence in the Project Area

The Southern Whiteface is considered highly likely/known within the Disturbance Footprint and the Development Envelope (Umwelt 2025b).

Survey Findings

The Southern Whiteface has been recorded both opportunistically and during targeted BBUS surveys on multiple occasions. A total of 47 observations of up to 263 individuals have been recorded across the GNWF (to February 2025) (Figure 4.9). The species was not listed as threatened under the EPBC Act until March 2023, thus, opportunistic records prior to this time may not been recorded with accurate location or count data, since it was regularly encountered in suitable habitat. Records include opportunistic observations and repeated records during BBUS at Site 5 and Site 10 and Site 16. Across the seven BBUS surveys to date, 184 Southern Whiteface have been recorded, including:

- 102 individuals recorded across 3 of the 16 targeted bird sites – Site 5 (mallee woodland, 26 individuals), Site 10 (shrubland, 70 individuals), and Site 16 (mallee woodland, 6 individuals),
- 23 individuals recorded across 1 of the 4 vehicular transects (Transect 4),
- 59 individuals opportunistically observed across the seven BBUS surveys to date.

Given the sedentary nature of the Southern Whiteface, these are likely to represent repeat observations of the same individuals over multiple survey periods.

The activity associated with all observations to date, have been foraging on the ground or resting in shrubs, with a maximum flight height recorded of 10 m.

Habitat Suitability

Within the GNWF Project Area, the species has been recorded in Mallee Woodlands associated with fringing Chenopod Shrublands in the eastern extent of the GNWF Project Area and along the OTL, particularly in the southern and eastern woodlands. These sites include vegetation associations of mixed mallee and grassy shrubland on the edge of mallee, whilst opportunistic observations have been made across a wide range of habitat types. Vegetation Associations in the Project Area which meet the preferred habitat types listed in the Conservation Advice are presented in Table 4.15 and Figure 4.9.

No nests have been found within the Project Area, however, given their sedentary nature and the repeated observation of the species at three BUS monitoring sites, it is likely that the species does nest within those areas of the GNWF Project Area, or nearby. Detailed surveys have not been undertaken along the length of the OTL, with survey records collected opportunistically and during MBC targeted surveys.

The long history of grazing in the Project Area means that most areas of habitat which have been assessed as being potentially suitable habitat, are currently disturbed, with a denuded understorey containing minimal grassy or herbaceous cover components. Additionally, areas with regular spacing of Declared weed, African Boxthorn (*Lycium ferocissimum*) over native and exotic grasses and low chenopod shrubs, were found to support regular observations of Southern Whiteface, demonstrating their adaptability to a wide range of habitats, including degraded areas.

Chenopod shrublands and grasslands may provide some foraging habitat for the species and are likely to support their movement across the landscape, however, these habitats are not listed in the Conservation Advice as preferred habitat and have not been included in areas of suitable habitat. Additionally, historical records show that observations of Southern Whiteface are concentrated within or nearby to woodland habitats, further corroborating this conclusion.

Within the broader GNWF, 2,722.16 ha is mapped in these vegetation associations, with up to 57.97 ha in the Disturbance Footprint. These calculations include all areas mapped as these associations as potentially suitable habitat; however, it is likely that not all patches constitute critical habitat based on the features listed below. For example, many areas mapped as mallee woodland are lacking a grassy component to the understorey or comprise areas of high tree density which are not preferred for foraging. Associations which contain at least one critical habitat requirement are marked with either "*" or "^" in Table 4.15. Additionally, given the long history of disturbance from agricultural grazing practices, most areas are lacking an herbaceous understorey. Based on the critical habitat criteria, up to 28.81 ha in the WF and 9.94 ha in the OTL contain at least one feature of the listed critical habitat.

Table 4.15: Habitat for Southern Whiteface in GNWF and Project Area

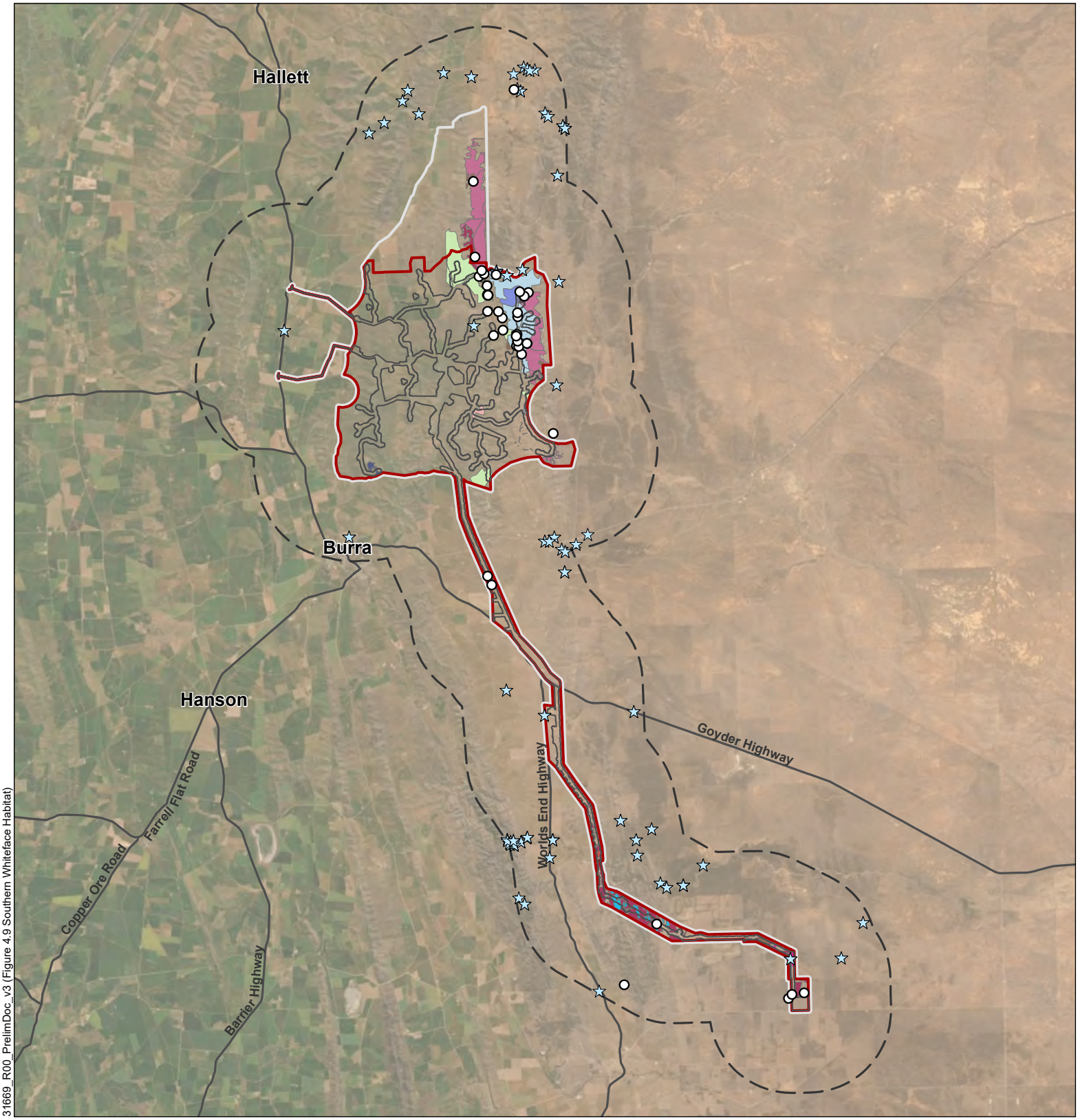
Distribution and Habitat Requirements		VA	DF (ha)	GNWF (ha)
IBRA Bioregion	FLB, MDD	Block A/B/C/D		
Habitat Requirement	Open woodland and shrubland habitat with an understorey of grasses and / or low shrubs. Suitable habitat is usually dominated by *Acacia* spp. or *Eucalyptus* spp. Critical habitat for the Southern Whiteface includes areas of: • Relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs or both. • Habitat with low tree densities and an herbaceous understorey litter cover which provides essential foraging habitat, indicated by '^'. • Living and dead trees with hollows and crevices which are essential for roosting and nesting. Vegetation associations which may contain nesting habitat are indicated by '*'.	VA1*	19.56	725.89
		VA2*	5.34	453.77
		VA3*^	1.49	119.53
		VA4	0.06	0.07
		VA7	0.00	4.02
		VA8*	1.17	28.37
		VA9	16.54	544.57
		VA10^	0.67	33.16
		VA11b*	1.50	74.66
		VA13^	0.22	13.91
		VA14*	0.05	10.33
		VA16	1.61	42.56
		VA18*	6.92	519.85
		VA19*	1.84	104.85
		VA20	0.91	30.55
		VA21	0.09	16.06
		Total	**57.97**	**2,722.16**

Population Estimates

Population estimates for the Project Area have not been made, and none are available for the region. As the home range size of Southern Whiteface is not reported in the literature, it is unclear if the individuals observed repeatedly at three BBUS sites comprise one large or multiple smaller territories, with the distance between sites ranging between 2.1 km and 3.7 km. BBUS site 10 reported repeat observations of Southern Whiteface on five out of seven survey sessions, across all seasons except winter. The number of individuals at this site ranged from 2 (spring 2024) to 24 (summer 2024), and it is likely this site represents a core foraging location. A separate territory may occur at or nearby to Site 5 (mallee woodland, 2.1 km east), with repeat observations on three out of seven surveys, ranging from seven (spring 2024, autumn 2025) to 12 individuals (spring 2023). Additionally, Site 16 (mallee woodland, 3.7 km southeast) reported between two (spring 2024) and four (autumn 2024) individuals on two of seven survey sessions, with other opportunistic records nearby. Without undertaking mark-recapture survey methodology over a long period of time, it is not possible to determine if these observations represent a sub-population with one or multiple separate territories, however it is clear that the eastern mallee woodland and fringing areas support a resident breeding population of the species. The carrying capacity of this environment is likely to fluctuate according to rainfall and associated productivity. Significant areas of similar suitable habitat occur in the surrounding region, which are likely to support local dispersal of this species.

Dedicated surveys have not been conducted along the length of the OTL; however a combination of opportunistic records and historical records indicate that the species has populations to the north of the Project Area, near Mount Bryan and Caroona Creek Conservation Park, as well as to the south, in Red Banks Conservation Park, Mimbara Conservation Park, Worlds End Gorge / Hopkins Creek and around the Bundey Substation.

Figure 4.9: Southern Whiteface habitat in GNREF and records within 5 km



GNWF
GNREF
Development Envelope
Search Area
Southern Whiteface record (Umwelt)
Southern Whiteface record (BDBSA)

Southern Whiteface habitat

- VA1: *Eucalyptus porosa +/- E. gracilis* woodland over Chenopods
- VA2: Smooth Barked mixed mallee
- VA3: *E. porosa* low woodland over *Schlerophyllous* shrubs
- VA4: *Acacia pycnantha* tall shrubland over grass
- VA7: *Acacia spilleriana* Shrubland
- VA8: *Eucalyptus leucoxylon ssp. Pruinosa* (Inland South Australian Bluegum) Open Woodland
- VA9: *Maireana rohrlachii* open shrubland
- VA10: *Allocasurina verticillata* over native grasses and herbs
- VA11b: Native grassland and emergent trees
- VA13: *Hakea leucoptera ssp. leucoptera* tall shrubland
- VA14: *E. camaldulensis* Riparian Woodland
- VA16: *Acacia nysophylla* shrubland
- VA18: Mixed Mallee over Chenopods and native grasses
- VA19: *Dodonaea lobulata* shrubland on rocky hills
- VA20: *Alectryon oleifolius* Low Woodland over Chenopods
- VA21: *Senna* spp. Shrubland

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

0 2.5 5 km

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31669_R00_PrelimDoc_v3 (Figure 4.9 Southern Whiteface Habitat)

4.3.7 Regional Context

The Project Area occurs across three IBRA Subregions, from north to south, Olary Spur, Broughton, and Murray Mallee. The Southern Whiteface is listed as Least Concern and Stable in Olary Spur, Vulnerable and in Probable Decline in Broughton, and Near Threatened and in Probable Decline in Murray Mallee. Within surrounding subregions, to the south (Mount Lofty Ranges) and west (St Vincent) of the Project Area, where land has been extensively cleared for agriculture and development, the species is listed as Critically Endangered and Endangered respectively. To the east (Braemer) and north (Southern Flinders), beyond Goyder's Line, the species is listed as Rare or Vulnerable and in Probable Decline. The species status for each of these regions, using NatureMaps Regional Assessment is presented in Table 4.16 and mapped in Figure 4.10.

The general region within the Project Area where most observations have been reported, in the eastern woodlands, occurs on the boundary of the Broughton (west) and Olary Spur (east) subregion. The presence of the Southern Whiteface in this location may support the movement and dispersal of individuals between regions, which can help to mitigate the impacts of localised declines by allowing individuals from stable populations to recolonize areas where the species is facing threats. As no habitat restoration efforts are currently planned for parts of the Project Area within the Broughton subregion, and it comprises predominantly cleared agricultural grazing land, it is unlikely that this population will serve to recolonise any areas in the foreseeable, however its ongoing maintenance is likely to be of importance.

In South Australia, the species is thought to have declined across an estimated 20% of its former range (within the Adelaide and Mount Lofty Ranges Region and southeast). However, it has an extensive range in semi-arid Australia where there is no documented evidence of decline (Robinson and Traill 1996 and Reid 1999 in DEH 2008b). As such, the species is not listed as threatened under the SA NPW Act.

The area of potentially suitable habitat being impacted within each of the affected subregions is listed in Table 4.16, along with the area of potential remnant habitat within the subregion, mapped by NVIS. Of the 831,652 ha of potentially suitable habitat in the affected subregions, 57.97 ha is proposed to be impacted, representing 0.007% of the potentially suitable habitat available in the subregions.

Table 4.16: Regional assessment for Southern Whiteface

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending	Area (ha) of potential habitat impacted by the Project	Area (ha) of potential habitat in the Subregion (NVIS mapping)	% of suitable habitat in subregion in DF
Project Area					
Broughton (FLB2)	Vulnerable	Probable Decline	18.11	43,104	0.04%
Murray Mallee (MDD2)	Near Threatened	Probable Decline	2.97	306,019	0.00%
Olary Spur (FLB3)	Least Concern	Stable/No Change	36.88	482,529	0.01%

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending	Area (ha) of potential habitat impacted by the Project	Area (ha) of potential habitat in the Subregion (NVIS mapping)	% of suitable habitat in subregion in DF
Bordering Project Area					
Braemer (MDD7)	Rare	Probable Decline	N/A	N/A	N/A
Mount Lofty Ranges (FLB1)	Critically Endangered	Definite Decline	N/A	N/A	N/A
Southern Flinders (FLB4)	Vulnerable	Probable Decline	N/A	N/A	N/A
St Vincent (EYB2)	Endangered	Definite Decline	N/A	N/A	N/A

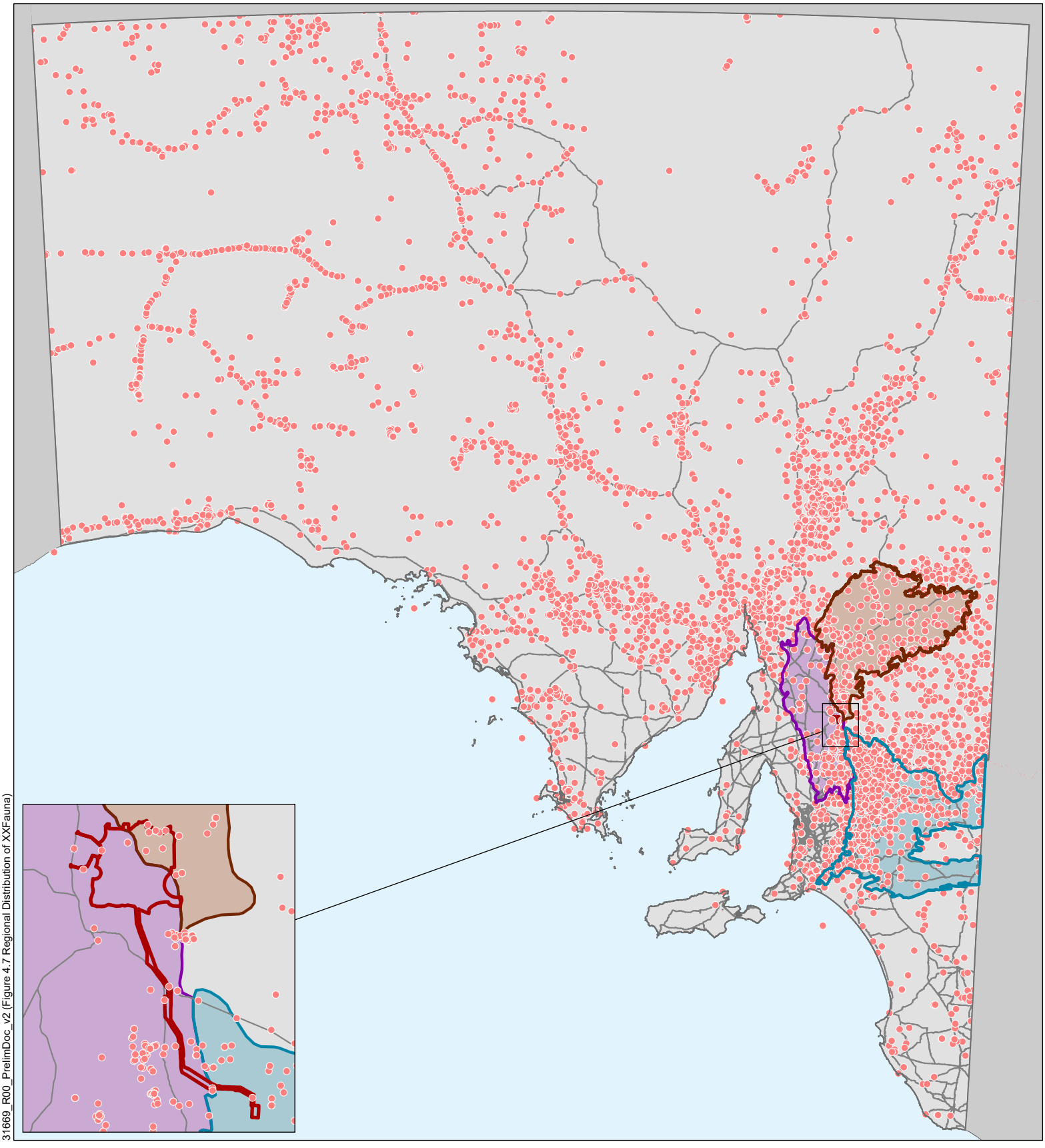
Source: DEW 2025b

Table 4.17: NVIS Major Vegetation Subgroups which provide potentially suitable habitat for Southern Whiteface in Broughton, Olary Spur and Murray Mallee IBRA Subregions

NVIS Major Vegetation Subgroup	Broughton (ha)	Murray Mallee (ha)	Olary Spur (ha)	Total Extent (ha)
Acacia (+/- low) open woodlands and sparse shrublands with a shrubby understorey	17	0	37,458	37,475
Acacia (+/- low) open woodlands and sparse shrublands with chenopods	0	2,448	52,526	54,974
Callitris forests and woodlands	256	11	1,241	1,507
Callitris open woodlands	63	1,676	5	1,743
Casuarina and *Allocasuarina* forests and woodlands	785	1,529	51	2,365
Casuarina and *Allocasuarina* open woodlands with a shrubby understorey	1,500	7,784	53,817	63,101
Eucalyptus (+/- low) open woodlands with a chenopod or samphire understorey	0	19	0	19
Eucalyptus low open woodlands with a shrubby understorey	2	196	0	197
Eucalyptus low open woodlands with tussock grass	169	885	17	1,070
Eucalyptus open forests with a grassy understorey	25	110	0	135
Eucalyptus open forests with a shrubby understorey	511	151	0	662
Eucalyptus open woodlands with a grassy understorey	322	26	0	348
Eucalyptus open woodlands with shrubby understorey	0	906	0	906
Eucalyptus tall open forests and open forests with ferns, herbs, sedges, rushes or wet tussock grasses	0	794	0	794
Eucalyptus woodlands with a chenopod or samphire understorey	142	771	9,128	10,041
Eucalyptus woodlands with a hummock grass understorey	279	0	0	279
Eucalyptus woodlands with a shrubby understorey	13,991	2,174	0	16,165

NVIS Major Vegetation Subgroup	Broughton (ha)	Murray Mallee (ha)	Olary Spur (ha)	Total Extent (ha)
Eucalyptus woodlands with a tussock grass understorey	10,185	0	0	10,185
Eucalyptus woodlands with ferns, herbs, sedges, rushes or wet tussock grassland	204	2,341	0	2,545
Heathlands	27	1,822	0	1,849
Mallee with an open shrubby understorey	1,209	20,417	56,838	78,464
Mallee with a dense shrubby understorey	8,380	36,185	22,154	66,718
Mallee with a tussock grass understorey	167	1,235	0	1,401
Mallee with hummock grass	253	18,183	102,412	120,848
Melaleuca open forests and woodlands	0	58	0	58
Melaleuca shrublands and open shrublands	24	7,925	0	7,948
Mulga (*Acacia aneura*) open woodlands and sparse shrublands +/- tussock grass	0	0	1,618	1,618
Open mallee woodlands and sparse mallee shrublands with a dense shrubby understorey	1,355	155,919	0	157,274
Open mallee woodlands and sparse mallee shrublands with a tussock grass understorey	285	4,686	0	4,971
Other *Acacia* forests and woodlands	58	6	0	63
Other *Acacia* tall open shrublands and shrublands	171	3,741	320	4,232
Other forests and woodlands	0	6	0	6
Other open woodlands	0	33,000	40,303	73,303
Other shrublands	2,723	575	104,642	107,940
Other sparse shrublands and sparse heathlands	0	444	0	444
Grand Total	**43,104**	**306,019**	**482,529**	**831,651**

Figure 4.10: Regional distribution of Southern Whiteface



GNWF

Southern Whiteface (*Aphelocephala leucopsis*)

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

0 50 100 km

N

31669_R00_PrelimDoc_v2 (Figure 4.7 Regional Distribution of XXFauna)

4.4 Flinders Ranges Worm-lizard (*Aprasia pseudopulchella*) – Vulnerable

4.4.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Flinders Ranges Worm-lizard, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.18. It is noted that a recent study by Woinarski et al. (2023) suggests that the Flinders Ranges Worm-lizard population is now considered stable, and the species no longer meets eligibility criteria for a threatened listing.

Table 4.18: Flinders Ranges Worm-lizard conservation documentation

EPBC Status	**Listed at Vulnerable** (Date effective 16-Jul-2000)
Approved Conservation Advice	Department of Environment, Water, Heritage and the Arts (2008a). Conservation Advice for *Aprasia pseudopulchella* (Flinders Ranges Worm-lizard). Canberra: Department of Environment, Water, Heritage and the Arts. Available from: 1666 - Approved Conservation Advice for *Aprasia pseudopulchella* (Flinders Ranges Worm-lizard). In effect under the EPBC Act from 16-Jul-2008.
Listing Advice	The species is listed as Vulnerable as prior to the commencement of the EPBC Act, it was listed as vulnerable under Schedule 1 of the *Endangered Species Protection Act 1992*.
Adopted / Made Recovery Plan	There is no adopted or made Recovery Plan for this species, however, DCCEEW note that a Recovery Plan is required as the threats facing the entity, and the recovery actions needed can most effectively be guided via an approved Recovery Plan for the species. The species is affected by serious threats, most notably habitat loss, degradation, fragmentation, removal and grazing. The entity has complex jurisdictional, land tenure and land manager situations, complex and multiple threats that vary in severity across their ranges and multiple conservation planning resources required to develop the plan, that require national, as well as local coordination with multiple stakeholders and complex recovery actions (23 March 2023).
Adopted / Made Threat Abatement Plan	No Threat Abatement Plan has been identified as being relevant for this species.
Policy Statements and Guidelines	There are no Policy Statements or Guidelines for the species.

4.4.2 Ecology

Flinders Ranges Worm-lizard (*Aprasia pseudopulchella*) is a small legless lizard, characterised by a dark-brown head that merges with a pale grey-brown body which fades into a reddish-brown terminal half of the tail (DEWHA 2008a). It often has longitudinal dark bars on the dorsal scales of the tail and part of the body, which gives the impression of longitudinal lines. Legs are reduced to small, almost absent, vestigial hindlimb flaps.

The species can be distinguished from its close relative, the Pink-tailed Legless Lizard (*A. parapulchella)*, by its greater average number of ventral scales in addition to non-overlapping distributions (Cogger 2014). Other similar species with overlapping ranges include Mallee Worm-lizard (*Aprasia inaurita*), from

which it differs by having dark flecks on scales and no pink colouration on its nose (Williams and Hutchinson 2024), and occupying different habitats (Cogger 2014; DEH 2008c).

The diet of the species is unknown, although as for most members of the *Aprasia* genus, it is believed to be predominately that of the larvae and pupae of ants and termites (DEH 2008c).

The species has a cryptic nature, being difficult to detect as it spends its time sheltering in soil beneath stones and rotting stumps and woody debris in the daytime, only becoming active above the surface at nighttime when it hunts for prey (DEWHA 2008a).

4.4.2.1 Dispersal

Little information is known about the specific ecology of the Flinders Ranges Worm-lizard, due to their cryptic, fossorial and predominantly nocturnal behaviours. However, other species in the genus, such as *Aprasia parapulchella*, have been more thoroughly studied and provide some indication of the home range and dispersal ability which is likely to be broadly applicable to the Flinders Ranges Worm-lizard. This species has been recorded up to 30 m from possible source populations and suitable habitat suggesting that it has some ability to move across the landscape including across unsuitable terrain (Wong et al. 2011). Genetic analysis is likely to be required to determine dispersal capability and connectivity and influence of barriers such as roads and modified agricultural landscapes (Wong et al. 2011).

Activity patterns or detectability appear to be strongly influenced by seasonal conditions with temperature and moisture likely to be strong influences, where hot dry weather causes lizards to reduce aboveground activity and descend deeper underground in contrast to mild and damp weather where they appear more active (Wong et al. 2011).

4.4.3 Habitat

Flinders Ranges Worm-lizard is known to occur in open woodlands, native tussock grasslands, riparian areas and rocky isolates, preferring stony soils or clay soils with a stony surface (DEWHA 2008a). The Flinders Ranges Worm-lizard is strongly associated with the presence of rocky outcrops and scattered, partially buried rocks.

The species is known to be adaptable and has been found persisting near expanding housing developments in Gawler (northern Adelaide) and in land grazed by sheep and cattle (Fenner et al. 2018).

4.4.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

4.4.4 Distribution and Abundance

The species is endemic to South Australia, with a distribution that extends south from the Flinders Ranges to the central Mount Lofty Ranges. Specifically, it has been reported in the northern suburbs or Adelaide at Cobbler Creek Recreation Reserve, as well as further north at Mount Remarkable National Park (DEWHA 2008a; Cogger 2014).

There is insufficient data on the Flinders Ranges Worm-lizard to produce a population estimate for the species. *The Action Plan for Australian Lizards and Snakes* (Chapple et al. 2019) cites the current EOO as 31,231 km^2 and the AOO as 196 km^2.

4.4.4.1 Important Populations

No 'important populations' are defined in the Conservation Advice for the Flinders Ranges Worm-lizard (DEWHA 2008a). however, the Significant Impact Guidelines 1.1 (DotE 2013a) identify important populations to include:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and / or
- populations that are near the limit of the species range.

4.4.5 Key Threatening Processes

The main threats to the Flinders Ranges Worm-lizard, as per the Approved Conservation Advice and other sources (DEH 2008c) (DEWHA 2008a), includes the following:

- The clearance of habitat due to intensive crops, livestock grazing and urbanisation.
- Overgrazing by livestock.
- The intensification of agricultural activities (i.e., cropping and pasture improvement).
- Removal of rocks from land surface to improve agricultural uses.
- Modification of habitat through tree planting in native grasslands.
- Changed fire regimes.

4.4.6 Occurrence in Project Area

The Flinders Ranges Worm-lizard is considered highly likely/known within the Disturbance Footprint and within the Development Envelope (Umwelt 2025b, Umwelt 2025h).

Survey Findings

A single FRWL was detected opportunistically under a large flat rock, which was flipped during targeted INTG surveys in spring 2024. There are large areas of suitable habitat, containing rocky surface covering and / or woody debris within the Project Area. Historical BDBSA records occur, with 56 observations in the Search Area between 1965 and 2023. Additional targeted field surveys were conducted in April 2025 in which an estimated 9,300 to 12,400 suitable rocks were upturned, to search for FRWL. A total of five live FRWL were observed during the survey period, and an additional 20 shed skins, with 16 out of 52 quadrats (30.77%) having either a skin or live FRWL. Figure 4.11 displays the location of survey effort and where FRWL (and skins) were recorded across the Project Area during targeted surveys.

All FRWL were located beneath rocks or within or close to ant and termite tunnels. All were found under rocks that were partly embedded in the soil, generally with a flat bottom surface, though rocks were variable in size, with a minimum diameter of 12 cm. All were recorded in grasslands with a moderate to high rock surface covering, with no records being found within the Mallee Woodlands located in the northeast corner of the Project Area.

Detailed survey findings are presented in Att10_GNWF FRWL Assessment, and summarised below.

Habitat Suitability

Almost all Vegetation Associations in the Project Area could be considered to comprise the associated habitat types of open woodland, native tussock grassland, riparian habitats and rocky isolates, except for shrublands (VA12, VA16 and VA20-23), indicating that a total of 496.69 ha of the Disturbance Footprint may be considered suitable habitat. The species is not known to occur in those parts of the Project Area outside the FLB IBRA Bioregion. However, not all areas of each vegetation association contain other associated features such as stony or clay soils with a stony surface, thus targeted surveys were undertaken in areas of potentially suitable vegetation, to further refine suitable habitat based on presence of suitable surface rock cover and soil types. These areas were then classified into areas of Known and Possible habitat based on the presence of FRWL and / or suitability of the habitat, as indicated in Table 4.19. Approximately 153.10 ha of potentially suitable habitat occurs in the Disturbance Footprint, from 3,152.81 ha in the broader GNWF Project Area. Of this, 35.41 ha is 'Known' habitat, classified as patches of suitable habitat which overlap with known records of FRWL; and 117.69 ha of 'Possible' habitat, containing suitable habitat features but with no FRWL observations made in surveyed quadrats.

Table 4.19: Flinders Ranges Worm-lizard Known and Possible habitat based on mapped surface rock overlay and survey findings

Habitat Type	Description	Disturbance Footprint (ha)	GNWF (ha)
Known	FRWL record (recent, historical or sign) intersects with suitable vegetation association and stony surface covering polygon.	35.41	706.11
Possible	Habitat mapped as being suitable vegetation association and with stony or other suitable surface covering.	117.69	2,446.70
Total Extent		**153.10**	**3,152.81**

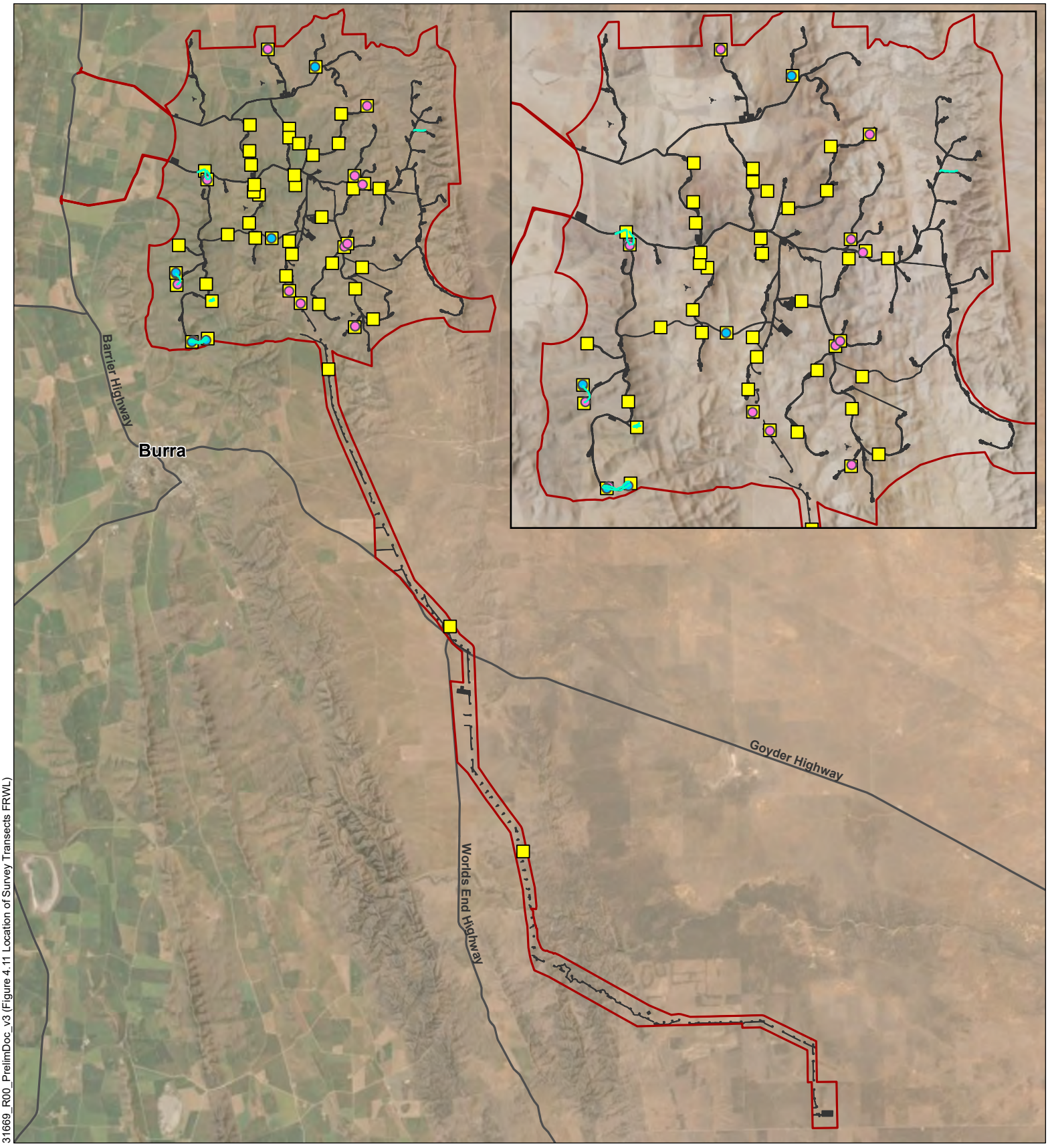
Population Estimates

A population estimate of FRWL has not been made for the GNWF, and there are no population estimates in the literature for the species. The field survey reported a density of 0.40 to 0.54 lizards per 1,000 rocks turned. Including skins as indicators of presence, this density increases to 2.02 to 2.69 lizards per 1,000 rocks turned.

Other similar species which have been more thoroughly studied, such as *Aprasia parapulchella*, have reported varying density of lizards from field surveys, ranging from 5.7 individuals per 1,000 stones (Australian Capital Territory study site) to 3.5 per 1000 stones (Bendigo, Victoria study site). The differences are likely related to habitat factors such as altitude, availability of cover (stones), food and shelter, thermal environment and predation pressure (Wong et al. 2011).

Within the Project Area, there are large areas of potentially suitable rocky habitat, with over 3,152.81 ha known to occur within GNWF and likely more in the broader GNREF and regionally. An abundance of termites (food source for FRWL) was observed across all FRWL survey sites within the WF, including in areas where no FRWL were detected, ants were less commonly observed. Termite and ant food resources are likely to fluctuate according to seasonal conditions as well as influence from agricultural practices, with grassland condition likely to impact termite abundance. The local conditions at the time of the survey were considered generally poor, with an extended period of drought and low grass cover. It is likely that the Project Area has a higher capacity to support FRWL during favourable seasonal conditions. Dispersal of the species is likely to be supported by large contiguous patches of suitable rocky surface covering, enabling safe movement within larger areas of suitable habitat.

Figure 4.11: Location of survey transects, FRWL (and skins) recorded across the Project Area



GNWF

Disturbance Footprint

Flinders Ranges Worm-lizard survey

- FRWL
- FRWL skin
- Survey quadrat location
- Survey transect

31669_R00_PrelimDoc_v3 (Figure 4.11 Location of Survey Transects FRWL)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

N

0 2.5 5 km

4.4.7 Regional Context

The Flinders Ranges Worm-lizard has a limited distribution within South Australia. Within the Project Area, the species is considered Least Concern and Stable / No Change. Further afield, bordering the Project Area, in the Mount Lofty Ranges it is considered Rare and in Probable Decline, however in the Sothern Flinders it is considered Least Concern and Stable, but data is deficient in St Vincent (Table 4.20, Figure 4.12). The species also occurs in the Central Flinders and Northern Flinders where it is rated as regionally Rare, but Stable.

Vegetation is not considered a reliable indicator of habitat suitability for this species due to their reliance on stony surface covering, for which accurate data is not readily available, thus NVIS vegetation mapping has not been used as a predictor of available habitat.

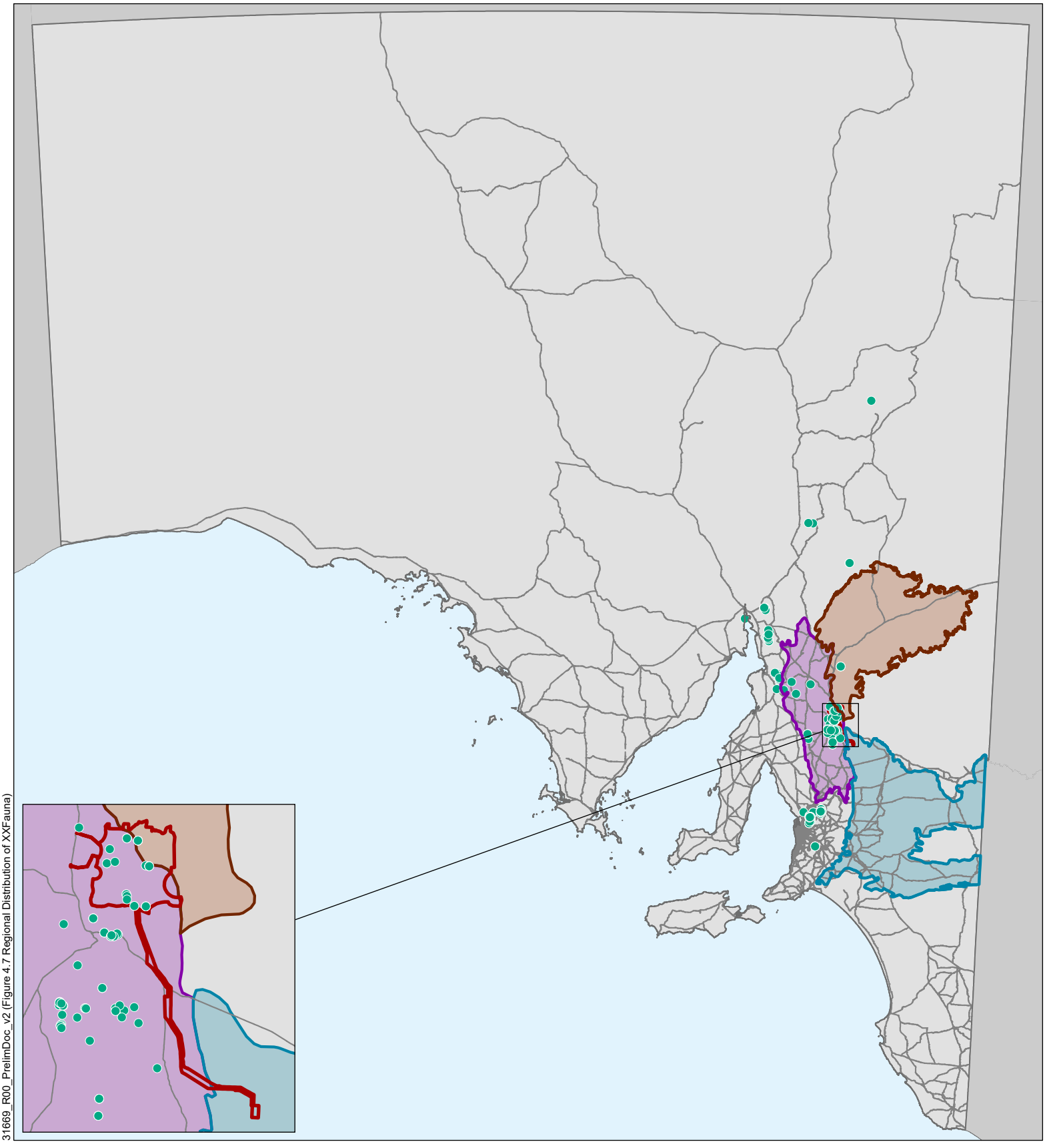
The most recent (2017) assessment under the IUCN Red List of Threatened Species (Fenner et al. 2018) lists the species as Least Concern on the basis that it has a relatively wide range; it is common and is subject to no major threats at present. The IUCN listing states that while it has been considered a threatened species in Australian and State legislation, surveys since 1996 have found that the species is quite common and adaptable.

Table 4.20: Regional assessment for Flinders Ranges Worm-lizard

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending	Area (ha) of potential habitat impacted by the Project
Project Area			
Broughton (FLB2)	Least Concern	Stable/No Change	129.32
Olary Spur (FLB3)	Least Concern	Stable/No Change	23.78
Murray Mallee (MDD2)	Does not occur	N/A	N/A
Bordering Project Area			
Braemer (MDD7)	N/A	N/A	N/A
Mount Lofty Ranges (FLB1)	Rare	Probable Decline	N/A
Southern Flinders (FLB4)	Least Concern	Stable/No Change	N/A
St Vincent (EYB2)	Data Deficient	Data Deficient	N/A

Source: DEW 2025b.

Figure 4.12: Regional distribution of Flinders Ranges Worm-lizard



GNWF

Flinders Rangers Worm-lizard (*Aprasia pseudopulchella*)

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

0 50 100 km

N

31669_R00_PrelimDoc_v2 (Figure 4.7 Regional Distribution of XXFauna)

4.5 Blue-winged Parrot (*Neophema chrysostoma*) – Vulnerable

4.5.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Blue-winged Parrot, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.21.

Table 4.21: Blue-winged Parrot conservation documentation

EPBC Status	**Listed as Vulnerable** (Date effective 31-Mar-2023)
Approved Conservation Advice	Department of Climate Change, Energy, the Environment and Water (2023c). *Conservation Advice for* Neophema chrysostoma *(blue-winged parrot)*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/726-conservation-advice-31032023.pdf. In effect under the EPBC Act from 31-Mar-2023.
Listing Advice	Eligible for listing as Vulnerable under Criterion 1 (population size reduction), as the species has reduced over three generations (11 years), equivalent to 30-50% and the cause is not understood.
Adopted / Made Recovery Plan	There is no adopted or made Recovery Plan for this species, however DCCEEW note that a Recovery Plan is required (DCCEEW 2025b). The species is affected by complex jurisdictional, land tenure and land manager situations, complex and multiple threats that vary in severity across their ranges and multiple conservation planning resources required to develop the plan, that require national, as well as local coordination with multiple stakeholders and complex recovery actions (23/03/2023).
Adopted / Made Threat Abatement Plan	Department of Climate Change, Energy, the Environment and Water (2024c). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24-Dec-2024.
Policy Statements and Guidelines	There are no Policy Statements or Guidelines for the species.

4.5.2 Ecology

The Blue-winged Parrot (*Neophema chrysostoma*) is a slender olive-green parrot characterised by the distinctive blue patches on its wings and a yellow facial patch with a blue band running across the forehead (DCCEEW 2023c). The species can be difficult to distinguish between other similar *Neophema* parrots which occupy the same range, including Elegant Parrots (*Neophema elegans*) and Critically Endangered Orange-bellied Parrots (*Neophema chrysogaster*), with reports of mixed flocks feeding on the ground near Robe (southeastern South Australia) (Forshaw 2006).

Birds congregate in pairs and small parties to forage near or on the ground for the seeds of native and introduced grasses, herbs, and shrubs.

The species breeds during spring and summer in Tasmania, coastal southeastern South Australia and southern Victoria (DCCEEW 2023c), forming monogamous pairs, and building nests in vertical hollows in live or dead tree stumps in eucalypt forest and woodlands. The clutch size is 4-6 eggs which are incubated

by the female, with both parents feeding the nestlings during this time (approximately 35 days) (DCCEEW 2023c; BirdLife Australia 2025).

4.5.2.1 Dispersal

During the non-breeding period (autumn to early spring), most Blue-winged Parrots disperse from breeding areas to forage overwinter and can be found in northern Victoria, eastern South Australia, south-western Queensland, and western New South Wales (DCCEEW 2023c). The movement ecology of *Neophema* parrots is understudied, however, Stojanovic et al. (2020) state that different subpopulations of Blue-winged Parrots may be partial / obligate migrants, resident or nomadic. The study hypothesised that the wing shape of grass parrots will correspond to their expected migration habits, and found that Blue-winged Parrots overlapped with highly migratory species such as Orange-bellied Parrots, but also with related sedentary (Elegant Parrot) and non-migratory (Rock Parrot) parrots. This suggests that each of these species has the capability to undertaken long movements.

4.5.3 Habitat

Suitable habitat during the non-breeding period is broad, with the species considered a habitat generalist (Stojanovic et al. 2020). Habitat ranges from coastal saltmarsh through to semi-arid chenopod shrublands; however, Blue-winged Parrots will typically favour grasslands and grassy woodlands in proximity to watercourses and wetlands (DCCEEW 2023c). They are also known to utilise modified habitats such as airfields, golf courses and paddocks. Breeding habitat within the breeding range, includes eucalypt forests and woodlands, as well as heathy forests. The species is associated with threatened ecological community, Subtropical and Temperate Coastal Saltmarsh (DCCEEW 2023c).

Although typically associated with near coastal habitats such as grassy areas near waterways and wetlands including saltmarsh, individuals are known on occasion to move more than 100 km inland to feed in semi-arid chenopod shrublands and sparse grasslands (Holdsworth et al. 2021).

4.5.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. The Conservation Advice lists habitat as critical to the survival of the species as follows:

- Foraging and staging habitats found from coastal, sub-coastal and inland areas, right through to semi-arid zones. This includes grasslands, grassy woodlands, and semi-arid chenopod shrublands with native and introduced grasses, herbs and shrubs.
- Wetlands both near the coast and in the semi-arid zone used for foraging and staging.
- Eucalypt forests and woodlands within the breeding range in Tasmania, coastal south-eastern South Australia, and southern Victoria.
- Live and dead trees and stumps with suitable hollows within the breeding range.

Any known or likely habitat should be considered as habitat critical to the survival of the species.

4.5.4 Distribution and Abundance

The species is a partial migrant, with breeding restricted to central and eastern areas of Tasmania, coastal southeastern South Australia and southern Victoria from Port Albert to Nelson (DCCEEW 2023c), dispersing in autumn to early spring, to overwinter in various parts of northern Victoria, eastern South Australia, south-western Queensland, and western New South Wales. The movements of the Blue-winged Parrot are poorly understood, with a known migration occurring to and from Tasmania across the Bass Strait after breeding each year in March to April and returning in August to October, however some birds overwinter in Tasmania off the Bass Strait islands (BirdLife Australia 2025). Mobile flocks feed in saltmarsh and rough pasture in coastal Victoria, with other birds known to move more than 100 km inland to feed in semi-arid chenopod shrubland and sparse grasslands (Garnett and Baker 2021).

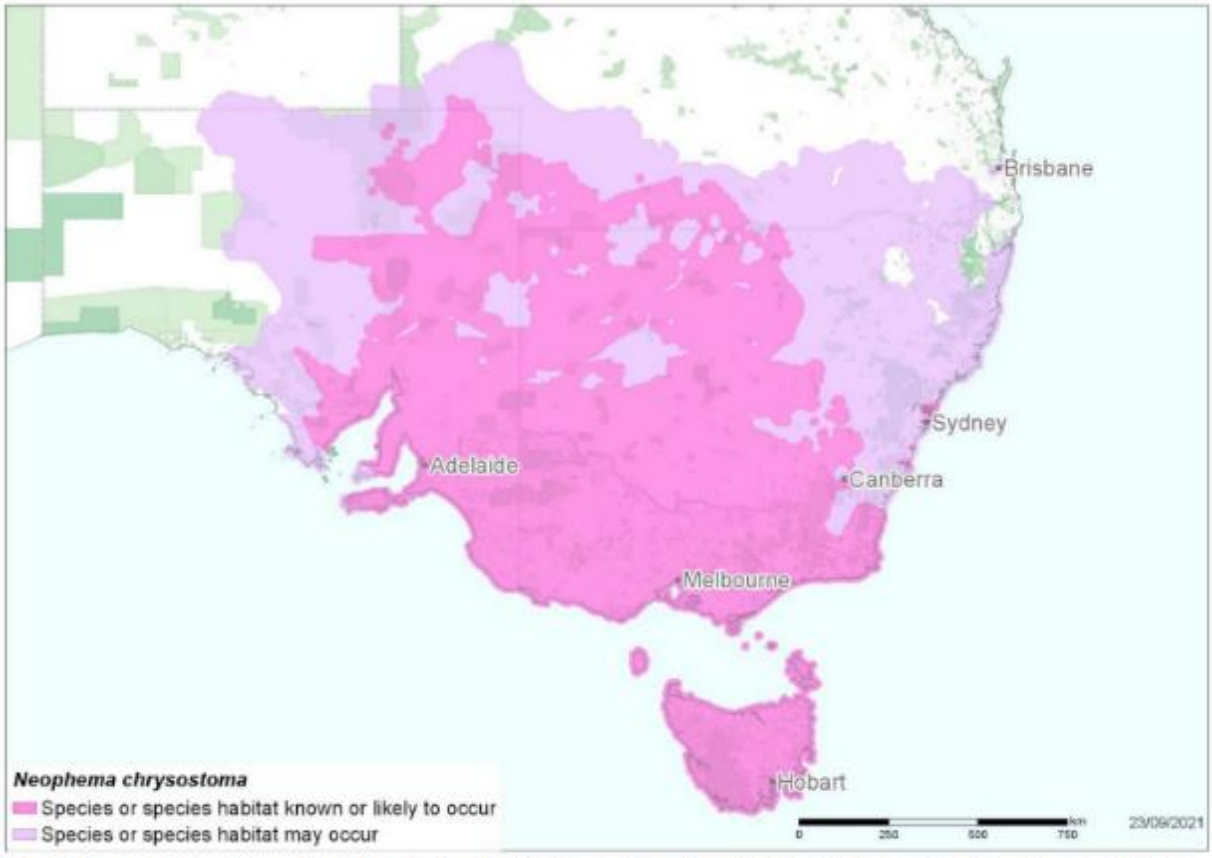
The population is thought to contain two subpopulations, with Victorian and Tasmanian breeding populations assumed to be separate, with the largest subpopulation in Tasmania (DCCEEW 2023c; Garnett and Baker 2021).

The current population is estimated to be 10,000 mature individuals in the wild (declining), with an EOO of 170,000 km^2 (stable) and an AOO of 11,000 km^2 (contracting) (Garnett and Baker 2021) (Figure 4.13). The Approved Conservation Advice considers that the Blue-winged Parrot has undergone a substantial population reduction over three generations (11 years), which is equivalent to a 30 – 50 % decline, and that the decline has not ceased. Consequently, the species has met the relevant elements of Criterion 1 for listing as Vulnerable.

4.5.4.1 Important Populations

No 'important populations' are defined in the Conservation Advice for the Blue-winged Parrot, however the Significant Impact Guidelines 1.1 (DotE 2013a) identify important populations to include:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and / or
- populations that are near the limit of the species range.



Source: Base map Geoscience Australia; species distribution data Species of National Environmental Significance database.
Caveat: The information presented in this map has been provided by a range of groups and agencies. While every effort has been made to ensure accuracy and completeness, no guarantee is given, nor responsibility taken by the Commonwealth for errors or omissions, and the Commonwealth does not accept responsibility in respect of any information or advice given in relation to, or as a consequence of, anything contained herein.
Species distribution mapping: The species distribution mapping categories are indicative only and aim to capture (a) the habitat or geographic feature that represents to recent observed locations of the species (known to occur) or habitat occurring in close proximity to these locations (likely to occur); and (b) the broad environmental envelope or geographic region that encompasses all areas that could provide habitat for the species (may occur). These presence categories are created using an extensive database of species observations records, national and regional-scale environmental data, environmental modelling techniques and documented scientific research.

Figure 4.13: Modelled distribution of the Blue-winged Parrot (DCCEEW 2023c)

4.5.5 Key Threatening Processes

The primary threats to the Blue-winged Parrot, as listed in the Conservation Advice, are habitat loss and the deterioration of habitat quality. This encompasses land clearance and habitat degradation caused by domestic livestock grazing and invasive weeds. However, it is not clearly understood what the driving process for species decline is (DCCEEW 2023c). Clearing of forests may have benefited the species in terms of creating foraging habitat, however clearance which results in loss of hollows within the breeding range of the species is likely to be a driver for decline (BirdLife Australia 2025), and other effects associated with clearing non-breeding habitat such as increased risk of predation, edge effects and disconnected dispersal paths are likely to further impact the species (DCCEEW 2023c).

Other threats to the species include:

- Inappropriate fire regimes.
- Climate change increasing the probability of extreme events (i.e., fire, heatwaves, and drought), and sea level rise thereby reducing the productivity / availability of coastal saltmarsh and other foraging habitats.
- Predation by Feral Cats (*Felis catus*), the Red Fox (*Vulpes vulpes*), and by Sugar Gliders (*Petaurus breviceps*) in Tasmania.
- Competition for tree hollows.
- Psittacine Beak and Feather Disease.

4.5.6 Occurrence in Project Area

The Blue-winged Parrot is considered a possible occurrence within the Disturbance Footprint the Development Envelope (Umwelt 2025b) and broader Project Area. Blue-winged Parrot is considered as a precautionary measure, when considering impacts on MNES.

Survey Findings

Despite numerous recent ecological surveys within the GNWF, the species has not been recorded (Umwelt 2025b). The closest records of the species occurring to the Project include a record (2001) of a Blue-winged Parrot within Red Banks Conservation Park approximately 8.5 km to the southeast of the WF boundary and approximately 7 km east of the OTL at its nearest point, and another record (2003) at Caroona Creek Conservation Park approximately 12 km north of the WF (DEW 2025a).

Habitat Suitability

Potentially suitable habitat in the GNWF Project is limited to foraging habitat only and does not include preferred wetland habitat nor any breeding habitat. Given the broad description of foraging and staging habitats, almost all vegetation within their mapped extent of occurrence could be considered critical habitat. However, given the limited number of records of Blue-winged Parrot in the surrounding region, and other factors such as the predominantly steep and hilly topography of the WF portion of the Project Area, they are considered to possibly occur in low numbers on occasion, and the habitat is unlikely to be critical in the sense of long-term maintenance of the species.

Vegetation Associations which broadly match the description for foraging habitats are listed in Table 4.22, with Blue-winged Parrot habitat mapped in Figure 4.14. There is a total of 15,540.66 ha of potentially suitable habitat in the GNWF Project Area, of which a maximum of 471.87 ha is inside the Disturbance Footprint and potentially impacted by the Project. This includes 268.65 ha of permanent clearance and 203.22 ha of temporary clearance. Vegetation occurring along the OTL is likely to represent more suitable habitat than the WF, due to the lower topography. Furthermore, within the GNWF, preferred habitats are likely to be those within proximity of creek lines or other low-lying areas which have not been specifically mapped.

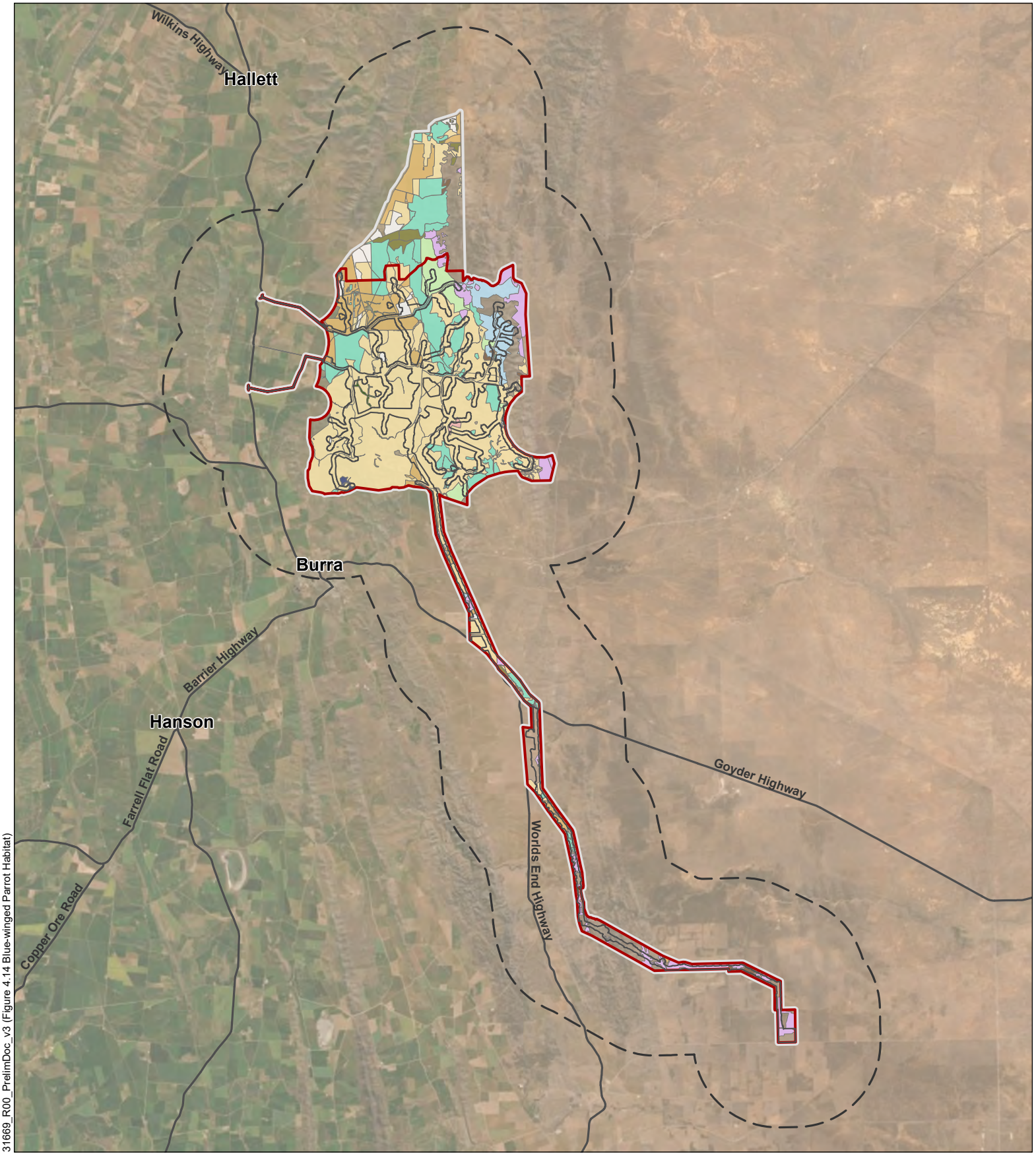
Table 4.22: Habitat for Blue-winged Parrot in GNWF and Project Area

Distribution and Habitat Requirements		VA	Disturbance Footprint (ha)	GNWF (ha)
IBRA Bioregion	FLB, MDD	Block A/B/C/D		
Habitat Requirement	Habitat critical to the survival of the Blue-winged Parrot incorporate areas that include: • Foraging and staging habitats found from coastal, sub-coastal and inland areas, right through to semi-arid zones including grasslands, grassy woodlands, and semi-arid chenopod shrubland with native and introduced grasses, herbs, and shrubs. • Wetlands both near the coast and in semi-arid zones used for foraging and staging. • Eucalypt forests and woodlands within the breeding range in Tasmania, coastal southeastern SA, and southern Victoria. • Live and dead trees and stumps with suitable hollows within the breeding range. The species forages predominantly near or on the ground in a range of native and introduced herbs, grasses, and shrubs. They are also known to utilise altered environments such as airfields, golf courses, paddocks and cropped land.	VA1	19.56	725.89
		VA4	0.06	0.07
		VA5	0.69	18.00
		VA6	8.59	1,932.13
		VA8	1.17	28.37
		VA9	16.54	544.57
		VA10	0.67	33.16
		VA11a/b	350.59	9,566.14
		VA12	27.35	74.66
		VA14	0.05	1,105.91
		VA15	0.02	10.33
		Exotic grassland	17.73	33.16
		Cropped	28.85	164.95
		Total	**471.87**	**15,540.66**

Population Estimates

No population estimates have been made for the Blue-winged Parrot due to the lack of available records. No population estimates are available for the region. The very low number of historical records and lack of observations despite frequent surveys, indicates that there is no permanent population of the species in the Project Area, and that the species is unlikely to be a regular visitor to the Project Area. The western edge of the Project Area is almost 100 km from the nearest coastline and therefore it is likely that only occasional migrants venture so far inland to forage, with core foraging habitat closer to the coast.

Figure 4.14: Blue-winged Parrot potential foraging habitat and records within 5 km



GNWF
GNREF
Development Envelope
Search Area

Blue-winged Parrot habitat

VA1: *Eucalyptus porosa +/- E. gracilis* woodland over Chenopods
VA4: *Acacia pycnantha* tall shrubland over grass
VA5: *Maireana aphylla* low shrubland
VA6: Lomandra Grassland
VA8: *Eucalyptus leucoxylon ssp. Pruinosa* (Inland South Australian Bluegum) Open Woodland
VA9: *Maireana rohrlachii* open shrubland
VA10: *Allocasurina verticillata* over native grasses and herbs
VA11a: Native grassland
VA11b: Native grassland and emergent trees
VA12: Mixed Chenopod shrubland
VA14: *E. camaldulensis* Riparian Woodland
VA15: *Juncus sp.* sedgeland in minor drainage pipe
Cropped
Exotic

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

0 2.5 5 km

N

4.5.7 Regional Context

Within the Project Area, Blue-winged Parrot is considered naturally rare. Within the affected subregions of Olary Spur and Broughton, it is listed as Rare and in Probable Decline. Further to the south, within the Murray Mallee region it is considered Rare, but Stable (Table 4.23). In surrounding regions, the species is considered Rare or Vulnerable and in Probable Decline. In the northern semi-arid and arid regions, the species is Rare or Vulnerable but with Stable populations, whereas in the southern more developed regions from the Mid-North to the south-east, which have been cleared for agriculture and development, the species is considered in Probable Decline.

The area of potentially suitable habitat being cleared and the area of potentially suitable habitat within each of the affected subregions is listed in Table 4.24 and displayed in Figure 4.15, along with historical records of the species. Of the 1,620,063 ha of potentially suitable habitat in the affected subregions, 471.87 ha occurs within the Disturbance Footprint, representing 0.03% of the potentially suitable habitat available in the subregions. The area of potential habitat in the Project Area includes areas of exotic grassland and cropped areas, which are not included in the NVIS mapping. Thus, as Blue-winged Parrots are known to utilise these modified areas for foraging, the actual area of available habitat is likely to be significantly higher than indicated in NVIS mapping.

Table 4.23: Regional assessment for Blue-winged Parrot

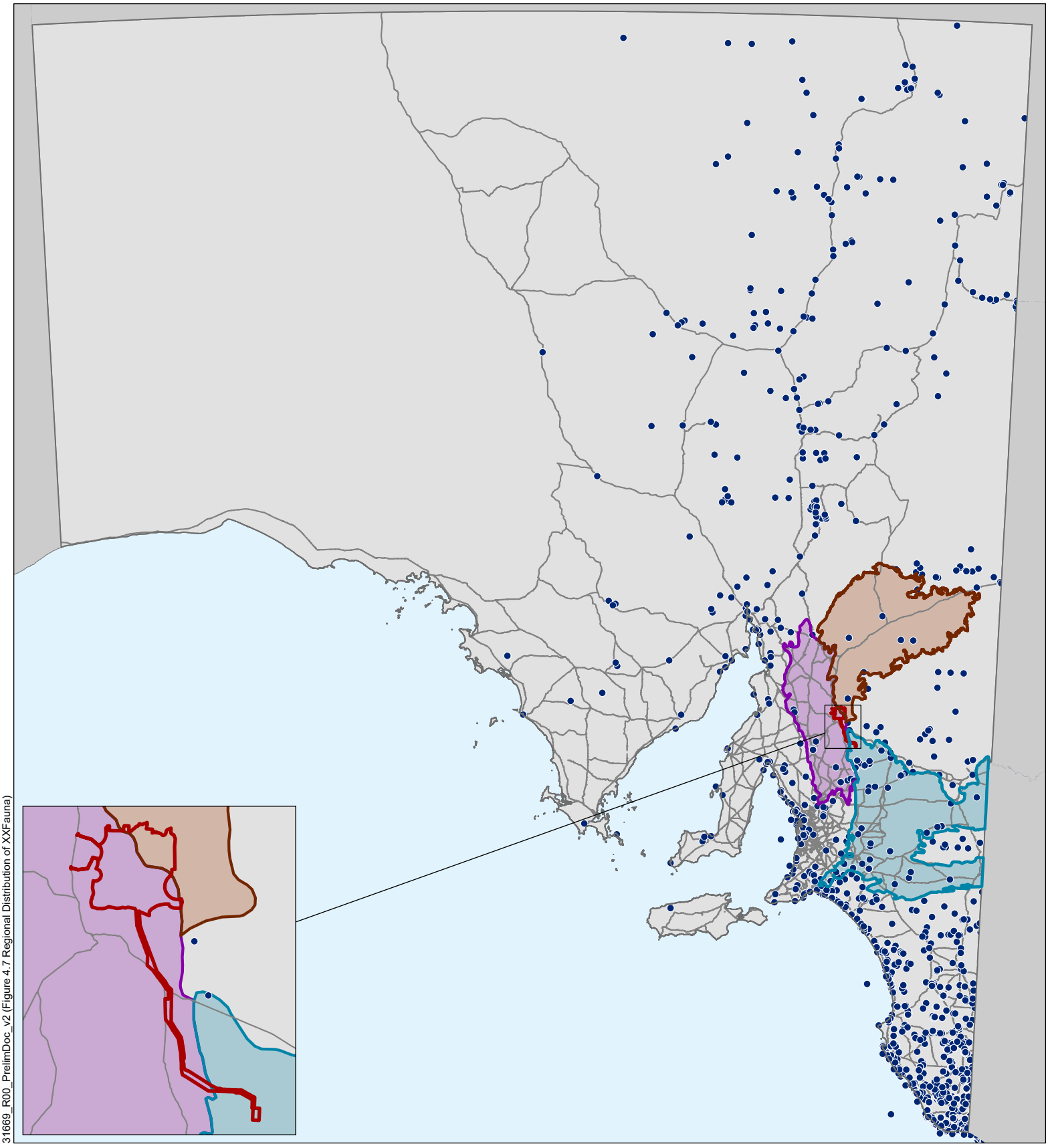
IBRA Subregion	Status Description (DEW Regional Assessment)	Trending	Area (ha) of potential habitat impacted by the Project	Area (ha) of potential habitat in the Subregion (NVIS mapping)	% of suitable habitat in subregion in DF
Project Area					
Broughton (FLB2)	Rare	Probable Decline	373.27	42,443	0.88%
Olary Spur (FLB3)	Rare	Probable Decline	78.59	1,367,949	<0.01%
Murray Mallee (MDD2)	Rare	Stable / No Change	20.00	209,671	<0.01%
Bordering the Project Area					
Braemer (MDD7)	Rare	Probable Decline	N/A	N/A	N/A
Mount Lofty Ranges (FLB1)	Vulnerable	Probable Decline	N/A	N/A	N/A
St Vincent (EYB2)	Rare	Probable Decline	N/A	N/A	N/A

Source: DEW 2025b

Table 4.24: NVIS Major Vegetation Subgroups which provide potentially suitable habitat for Blue-winged Parrot in Broughton, Olary Spur and Murray Mallee IBRA Subregions

NVIS Major Vegetation Subgroup	Broughton (ha)	Murray Mallee (ha)	Olary Spur (ha)	Grand Total (ha)
Callitris forests and woodlands	256	11	1,241	1,507
Callitris open woodlands	63	1,676	5	1,743
Casuarina and *Allocasuarina* forests and woodlands	785	1,529	51	2,365
Casuarina and *Allocasuarina* open woodlands with a shrubby understorey	1,500	7,784	53,817	63,101
Eucalyptus (+/- low) open woodlands with a chenopod or samphire understorey	0	19	0	19
Eucalyptus low open woodlands with tussock grass	169	885	17	1,070
Eucalyptus open forests with a grassy understorey	25	110	0	135
Eucalyptus open woodlands with a grassy understorey	322	26	0	348
Eucalyptus tall open forests and open forests with ferns, herbs, sedges, rushes or wet tussock grasses	0	794	0	794
Eucalyptus woodlands with a chenopod or samphire understorey	142	771	9,128	10,041
Eucalyptus woodlands with a tussock grass understorey	10,185	0	0	10,185
Eucalyptus woodlands with ferns, herbs, sedges, rushes or wet tussock grassland	204	2,341	0	2,545
Freshwater, dams, lakes, lagoons or aquatic plants	920	9,685	357	10,962
Heathlands	27	1,822	0	1,849
Lignum shrublands and wetlands	8	1,935	0	1,944
Mallee with a tussock grass understorey	167	1,235	0	1,401
Melaleuca open forests and woodlands	0	58	0	58
Melaleuca shrublands and open shrublands	24	7,925	0	7,948
Mixed chenopod, samphire +/- forbs	23	8,356	9,218	17,598
Open mallee woodlands and sparse mallee shrublands with a tussock grass understorey	285	4,686	0	4,971
Other open woodlands	0	33,000	40,303	73,303
Other shrublands	2,723	575	104,642	107,940
Other sparse shrublands and sparse heathlands	0	444		444
Other tussock grasslands	1,888	955	82,857	85,700
Saline or brackish sedgelands or grasslands	1,022	374	2	1,398
Salt lakes and lagoons	0	0	322	322
Saltbush and/or Bluebush shrublands	1,030	68,256	1,019,224	1088,510
Sedgelands, rushs or reeds	3,215	950	42,310	46,475
Temperate tussock grasslands	4,731	51,602	415	56,748
Wet tussock grassland with herbs, sedges or rushes, herblands or ferns	12,727	1,868	4,041	18,636
Grand Total	**42,443**	**209,671**	**1,367,949**	**1,620,063**

Figure 4.15: Regional distribution of Blue-winged Parrot



GNWF

- Blue-winged Parrot (*Neophema chrysostoma*)

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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31669_R00_PrelimDoc_v2 (Figure 4.7 Regional Distribution of XXFauna)

4.6 Diamond Firetail (*Stagonopleura guttata*) – Vulnerable

4.6.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Diamond Firetail, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.25.

Table 4.25: Diamond Firetail conservation documentation

EPBC Status	**Listed as Vulnerable** as *Stagonopleura guttata* (Date effective 31-Mar-2023)
Approved Conservation Advice	Department of Climate Change, Energy, the Environment and Water (2023e). *Conservation Advice for* Stagonopleura guttata *(diamond firetail)*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/59398-conservation-advice-31032023.pdf. In effect under the EPBC Act from 31-Mar-2023.
Listing Advice	The species was assessed by the TSSC to be eligible for listing as Vulnerable under Criterion 1: Population size reduction. The population has declined by an estimated 30-50% every ten years.
Adopted / Made Recovery Plan	There is no adopted or made Recovery Plan for this species, however, DCCEEW note that a Recovery Plan is required as the threats facing the entity, and the recovery actions needed can most effectively be guided via an approved Recovery Plan for the species. The species is affected by serious threats, most notably habitat loss, degradation, fragmentation and removal, climate change, predation from invasive species, invasive weeds, firewood collection and competition with noisy miners (Manorina melanocephala). The entity has complex jurisdictional, land tenure and land manager situations, complex and multiple threats that vary in severity across their ranges and multiple conservation planning resources required to develop the plan, that require national, as well as local coordination with multiple stakeholders and complex recovery actions (23 March 2023).
Adopted / Made Threat Abatement Plan	Department of Climate Change, Energy, the Environment and Water (2024c). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24-Dec-2024.
Policy Statements and Guidelines	There are no Policy Statements of

4.6.2 Ecology

The Diamond Firetail is a large finch with a bright red bill, rump, and eye-rings. The species has a white throat and lower breast, separated by a black breast band that extends into white-spotted black flanks, with a grey head and ash wings.

Birds congregate in small flocks, of between five and 40 individuals. Diamond Firetails feed predominately on the ground foraging on leaves, ripe grass seeds, and on insects (particularly during the breeding season) (Blakers et al.1984 and Read 1994 in DCCEEW 2023e). Reproduction occurs between August and January when groups separate into small colonies to breed. Their bottle-shaped nests are constructed out of plant material and feathers and are often built into defensible locations (i.e., the base of raptor nests

and in the prickly foliage of shrubs such as hakeas and boxthorn). The clutch size ranges between four and nine eggs, with incubation performed by both sexes (DEH 2008d).

4.6.2.1 Dispersal

The species appears to be relatively sedentary, although some populations will undertake localised migrations, with one study finding that banded individuals have been located up to 2 km away from their original banding location (Paton and Rogers 2004 in DEH 2008d).

A study looking at strategies for ecological restoration and their benefit to five woodland bird species, included parameters gleaned from local experts required for each species to 1) minimum viable population size to sustain a population in an isolated patch, 2) dispersal ability of the species and 3) the area needed by a breeding pair for typical breeding and feeding activities. The study included Diamond Firetail as a study species and reported that a minimum of 1-ha was required per breeding pair, dispersal ability was 1000 m and the minimum number of breeding pairs to sustain a viable population was 20 (Polyakov et al. 2017).

Another report from South Australia indicated that the home range size for a breeding pair of Diamond Firetail was between 2 to 20 ha, and that the longest movement of a marked bird in the study was 5 km (Paton et al. 2004).

4.6.3 Habitat

Diamond Firetails occupy *eucalypt*, *acacia*, and *casuarina* woodlands, open forests and other lightly timbered habitats (including farmland and grassland with scattered trees). They typically prefer areas with high grass cover and with relatively low tree and litter densities (DCCEEW 2023e). In SA the broad vegetation group they are associated with is Grassy Woodland (DEH 2008d).

They are reportedly able to live further from water sources than other firetails but are still dependent on having a reliable water source (Immelmann 1982 in DEH 2008d). Availability of suitable seed throughout the year is an essential habitat requirement, with a diversity of native grasses with differing phenology essential for their persistence, but presence of exotic grasses still providing useful food source when available.

4.6.3.1 Critical Habitat

No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. However, the Approved Conservation Advice lists habitat critical to the survival of the species as:

- Eucalypt, acacia, and casuarina woodlands, open forests and other lightly timbered habitats.
- Low tree density, few large logs, and little litter cover but high grass cover for foraging, roosting, and breeding.
- Drooping she-oak (*Allocasuarina verticillata*) within the Mt Lofty Ranges.

- Additionally, any known or likely habitat should be considered as habitat critical to the survival of the species.

4.6.4 Distribution and Abundance

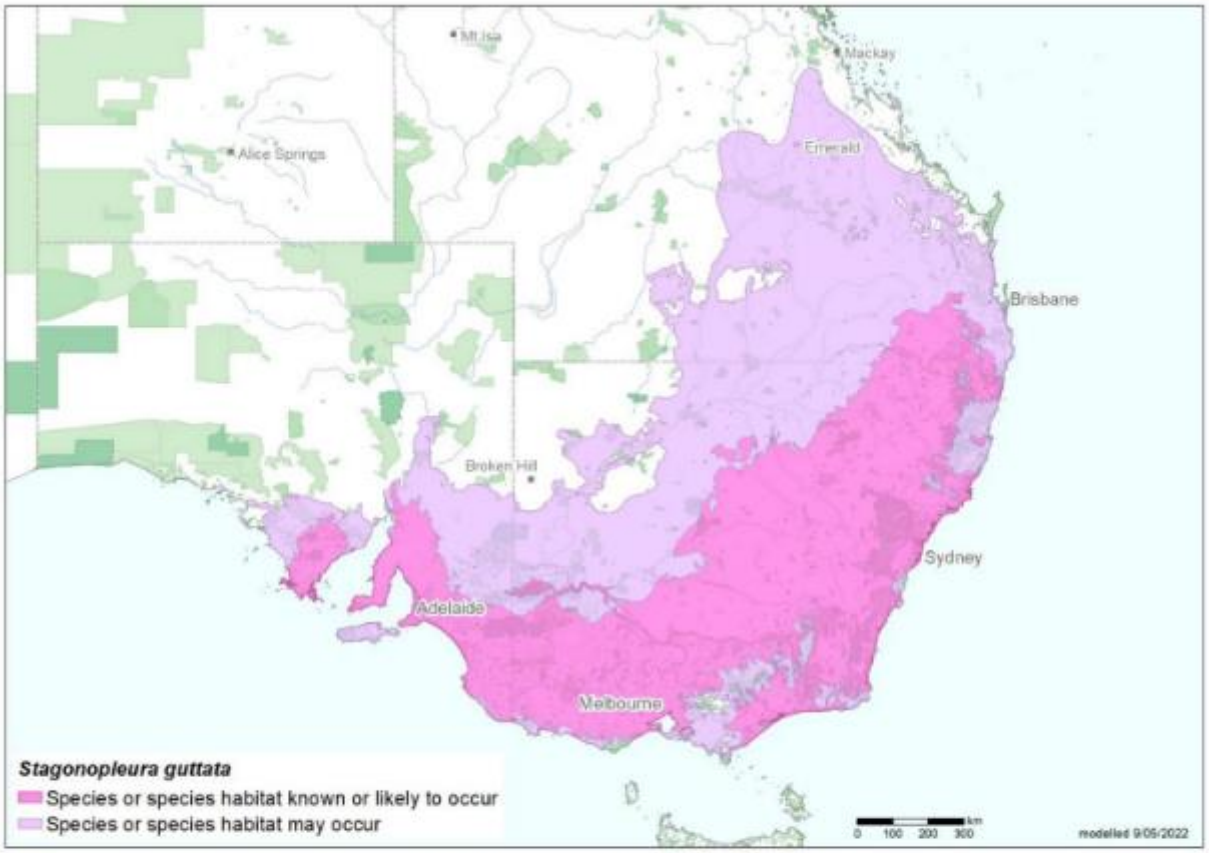
The current population is estimated to be 136,000 mature individuals in the wild (declining), with an EOO of 1,500,000 km^2 (contracting) and an AOO of 25,000 km^2 (contracting) (Garnett and Baker 2021) (Figure 4.18). The Conservation Advice considers that the Diamond Firetail has undergone a substantial population reduction over 10 years, which is equivalent to a 30 – 50 % decline, and that the decline has not ceased (DCCEEW 2023e). Consequently, the species has met the relevant elements of Criterion 1 for listing as Vulnerable.

The species appears to have been separated into three isolated subpopulations: Eyre Peninsula, Mount Lofty to Southern Flinders Ranges, and the south-east, with a few records from the Yorke Peninsula which may represent a fourth subpopulation (Garnett and Baker 2021). Little is known about their home range, however in revegetation areas at Monarto (SA) densities varied seasonally, from 0.58 birds per hectare in March to a low of 0.01 birds per hectare in August, suggesting that populations may fluctuate according to conditions available (Paton and Rogers 2004 in DEH 2008d). Populations appear unable to persist in areas which lack remnants of native vegetation larger than 200 hectares.

4.6.4.1 Important populations

No 'important populations' are defined in the Conservation Advice for the Diamond Firetail (DCCEEW 2023e), however the Significant Impact Guidelines 1.1 (DotE 2013a) identify important populations to include:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and / or
- populations that are near the limit of the species range.



Source: Base map Geoscience Australia; species distribution data Species of National Environmental Significance database.
Caveat: The information presented in this map has been provided by a range of groups and agencies. While every effort has been made to ensure accuracy and completeness, no guarantee is given, nor responsibility taken by the Commonwealth for errors or omissions, and the Commonwealth does not accept responsibility in respect of any information or advice given in relation to, or as a consequence of, anything contained herein.
Species distribution mapping: The species distribution mapping categories are indicative only and aim to capture (a) the habitat or geographic feature that represents to recent observed locations of the species (known to occur) or habitat occurring in close proximity to these locations (likely to occur); and (b) the broad environmental envelope or geographic region that encompasses all areas that could provide habitat for the species (may occur). These presence categories are created using an extensive database of species observations records, national and regional-scale environmental data, environmental modelling techniques and documented scientific research.

Figure 4.16: Modelled distribution of the Diamond Firetail (DCCEEW 2023e)

4.6.5 Key Threatening Processes

The primary threat to the Diamond Firetail, as per the Conservation Advice (DCCEEW 2023e), is the clearance of native vegetation (historical and current). The degradation of habitat has also negatively impacted the species through the replacement of native perennial grasses with exotic annual grasses, leading to food shortages that have been exacerbated by overgrazing. Other threats include:

- Increases in the frequency, scale and intensity of fire.
- Climate change increasing the likelihood of extreme events (i.e., fire, heatwaves, and drought).
- Territorial competition with Noisy Miners (*Manorina melanocephala*).
- Increased predation by Pied Currawongs (*Strepera graculina*) due to habitat fragmentation.

- Predation by cats, foxes and avian predators, with one South Australian study finding up to 100% of nests were depredated in one year, and 90.9% in a second year of the study (McGuire and Kleindorfer 2007).

4.6.6 Occurrence in Project Area

The Diamond Firetail is considered highly likely/known within the Disturbance Footprint of the southern portion of the OTL the Development Envelope, and is considered to possibly occur within the WF, though extensive surveys have not detected it in this location to date (Umwelt 2025b).

Survey Findings

Diamond Firetail was detected outside of GNWF, but within the Search Area during Mallee Bird Community targeted surveys along Black Peake Road in *Eucalyptus porosa* open grassy woodland (VA1). Additionally, 11 BDBSA historical records are reported between 1987 and 2017(Umwelt 2025b).

Most historical records of the species occurring near the GNWF occur to the south or west of the GNWF (DEW 2025a), with only one record (2005) of the species occurring to the north-east of the WF (approximately 15 km to the north-east) (DEW 2025a). There are several records of the species occurring near to the OTL, including those recorded by EBS (now Umwelt) in association with the separate but nearby Goyder South (Stage 2) Project Area.

The species has not been previously recorded within the WF portion of the Project Area, despite extensive survey effort including seven seasonal BBUS surveys in potentially suitable habitat. Given the lack of records in the WF area, and lack of observations over multiple survey periods, habitat within the WF portion of the Project Area is considered marginal and unlikely to support a resident population of the species.

Habitat Suitability

Within the GNWF, several vegetation associations broadly match the description for this species, however, based on on-ground field surveys, most areas mapped as mallee woodland, contain a high tree density and chenopod / sclerophyll dominated shrub understorey, that is unlikely to provide preferred habitat for this species (i.e. comprising grassy / herbaceous understorey component). Edges of mallee woodland (VA1 and VA18) which adjoin grassland (VA11b) or chenopod shrubland (VA12) with a grassy understorey are likely to provide the most suitable locations. VA8 and VA11b contain both suitable lightly timbered foraging habitats and large logs, with higher grass cover suitable for foraging roosting and breeding.

Potentially suitable habitat in the GNWF Project Area and Disturbance Footprint is listed in Table 4.26, with Diamond Firetail habitat mapped in Figure 4.17. There is a total of 1,511.87 ha of potentially suitable habitat in GNWF Project Area. Of this, a maximum of 31.42 ha including 17.91 ha permanent and 13.50 ha temporary clearance, is inside the Disturbance Footprint and potentially impacted by the GNWF Project. Of this, 3.45 ha of the Disturbance Footprint includes elements which may contain features listed as critical habitat, indicated by "*" or "^".

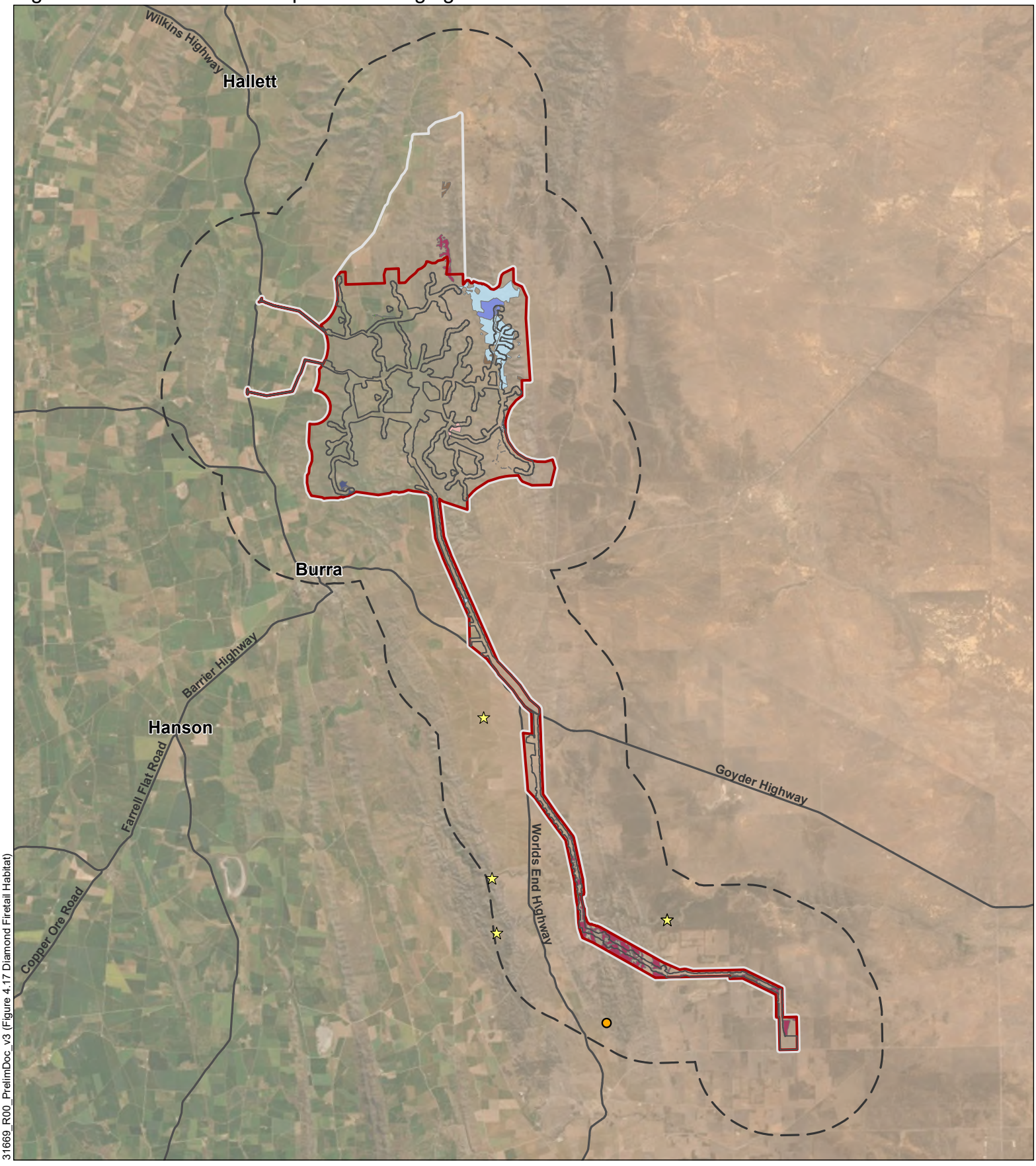
Table 4.26: Habitat for Diamond Firetail in GNWF and Project Area

Distribution and Habitat Requirements		VA	Disturbance Footprint (ha)	GNWF (ha)
IBRA Bioregion	FLB, MDD	Block A/B/C/D		
Habitat Requirement	Prefers open grassy woodland, farmland and grassland with scattered trees. Critical habitat for Diamond Firetail includes areas of: • *Eucalyptus, Acacia* or *Casuarina* woodlands, open forests, and other lightly timbered habitats. * • Low tree density, few large logs, and little litter cover but high grass cover for foraging, roosting, and breeding. ^	VA1	19.56	725.89
		VA3	1.49	119.53
		VA4*	0.06	0.07
		VA8*^	1.17	28.37
		VA10*	0.67	33.16
		VA11b*^	1.50	74.66
		VA14*	0.05	10.33
		VA18	6.92	519.85
		Total	**31.42**	**1,511.87**

Population Estimate

No population estimates have been made for Diamond Firetail due to the lack of available records. No population estimates are available for the region. The very low number of historical records and lack of observations despite frequent surveys, indicates that there is no permanent population of the species in the Project Area, particularly the Wind Farm. Scattered occurrences further to the south may indicate presence of sedentary populations, however they may also indicate more sporadic foraging locations.

Figure 4.17: Diamond Firetail potential foraging habitat and records within 5 km



GNWF
GNREF
Development Envelope
Search Area
Diamond Firetail record (Umwelt)
Diamond Firetail record (BDBSA)

Diamond Firetail habitat

VA1: *Eucalyptus porosa +/- E. gracilis* woodland over Chenopods
VA3: *E. porosa* low woodland over *Schlerophyllous* shrubs
VA4: *Acacia pycnantha* tall shrubland over grass
VA8: *Eucalyptus leucoxylon ssp. Pruinosa* (Inland South Australian Bluegum) Open Woodland
VA10: *Allocasurina verticillata* over native grasses and herbs
VA11b: Native grassland and emergent trees
VA14: *E. camaldulensis* Riparian Woodland
VA18: Mixed Mallee over Chenopods and native grasses

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

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31669_R00_PrelimDoc_v3 (Figure 4.17 Diamond Firetail Habitat)

4.6.7 Regional Context

The Project Area occurs across three IBRA Subregions, from north to south, Olary Spur, Broughton, and Murray Mallee. The species status for each of these regions, using NatureMaps Regional Assessment is presented in Table 4.27 and displayed in Figure 4.18. The species is listed as Endangered with trend of Definite Decline across all subregions within the Project Area. Bordering the Project Area in the regions of Mount Lofty Ranges, St Vincent and Southern Flinders Ranges it is known as Endangered, Critically Endangered and Vulnerable respectively, and in Definite Decline in all regions. Further afield, the species is listed as in Definite or Probable Decline across all subregions from which it is known.

Declines in the Mount Lofty Ranges (MLR) region of SA, further to the south of the Project Area are well documented, with less than 6.5% of their original habitat remaining in the region (Ford et al. 2001 in McGuire and Kleindorfer 2007). The eastern MLR population is considered its stronghold, along with the northern agricultural area, where it persists only in larger remnants (>50 ha), and isolated from the rest of the species eastern distribution (DEH 2008d). Surveys are limited within the region relevant to the Project Area, however for the MLR population the average recording rate across the region declined from 27% to 6% of surveys for the pre-1980 to post 1995 periods.

The area of potentially suitable habitat in the Disturbance Footprint within each of the affected subregions is listed in Table 4.27, along with the area of potential habitat in the subregions from NVIS mapping. Of the 347,531 ha of potentially suitable habitat in the affected subregions, 31.42 ha occurs within the Disturbance Footprint, representing 0.009% of the potentially suitable habitat available in the subregions. This does not account for the size of patches, which cumulatively may equate to a large area, but consist of multiple small patches which do not support populations or breeding pairs of the species.

Table 4.27: Regional assessment of Diamond Firetail

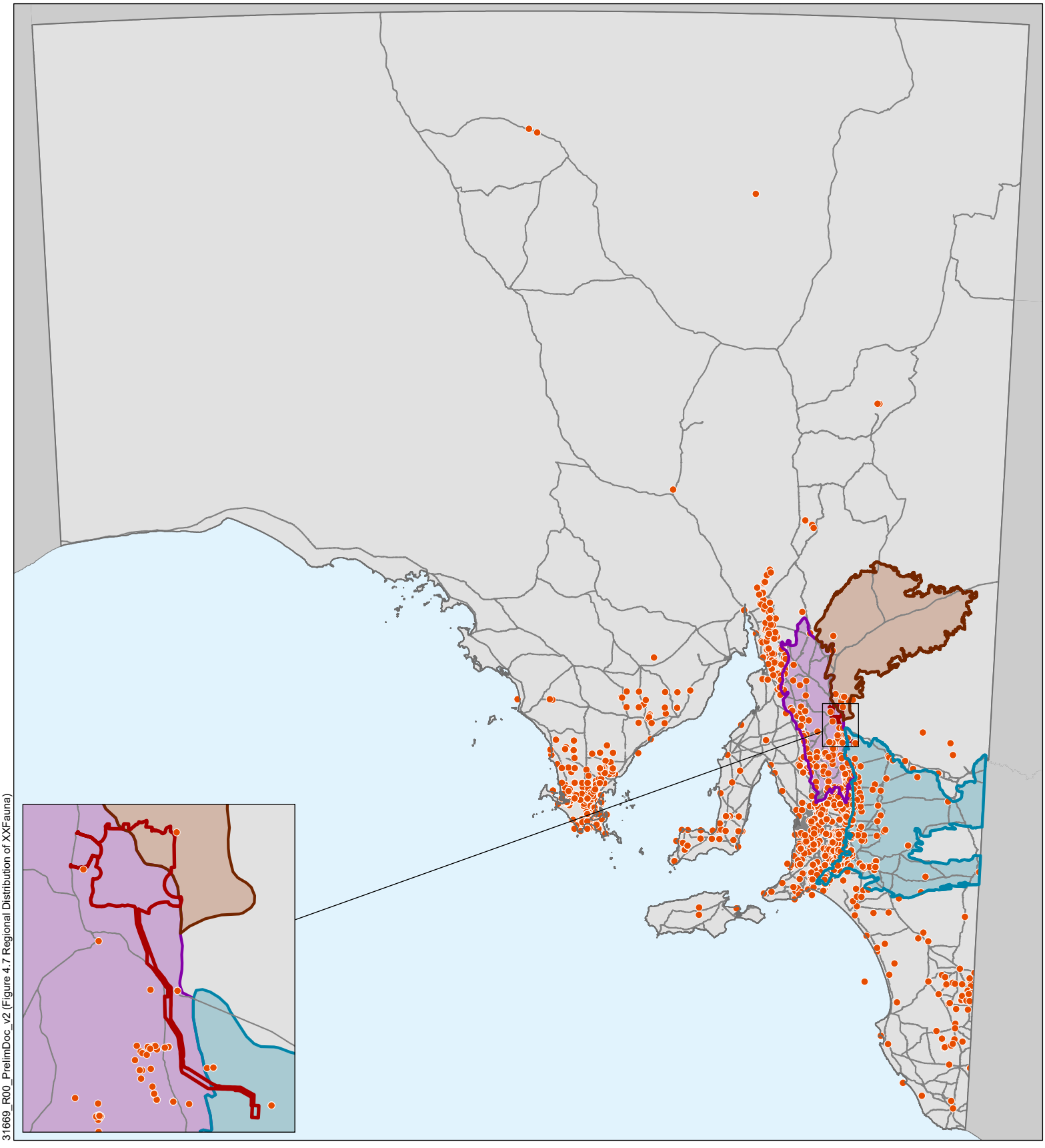
IBRA Subregion	Status Description (DEW Regional Assessment)	Trending	Area (ha) of potential habitat impacted by the Project	Area (ha) of potential habitat in the Subregion (NVIS mapping)	% of suitable habitat in subregion in DF
Project Area					
Broughton (FLB2)	Endangered	Definite Decline	10.43	16,095	0.06%
Olary Spur (FLB3)	Endangered	Definite Decline	19.63	61,225	0.03%
Murray Mallee (MDD2)	Endangered	Definite Decline	1.36	270,211	<0.01%
Bordering Project Area					
Mount Lofty Ranges (FLB1)	Endangered	Definite Decline	N/A	N/A	N/A
St Vincent (EYB2)	Critically Endangered	Definite Decline	N/A	N/A	N/A
Southern Flinders (FLB4)	Vulnerable	Definite Decline	N/A	N/A	N/A

Source: DEW 2025b

Table 4.28: NVIS Major Vegetation Subgroups which provide potentially suitable habitat for Diamond Firetail in Broughton, Olary Spur and Murray Mallee IBRA Subregions

NVIS Major Vegetation Subgroup	Broughton (ha)	Murray Mallee (ha)	Olary Spur (ha)	Grand Total (ha)
Acacia (+/- low) open woodlands and sparse shrublands with a shrubby understorey	17	0	37,458	37,475
Acacia (+/- low) open woodlands and sparse shrublands with chenopods	0	2,448	52,526	54,974
Callitris forests and woodlands	256	11	1,241	1,507
Callitris open woodlands	63	1,676	5	1,743
Casuarina and Allocasuarina forests and woodlands	785	1,529	51	2,365
Casuarina and Allocasuarina open woodlands with a shrubby understorey	1,500	7,784	53,817	63,101
Eucalyptus low open woodlands with tussock grass	169	885	17	1,070
Eucalyptus open forests with a grassy understorey	25	110	0	135
Eucalyptus open woodlands with a grassy understorey	322	26	0	348
Eucalyptus tall open forests and open forests with ferns, herbs, sedges, rushes or wet tussock grasses	0	794	0	794
Eucalyptus woodlands with a tussock grass understorey	10,185	0	0	10,185
Eucalyptus woodlands with ferns, herbs, sedges, rushes or wet tussock grassland	204	2,341	0	2,545
Mallee with a tussock grass understorey	167	1,235	0	1,401
Mulga (*Acacia aneura*) open woodlands and sparse shrublands +/- tussock grass	0	0	1,618	1,618
Open mallee woodlands and sparse mallee shrublands with a tussock grass understorey	285	4,686	0	4,971
Other Acacia forests and woodlands	58	6	0	63
Other Acacia tall open shrublands and shrublands	171	3,741	320	4,232
Other open woodlands		33,000	40,303	73,303
Other tussock grasslands	1,888	955	82,857	85,700
Total Extent	**16,095**	**61,225**	**270,211**	**347,532**

Figure 4.18: Regional distribution of Diamond Firetail



GNWF

Diamond Firetail (*Stagonopleura guttata*)

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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31669_R00_PrelimDoc_v2 (Figure 4.7 Regional Distribution of XXFauna)

4.7 Fork-tailed Swift (*Apus pacificus*) – Migratory Marine

4.7.1 Conservation and Listing Status

Further information regarding the Fork-tailed Swift was not required to be addressed as per the DCCEEW's RFI dated 5 December 2024, however, one individual Fork-tailed Swift was reported from the summer 2024 field survey, observed flying briefly over the range at BUS Site 12. Thus, the species has been included within this document.

The EPBC Act legal status and associated documents for Fork-tailed Swift as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.29.

Table 4.29: Fork-tailed Swift conservation documentation

EPBC Status	Listed marine Listed migratory - EPBC Act, China-Australia Migratory Bird Agreement, Japan-Australia Migratory Bird Agreement, Republic of Korea-Australia Migratory Bird Agreement.
Approved Conservation Advice	There is no approved Conservation Advice for this species
Listing Advice	There is no Listing Advice for this species
Adopted / Made Recovery Plan	There is no adopted or made Recovery Plan for this species
Adopted / Made Threat Abatement Plan	Department of Climate Change, Energy, the Environment and Water (2024c). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24-Dec-2024.
Policy Statements and Guidelines	Draft referral guideline for 14 birds listed as migratory species under the EPBC Act (Department of the Environment 2015) [Admin Guideline]. South-east marine region profile: A description of the ecosystems, conservation values and uses of the South-east Marine Region (Commonwealth of Australia 2015) [Information Sheet].

4.7.2 Ecology

The Fork-tailed Swift is a medium to large sized swift of 18-21 cm and a wingspan of 40-42 cm, characterised by a slim body, long scythe shaped wings that taper to finely pointed tips and a long deeply forked tail. It is mainly bluish black with a conspicuous white band across the rump, and a white patch on the chin and throat (DCCEEW 2025b).

The species is a non-breeding migrant to Australia. Its breeding grounds occur in Siberia on cliffs or in caves from August to September, before travelling through south-east Asia enroute to Australia, where they arrive and forage between October and May. When in Australia, they are known to precede or follow low pressure systems as they cross the country in search of food. In South Australia they are most regularly sighted from December to March (DCCEEW 2025b).

Foraging takes place aerially, with flocks seen ranging from 10 to 1,000 birds, flying in circular patterns through areas of high insect prey concentration.

4.7.3 Habitat

The Fork-tailed Swift is almost exclusively aerial, occupying airspace from 1 m to over 300 m above ground level. In Australia they are known to occur over a large range of habitats, favouring inland plains, but also including above foothills in coastal areas, over cliffs and beaches, out to sea and over urban areas. Over many varieties of terrestrial habitat, they forage aerially, often in areas of updraughts around cliffs. They have been reported to search along edges of low-pressure systems, and fly ahead of storm systems or unsettled weather, which is hypothesized to be related to insect prey behaviour (DCCEEW 2025b).

4.7.3.1 Important Habitat

There is no Conservation Advice for the species and subsequently no listed important habitat. However, the *Draft Referral guideline for 14 birds listed as migratory species under the EPBC Act* (DotE 2015) identifies important habitat to the Fork-tailed Swift as:

- Non-breeding habitat only: found across a range of habitat, from inland open plains to wooded areas where it is exclusively aerial.

For Fork-tailed Swift there currently no important habitat threshold areas that have been determined either due to lack of knowledge or rarity.

4.7.4 Distribution and Abundance

The Fork-tailed Swift occurs globally and is a non-breeding migrant to all states and territories of Australia.

In South Australia, the Fork-tailed Swift is widespread from the Victorian border to the Spencer Gulf. It is commonly found in coastal parts of the Eyre Peninsula, extending as far west as Franklin Island and north to 32° S. Recent records also include sightings in the Flinders Ranges, Lake Eyre Drainage Basin, and areas north to Moorayepe and east to Innamincka and Moomba.

The global population is not quantified; however, populations are believed to be stable throughout most of its range, except Pakistan (del Hoyo et al.1999 in DCCEEW 2025b). There are no measures of abundance in Australia. The largest flocks recorded in Australia were 90,000 near Mildura, Victoria, during 1961 (Simpson 1961 in DCCEEW 2025b); 50,000 at Portland, south-west Victoria, during January 1960 (Anon. 1960, in DCCEEW 2025b); and 50,000 at Ivanhoe, NSW (Anon. 1972 in DCCEEW 2025b). There is no listed EOO or AOO for the species.

4.7.4.1 Important Populations

Important populations for migratory species are categorised into areas where an 'ecologically significant proportion of a population' occurs. For Fork-tailed Swift an ecologically significant proportion of a population (individuals) is 1000 individuals (1% of the population) at an international scale, and 100 individuals (0.1% of the population) at a national scale.

4.7.5 Key Threatening Processes

No specific threats are identified for the Fork-tailed Swift, and there are no significant threats identified in Australia (DCCEEW 2025b), however the Draft Migratory Bird Guidelines identify several threats to migratory birds more generally including:

- Infrastructure such as tall buildings, wind turbines, overhead powerlines which occur in the flight path of migratory birds, especially during conditions of poor visibility or at night.
- Habitat loss or modification, especially where it overlaps with important populations or important habitats, or on offshore islands which act as stop-over points during migration.

4.7.6 Occurrence in the Project Area

Survey Findings

Surveys were conducted in accordance with the Migratory Birds Draft Referral Guideline. Two seasonal BBUS surveys were conducted during the Austral summer, in February 2024 and February 2025, over four days for each session.

During the summer 2024 field survey weather conditions included overcast skies, strong winds and high temperatures (maximum of 26.1C to 38.5 C). During summer 2025, survey conditions were warm (maximum of 26.0 to 29.3 C) with low wind and no rainfall.

One individual Fork-tailed Swift was reported from the summer 2024 field survey, observed flying briefly over the range at BUS Site 12, a north-south aligned ridge line at approximately 650 m elevation, in the centre of the WF portion of the Project Area in grassland habitat. The individual was observed swooping low over the ridgeline and then at up to 50 m from the ground level on the mid to upper slopes of the ridge.

No other Fork-tailed Swift have been observed on field surveys or opportunistically in the vicinity of the Project Area during extensive surveys. Four historical BDBSA records are reported within the Search Area for the species ranging from 2006 to 2012 (Figure 4.19).

Habitat Suitability

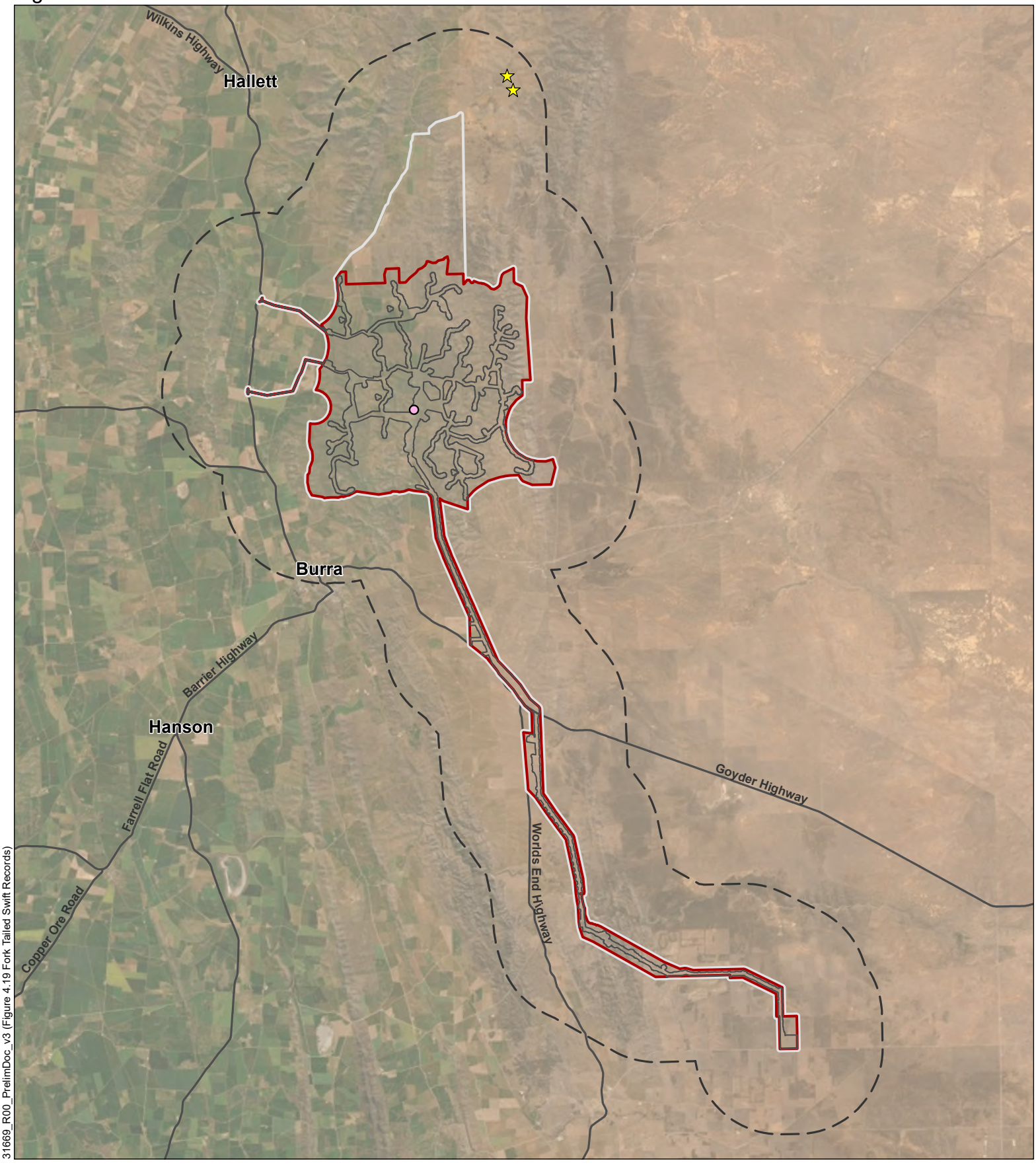
The Fork-tailed Swift is likely to intermittently visit the aerial space above all habitats in the GNWF and Disturbance Footprint, including in areas that are not mapped as native vegetation such as crops and exotic grassland. Given the aerial nature of this species, impacts to vegetation are unlikely to constitute direct impact, rather impacts are likely to be restricted to air-strike from WTGs during operational phase.

There is not an abundance of historical database records of this species and only one individual has been detected in the Project Area over the course of extensive surveys, including targeted BBUS surveys in suitable conditions. Therefore, it is considered unlikely that the aerial habitats over GNWF represent an important foraging area for this species, nor that an ecologically significant proportion of the national or international population occurs in the Project Area.

Population Estimate

No population estimates have been made for Fork-tailed Swift due to the lack of available records. No population estimates are available for the region. The very low number of historical records and lack of observations despite frequent surveys, indicates that there is no permanent population of the species in the Project Area, and that the species is unlikely to be a regular visitor to the Project Area.

Figure 4.19: Fork-tailed Swift records within 5 km



GNWF
GNREF
Development Envelope
Search Area
Fork-tailed Swift record (Umwelt)
Fork-tailed Swift (BDBSA)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

N

0 2.5 5 km

31669_R00_PrelimDoc_v3 (Figure 4.19 Fork Tailed Swift Records)

4.7.7 Regional Context

Fork-tailed Swift is widespread, occurring globally and across all states and territories in Australia as well as offshore islands, during the non-breeding period of October to May. A regional assessment for the species is presented in Table 4.30, which indicates that the species is considered Rare at a regional level and in Probable Decline. This trend is observed across all subregions in South Australia (DEW 2025b).

Within South Australia, observations of the Fork-tailed Swift are widespread, with concentrations around the populated metropolitan area of Adelaide, the Fleurieu Peninsula, Lower Lakes and Coorong, and inland at riverine locations such as Berri. More scattered records occur across the state including along the coastal margins of the Eyre and Yorke Peninsula and inland around Lake Torrens and Kati-Thanda Lake Eyre (South) (Figure 4.20).

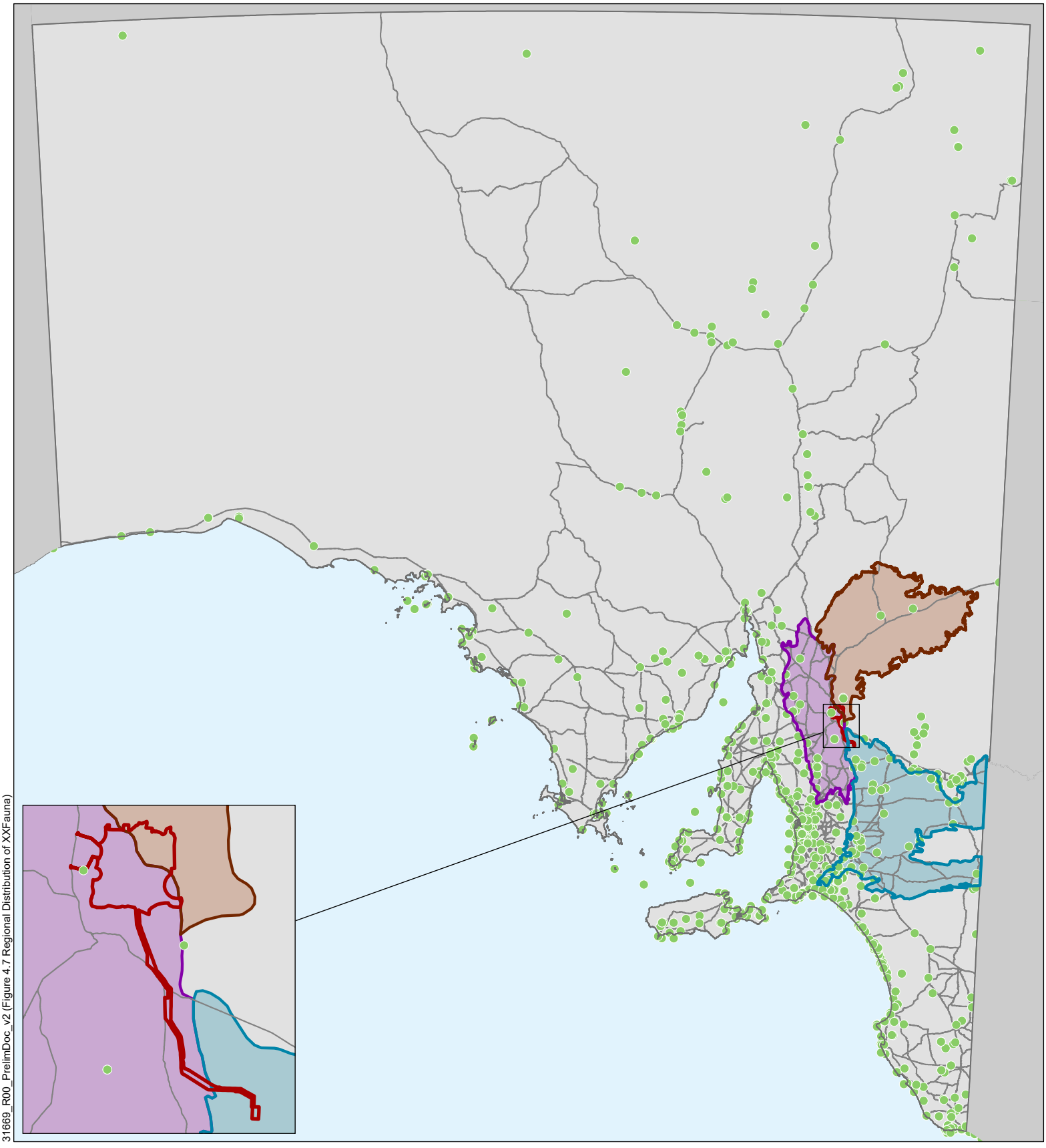
No vegetation assessment is made as the species is entirely aerial and may occur across all vegetation types.

Table 4.30: Regional assessment for Fork-tailed Swift

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending
Project Area		
Broughton (FLB2)	Rare	Probable Decline
Olary Spur (FLB3)	N/A	N/A
Murray Mallee (MDD2)	Rare	Probable Decline
Bordering Project Area		
St Vincent (FLB4)	Rare	Probable Decline
Southern Flinders (EYB2)	Rare	Probable Decline

Source: DEW 2025b

Figure 4.20: Regional distribution of Fork-tailed Swift



GNWF

Fork-tailed Swift (*Apus pacificus*)

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

0 50 100 km

N

4.8 Spiller's Wattle (*Acacia spilleriana*) – Endangered

4.8.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Spiller's Wattle, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.31.

Table 4.31: Spiller's Wattle Conservation Documentation

EPBC Status	**Listed as Endangered** as *Acacia spilleriana* (Date effective 24-Dec-2009)
Approved Conservation Advice	Department of the Environment, Water, Heritage and the Arts (2009b). *Approved Conservation Advice for* Acacia spilleriana *(Spiller's Wattle)*. Canberra, ACT: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/34123-conservation-advice.pdf. In effect under the EPBC Act from 24-Dec-2009.
Listing Advice	The species is eligible for listing as Endangered under Criterion 2 (restricted geographic distribution). Threatened Species Scientific Committee (TSSC 2009). *Commonwealth Listing Advice on* Acacia spilleriana. Department of the Environment, Water, Heritage and the Arts. Canberra, ACT: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/34123-listing-advice.pdf. In effect under the EPBC Act from 24-Dec-2009.
Adopted / Made Recovery Plan	There is no adopted or made Recovery Plan for the species and a Recovery Plan not required. The TSSC recommended that there should not be a recovery plan for this species as the conservation advice provides sufficient direction to implement priority actions and mitigate against key threats (07/12/2009).
Adopted / Made Threat Abatement Plan	No Threat Abatement Plan has been identified as being relevant for this species.
Policy Statements and Guidelines	There are no Policy Statements or Guidelines for the species.

4.8.2 Ecology

A taxonomic revision in 2001, reclassified three previously accepted type locations (Maslin 2001). The original type locations are now treated as follows (Maslin 2001 in TSSC 2009):

- The Burra Gorge specimen is the current accepted type locality.
- The Wirrabara Forest specimen is treated as *Acacia* aff. *spilleriana*.
- The Hill River Estate specimen is accepted as Spiller's Wattle, but not as the type locality.

The type specimen, Spiller's Wattle (*Acacia spilleriana*) is a rounded, bushy, spreading shrub up to 3 m high, with small, round grey leaves and bright golden flowers on long stalks. Branchlets are velvety, with dense, short hairs. New shoots are densely hairy, often an iridescent light gold-to-silver colour.

The plant flowers between August and September, after which it produces dark grey pods, often containing only 1 to 2 hard black seeds. Seeds have a physical dormancy which needs to be overcome for the seed to germinate, and reportedly high viability from tested collections near Scrubby Range and Hallelujah Hills (95%-100%) (SASCC 2025; Te et al. 2009).

4.8.3 Habitat

Spiller's Wattle is endemic to South Australia and is currently only known from northern Mount Lofty Ranges, largely between Burra and Auburn in the north and the Tothill Ranges in the south. The species grows on rocky hills and alongside watercourses and roadsides (DEWHA 2009b). Herbarium records for the species report it to occur in well drained soils on alkaline loams to heavy loams (DCCEEW 2025b). It has been recorded mainly in mallee vegetation communities, (co)dominated by *Eucalyptus brachycalyx, E. gracilis,* and *E. socialis,* with open shrubby understory including Dryland Teatree (*Melaleuca lanceolata*) Pale Turpentine Bush (*Beyeria lechenaultii*), *Acrotriche patula* and Stiff Westringia (*Westringia rigida*). One population at the Burra Creek occurs in a *Eucalyptus camaldulensis* ssp. riparian woodland.

4.8.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

4.8.4 Distribution and Abundance

Spillers Wattle is endemic to South Australia, where it is currently known from the northern Mount Lofty Ranges and the ranges around Burra and Auburn, where it is sparsely distributed along roadsides and in remnant vegetation between the townships of Eudunda, Saddleworth and Burra (TSSC 2009). The species is historically known from 23 populations, with larger populations occurring in the Burra Gorge and Hallelujah Hills, and small outlier populations occurring at Port Lincoln on the Eyre Peninsula, of which four are now extinct.

The land tenure of populations is varied, with most occurring on unprotected roadsides. Populations that afford some level of protection, but no active management include a heritage agreement, Hopkins Creek CP, World's End Gorge and Burra Mine Site Grasslands (National Trust).

The current EOO is estimated at 1,800 km^2 and the AOO at 100 km^2 (DEWHA 2009b), however as per the Approved Conservation Advice (DEWHA 2009b; TSSC 2009), there is insufficient data to produce population estimates for the Spiller's Wattle.

4.8.4.1 Important Populations

The Approved Conservation Advice does not identify any important populations for the species.

4.8.5 Key Threatening Processes

The main identified threats to Spiller's Wattle, as per the Approved Conservation Advice and Listing Advice (DEWHA 2009b), are habitat loss and fragmentation from vegetation clearance. Due to the extent of clearance in the northern Mount Lofty Ranges, most individuals now occur along road corridors and are therefore threatened by roadside maintenance activities, habitat degradation and subsequent lack of juvenile recruitment.

The main potential threats to Spiller's Wattle are that of exotic weed incursions and livestock. All populations are considered threatened by weed invasions, which through competition inhibits recruitment and weakens mature shrubs. Domestic stock, through grazing and trampling, may damage plants and prevent recruitment, or create conditions conducive to the spread of weeds.

4.8.6 Occurrence in Project Area

Survey Findings

A targeted threatened species survey was undertaken to specifically locate any *Acacia spilleriana* within suitable habitat within the Disturbance Footprint. Within the Project Area, individual planted specimens were recorded on Gum Hill Road and White Hill Road, and in Burra Creek outside of the Development Envelope east of Sutherland Road in the south of the Project Area.

Additionally, VA7 was dominated by *A. spilleriana* which was determined likely to be Wirrabara subspecies, which is not the EPBC listed threatened species (pers comms. SA Herbarium 2024). This VA is not within the current Disturbance Footprint or Development Envelope for the GNWF Project.

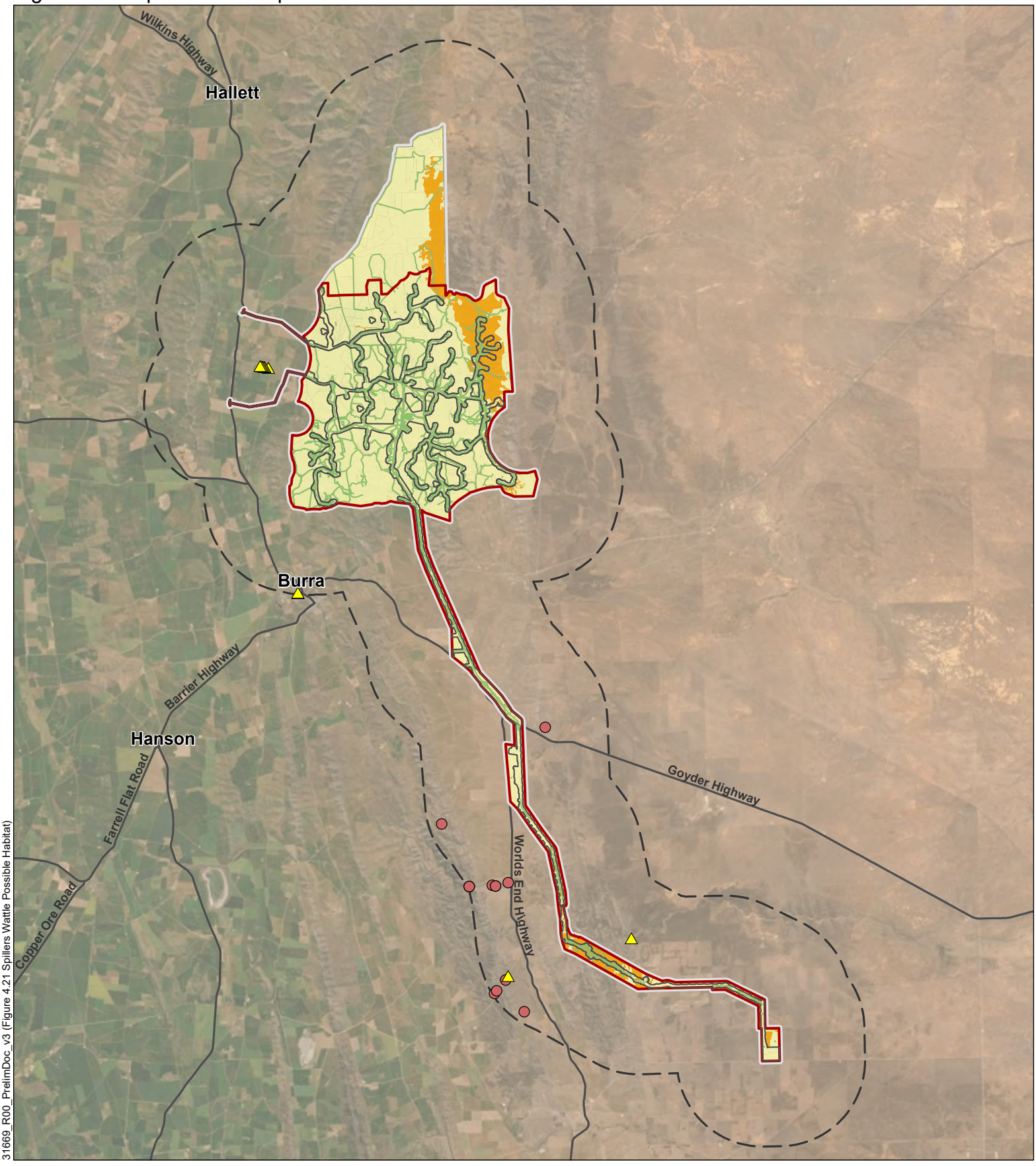
Habitat Suitability

Based on the habitat preferences listed in the Conservation Advice and other literature, the species is considered likely to occur in VA4, VA14 and VA19 with possible occurrences in VA1, VA2, VA3 and VA18 (Figure 4.21). Targeted survey effort has ensured that over 80% of all likely habitat has been searched in detail and significant portions of possible habitat, and no additional specimens have been found. Given the conspicuous nature the species, being a small to medium sized perennial shrub, and dissimilar to other flora species in the region, it is likely to have been detected if present. The survey findings provide high confidence that present specimens have been identified.

Population Estimate

A total of seven individual planted specimens are known to occur in the GNWF Project Area. There are no known natural populations within the Project Area. Several historical records occur within 5 km of the Project Area, including ten records to the south of GNWF in the vicinity of Worlds End Gorge / Burra Creek Gorge, Hallelujah Hills and Scrubby Range. Records are from between 1893 and 1994, and no records provide a count of individuals at each locality. One additional record was located by Umwelt in Burra Creek, approximately 1.7 km north of the proposed OTL route (Figure 4.21).

Figure 4.21: Spiller's Wattle possible habitat and records within 5 km



GNWF
GNREF
Development Envelope
Search Area
Spiller's Wattle (Umwelt)
Spiller's Wattle (BDBSA)

Spiller's Wattle habitat
Possible
Unlikely
Searched - not present

31669_R00_PrelimDoc_v3 (Figure 4.21 Spillers Wattle Possible Habitat)

umwelt

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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N

0 2.5 5 km

4.8.7 Regional Context

Acacia spilleriana has a restricted occurrence in the Mid-North region of South Australia, known from only two IBRA subregions, Broughton and St Vincent. In both subregions it is listed as regionally Endangered and in Definite Decline, as presented in Table 4.32, Figure 4.22.

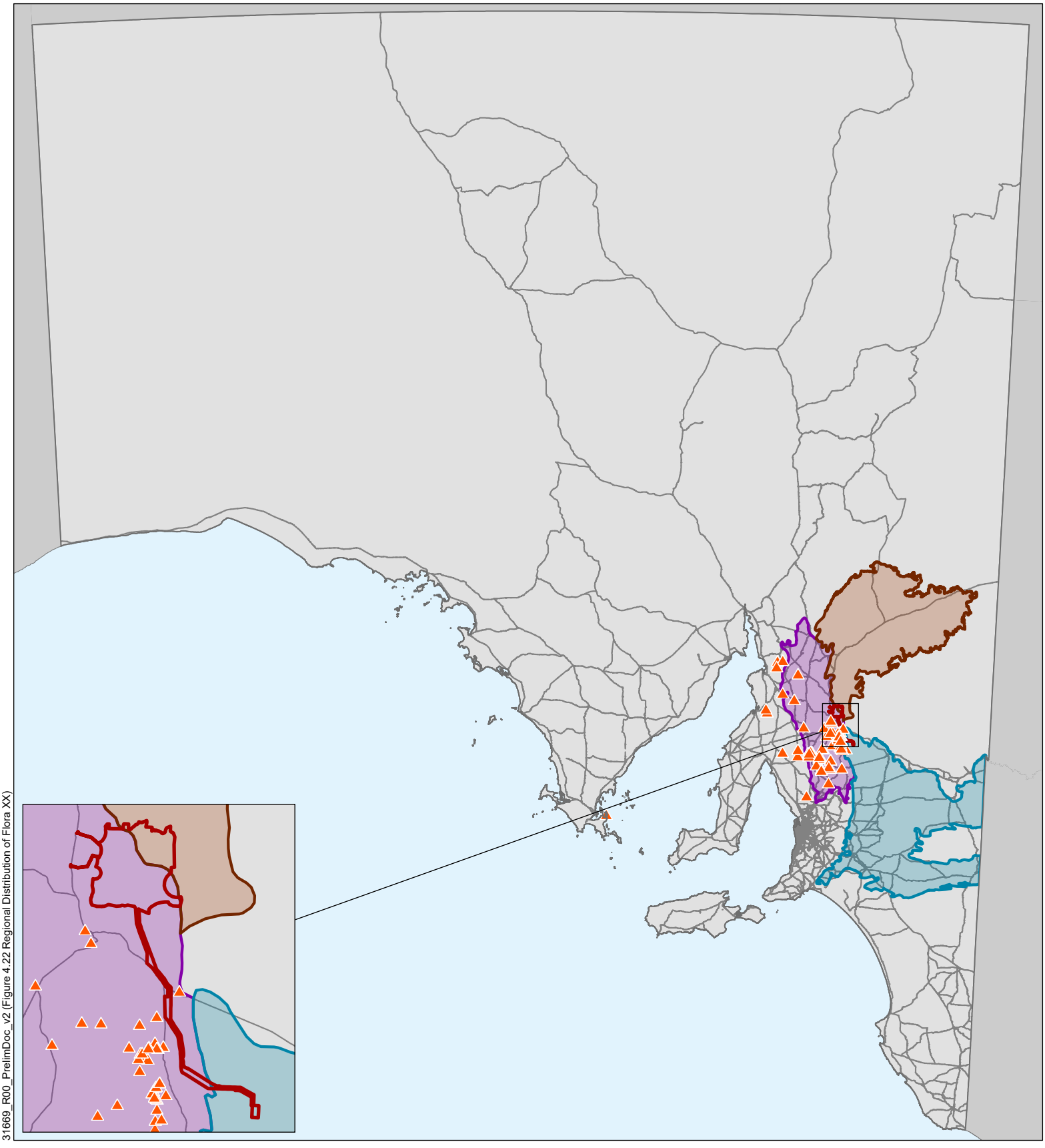
Table 4.32: Regional assessment for Spiller's Wattle

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending
Project Area		
Broughton (FLB2)	Endangered	Definite Decline
Olary Spur (FLB3)	Does not occur	N/A
Murray Mallee (MDD2)	Does not occur	N/A
Bordering Project Area		
St Vincent (FLB2)	Endangered	Definite Decline

Source: DEW 2025b

The Botanic Gardens of South Australia (BGSA) Seed Conservation Centre has been involved in seed collection to establish a long-term conservation seed bank for 50 of south Australia's priority plant species. This work included seed collection for *Acacia spilleriana* in which surveys were undertaken of several populations, including Scrubby Range / Hallelujah Hills, Lochiel (roadside), Hallett (roadside) and Burra (Burra Mine) (Te et al. 2009).

Figure 4.22: Regional distribution of Spiller's Wattle



GNWF

Spiller's Wattle

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

0 50 100 km

N

4.9 Peep Hill Hop-bush (*Dodonaea subglandulifera*) – Endangered

4.9.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Peep Hill Hop-bush, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.33.

Table 4.33: Peep Hill Hop-bush conservation documentation

EPBC Status	**Listed as Endangered** (Date effective 16 July 2000)
Approved Conservation Advice	There is no approved Conservation Advice for this species.
Listing Advice	There is no Listing Advice for this species
Adopted / Made Recovery Plan	Moritz and Bickerton (2010). Recovery Plan for the Peep Hill hop-bush *Dodonaea subglandulifera* 2010. Report to the Recovery Planning and Implementation Section, Australian Government Department of the Environment, Water, Heritage and the Arts, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-peep-hill-hop-bush-dodonaea-subglandulifera. In effect under the EPBC Act from 13-Aug-2010 as *Dodonaea subglandulifera*.
Adopted / Made Threat Abatement Plan	No Threat Abatement Plan has been identifies as being relevant for this species.
Policy Statements and Guidelines	There are no Policy Statements or Guidelines for the species.

4.9.2 Ecology

Peep Hill Hop-bush is an erect, perennial shrub growing 1 to 2m high, often with short pinnate leaves approximately 1.5cm long with 9-17 viscous leaflets with raised glands on their lower surface (Jusaitis and Sorensen 1994). The plant is dioecious and flowers between February and August. Flowers occur in groups of 2 or 3. Female plants are prominent when in fruit with capsules varying in colour from greenish yellow to deep maroon on separate bushes. Capsules are 3- to 4-winged (Jessop and Toelken 1986) and contain hard black seeds (SASCC 2025). From three collections, seed viability has been reported at 50% to 90%, with the seed having a physiological dormancy (SASCC 2025).

4.9.3 Habitat

Peep Hill Hop-bush occurs in semi-arid habitat conditions, primarily on low hills on loamy soils associated with rocky (limestone, slate, shale) outcrops (Jusaitis and Sorensen 1994; Smith 2000 in Moritz and Bickerton 2000). These low hills occur to the east of the range country, just before the vegetation changes to mallee flats (Smith 2000). The species has also been recorded from plains country in sandy soils over limestone, occurring in native vegetation associated with rock outcrops including low open woodland, open shrubland and mallee. Habitat records include *Eucalyptus porosa* +/- *Callitris gracilis* +/- *Acacia calamifolia*; *E. dumosa* +/- *Allocasuarina verticillata*; *E. oleosa*; *E. phenax* with *C. gracilis* and *Beyeria lechenaultii*; *C. gracilis* with *Alectryon oleifolius* and *B. lechenaultii*; *Acacia argyrophylla*; and *A. hakeoides*.

The understorey is quite variable at most sites. This species occupies in an area of South Australia that has an average annual rainfall of greater than 100 mm and less than 400 mm.

4.9.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. However, all currently occupied and potential habitat is considered critical to the survival of the species (Moritz and Bickerton 2010).

4.9.4 Distribution and Abundance

Peep Hill Hop-bush is endemic to South Australia and has a restricted and disjunct distribution within the state. It has been recorded from semi-arid mallee areas of the South Australian Murray Darling Basin, Northern and Yorke Region including Yorke Peninsula, and the Flinders Ranges in the South Australian Arid Lands. This species exhibits a fragmented distribution across the semi-arid region of South Australia with knowledge of this species being recorded in 45 sites encompassing over 45,700 individual pants organised into 11 sub-populations. These populations are primarily located in the Murraylands and Riverland regions, with notable occurrences near Walkers Flat, Black and White Hill, Peep Hill, Robertstown and Notts Well.

The largest known sub-population of this species is situated near Peep Hill, with approximately 36,000 individual plants being recorded, accounting for nearly 80% of the total known individuals.

There is no formal EOO or AOO listed in the literature for the species, however, based on available ALA records (n = 367), using a 2 km cell grid, the EOO is calculated to be 154,202.67 km^2 and the AOO at 220.00 km^2.

4.9.4.1 Important Populations

The Recovery Plan for the Peep-Hill Hop-bush documents nine important sub-populations (based upon spatial data rather than genetic data), and notes that roadside populations are also considered important, constituting more than 50% of known sites (Moritz and Bickerton 2010).

4.9.5 Key Threatening Processes

The main identified threats to Peep Hill Hop-bush, as per the National Recovery Plan (Moritz and Bickerton 2010), are habitat loss and fragmentation from vegetation clearance. With many of the sub-populations now occurring along road corridors, there is the threat of roadside maintenance activities, habitat degradation and subsequent lack of juvenile recruitment.

The main potential threats to Peep Hill Hop-bush are that of exotic weed incursions and livestock. All populations are considered threatened by weed invasions, which through competition inhibits recruitment and weakens mature shrubs. Domestic and invasive stock, through grazing, may damage plants and prevent recruitment, or create conditions conducive to the spread of weeds.

4.9.6 Occurrence in Project Area

The Peep Hill Hop-bush is considered unlikely within the Disturbance Footprint but possible within the Development Envelope (Umwelt 2025b).

Survey Findings

A targeted threatened species survey was undertaken by EBS (now Umwelt) to specifically locate the Peep Hill Hop-bush within mapped suitable habitat within the Disturbance Footprint (WF and OTL). Despite numerous vegetation surveys to date the species has not been recorded within the WF or OTL, however, it is noted that potentially suitable habitat occurs within the vicinity of the OTL (Umwelt 2025b).

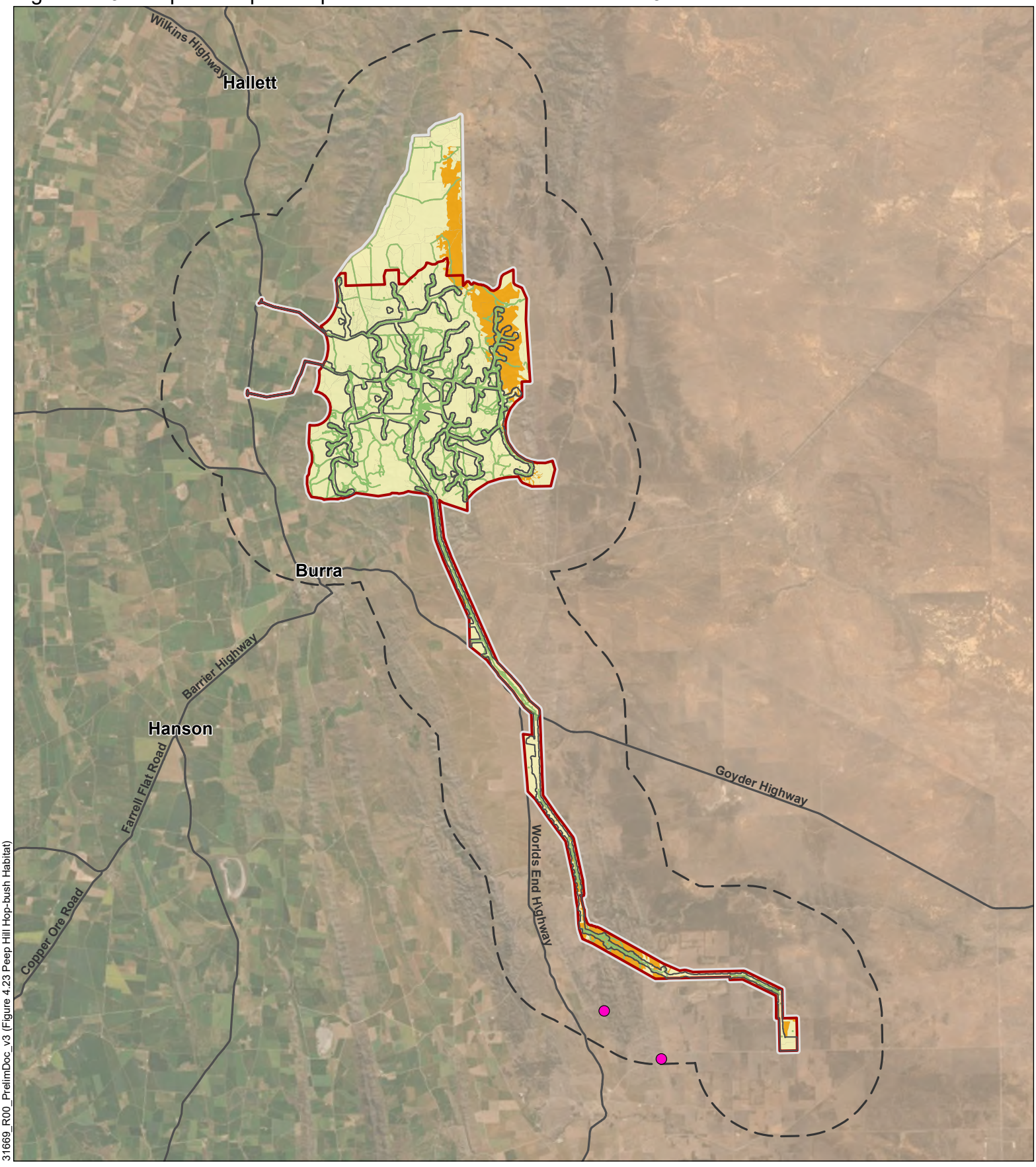
Habitat Suitability

Based on the habitat preferences listed in the Conservation Advice and other literature, the species is considered likely to occur in VA3 and VA20 with possible occurrences in VA1, VA2, VA18 and VA19 (Figure 4.23). Targeted survey effort has ensured that approximately 77% of all likely habitat has been searched in detail as well as significant portions of possible habitat, and no specimens have been found. Superficially similar species *Dodonaea lobulata* (Lobed-hop Bush) was detected in abundance (dominant in VA19), but close inspection found no populations of *D. subglandulifera*. Given the conspicuous nature the species, being a small to medium sized perennial shrub, it is likely to have been detected if present. The survey findings provide high confidence that the species does not occur.

Population Estimate

No individuals or populations are known to occur in the Project Area. Two historical records occur within 5 km of the Project Area, both occurring in the far south of the Project Area in the locality of Bright, to the east of the World's End Highway (Figure 4.23). The records are from 2000 and 2007, and do not provide a count of individuals at either locality. One additional record was located by Umwelt in Burra Creek, approximately 1.7 km north of the proposed OTL route.

Figure 4.23: Peep Hill Hop-bush possible habitat and records within 5 km



GNWF
GNREF
Development Envelope
Search Area
Peep Hill Hop-bush (BDBSA)

Peep Hill Hop-bush habitat
Possible
Unlikely
Searched - not present

31669_R00_PrelimDoc_v3 (Figure 4.23 Peep Hill Hop-bush Habitat)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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0 2.5 5 km

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4.9.7 Regional Context

Dodonaea subglandulifera is found on the east side of the Mount Lofty Ranges and on Yorke Peninsula, with restricted occurrence in the Mid North region of South Australia. It is listed as Endangered in South Australia where it is known from only three IBRA subregions, Broughton and St Vincent and Murray Mallee. It is listed as regionally extinct from South Olary Plain (Figure 4.24). It is listed as Vulnerable and in Probable Decline in Broughton, Vulnerable but Stable in Murray Mallee. Bordering the Project Area in the St Vincent subregion it is listed as Endangered and in Probable Decline, as presented in Table 4.34.

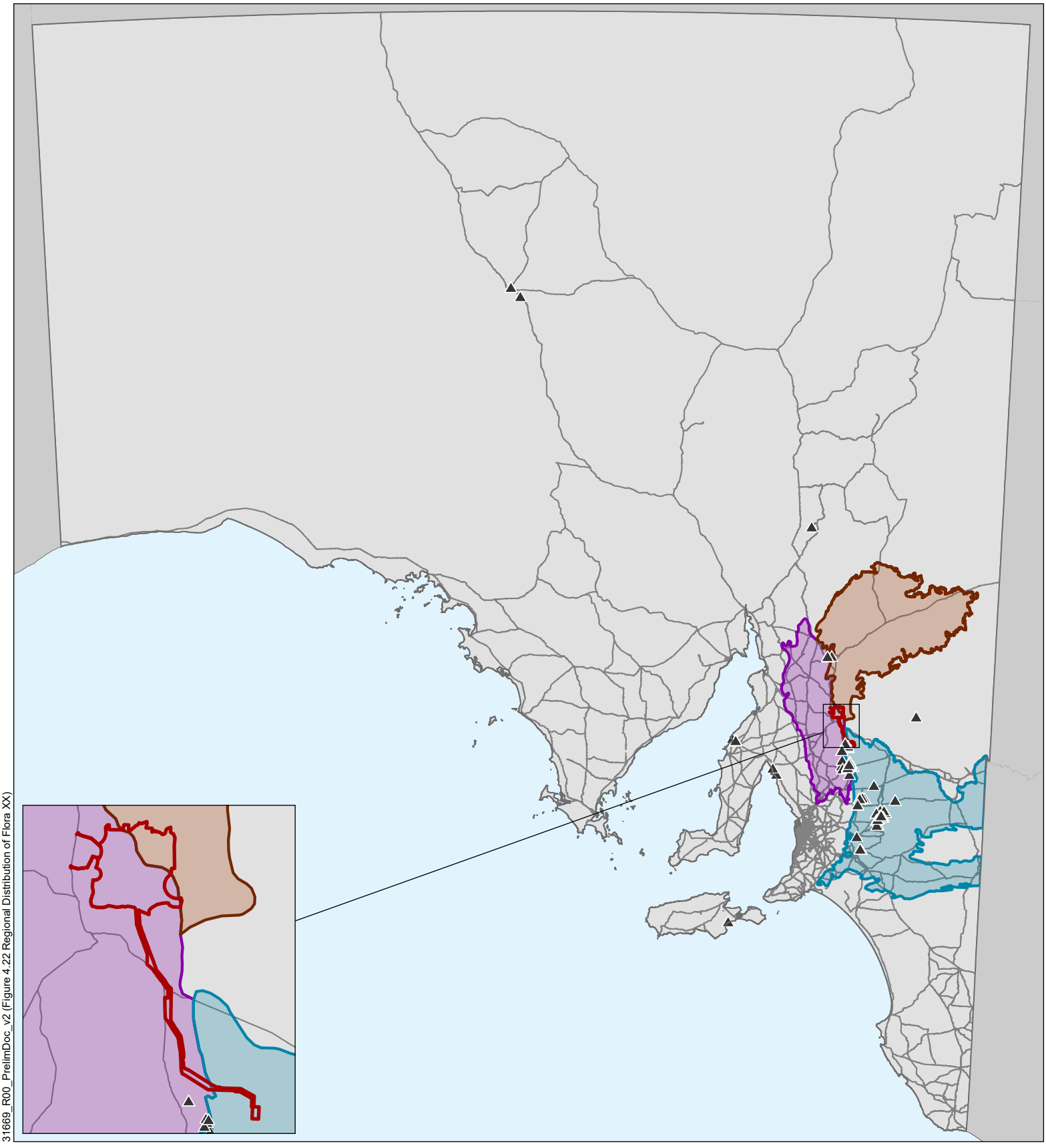
The Botanic Gardens of South Australia Seed Conservation Centre has stored seed collections from three populations, collected between 2003 and 2012 from the Yorke Peninsula, Northern Lofty and Murray Regions (SASCC 2025).

Table 4.34: Regional assessment for Peep Hill Hop-bush

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending
Project Area		
Broughton (FLB2)	Vulnerable	Probable Decline
Olary Spur (FLB3)	Does not occur	N/A
Murray Mallee (MDD2)	Vulnerable	Stable / No Change
Bordering Project Area		
St Vincent (FLB2)	Endangered	Probable Decline

Source: DEW 2025b

Figure 4.24: Regional distribution of Peep Hill Hop-bush



GNWF

Peep Hill Hop-bush

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

31669_R00_PrelimDoc_v2 (Figure 4.22 Regional Distribution of Flora XX)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

0 50 100 km

N

4.10 Hairy-pod Wattle (*Acacia glandulicarpa*) – Vulnerable

4.10.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Hairy-pod Wattle, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.35.

Table 4.35: Hairy-pod Wattle conservation documentation

EPBC Status	Listed as Vulnerable (Date effective 16-Jul-2000)
Approved Conservation Advice	Department of Agriculture, Water and the Environment (2021b). *Conservation Advice for Acacia glandulicarpa (Hairy-pod Wattle)*. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/8838-conservation-advice-29092021.pdf. In effect under the EPBC Act from 29-Sep-2021.
Listing Advice	The species is listed as Vulnerable as prior to the commencement of the EPBC Act it was listed as vulnerable under Schedule 1 of the *Endangered Species Protection Act 1992*. The Conservation Advice advises its listing status is due to its limited distribution and small number of populations.
Adopted / Made Recovery Plan	Initial Recovery Plan Decision: recovery plan required as it was included in the Commenced List (1/11/2009). A Recovery Plan was determined as not required by Minister for the Environment Sussan Ley on 28/03/2022) due to the assessment that it would not provide a significant conservation planning benefit above existing mechanisms. The Recovery Plan (Carter 2011) that was adopted for this species on 5/4/2011 ceased to be in effect from 1/10/2021.
Adopted / Made Threat Abatement Plan	Department of the Environment and Energy (2016). *Threat abatement plan for competition and land degradation by rabbits*. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-rabbits-2016. In effect under the EPBC Act from 07-Jan-2017.
Policy Statements and Guidelines	There are no policy statements or guidelines relevant to this species.

4.10.2 Ecology

The Hairy-pod Wattle (*Acacia glandulicarpa*) is a dense, rounded, spreading shrub up to 2 m high, with dull to bright olive-green foliage. Branches are grey-brown and minutely hairy, marked with small, raised leaf basses along the stem. Seed pods are narrowly oblong, sticky, and covered with the species characteristic glandular shining hairs (DAWE 2021b) (Carter 2011).

The plant is known to flower from July to October, however the distinctive pods which are retained on the plant for some time after seeding, make it readily identifiable at other times of the year. The pods contain hard, dark brown seeds. Viability is reported from low to high, ranging from 5% to 90%, and have a physical dormancy (SASCC 2025). In SA populations have also been reported to be partly clonal, sprouting from root-suckers (Whibley and Symon 1992), however, typical regeneration occurs following ground disturbance.

4.10.3 Habitat

Across its range, the Hairy-pod wattle occurs in a range of woodland, shrubland and open mallee vegetation communities on sandy clay to clay-loam soils, as well as minor occurrences on ironstone gravel and heavy clays. Typically, these populations occur on the gentle slopes at the transition zone between heavy clay / gravel soils on the flats and sandy soils on the rises (Venn 1996 in DAWE 2021b). The species is thought to occur with three EPBC Act listed ecological communities including two known to occur within South Australia: *Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions* and *Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia*.

In South Australia the species grows in shrublands of *Dodonaea viscosa* ssp. *angustissima* (Slender Hop-bush) and *Beyeria lechenaultii* (Pale Turpentine-bush) on light sandy clay loams; shrubby woodlands co-dominated by *Acacia carnei* (Purple-wood Wattle) and *Sida ammophila* (Sand Sida); and tall shrublands of *Acacia pycnantha* (Golden Wattle) on skeletal soils with outcropping shales.

4.10.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. However, all habitats should be considered important for the species' long-term survival (DAWE 2021b), with nine sites, including three within South Australia, currently described as important for the species (DCCEEW 2025b), see below.

4.10.4 Distribution and Abundance

The Hairy-pod Wattle is endemic to south-eastern Australia, where it has a wide distribution, occurring in the Wimmera region of Western Victoria and south-east, northern agricultural and north-east pastoral districts of South Australia. Despite its wide distribution, plants are restricted into three widely separated broad locations: the Wimmera region and nearby SA boarder near Bordertown in the south-east of SA; around Burra; and at Wertaloona Station near Lake Frome near the Gammon Ranges (Figure 4.25).

The total current population is estimated to be 6,000 to 12,000 plants spread across 50 – 75 subpopulations (Carter 2011). Most of these subpopulations occur in Victoria, although there are an estimated 3,268 plants located in the Mid-North population within the Goyder Regional Council area.

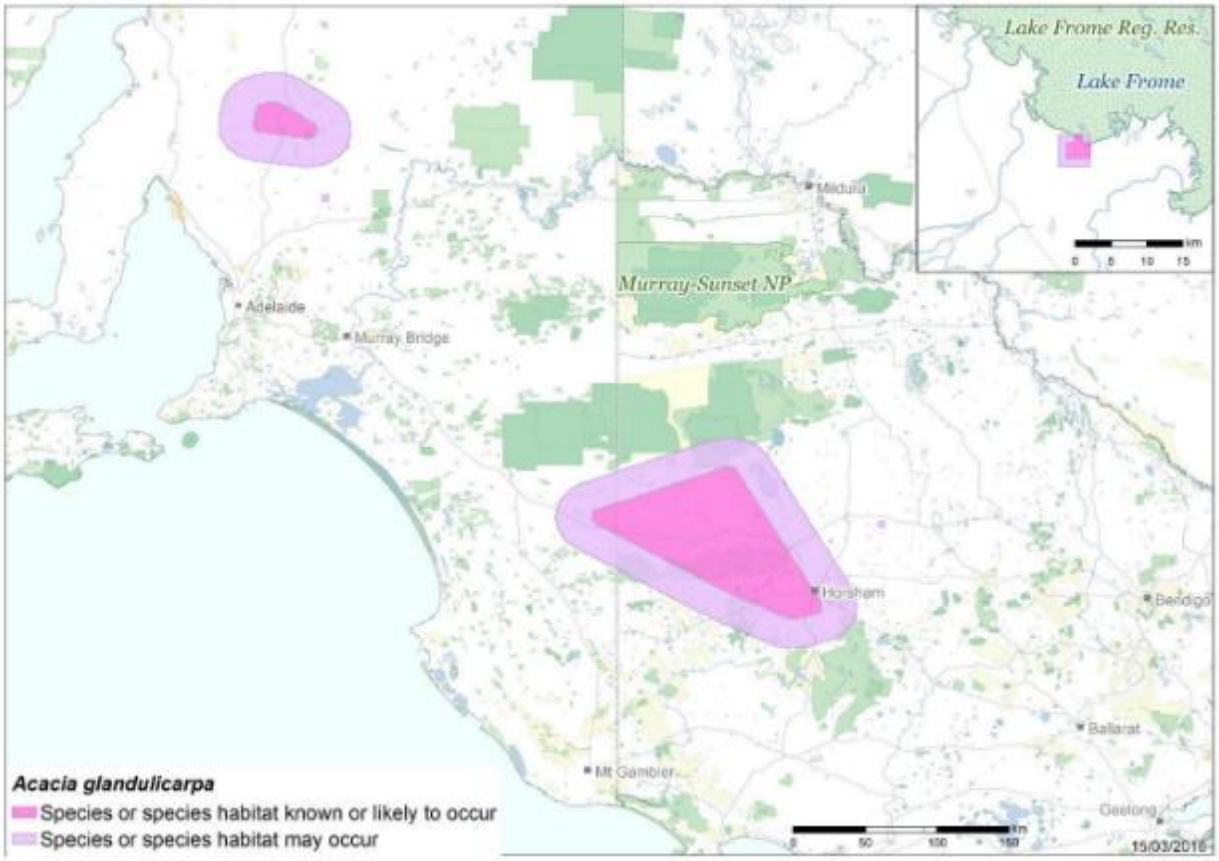
Most subpopulations are on roadsides, with most comprising very few individual plants (<20). There are likely to be additional undocumented subpopulations along roadsides and on adjoining private land that have been under surveyed due to access constraints. Several populations occur in currently protected areas, especially in Victoria, with one known protected population Hopkins Creek Conservation Park in SA (where 250 plants were planted in 2020, DEW 2021 cited in DAWE 2021b).

There is no formal EOO or AOO listed in the literature for the species, however, based on available ALA records (n = 442), using a 2 km cell grid, the EOO is estimated at 427,926.63 km^2 and the AOO at 496.00 km^2.

4.10.4.1 Important habitat

No 'important populations' are defined in the Conservation Advice for the Hairy-pod Wattle, due to insufficient information available for the species, however, nine sites have been described as important based on regeneration, population size, land tenure, patch and landscape condition and geographic location (Carter 2011), with six populations in Victoria, and three in South Australia, including:

- Hopkins Creek Conservation Park, containing less than (<) 50 individuals (2003), threatened by stock grazing, weed invasion, erosion and road work/ maintenance.
- Wertaloona Pastoral Lease, Frome Downs, reported to contain 330 'clumps' of the species in 1993, and threatened by stock grazing, weed invasion and erosion.
- Roadside at Farrel Flat / Hanson, with an unknown population size, comprising regenerating individuals.



Source: Species distribution data Species of National Environmental Significance database, base map Geoscience Australia
Caveat: The information presented in this map has been provided by a range of groups and agencies. While every effort has been made to ensure accuracy and completeness, no guarantee is given, nor responsibility taken by the Commonwealth for errors or omissions, and the Commonwealth does not accept responsibility in respect of any information or advice given in relation to, or as a consequence of, anything containing herein.
Species distribution mapping: The species distribution mapping categories are indicative only and aim to capture (a) the specific habitat type or geographic feature that represents to recent observed locations of the species (known to occur) or preferred habitat occurring in close proximity to these locations (likely to occur); and (b) the broad environmental envelope or geographic region that encompasses all areas that could provide habitat for the species (may occur). These presence categories are created using an extensive database of species observations records, national and regional-scale environmental data, environmental modelling techniques and documented scientific research.

Figure 4.25: Modelled distribution of *Acacia glandulicarpa* (from Conservation Advice, (DAWE 2021b))

4.10.5 Key Threatening Processes

The primary threat to the Hairy-pod Wattle is habitat destruction, largely through infrastructure (i.e., roadside/rail side) maintenance activities. Other potential threats to the species include:

- Climate change increasing the frequency and severity of drought.
- Disease through fungal gall infestations.
- Introduced species (browsing by herbivores and competition with weeds).
- Inappropriate disturbance regimes.
- Genetic threats resulting from small and fragmented populations.

4.10.6 Occurrence in Project Area

The Hairy-pod Wattle is considered unlikely to occur within the Disturbance Footprint of the WF or OTL, based on extensive surveys conducted with no detections made. The species may occur in small pockets of suitable habitat and associated vegetation within the Development Envelope along the OTL (Umwelt 2025b) however it is considered unlikely.

Survey Findings

A targeted threatened species survey was undertaken by EBS (now Umwelt) to specifically locate the threatened flora species within the Disturbance Footprint (WF and OTL). Despite numerous vegetation surveys to date the species has not been recorded within the WF or OTL (Umwelt 2025b).

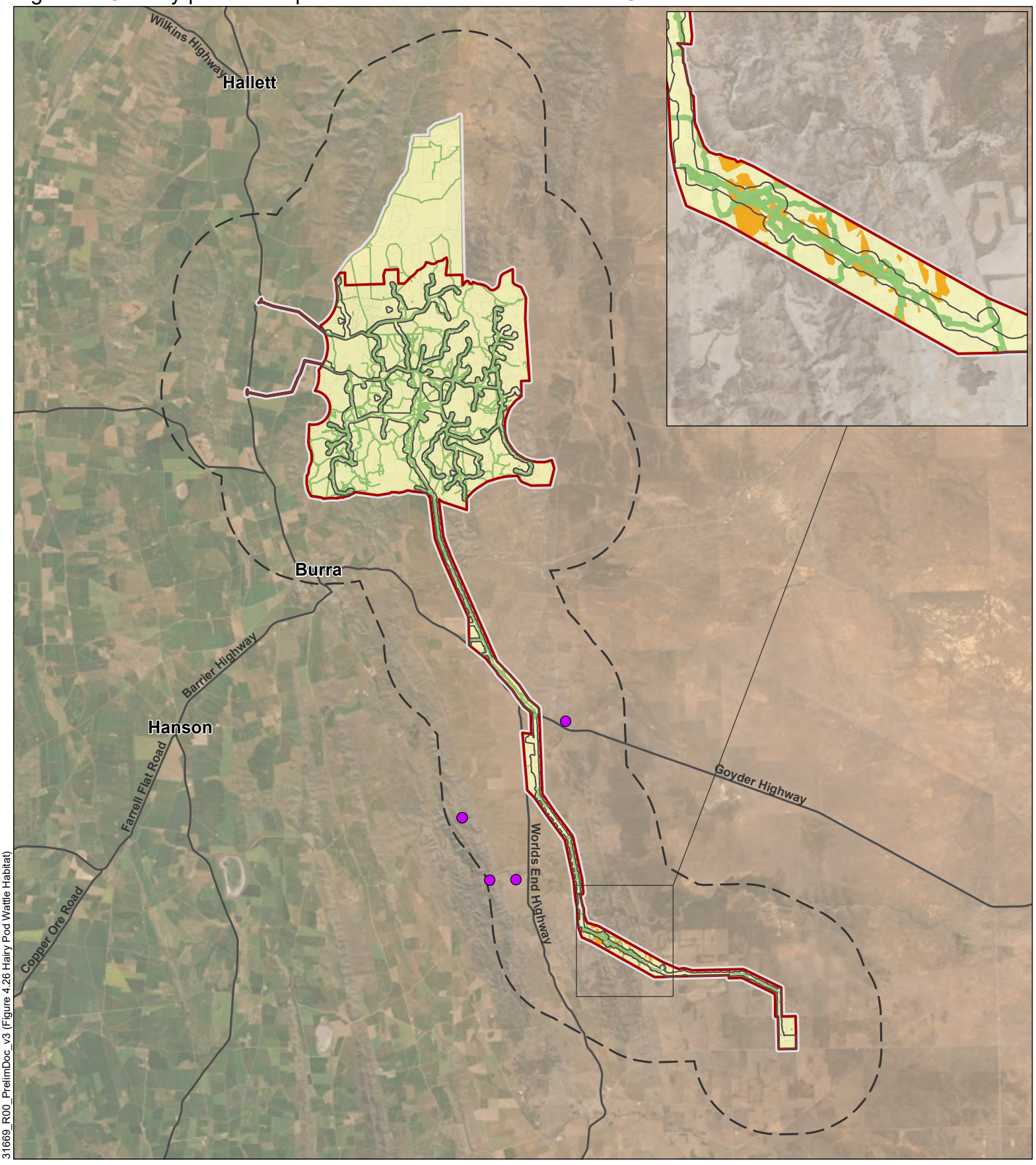
Habitat Suitability

Based on the habitat preferences listed in the Conservation Advice and other literature, the species is considered likely to occur in VA4 with possible occurrences in VA7 and VA19 (Figure 4.26). Targeted survey effort has ensured that over 90% of all likely and possible habitat has been searched in detail, and no specimens have been found. Given the conspicuous nature the species, being a small to medium sized perennial shrub, it is likely to have been detected if present. The survey findings provide high confidence that the species does not occur.

Population Estimate

No individuals or populations are known to occur in the Project Area. Four historical records occur within 5 km of the Project Area, occurring in the south of the Project Area in the locality of Worlds End Gorge and Burra Creek Gorge. The records are from 1977 (3) and 1983 (1), and do not provide a count of individuals.

Figure 4.26: Hairy-pod Wattle possible habitat and records within 5 km



GNWF
GNREF
Development Envelope
Search Area
Hairy-pod Wattle (BDBSA)

Hairy-pod Wattle habitat
Possible
Unlikely
Searched - not present

31669_R00_PrelimDoc_v3 (Figure 4.26 Hairy Pod Wattle Habitat)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

0 2.5 5 km

N

4.10.7 Regional Context

Acacia glandulicarpa has a small and disjunct range within South Australia. It is known to occur from three subregions, Lowan Mallee / Wimmera (Bordertown Population), Broughton (Burra Population) and Munpeowie (Wertaloona Population) (Figure 4.27). Within the Broughton Subregion, affected by the Project it is reported as Endangered and in Definite Decline (Table 4.36).

Table 4.36: Regional assessment for Hairy-pod Wattle

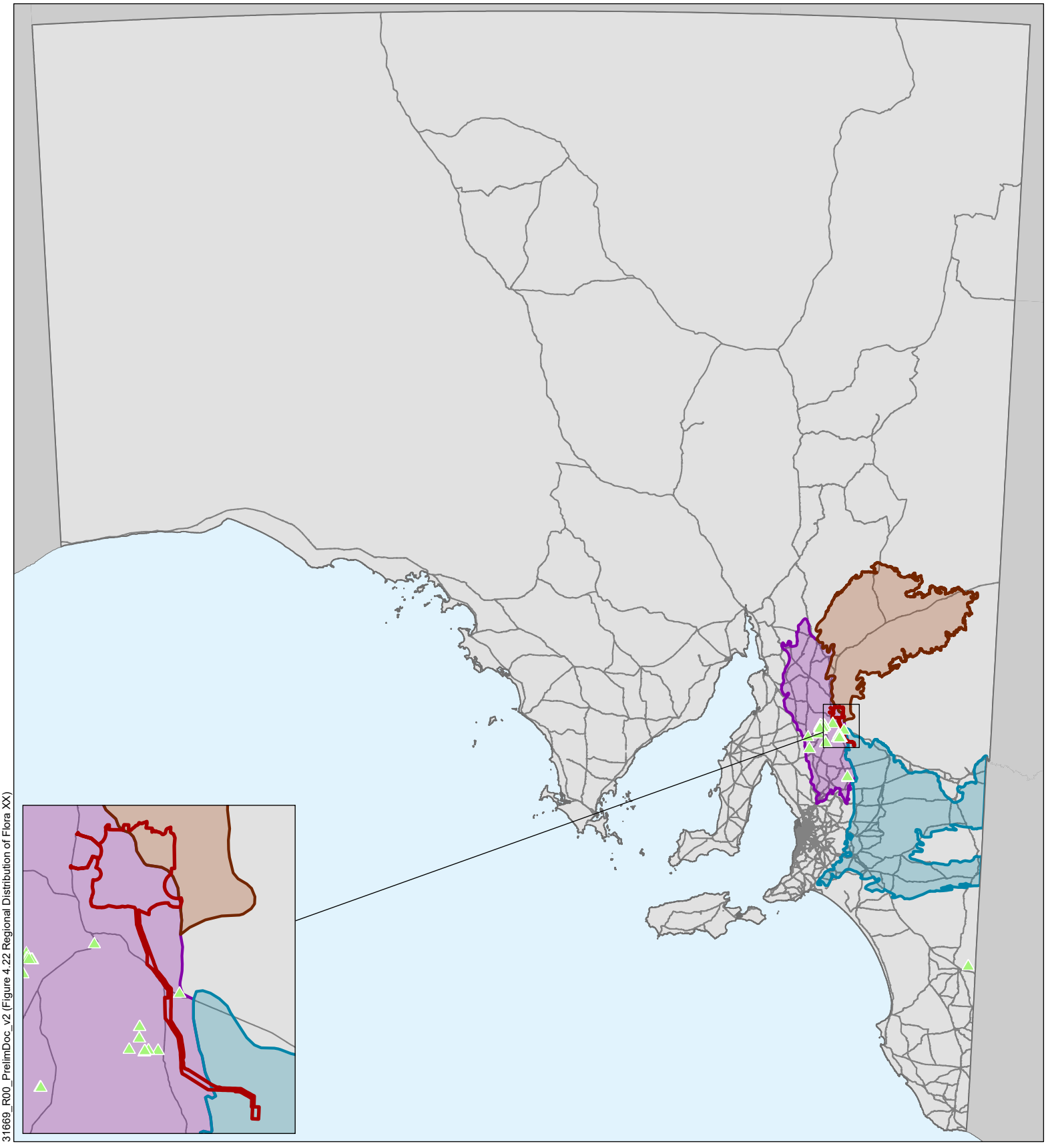
IBRA Subregion	Status Description (DEW Regional Assessment)	Trending
Project Area		
Broughton (FLB2)	Endangered	Definite Decline
Olary Spur (FLB3)	Does not occur	N/A
Murray Mallee (MDD2)	Does not occur	N/A

Source: DEW 2025b

Known populations are under threat from various sources including agricultural livestock grazing, grazing by feral herbivores, road maintenance activities, weed invasion, herbicide drift from agricultural areas, pathogens, and loss of habitat.

Given the disjunct nature of the remaining populations, and their occurrence in areas which are not managed for conservation it is considered likely that this species is facing further decline without adequate conservation management actions undertaken within known populations. The Botanic Gardens of South Australia Seed Conservation Centre has stored seed collections from two populations, collected between 2004 and 2007 from a South Eastern and Northern Lofty region (SASCC 2025).

Figure 4.27: Regional distribution of Hairy-pod Wattle



GNWF

Hairy-pod Wattle

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

0 50 100 km

N

31669_R00_PrelimDoc_v2 (Figure 4.22 Regional Distribution of Flora XX)

4.11 Slender Bell-fruit (*Codonocarpus pyramidalis*) – Vulnerable

4.11.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Slender Bell-fruit, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.37.

Table 4.37: Slender Bell-fruit conservation documentation

EPBC Status	Listed as Vulnerable as *Codonocarpus pyramidalis* (Date effective 16-Jul-2000)
Approved Conservation Advice	Department of the Environment, Water, Heritage and the Arts (2008b). *Approved Conservation Advice for* Codonocarpus pyramidalis *(Slender Bell-fruit)*. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/19507-conservation-advice.pdf. In effect under the EPBC Act from 01-Oct-2008.
Listing Advice	The species is listed as Vulnerable as prior to the commencement of the EPBC Act it was listed as vulnerable under Schedule 1 of the *Endangered Species Protection Act 1992*. The IUCN Red List reports it to be Vulnerable under B2ab(iii, v): Limited AOO <500km^2 and a) severely fragmented populations which are b) continuing to decline in iii) area, extent and / or quality of habitat and v) number of mature individuals.
Adopted / Made Recovery Plan	Recovery Plan not required, included on the Not Commenced List (1/11/2009).
Adopted / Made Threat Abatement Plan	Department of the Environment and Energy (2016). *Threat abatement plan for competition and land degradation by rabbits*. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-rabbits-2016. In effect under the EPBC Act from 07-Jan-2017. Department of Environment, Water, Heritage and the Arts (2008d). *Threat abatement plan for competition and land degradation by goats*. Canberra, ACT: Commonwealth of Australia. Available from: Threat abatement plan for competition and land degradation by unmanaged goats - 2008.
Policy Statements and Guidelines	There are no Policy Statements or Guidelines for the species.

4.11.2 Ecology

Slender Bell-fruit, also known as Camel Poison, is a shrub or small tree growing up to 8m tall, often with multiple slender stems, often characterised by a distinct lean to one side. Foliage is bright green, even during dry periods, providing a strong contrast with the surrounding shrublands (SAAL NRM 2010). They are naturally sparse in the landscape, with populations often occurring as scattered individuals or small localised stand (DEWHA 2008b).

The species is monoecious with clusters of small green-yellow male and female flowers on the same plant, flowering from May to October, and producing an abundance of distinctively bell-shaped and segmented fruits, with orange to dark brown U-shaped seeds (DEWHA 2008b; SAAL NRM 2010). Viability is reported from average to high, ranging from 75% to 90%, and have a morphophysiological dormancy with complex

germination requirements (SASCC 2025). The species is rapid growing, but short lived, and known to regenerate well after fire, which may be required for germination (Davies 1995; SASCC 2025).

4.11.3 Habitat

The Slender Bell-fruit is known from the Northern Lofty Ranges, Flinders Ranges and eastern regions of SA. It occurs within the South Australian Murray Darling Basin, Northern and Yorke, Adelaide and Mount Lofty Ranges, and Eyre Peninsula Natural Resource Management Regions.

As seeds are dispersed by wind, the resulting populations are scattered and sparse occurring in a range of habitats. However, it is thought to preference shaley hill slopes and crests, ridges, hills and along creeks, or areas of skeletal soil including loamy sand, where physical soil or landscape disturbance has occurred (i.e. road works or erosion) (DEWHA 2008b; SAAL NRM 2010). It is associated with shrubland plant communities of *Senna, Eremophila* or *Dodonaea* or Prickly Wattle (*Acacia victoriae*) and Dead Finish (*Acacia tetragonophylla*) (SAAL NRM 2010).

4.11.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

4.11.4 Distribution and Abundance

The species is endemic to South Australia where it grows in the Northern Lofty Ranges, Flinders Ranges and eastern regions of the state, and formerly from southwestern NSW. It is now considered extinct in NSW where it was previously found near Pooncarie south of the Menindee Lakes and Darling River Plains (Oldfield and Gowland 2021; DEWHA 2008b).

The Slender Bell-fruit has a low AOO of between 176 km^2 and 500 km^2 in various literature (Oldfield and Gowland 2021). The Conservation Advice states that there is little information on population numbers of Slender Bell-fruit (DEWHA 2008b).

4.11.4.1 Important Populations

No 'important populations' are defined in the Conservation Advice for the Slender Bell-fruit. However, due to the species' small size and limited range of populations and individuals, and the species reduced distribution, it may be considered that all populations are important for the survival and protection of the species (DCCEEW 2025b). A plan for Threatened Plant Species Management in the Arid Pastoral Zone of South Australia (Davies 1995) recommends that mining and destructive mineral exploration should be excluded from areas with populations of Slender Bell-fruit that contain five or more individuals, suggesting this may be a suitable population size to constitute an important population.

4.11.5 Key Threatening Processes

The Approved Conservation Advice (DEWHA 2008b) and other sources (Davies 1995) identify the main identified threat to Slender Bell-fruit as seedling grazing and damage to plants (such as ringbarking of trunks and browsing of basal roots) by rabbits and goats, however a range of other threats are identified including:

- Habitat loss and degradation from human development or large-scale natural disturbance such as fire.
- Climate change.
- Degradation of habitat through introduction of weeds and diseases.
- Inappropriate fire regimes.
- Fragmentation of habitat.
- Loss of native pollinators.

4.11.6 Occurrence in Project Area

Survey Findings

A targeted threatened species survey was undertaken to locate any *Codonocarpus pyramidalis* within the Disturbance Footprint. Despite numerous vegetation surveys to date the species has not been recorded within the WF or OTL (Umwelt 2025b).

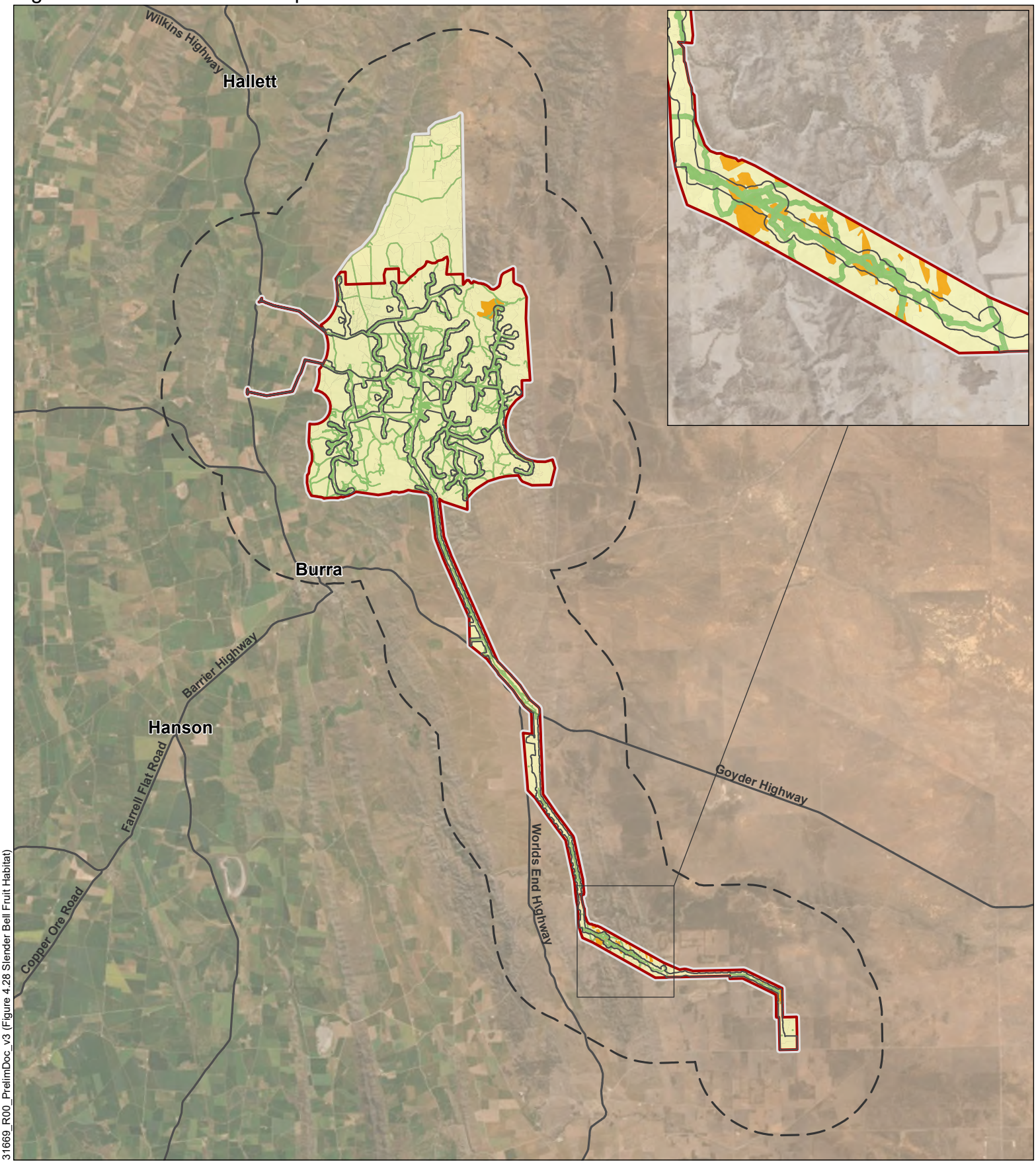
Habitat Suitability

Based on the habitat preferences listed in the Conservation Advice and other literature, the species is considered likely to occur in VA16, VA19 with possible occurrence in VA3 (Figure 4.28). Within these VAs suitable habitat is likely to be further restricted to crests of hills and ridges and slopes along creeks. Targeted survey effort has ensured that over 60% of all likely and possible habitat has been searched in detail, and no specimens have been found. Given the conspicuous nature the species, being a medium to large sized tree, and dissimilar to all other flora species in the region, it is highly likely to have been detected if present. The survey findings provide high confidence that the species does not occur.

Population Estimate

The species has not been previously recorded within the Project Area or within 5 km of the Project Area (BDBSA records). There are sparse records of the species further afield, including one record of eight individuals in mixed shrubland on a roadside nearby Caroona Creek CP to the north in 2003, and another record from 2013 west of the Hallelujah Hills to the south of the Project Area. It is considered unlikely that individuals or populations of the species occur within the Project Area.

Figure 4.28: Slender Bell-fruit possible habitat and records within 5 km



GNWF
GNREF
Development Envelope
Search Area

Slender Bell-fruit habitat
Possible
Unlikely
Searched - not present

31669_R00_PrelimDoc_v3 (Figure 4.28 Slender Bell Fruit Habitat)

umwelt

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

N

0 2.5 5 km

4.11.7 Regional Context

Several large-scale surveys have been conducted in the Flinders Ranges, Eyre Peninsula and South Olary Plains, where populations of Slender Bell-fruit are known to occur, however, limited detail has been provided on the size of populations (DCCEEW 2025b). Regional Species Conservation Assessments across 10 IBRA subregions in South Australia in which the Slender Bell-fruit is known to occur, have shown this species is in Probable Decline in at least six of these subregions (SASCC 2025). The four remaining subregions (Northern and Central Flinders, Torrens and Murnpeowie) had three years of wet summers and the species assessment panel could not say if this species was in Decline, although it was Rare, and is listed as Stable / No Decline.

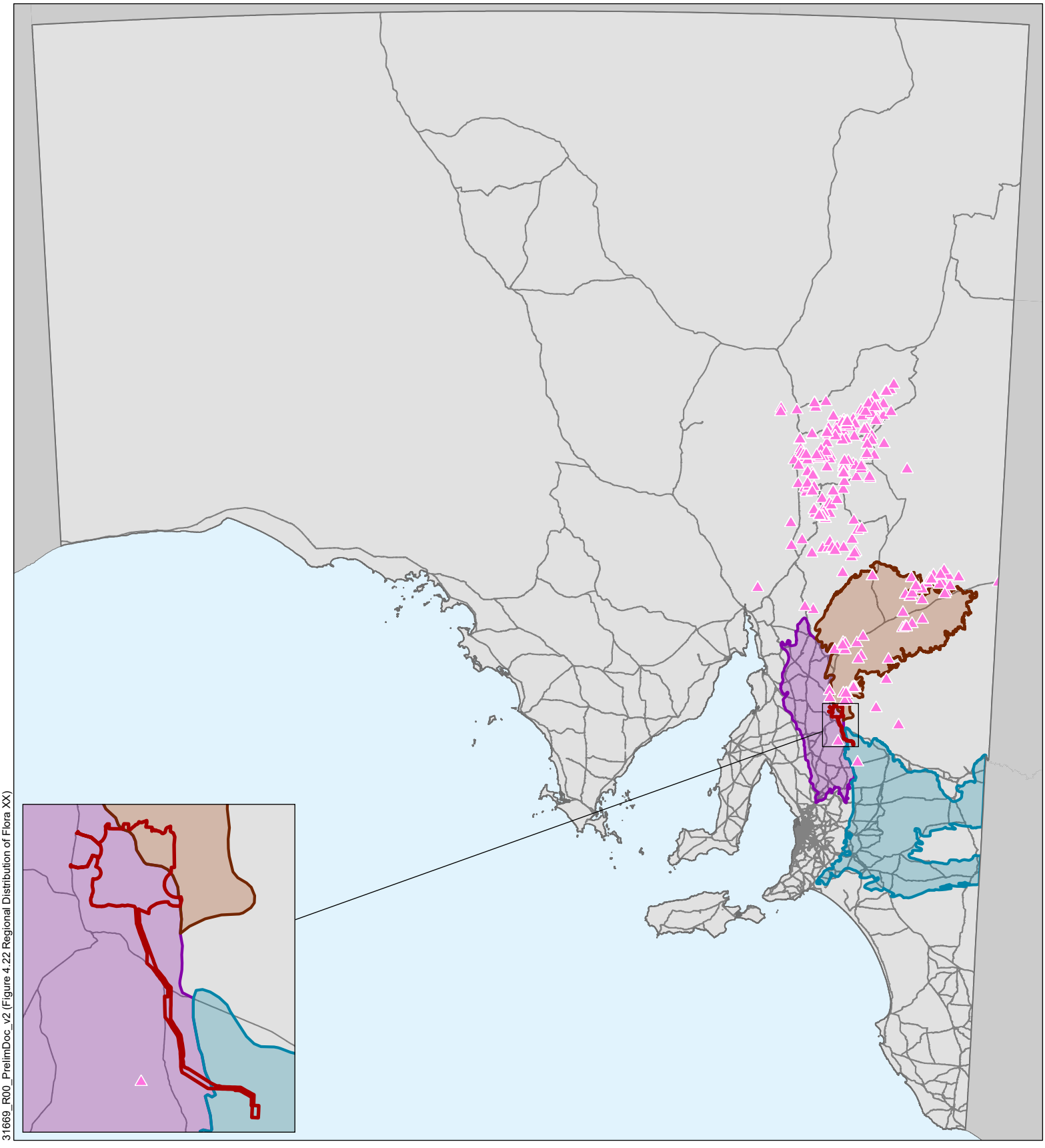
The area of potentially suitable habitat being cleared within each of the affected subregions is listed in Table 4.38. Suitable habitat and historical records within South Australia and presented in Figure 4.29.

Table 4.38: Regional assessment for Slender Bell-fruit

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending
Project Area		
Broughton (FLB2)	Endangered	Probable Decline
Olary Spur (FLB3)	Vulnerable	Probable Decline
Murray Mallee (MDD2)	Does not occur	N/A
Bordering Project Area		
Braemer (MDD7)	Endangered	Probable Decline
Southern Flinders (FLB4)	Endangered	Probable Decline

Source: DEW 2025b

Figure 4.29: Regional distribution of Slender Bell-fruit



GNWF

Slender Bell-fruit

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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N

0 50 100 km

31669_R00_PrelimDoc_v2 (Figure 4.22 Regional Distribution of Flora XX)

4.12 Trailing Hop-bush (*Dodonaea procumbens*) – Vulnerable

4.12.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Trailing Hop-bush, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.39.

Table 4.39: Trailing Hop-bush conservation documentation

EPBC Status	Listed as Vulnerable (Date effective 16-Jul-2000)
Approved Conservation Advice	There is no approved Conservation Advice for this species
Listing Advice	There is no Listing Advice for this species
Adopted / Made Recovery Plan	Carter (2010). National Recovery Plan for Trailing Hop-bush Dodonaea procumbens. Department of Sustainability and Environment, Melbourne. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-trailing-hop-bush-dodonaea%C2%A0procumbens. In effect under the EPBC Act from 13-Aug-2010.
Adopted / Made Threat Abatement Plan	Department of the Environment and Energy (2016). *Threat abatement plan for competition and land degradation by rabbits*. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-rabbits-2016. In effect under the EPBC Act from 07-Jan-2017.
Policy Statements and Guidelines	No Policy Statements or Guidelines are available for the species.

4.12.2 Ecology

The Trailing Hop-bush (*Dodonaea procumbens*) is a spreading prostrate shrub growing to 1.5 m in diameter and 20 cm in height. Its leaves are wedge-shaped and are glossy dark green in colour. The flowers, which appear in spring, are small and have yellow, orange, red and pink petals. The species is dioecious, having male and female flowers on different plants (Carter 2010). The fruits are orange-red papery 'hops' forming in summer between November and January and containing black ovoid seeds with a cream aril (SASCC 2025). Seed viability from three collections was reported to be average to high, ranging from 75% to 100% (SASCC 2025).

4.12.3 Habitat

Trailing Hop-bush grows in low-lying, often winter-wet areas in woodlands, low open forests, heathlands and grasslands, often on sands and cracking grey clays (Carter 2010; SASCC 2025). South Australian populations have been recorded in open woodlands of River Red Gum *(Eucalyptus camaldulensis* ssp.), Pink Gum (*E. fasciculosa)*, and Blue Gum (*E. leucoxylon* ssp.), and grasslands of Spear-grass (*Austrostipa* spp.), Wallaby-grass (*Rytidosperma* spp.), Sticky saw sedge (*Lepidosperma viscidum*) and Kangaroo Grass (*Themeda triandra*).

The species is protected in Mokota Conservation Park where it grows in native herbaceous grasslands on rocky outcrops in shallow soils. It is protected from grazing by several small enclosures. On Kangaroo Island (reportedly) and near Penola it grows in Brown Stringybark (*Eucalyptus baxteri*) forest or Grass-tree (*Xanthorrhoea* spp.) thickets. In NSW it is similarly associated with grassland or grassy woodland of Snow Gum (*Eucalyptus pauciflora*) on crests or slopes. Plants are often found on disturbed and exposed sites, including road verges and cuttings.

4.12.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

4.12.4 Distribution and Abundance

Trailing Hop-bush has a wide but sparse distribution in southeastern Australia, where it occurs in New South Wales, Victoria, and South Australia. There are an estimated 5,000 plants occurring in approximately 50 to 55 wild populations across its range; however, accurate location and population data only exists for around 25 of these populations (DCCEEW 2025b). The two largest populations are in Victoria, with approximately 2000 plants at Duston Downs in central Gippsland and 1000 plants at Beear State Forest. Most populations contain 50 plants or less.

There is no formal EOO or AOO listed in the literature for the species, however, based on available ALA records (n = 1,812), using a 2 km cell grid, the Trailing Hop-bush EOO has been estimated at 408,577.44 km^2 and the AOO at 220.00 km^2.

There are approximately eight known populations of the Trailing Hop-bush across in South Australia, with reports of thousands of plants occurring in the Kapunda to Peterborough area, however this is not reported in the Recovery Plan (Carter 2010; DCCEEW 2025b). A population is known from Mokota Conservation Park, within the Project Area, however the population size is not reported.

4.12.4.1 Important Populations

Important populations are identified in the National Recovery Plan (Carter 2010) as those where locations are precisely known and have recent abundance information. Within South Australia there are eight known populations, two of which have known abundance information (Holm Hill Council Reserve, Julie Creek) however the information is over 20 years old (DCCEEW 2025b). Other populations including Mokota Conservation Park have unknown population abundances, despite conservation efforts such as exclusion fencing being installed.

4.12.5 Key Threatening Processes

As per the National Recovery Plan (Carter 2010) for the species, Trailing Hop-bush many populations occur in highly vulnerable locations where they are at risk of the following threatening processes:

- Disturbance to / destruction of habitat and individual plants through road works, utilities installation and cropping.

- Infrastructure maintenance activities (i.e., roadside maintenance).
- Competition with exotic weeds.
- Overgrazing by native and introduced herbivores.
- Inappropriate/ altered fire regimes.

4.12.6 Occurrence in Project Area

The Trailing Hop-bush is considered a possible occurrence within the Disturbance Footprint and known within the Development Envelope (Umwelt 2025a).

Survey Findings

A targeted threatened species survey was undertaken to locate any *Dodonaea procumbens* (and other threatened plants) within the Disturbance Footprint. To date, the species has been recorded solely within the Mokota CP (including two historical records), where it is protected from herbivore grazing by fencing. One additional record in the Project Area, from 1993 and with low spatial reliability, was investigated but found not to be present at that location or in the vicinity.

The species has not been recorded within the Disturbance Footprint of the Project Area. Neoen have applied an avoidance buffer around all conservation areas, and therefore, although Mokota CP is within the Development Envelope it has been designated as an Avoidance Area.

Habitat Suitability

Based on the habitat preferences listed in the Conservation Advice and other literature, the species is considered to possibly occur in VA6, VA8, VA10, VA11 and VA17. Within these VAs suitable habitat is likely to be further restricted areas of higher quality grassland, with moist micro-climates which contain an herbaceous component. Targeted survey effort has ensured that over 93% of all possible habitat has been searched in detail, and no specimens have been found outside of Mokota Conservation Park. While the species is known to inhabit the Project Area and could potentially be present, but remain undetected due to its small size, susceptibility to grazing, and low visibility, it is unlikely that it still occurs in the unprotected agricultural landscape.

Population Estimate

Up to 108 historical records occur within the Project Area, all concentrated within Mokota Conservation Park, or on agricultural land directly to the west. The records nearby the Disturbance Footprint were verified by targeted field surveys. Two records occur near the Disturbance Footprint, contained within a fenced grazing exclusion fence. This occurs up a hill, approximately 22.3 m to the north of a proposed access route (Figure 4.30 and Figure 4.32). Other specimens occur within similar large, fenced exclusion zones or individual wire mesh exclusion barriers (Figure 4.31), most of which have been outgrown and are being heavily grazed by native herbivores such as kangaroos, from the outside. No specimens were detected outside of the grazing excluders, indicating their susceptibility to these pressures. Figure 4.33 shows possible habitat for Trailing Hop-bush and the location of historic records within 5 km of the Project Area.

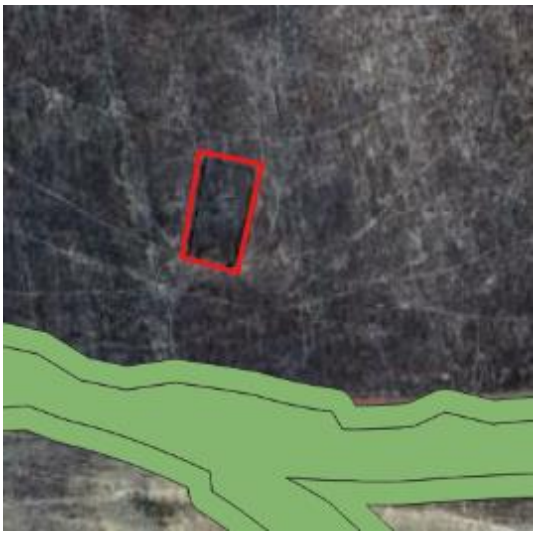


Figure 4.30: Exclusion fence approximately 23 m north of edge of proposed Disturbance Footprint

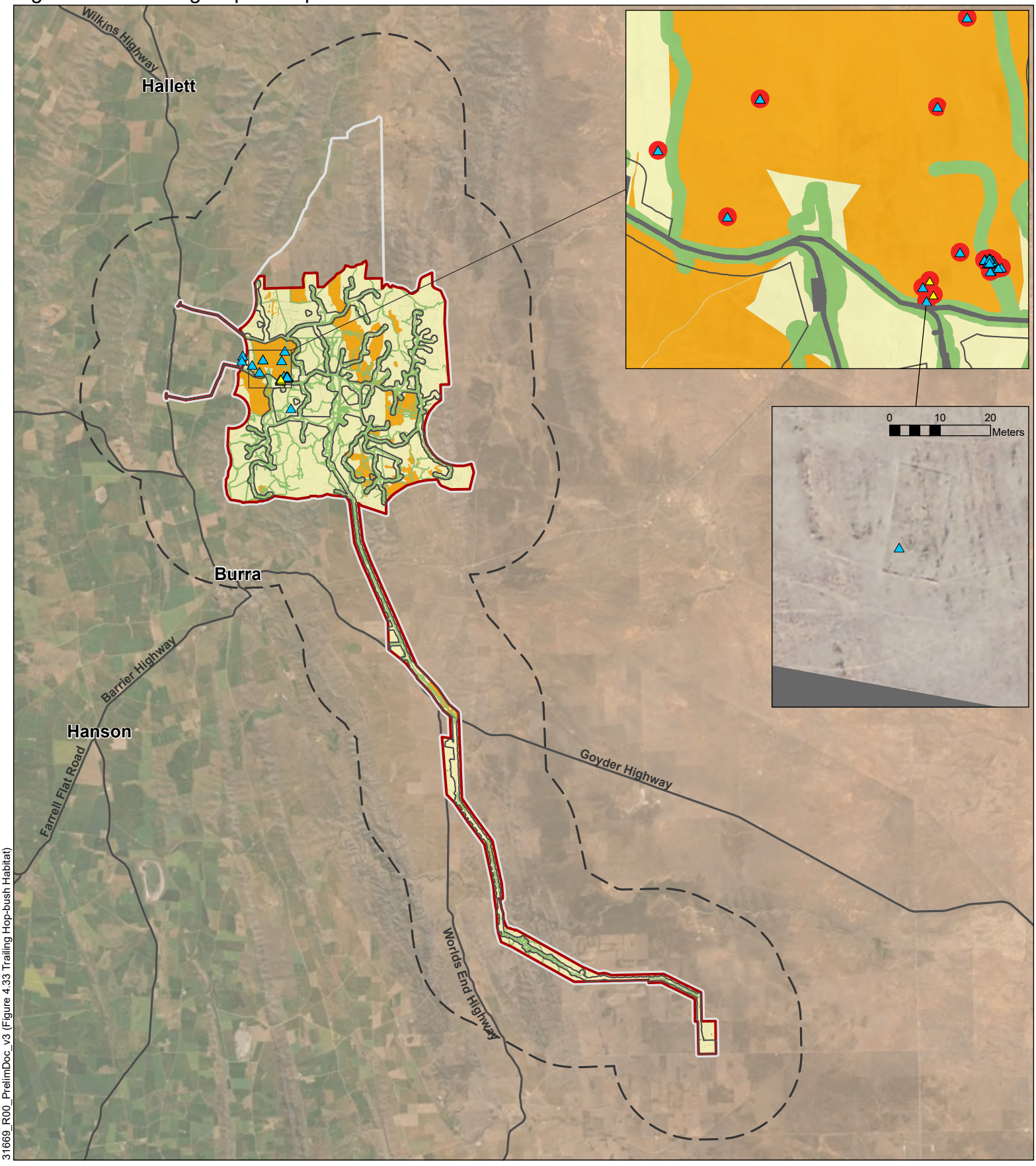


Figure 4.31: Exclusion fence (large) and individual barriers further to the north (~270 m) of the Disturbance Footprint



Figure 4.32: Proximity of both localities to Disturbance Footprint

Figure 4.33: Trailing Hop-bush possible habitat and records within 5 km



GNWF
GNREF
Disturbance Footprint
Development Envelope
Search Area
Trailing Hop-bush (Umwelt)
Trailing Hop-bush (BDBSA)

Trailing Hop-bush habitat

Known
Possible
Unlikely
Searched - not present

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

0 5 10 km

N

31669_R00_PrelimDoc_v3 (Figure 4.33 Trailing Hop-bush Habitat)

4.12.7 Regional Context

Dodonaea procumbens has a limited and disjunct distribution in South Australia, where it is known from the Eyre Yorke Block, Flinders Lofty Block, Kanmantoo and Naracoorte Coastal Plain. In the Eyre Hills and Broughton subregions it is in Probable Decline (Table 4.40). One record (1987) is reported on Kangaroo Island, and the population is listed as Data Deficient and likely to be extinct, while the Glenelg Plain population in the southeast is also listed as Data Deficient with only 12 plants reported.

Within the Broughton subregion, it is known to occur at Mokota Conservation Park, Holm Hill Council Reserve, Mintaro Cemetery and the Barrier Highway (10 km south of Burra). The regional distribution of Trailing Hop-bush in relation to the Project Area is shown on Figure 4.34.

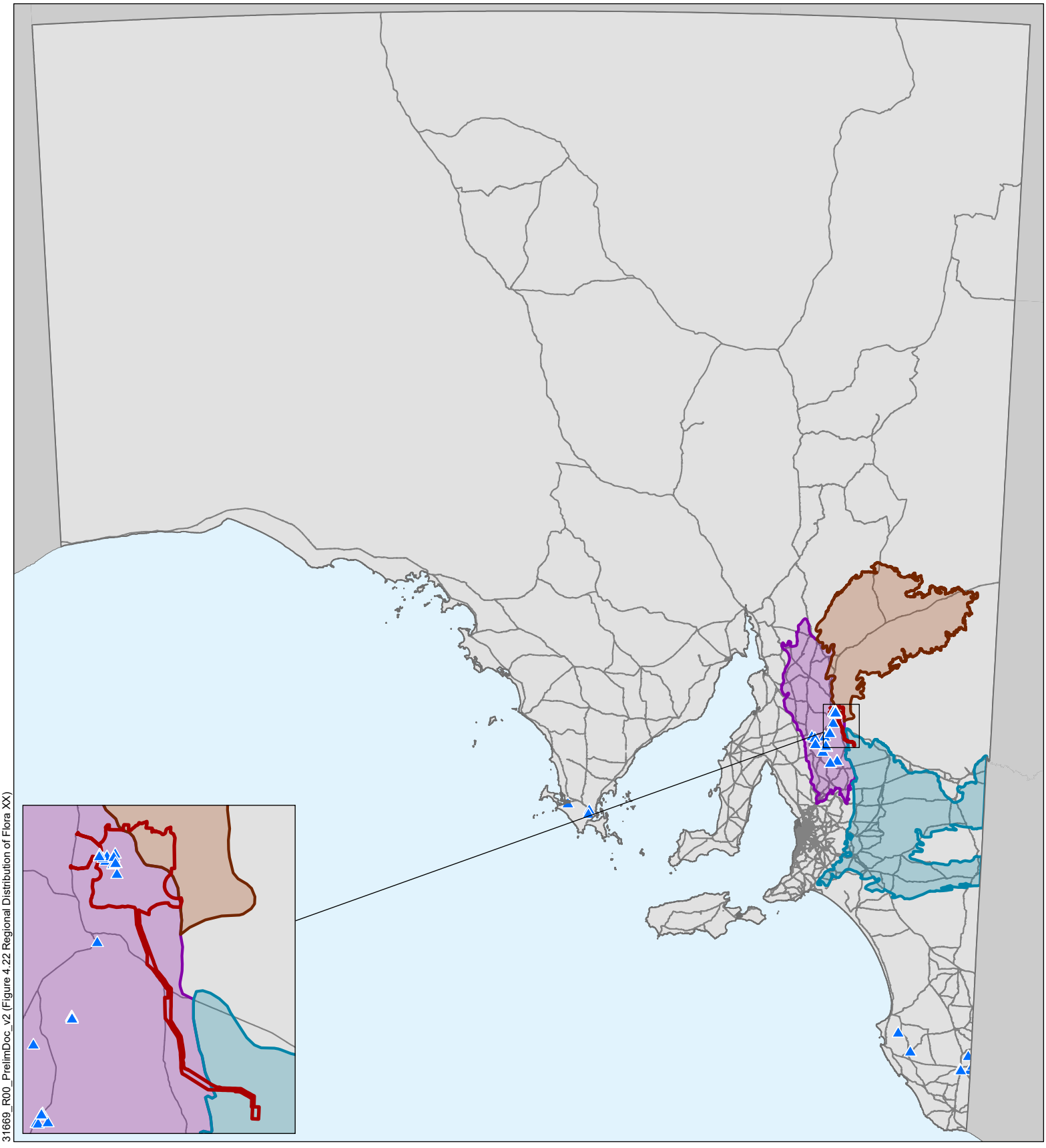
The Botanic Gardens of South Australia Seed Conservation Centre has stored seed collections from three populations, collected between 2006 and 2012 from Eyre Peninsula, Northern Lofty and Southeastern region (SASCC 2025).

Table 4.40: Regional assessment for Trailing Hop-bush

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending
Project Area		
Broughton (FLB2)	Vulnerable	Probable Decline
Olary Spur (FLB3)	Does not occur	N/A
Murray Mallee (MDD2)	Does not occur	N/A

Source: DEW 2025b

Figure 4.34: Regional distribution of Trailing Hop-bush



GNWF

Trailing Hop-bush

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

0 50 100 km

N

31669_R00_PrelimDoc_v2 (Figure 4.22 Regional Distribution of Flora XX)

4.13 Silver Daisy-bush (*Olearia pannosa* subsp. *pannosa*) – Vulnerable

4.13.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Silver Daisy-bush, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.41.

Table 4.41: Silver-daisy Bush conservation documentation

EPBC Status	Listed as Vulnerable as *Olearia pannosa* subsp. *pannosa* (Date effective 16-Jul-2000)
Approved Conservation Advice	Department of the Environment (2013b). Approved Conservation Advice for *Olearia pannosa* subsp. *pannosa* (silver daisy-bush). Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/12348-conservation-advice.pdf. In effect under the EPBC Act from 17-Dec-2013.
Listing Advice	The species is listed as Vulnerable as prior to the commencement of the EPBC Act it was listed as vulnerable under Schedule 1 of the *Endangered Species Protection Act 1992*.
Adopted / Made Recovery Plan	There is no adopted or made Recovery Plan for this species. The Conservation Advice is considered to be an effective, efficient and responsive document to guide the implementation of priority management actions, mitigate key threats and support the recovery of the species. (28 March 2022).
Adopted / Made Threat Abatement Plan	Department of the Environment and Energy (2018). *Threat abatement plan for disease in natural ecosystems caused by* Phytophthora cinnamomi. Canberra: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/threat-abatement-plan-disease-natural-ecosystems-caused-phytophthora-cinnamomi-2018. In effect under the EPBC Act from 22-Feb-2019.
Policy Statements and Guidelines	There are no Policy Statements or Guidelines for the species.

4.13.2 Ecology

Silver Daisy-bush is a spreading undershrub to 1.5 m high, which produces root suckers which spread along the ground. It has prominently veined leaves which are dark green and shiny above, with white to rusty and tomentose(hairy) below. The species has been reported to flower in late winter through spring (BGSA 2025), producing an abundance of large white solitary flower heads in the upper leaf axils on a long stalk. The resulting large fluffy daisy heads contain numerous seeds which are dispersed by wind (DotE 2013b; SASCC 2025).

The potential for this species to disperse and successfully germinate is limited by its low to average reported seed viability ranging from 15% to 70%, and at high risk of predation (SASCC 2025). Given the landscape use as primarily agricultural grazing land, recruitment is likely to be low in unprotected / unmanaged areas due to grazing of seedlings and juvenile plants by rabbits, goats and livestock. The isolated / fragmented nature of the populations further reduces genetic dispersal, however, as there are multiple known subpopulations of the species over a wide range, and likely many more unreported locations on private land, the species is not facing imminent threat.

4.13.3 Habitat

Silver Daisy-bush utilises the preferred broad habitats of Mallee and Shrubland (Wilson and Bignall 2009). It is known to occur in a range of soil types including sandy flat areas and hilly rocky areas in woodland or mallee.

From threatened species recovery plans which contain detailed regional information on the species (Obst 2005; Pobke 2007), associated vegetation communities include, on the Eyre Peninsula: Drooping Sheoak (*Allocasuarina verticillata*) low woodland and Mallee woodlands containing an understory of Broombush (*Melaleuca uncinata*) such as Peppermint Box (*E. odorata*) mid mallee woodland and Mallee Box (*E. porosa*) mid open mallee woodland. In the Murray Darling Basin: Mallee woodlands (many associated Eucalypt species) and Pink Gum (*E. fasciculosa*) woodland.

Vegetation mapping in the Mid-north indicates that known populations occur in areas mapped as Peppermint Box low Woodland, *Eucalyptus brachycalyx* / *E. oleosa* mid mallee woodland and *E. leucoxylon* ssp. *pruinosa* open grassy woodland (DEW 2025a).

4.13.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. However, Obst (2005) and Pobke (2007) state that given it is listed as vulnerable, it is considered that all known habitat is critical to the survival of the sub-species.

4.13.4 Distribution and Abundance

Silver Daisy-bush is Endemic to SA where it is found scattered throughout in remnant bushland, within the and on roadsides with few individuals. It has been recorded widely across the Eyre Peninsula, Yorke Peninsula, Flinders Ranges, Southern and Northern Mount Lofty Ranges, Murray and Southeastern South Australia herbarium regions and a single collection from Kangaroo Island (DotE 2013b).

In the Murray Darling Basin, it is known from 35 populations comprising an estimated 1,100 plants, with the largest subpopulation containing 262 plants near Strathalbyn, and estimated EOO of 8,058 km^2 (Obst 2005). On the Eyre Peninsula there are 18 known populations comprising 1,150 plants, with an EOO of 2,200 km^2 (Pobke 2007).

In the Mid-North it is known from several populations including south of Burra in the Worlds End Gorge and Tothills region where it is protected by Heritage Agreements and Hopkins Conservation Park as well as Mount Bryan and Mount Bryan East and several localities further north (DEW 2025a).

4.13.4.1 Important Populations

No 'important populations' are defined in the Conservation Advice for the Silver Daisy-bush. The *South Australian Murray Darling Basin Threatened Flora Recovery Plan* (Obst 2005), lists a number of important populations within the MDB region, none of which occur in the Project Area.

4.13.5 Key Threatening Processes

Key threats to Silver Daisy-bush listed in the Conservation Advice (DotE 2013b) are:

1. Livestock grazing and trampling and grazing by feral pest species such as goats and rabbits.
2. Small population sizes, fragmentation of populations and poor recruitment.
3. Weed invasion, especially by bridal creeper (Asparagus asparagoides) and perennial veldt grass (Ehrharta calycina).
4. Lack of fire and / or disturbance and changed fire regimes.
5. Road and rail maintenance activities.
6. Insect pests and dieback caused by *Phytophthora cinnamomi*.
7. Recreational activities and other damaging activities which clear native vegetation.

4.13.6 Occurrence in Project Area

The Silver Daisy-bush is considered unlikely to occur within the Disturbance Footprint but a possible occurrence within the Development Envelope (Umwelt 2025b).

Survey Findings

A targeted threatened species survey was undertaken to locate any threatened flora species, including *Olearia pannosa* ssp. *pannosa* within the Disturbance Footprint. Despite comprehensive vegetation surveys in the Disturbance Footprint and extensive survey effort in the Project Area, to date the species has not been recorded within the Project Area.

During surveys in the surrounding landscape to assess potentially suitable offset sites, a specimen was detected in an adjacent property protected by a Heritage Agreement.

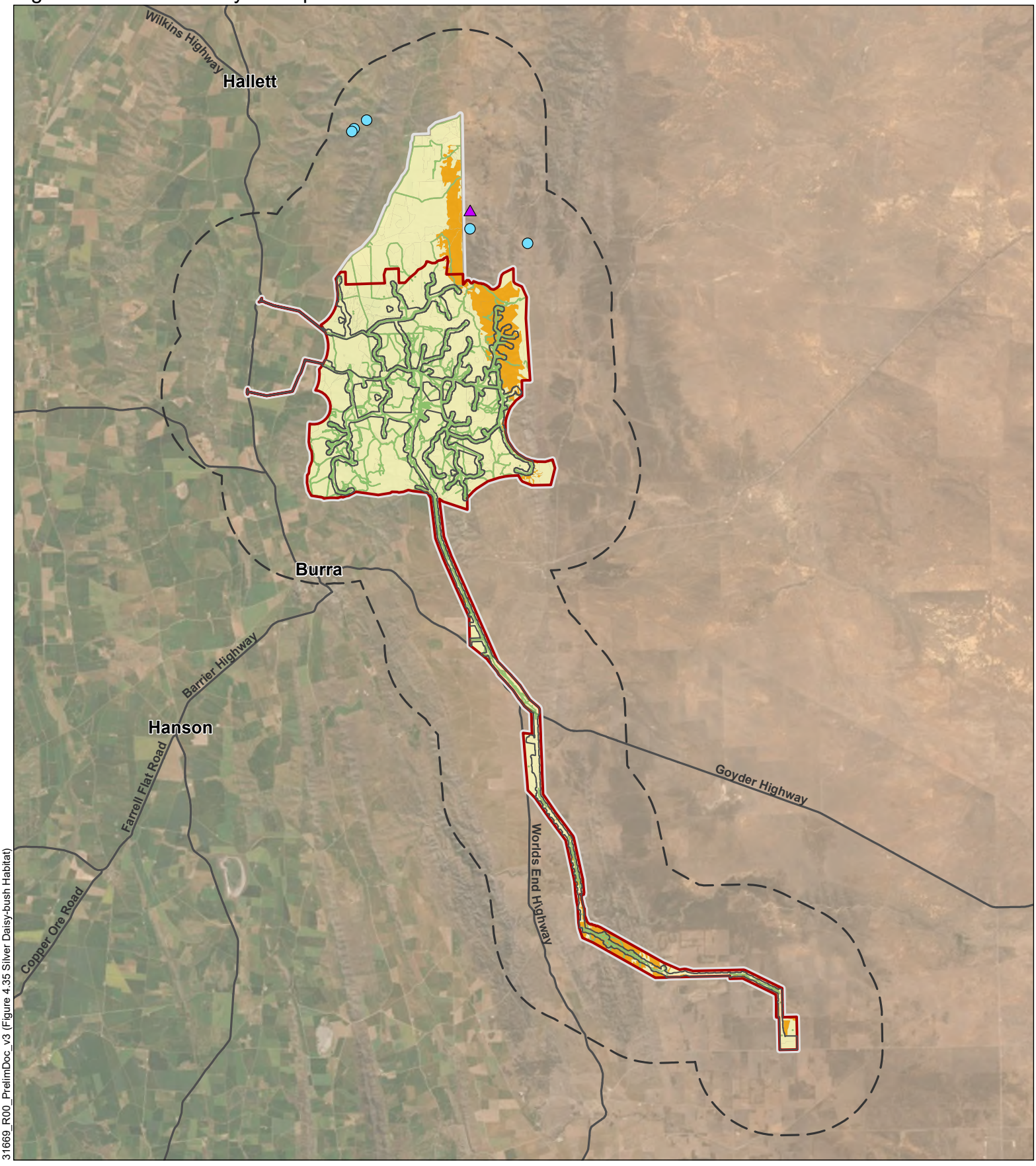
Habitat Suitability

Based on the habitat preferences listed in the Conservation Advice and other literature, the species is considered likely to occur in VA1, VA2, VA3, VA8, and VA18 and to possibly occur in VA19. Within these VAs suitable habitat is likely to be further restricted areas which contain a grassy understorey, and which are not subject to heavy grazing. Thus, suitable habitat (i.e. mallee or woodland in sandy, flat or hilly and rocky areas) potentially occurs in small pockets of unsurveyed areas of the Project Area and Development Envelope. Targeted survey effort has ensured that over 70% of all likely and possible habitat has been searched in detail, and no specimens have been found. Given the nature the species, being a small to medium sized perennial shrub, with no similar species in the region, it is likely to have been detected in the Project Area if present. The survey findings provide high confidence that the species does not occur.

Population Estimate

No individuals or populations are known to occur in the Project Area. Five historical records occur within 5 km of the Project Area, occurring in the north of the Project Area. Two localities are reported from approximately 2.8 km or more to the northeast of the Project Area including one record in Mongolata Hills (2000) and two near to Newikie Creek (2023). Further to the north, three additional records are reported in Peppermint Box (*Eucalyptus odorata*) grassy woodland near Mount Bryan summit in 1993. To the south three localities are recorded outside of the Search Area, occurring in the Hallelujah Hills, near Hopkins Creek and two east of Emu Downs. Figure 4.35 shows possible habitat for Silver Daisy-bush and the location of historic records within 5 km of the Project Area.

Figure 4.35: Silver Daisy-bush possible habitat and records within 5 km



GNWF
GNREF
Development Envelope
Search Area
Silver Daisy-bush (Umwelt)
Silver Daisy-bush (BDBSA)

Silver Daisy-bush habitat
Possible
Unlikely
Searched - not present

31669_R00_PrelimDoc_v3 (Figure 4.35 Silver Daisy-bush Habitat)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

N

0 2.5 5 km

4.13.7 Regional Context

Silver Daisy-bush is known from the Eyre Yorke Block, Flinders Lofty Block, Kanmantoo, Murray Darling Depression, Naracoorte Coastal Plain and Southern Volcanic Plain. Across all these regions its status is listed as being in Probable Decline or Data Deficient, except on the Fleurieu Peninsula (Kanmantoo) and Mount Lofty Ranges (Flinders Lofty Block) where it is listed as Stable / No Change (SASCC 2025; DEW 2025b). The regional distribution of Silver Daisy-bush in relation to the Project Area is shown on Figure 4.36.

The Project Area occurs within Broughton, Olary Spur and Murray Mallee subregions where it is listed as either Vulnerable or Endangered and in Probable Decline (Table 4.42). The Murray Mallee population is listed as being Vulnerable, and in Probable Decline, however it is noted that this rating is potentially due to the habitat being on the edge of its known range.

Table 4.42: Regional assessment for Silver Daisy-bush

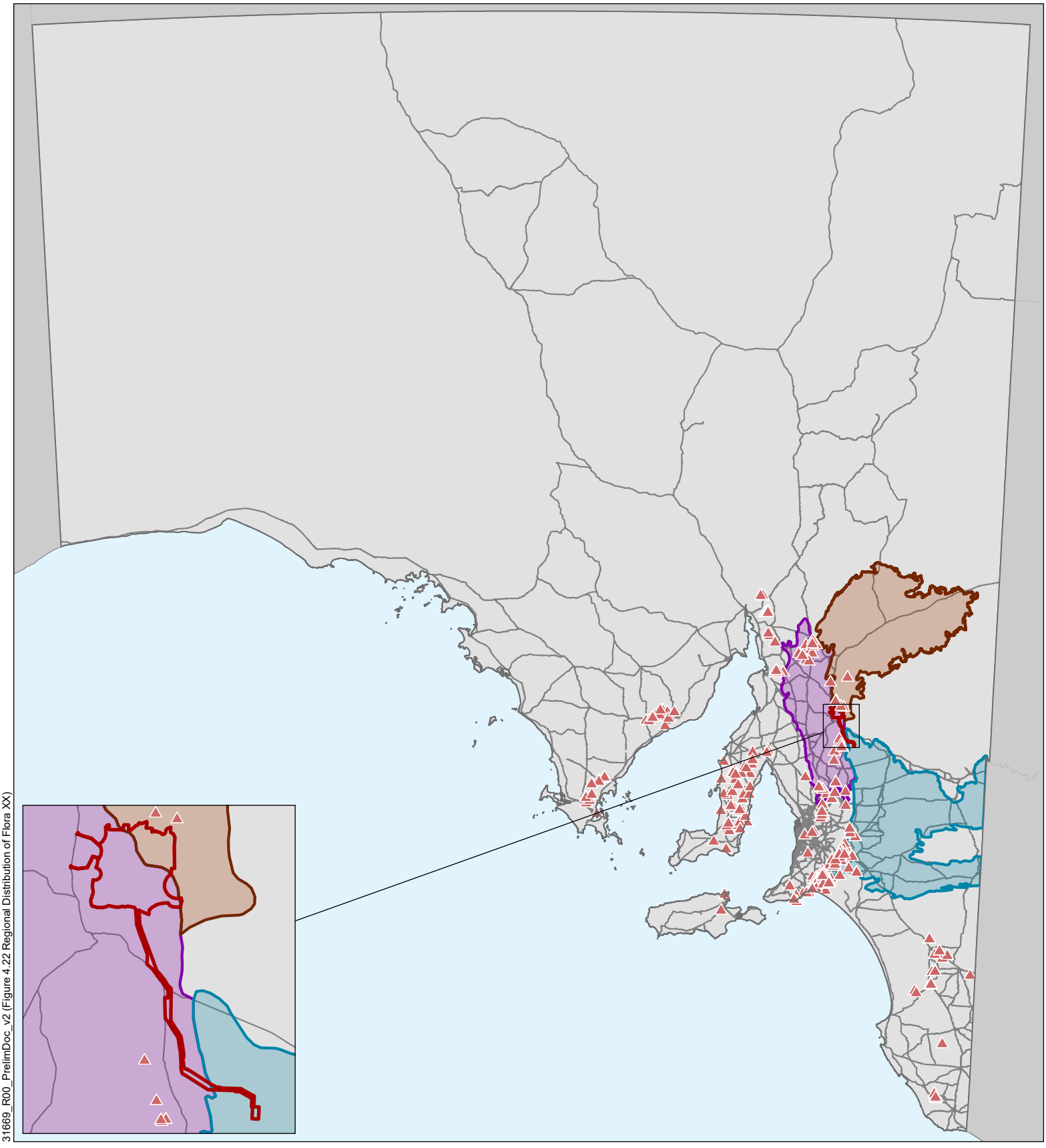
IBRA Subregion	Status Description (DEW Regional Assessment)	Trending
Project Area		
Broughton (FLB2)	Vulnerable	Probable Decline
Olary Spur (FLB3)	Endangered	Probable Decline
Murray Mallee (MDD2)	Vulnerable	Probable Decline
Bordering Project Area		
Mount Lofty Ranges (FLB1)	Endangered	Stable / No Change
Southern Flinders (FLB4)	Vulnerable	Probable Decline
St Vincent (EYB2)	Endangered	Probable Decline

Source: DEW 2025b

The Botanic Gardens of South Australia Seed Conservation Centre has stored seed collections from at least five localities, collected between 2006 and 2007 from Southern Lofty, South Eastern, Murray, Yorke Peninsula and Flinders Ranges (SASCC 2025).

Conservation actions currently underway, as the species was listed as a priority species in the Australian Government Threatened Species Strategy. In 2018, conservation organisation 'Trees for Life' received funding to implement a conservation project, *Community action across South Australia to secure the future of the Silver Daisy bush in a changing climate*. The Project aims to undertake translocations to establish new populations, introduce genetic material from north to south to develop climate resistance and increase local population sizes (Hurren et al. 2019).

Figure 4.36: Regional distribution of Silver Daisy-bush



GNWF

Silver Daisy-bush

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

N

0 50 100 km

31669_R00_PrelimDoc_v2 (Figure 4.22 Regional Distribution of Flora XX)

4.14 Superb Groundsel (*Senecio megaglossus*) – Vulnerable

4.14.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Superb Groundsel, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.43.

Table 4.43: Superb Groundsel conservation documentation

EPBC Status	Listed as Vulnerable (Date effective 16-Jul-2000)
Approved Conservation Advice	Department of the Environment, Water, Heritage and the Arts (2008e). *Approved Conservation Advice for* Senecio megaglossus *(Superb Groundsel)*. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/13374-conservation-advice.pdf. In effect under the EPBC Act from 03-Jul-2008.
Listing Advice	The species is listed as Vulnerable as prior to the commencement of the EPBC Act it was listed as vulnerable under Schedule 1 of the *Endangered Species Protection Act 1992*.
Adopted / Made Recovery Plan	There is no adopted or made Recovery Plan for this species. Recovery Plan not required, included on the Not Commenced List (1/11/2009).
Adopted / Made Threat Abatement Plan	Threat abatement plan for competition and land degradation by rabbits (DotEE 2016). Threat abatement plan for competition and land degradation by unmanaged goats (DEWHA 2008d).
Policy Statements and Guidelines	There are no Policy Statements or Guidelines for the species.

4.14.2 Ecology

Superb Groundsel is a perennial shrub, growing up to 80 cm high. It has woody branches with overlapping large bluish green leaves which have a waxy coating and serrated margins. The plant presents a large yellow flower-head in a cluster on a long stalk with 1-3 large yellow daisy flowers, which flower between July-August and November (SASCC 2025). The seed head is a large fluffy ball containing many elongated brown seeds topped with white/yellow hairy tufts. Seed viability from one collection was found to be high, at 100%. Fire may play a role in recruitment of new plants; however, this has not been verified (DEH 2005 in DEWHA 2008e; Davies 2000).

4.14.3 Habitat

The species is known to grow in rocky gorges, valley slopes and creek beds in a variety of habitats including tall open shrubland, woodland and open woodland, on variable soils of loam and clay loam (SASCC 2025). Associated species include Native Apricot (*Pittosporum angustifolium*), Bullock Bush (*Alectryon oleifolius*), Wallowa (*Acacia calamifolia*), Emu Bush (*Eremophila longifolia*), Curry Bush (*Cassinia laevis*), Sweet Bursaria (*Bursaria spinosa*) as well as in association with Spinifex (*Triodia* spp.), White Cypress Pine (*Callitris columellaris*) and River Red Gum (*E. camaldulensis*) (DEH 2008e; DEWHA 2008e).

4.14.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. However, given the species disjunct populations and small AOO, all known habitats should be considered important for the species' long-term survival.

4.14.4 Distribution and Abundance

The species is endemic to SA where it is known to occur in six scattered localities from the Southern Flinders Ranges to the Northern Lofty Ranges in SA. In the Northern Lofty region, three populations are known at Orroroo, Black Rock and Newikie Creek. It has previously been collected from Marne River Gorge and near Whyte-Yarcowie in the north, Spalding in the west and Robertstown in the south and east. In the Flinders Ranges it is known from Dutchman's Stern CP and Horrocks Creek to the south of the park, as well as historically at Buckaringa Gorge and Spear Creek (DEWHA 2008e; Davies 2000).

No EOO, AOO or population estimates are reported for the species, and the current status of known populations is not reported, with population estimates for each known locality reported from 1980-1995. The Newikie Creek population in the Mid-North was found to have an estimated 1,000 individuals, occurring on private land (DCCEEW 2025b). Dutchman's Stern Conservation Park had 135 individuals across five populations, with subsequent populations detected nearby comprising several thousand plants in combination.

There is no formal EOO or AOO listed in the literature for the species, however, based on available ALA records (n = 135), using a 2 km cell grid, the Superb Groundsel EOO has been estimated at 21,928.35 km^2 and the AOO at 152.00 km^2.

4.14.4.1 Important Populations

No 'important populations' are defined in the Conservation Advice (DEWHA 2008e) for the Superb Groundsel. However, all known populations of the species should be considered important to the species survival and protection.

4.14.5 Key Threatening Processes

The Conservation Advice (DEWHA 2008e) lists the main identified threat to the species to be the isolation and scattered nature of the known populations, as well as:

- Competition and habitat degradation caused by weeds.
- Grazing by goats, stock or rabbits.
- Lack of recruitment of seedlings.
- Changes in fire regime.
- Seed predation.

From observations of the population at Dutchman's Stern (Southern Flinders Ranges) Davies (2000) indicated that explanations for the lack of recruitment may include inhibition of seedling regeneration by weeds, borer damage to seeds, inadequate fire frequences, grazing and trampling of new shoots.

4.14.6 Occurrence in Project Area

The Superb Groundsel is considered unlikely to occur within the Disturbance Footprint but a possible occurrence within the Development Envelope (Umwelt 2025b).

Survey Findings

A targeted threatened species survey was undertaken to locate any threatened flora species, including *Senecio megaglossus* within the Disturbance Footprint. Despite extensive effort in the Disturbance Footprint and comprehensive effort in the Project Area, to date the species has not been recorded within the Project Area. The nearest known records are over 30 years old and occur outside of the Development Envelope, and were verified as no longer current during targeted field surveys. Given their historical occurrence in the region, they are conservatively considered as potentially occurring within the broader Development Envelope.

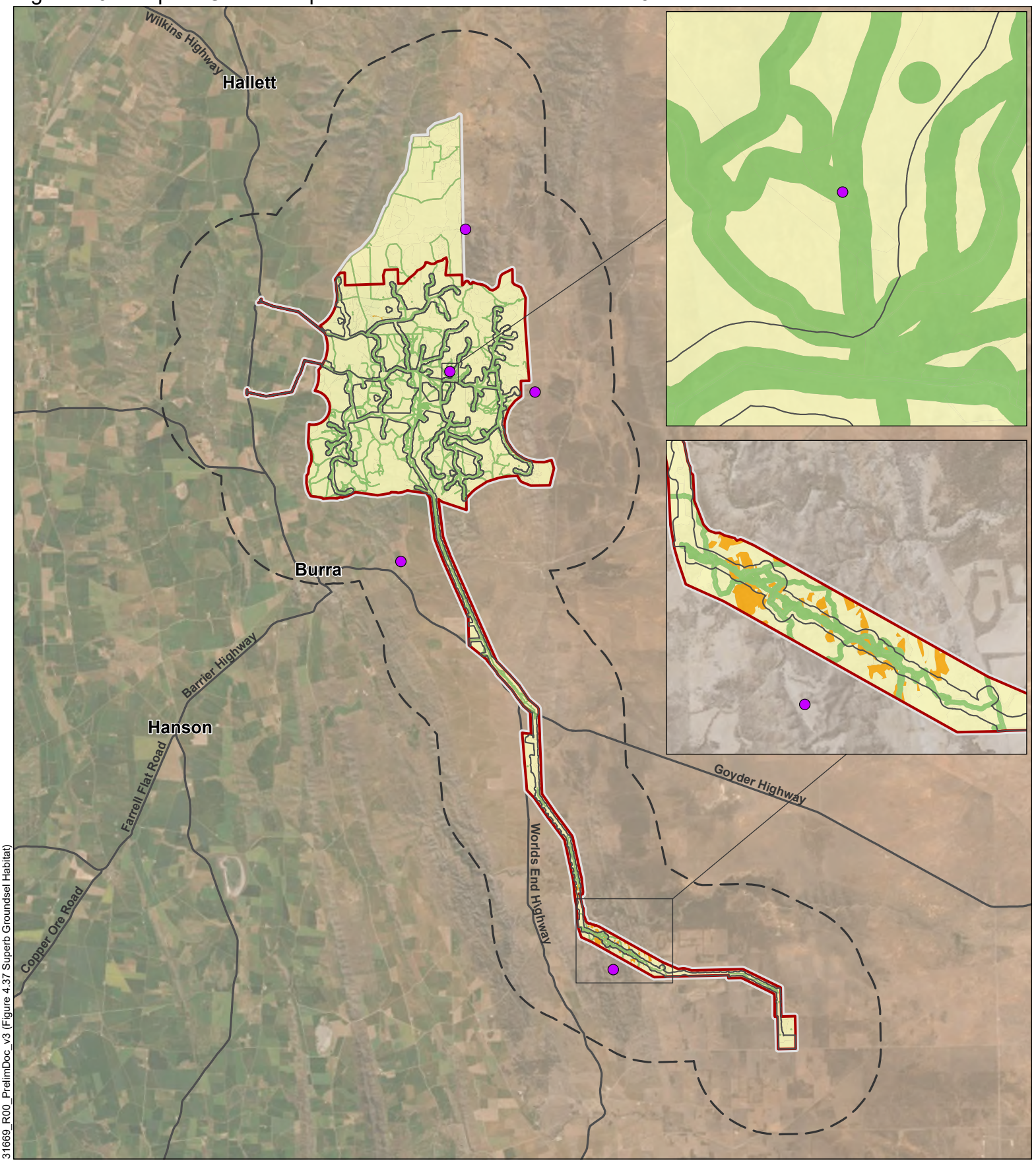
Habitat Suitability

Based on the habitat preferences listed in the Conservation Advice and other literature, the species is considered to possibly occur in VA14, VA19 and VA20. Within these VAs suitable habitat is likely to be further restricted to rocky gorges, valley slopes and creek beds. Thus, suitable habitat potentially occurs in small pockets of unsurveyed areas of the Project Area and Development Envelope. Targeted survey effort has ensured that over 80% of all possible habitat has been searched in detail, and no specimens have been found. Given the nature the species, being a showy perennial shrub with distinctive coloured leaves and bright yellow flower, it is likely to have been detected in the Project Area if present. The survey findings provide high confidence that the species does not occur.

Population Estimate

No individuals or populations are currently known to occur in the Project Area. One historical record occurs within the Project Area (Mongolata Gorge) from 1993; however, a targeted on-ground search did not locate it. Several other historical records occur within 5 km of the Project Area reported between 1892 and 1993, including one to the north at Newikie Creek (1993) (Figure 4.37). This record contains no count data, however, presumably relates to the large population of 1000 individuals referred to in the Conservation Advice (DEWHA 2008e). Other populations occur in the vicinity of Mongolata, a steep sided valley east of Burra, and further to the south an historical observation (1892) recorded as in a creek bed in the locality of Bright.

Figure 4.37: Superb Groundsel possible habitat and records within 5 km



GNWF
GNREF
Development Envelope
Search Area
Superb Groundsel (BDBSA)

Superb Groundsel habitat
Possible
Unlikely
Searched - not present

31669_R00_PrelimDoc_v3 (Figure 4.37 Superb Groundsel Habitat)

umwelt

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

N

0 2.5 5 km

4.14.7 Regional Context

The species is known from the Flinders Lofty Block and Kanmantoo subregions where it is listed as Endangered and in Probable Decline and Critically Endangered and in Definite Decline respectively (Table 4.44). The regional distribution of Superb Groundsel in relation to the Project Area is shown in Figure 4.38.

Table 4.44: Regional assessment for Superb Groundsel

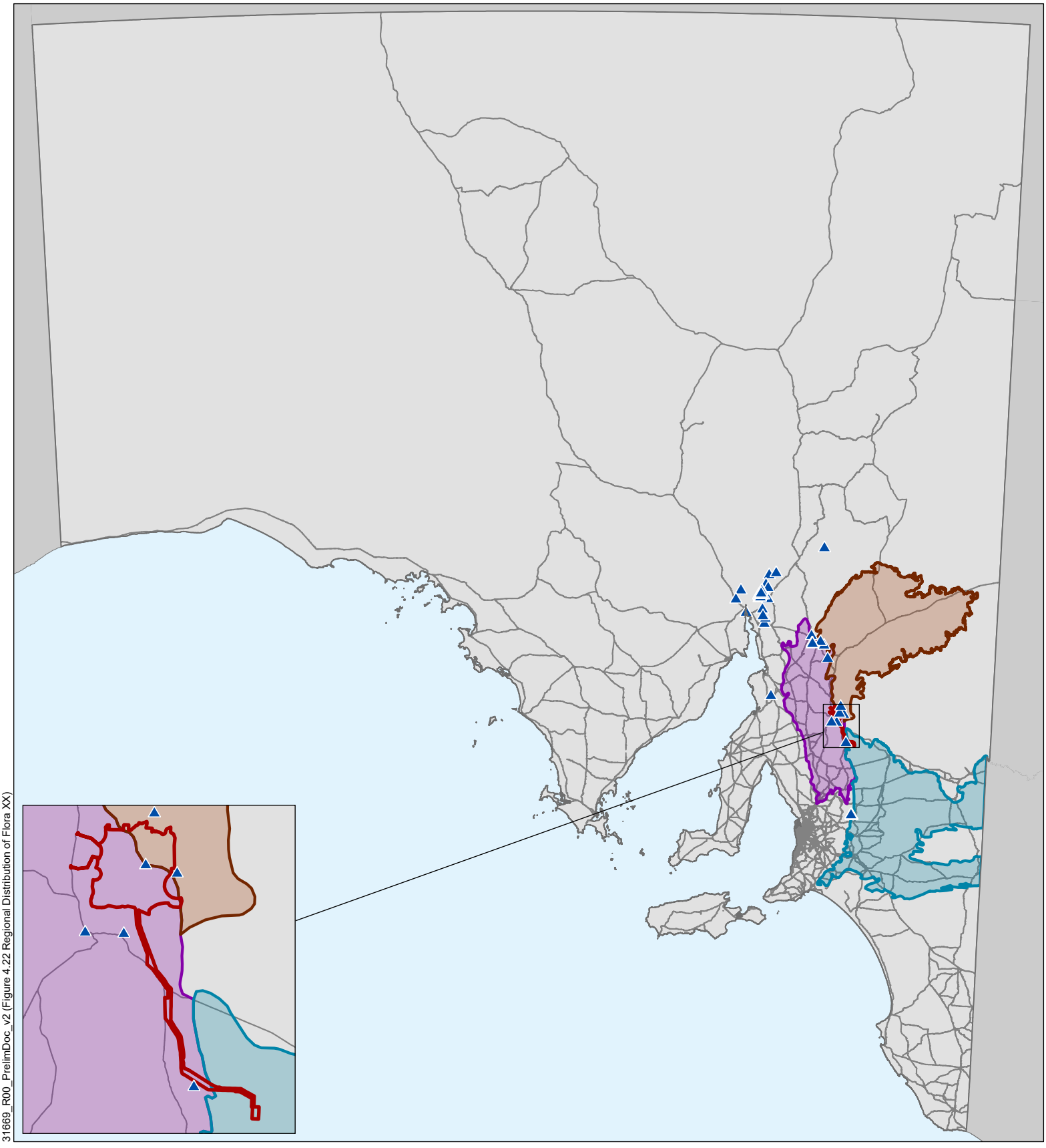
IBRA Subregion	Status Description (DEW Regional Assessment)	Trending
Project Area		
Broughton (FLB2)	Endangered	Probable Decline
Olary Spur (FLB3)	Endangered	Probable Decline
Murray Mallee (MDD2)	Does not occur	N/A
Bordering Project Area		
Southern Flinders (FLB4)	Endangered	Probable Decline
Fleurieu (KAN2)	Critically Endangered	Definite Decline

Source: DEW 2025b

The Botanic Gardens of South Australia Seed Conservation Centre has stored seed collections from one locality, collected in 2005 from Flinders Ranges (SASCC 2025).

The Bounceback and Beyond program undertaken by the SA Arid Lands Landscape Board has included monitoring and management of the populations protected at Dutchman's Stern (South Australian Government 2020). Another conservation organisation; the Foundation for Australia's Most Endangered Species (FAME) is involved in propagation of seeds for potential translocation as part of the Saving Endangered Orchid and Flora Species Project (FAME 2025).

Figure 4.38: Regional distribution of Superb Groundsel



GNWF

Superb Groundsel

IBRA Subregion

Broughton

Murray Mallee

Olary Spur

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

N

0 50 100 km

31669_R00_PrelimDoc_v2 (Figure 4.22 Regional Distribution of Flora XX)

4.15 Iron-grass Natural Temperate Grassland of South Australia – Critically Endangered

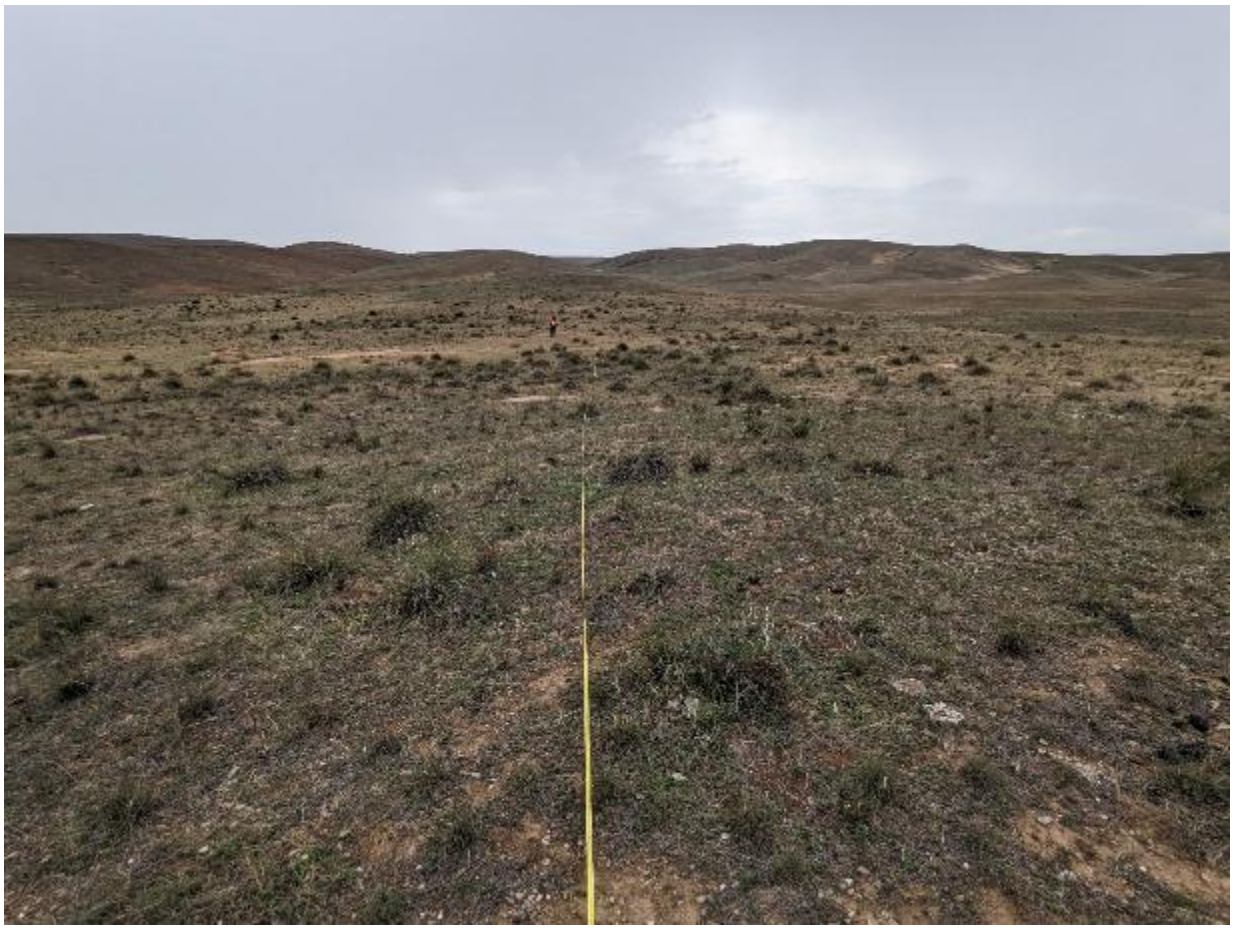


Plate 4.1: Class B Lomandra Grassland at GNWF (Site Lom3, facing west) (Photo: Umwelt)

4.15.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Iron-grass Natural Temperate Grassland, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.45.

Table 4.45: Iron-grass Natural Temperate Grassland conservation documentation

EPBC Status	Listed as Critically Endangered (Date effective 21-Jun-2007)
Approved Conservation Advice	Department of the Environment, Water, Heritage and the Arts (2008c). Approved Conservation Advice for Iron-grass Natural Temperate Grassland of South Australia. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/37-conservation-advice.pdf. In effect under the EPBC Act from 16-Dec-2008.

Listing Advice	Threatened Species Scientific Committee (TSSC 2007). Commonwealth Listing Advice on Iron-grass Natural Temperate Grassland of South Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/l-effusa.pdf. In effect under the EPBC Act from 22-Jun-2007. The TEC is eligible for listing as critically endangered under Criterion 1 – Decline in geographic distribution as it has undergone a likely decline in extent of >95%. Similarly, it is eligible for listing as Vulnerable under Criterion 2 and 4, being its restricted distribution subjected to ongoing threats and reduction in community integrity, respectively.
Adopted / Made Recovery Plan	Turner (2012). National Recovery Plan for the Irongrass Natural Temperate Grassland of South Australia ecological community 2012. Department of Environment and Natural Resources, South Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-iron-grass-natural-temperate-grassland-sa. In effect under the EPBC Act from 24-Jul-2012.
Adopted / Made Threat Abatement Plan	No Threat Abatement Plan has been identified as being relevant for this ecological community
Policy Statements and Guidelines	EPBC Act policy statement 3.7 - Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia and Iron-grass Natural Temperate Grassland of South Australia (DEWR 2007) [Admin Guideline]. Farming and nationally protected Iron-grass Natural Temperate Grassland (Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC 2011c) [Information Sheet]

4.15.2 Ecology

INTG TEC is classified as a natural grassland dominated by tussock forming perennial grasses and iron-grasses (*Lomandra effusa* or *Lomandra multiflora* ssp. *dura*). Between 10% and 70% of the ground cover is covered by *Lomandra* ssp. with a range of herbaceous plant species in the inter-tussock spaces, and an absence (<10% cover) of trees or shrubs (Turner 2012). The terms 'Lomandra Grassland' and 'Iron-grass Grassland' are used interchangeably for this ecological community, however 'INTG' typically refers to the listed TEC, whilst Lomandra Grassland refers to the general community in all its forms, regardless of condition.

The TEC is unique as it is the only recognised temperate grassland community dominated by tussock-forming species that are not true grasses, and the only location where Lomandra species occur in sufficient density to form a dominant stratum (Turner 2012). Lomandra species are members of the Liliaceae family.

The floristic composition of INTG includes characteristic iron-grasses in addition to perennial native grasses such as *Aristida behriana, Austrostipa* spp., *Rytidosperma* spp. and others. The inter-tussock spaces are filled with herbaceous species which may only be visible seasonally, such as *Arthropodium strictum* (Chocolate Lily), *Bulbine bulbosa* (Bulbine Lily), *Calocephalus citreus* (Lemon Beauty-heads), *Eryngium* spp. (Blue Devil), *Goodenia* spp., *Vittadinia* spp. *Wahlenbergia* spp. (Bluebells) and others. Shrubs form a minor component of some INTG communities, and may include *Bursaria spinosa* (Sweet Bursaria), *Cryptandra Amara* spp. (Long-flower Cryptandra), *Enchylaena tomentosa* (Ruby Saltbush) and others (DEWR 2007).

A number of threatened flora and fauna species are associated with the INTG TEC including Flinders Ranges Worm-lizard, Pygmy Blue-tongue Lizard, *Cullen parvum* (Small Scurf-pea), *Dodonaea procumbens* (Trailing Hop-bush) (TSSC 2007).

4.15.2.1 Condition Classification

The Iron-grass listing criteria (DEWR 2007) separates INTG into Condition Classes based on native plant species diversity, composition and native perennial tussock density. Three Condition Class categories have been defined (Table 4.46):

- Areas of Class A INTG are considered the highest quality representation of the community.
- Condition Class B INTG areas are also considered of high quality, but do not have the native species diversity of Class A INTG.
- Class C INTG areas are typically significantly degraded (low condition), are not included as the listed ecological community and therefore do not trigger the 'significant test' of the EPBC Act. Class C INTG is still considered to be amenable to rehabilitation through measures such as weed control, natural regeneration and protection from grazing.

Table 4.46: Criteria for listing INTG as a TEC (adapted from DEWR 2007)

Condition Class	Minimum patch size (ha)	Diversity of native species[1]	No. broad-leaved herbaceous species[1] in addition to identified disturbance resistant species[2]	No. perennial grass species[1]	Tussock count[3]
Constitutes INTG TEC					
A	0.1 ha	≥ 30	≥ 10	≥ 5	1/m
B	0.25 ha	≥ 15	≥ 3	≥ 4	1/m
Does not constitute INTG TEC, but amenable to rehabilitation					
C	No minimum	[3] 5	No minimum	≥ 1	No minimum

[1] Surveyed within a 50 x 50 metre (m) (or equivalent 2,500 m^2) quadrat within a representative area of each patch.

[2] Disturbance resistance species: *Ptilotus spathulatus*; *Sida corrugata*; *Oxalis perennans*; *Euphorbia drummondii*; *Maireana enchylaenoides*; *Convolvulus angustissimus*).

[3] Average count as measured along a 50 m transect, including all native perennial tussock species i.e. true grasses, as well as species of *Lomandra*, *Dianella*, *Gahnia*, *Lepidosperma* and other perennial sedges and rushes.



Plate 4.2: Condition Class B INTG within the Project Area (Photo: Umwelt)

4.15.3 Habitat

Remnants of Lomandra grassland generally occur on gentle slopes of low hills approximately 380 m above sea level and predominantly on loams to clay-loams with an estimated clay content of 30-35% (Turner 2012; DEWR 2007). Surface pebbles are common at some sites, including areas of rock outcrop. INTG is associated with a Mediterranean climate, with hot dry summers and cold wet winters with mean annual rainfall ranging from 280-600mm per year.

An early study by Specht (2007) (cited in Turner 2012) found that *Lomandra* tussocks occurred in the higher altitude regions, with the community extending into broad valleys between the hills, where density of *Lomandra* declined, replaced by a higher dominance of native grasses. A more recent study (Neagle 2008; Turner 2012) found that in the southern areas of its distribution, *Lomandra effusa* grassland occurred on the higher hill slopes and crests, with *Lomandra multiflora* occurring on the lower slopes.

The species is known to co-occur or occur adjacent to with Critically Endangered Peppermint Box Grassy Woodland (PBGW) of South Australia TEC.

4.15.3.1 Critical Habitat

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for INTG. However, the Recovery Plan (Turner 2012) states that given the small area remaining, all sites that meet the criteria for the listed ecological community should be considered habitat critical to the survival of the ecological community. The following additional criteria should be considered when assessing the significance of remnants:

- Moderate to high native species diversity in the remnant as a whole.
- Presence of different age cohorts of Lomandra including signs of regeneration and recruitment.
- Presence of different vegetation strata within the grassland.
- Native fauna species diversity and presence of grassland fauna habitats.
- Presence and condition of microphytic crust.
- Variations in grassland structure, including open spaces and bare patches
- Presence of one or more listed threatened species.
- Presence of grazing sensitive species.
- Remnant size and shape.
- Connectivity with other remnants of the ecological community and / or remnants of other ecological communities.
- Low weed density, species diversity and / or limited distribution in remnants.
- Potential for restoration.

4.15.4 Distribution and Abundance

The Iron-grass Natural Temperate Grassland of South Australia TEC is endemic to South Australia, where it predominantly occurs in the Flinders Lofty Block bioregion with smaller occurrences in Kanmantoo, Eyre Yorke Block and Murray Darling Depression Bioregions (Turner 2012).

The area of Iron-grass Natural Temperate Grassland at the time of European settlement has been estimated at between 750,000 to 1,000,000 ha (Specht 1972; Hyde 1995 in Turner 2012). At the time of listing under the EPBC Act in 2007, the remaining area of Iron-grass Natural Temperate Grassland of any condition, including highly degraded remnants, was thought to be less than 50,000 ha (Department for Transport, Urban Planning and the Arts 2000 in Turner 2012), whilst the area meeting the criteria for the listed threatened ecological community is thought to substantially less and may be less than 5,000 ha (Hyde 1995; TSSC 2007 in Turner 2012). As much of the remaining grasslands (up to 95%) occur on privately owned land tenures, knowledge of the area and condition of INTG is not complete (TSSC 2007; Turner 2012).

Temperate native grasslands were once dominant across the region, however due to land clearing practices for agriculture, are now mainly confined to non-arable hills and ranges, rocky slopes and rocky areas in arable paddocks. Similarly, agricultural grazing practices have altered the composition of grasslands through the introduction of introduced annual grasses and weeds.

Broadscale mapping of INTG is problematic as they are difficult to distinguish from other grassland or pasture types in aerial imagery and, many are largely inaccessible by road and therefore unable to be verified on ground. Additionally, the condition assessments are further limited by the seasonal nature of herbaceous species which require on ground assessment, often during good seasonal conditions, to detect.

4.15.5 Key Threatening Processes

The main identified threats to INTG listed in the Approved Conservation Advice (DEWHA 2008c) are land clearing, grazing and weed invasion. More specifically the Recovery Plan lists the following threats of concern to INTG, many of which interact and further compound impacts:

- General lack of awareness and recognition of native grasslands, including INTG, as native vegetation.
- Changes in land use such as grazing stocking rates, cropping expansion, use of chemical pesticides and herbicides, and changes to location of feed-lots and water supplies.
- Weed invasion causing degradation of the community.
- Exotic animals and overabundant native species degrading grassland habitats, spreading weeds and predating on associated fauna.
- New infrastructure and development.
- Inappropriate or altered fire regimes and damage to vegetation from fire suppression activities.
- Ongoing and intensified stress and degradation due to fragmentation of the community and resulting loss of ecological processes such as seed dispersal and pollination.
- Climate change resulting in plant stress and intensified impacts of existing grazing practices, or failure to adopt best practice grazing strategies due to lack of feed for livestock.

4.15.6 Occurrence in Project Area

The INTG TEC is considered known to occur within the Disturbance Footprint, Development Envelope and broader Project Area.

The GNWF Project Area occurs on the eastern edge of the mapped extent of the INTG ecological community. It has been mapped across the WF component of the Project Area, with scattered patches occurring along the OTL alignment. INTG within the Project Area has been heavily impacted by historical clearance for cropping, and by ongoing impacts of livestock grazing. Additionally, a large swathe of INTG within the Project Area was subjected to a grass fire in summer 2023. Coupled with dry conditions and grazing, the INTG within this area has struggled to regenerate, and is generally in poor condition.

Since 2022 surveys have mapped the occurrence, extent and estimated Condition Class of INTG and other vegetation associations within the Project Area. The precautionary approach was adopted for early designs as surveys were not targeted to assessing the Condition Class of INTG as set out under the Criteria for listing INTG as TEC (DEWR 2007). Additional targeted surveys were undertaken in spring 2024 to classify Condition Class of patches of INTG occurring in the Disturbance Footprint, according to the criteria and methodology set out in the *EPBC Act Policy Statement 3.7* (DEWR 2007) and National Recovery Plan (Turner 2012).

A total of 23 sites were surveyed for INTG Condition Class within the Project Area, with one site determined to be Class A INTG, 14 sites Class B INTG and eight sites to be Class C (or less). Given the dry conditions and ongoing grazing practices, the precautionary principle was applied to sites where the criteria were close to being met, with sites upgraded to Class B in these situations.

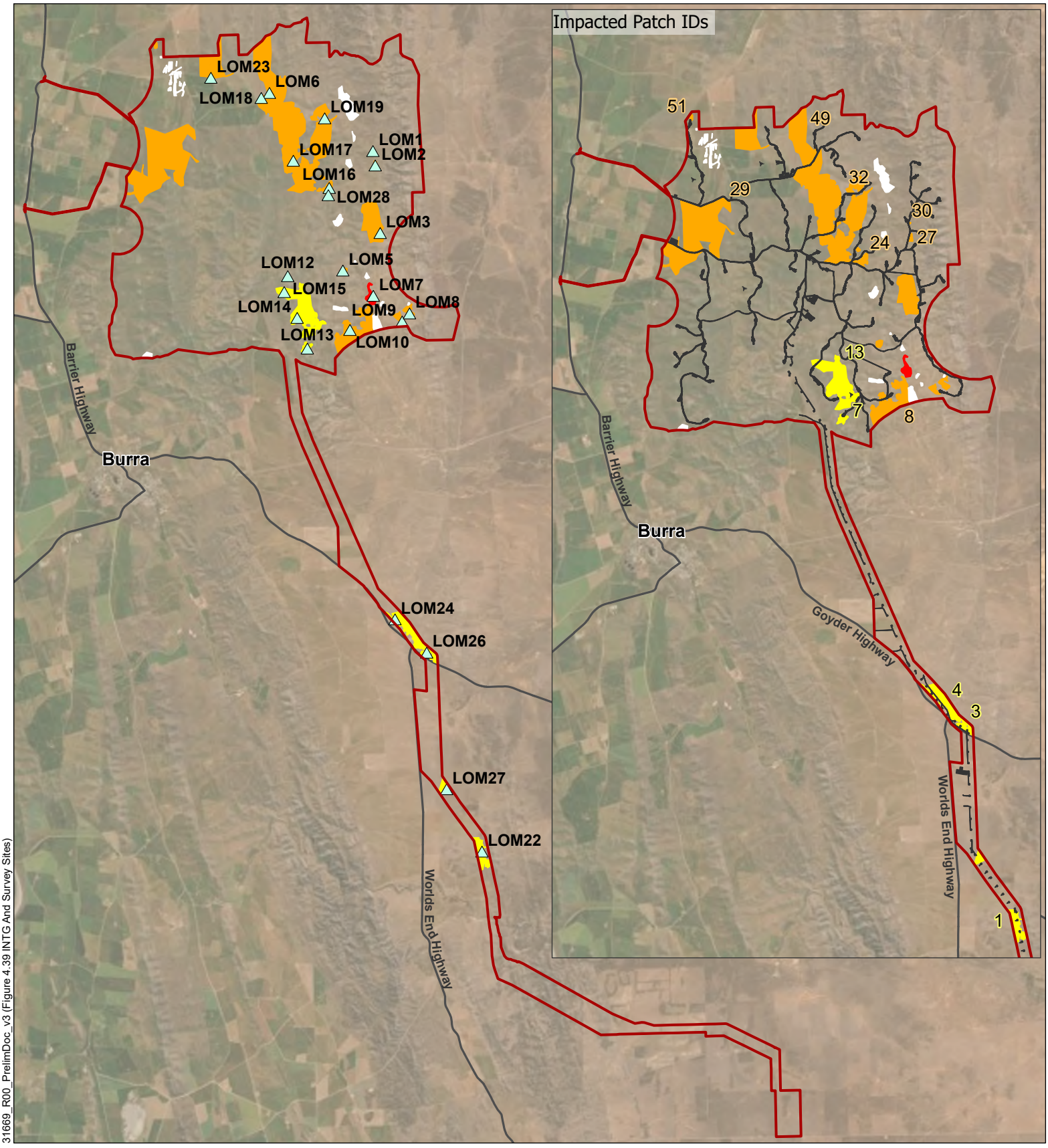
Within the GNWF Project Area, a total of 1,931.24 ha of vegetation has been mapped as VA6: Lomandra Grassland, of which 1,498.09 ha has been assessed as meeting the criteria for listing as INTG TEC (Table 4.47). Of the total VA6 in the GNWF Project Area, 8.59 ha is within the Disturbance Footprint, including 6.14 ha of INTG TEC (Class B) and the remaining 2.44 ha of INTG (Class C which doesn't meet the criteria for the TEC). The location of INTG and INTG survey sites are shown on Figure 4.39.

Table 4.47: Occurrence of INTG within the GNWF Project Area and Disturbance Footprint

INTG Class (A, B or C)	INTG TEC (Yes/No)	GNWF Project Area (ha)	GNREF Total (ha)	Impacted by DF (Yes/No)	DF (ha)	% of GNWF INTG Impacted
INTG Class A	Yes	18.02	18.02	No	0.00	0.00
INTG Class B	Yes	1,480.07	1923.32	Yes	6.14	0.42
INTG Class C	No	307.63	307.63	Yes	2.44	0.79
Un-surveyed Lomandra Grassland	-	125.51	858.38	No	0.00	0.00
Total Area of Lomandra Grassland		**1,931.24**	**3,107.35**		**8.59**	**0.44**
Total TEC (Class A, B, excl. un-surveyed)		**1,498.09**	**1,941.34**		**6.14**	**0.41**

Refer to Att08_GNWF INTG Assessment, and Att02_GNWF Ecological Assessment for full details of the surveys for INTG, including species lists.

Figure 4.39: INTG and survey site locations in GNWF



GNWF
Disturbance Footprint
Lomandra survey site

INTG Condition
Class A
Class B
Class C
Unsurveyed

31669_R00_PrelimDoc_v3 (Figure 4.39 INTG And Survey Sites)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 MGA Zone 54

0 2.5 5 km

N

4.15.7 Regional Context

The Flinders Lofty Block incorporating the Mid-North region of the GNWF Project Area is the stronghold for INTG, which is endemic to SA, where it is predominantly known in patches between Clare in the south and Peterborough in the north (TSSC 2007). The TEC is also known from other bioregions including Kanmantoo, Eyre Yorke Block and Murray Darling Depression bioregion.

The range of INTG TEC occurs in an area that has been intensively cleared for agriculture, with at least 78% of the Northern Agricultural Districts being cleared of its original native vegetation, and enduring fragments predominantly represented by small blocks under 20 ha in size (Turner 2012).

Few areas of the INTG TEC are formally protected under conservation covenants. Two reserves are known to protect the INTG TEC: Mokota Conservation Park (CP), and Poonthie Ruwi – Riverdale Conservation Park. Mokota CP is a 455-ha reserve which was dedicated in 2000 to conserve temperate native grasslands, including representative areas of INTG. This CP occurs within the Project Area boundary but is not within the Project Disturbance Footprint. Poonthie Ruwi – Riverdale Conservation Park is a ~240 ha park which occurs near Tailem Bend, proclaimed in 2003 to protect *Lomandra effusa* tussock grassland. Additional minor protected occurrences of INTG occur at other protected areas including Heritage Agreement sites and Significant Environmental Benefit (SEB) sites. The regional distribution of INTG in relation to the Project Area is shown on Figure 4.40.

The two dominant species of Iron-grass that characterise the TEC are *Lomandra multiflora* ssp. *dura* (Many-flowered Mat-rush), which is endemic to South Australia, and *Lomandra effusa* (Scented mat-rush) which is widely distributed from Western Australia to the western parts of NSW and Victoria (TSSC 2007). The Lomandra species are not listed as threatened under state or national legislation, however a *provisional list of Threatened ecological communities in South Australia* separately includes Many-flowered Mat-rush and Scented Mat-rush dominated grasslands as endangered ecological communities (DEH 2005 -unpublished). A regional assessment for individual species is presented in Table 4.48, which indicates that *Lomandra effusa* is in probable decline across Broughton and Olary Spur subregions, but stable in the Murray Mallee, whilst *Lomandra multiflora* ssp. *dura* is stable across all subregions.

Table 4.48: Regional assessment for *Lomandra* sp. relevant to GNWF

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending	Area (ha) of potential habitat impacted by the Project
***Lomandra effusa* (Scented Iron-grass) (not listed under EPBC Act)**			
Broughton (FLB2)	Least Concern	Probable Decline	NA
Olary Spur (FLB3)	Least Concern	Probable Decline	NA
Murray Mallee (MDD2)	Least Concern	Stable/No change	NA
***Lomandra multiflora* subsp. *dura* (Stiff Iron-grass) (not listed under EPBC Act)**			
Broughton (FLB2)	Least Concern	Stable/No Change	NA
Olary Spur (FLB3)	Least Concern	Stable/No Change	NA
Murray Mallee (MDD2)	Rare	Stable/No Change	NA

Source: DEW 2025b

Under the National Vegetation Information System (NVIS), the Iron-grass Natural Temperate Grassland of South Australia ecological community is classified as a type of "other tussock grassland / sedgelands, rushes or reeds, temperate tussock grasslands and / or wet tussock grassland with herbs, sedges or rushes, herb lands or ferns". The representation of this ecological community is presented in Table 4.49, for each subregion. These associations have not been verified on ground are likely to overrepresent INTG. Similarly, areas not mapped as tussock grasslands in the NVIS dataset may meet the criteria for listing as INTG but have not been captured in the dataset, thus areas should be used as a guide only.

Table 4.49: Regional assessment for potential INTG relevant to GNWF

IBRA Subregion	Area (ha) of potential habitat impacted by the Project	Area (ha) of potential habitat in the subregion	Percent impacted by Project
Broughton (FLB2)	7.43	17,716.52	0.04%
Olary Spur (FLB3)	1.16	45,875.97	0.003%
Murray Mallee (MDD2)	0.00	1,904.82	0.00%

Historical reports estimate that natural temperate grasslands occupied approximately one-million hectares in South Australia at the time of European settlement, with up to 750,000 ha of this comprising Iron-grass Grasslands. The current estimate in the Mid-North region is 50,000 ha, however this includes a patchwork of areas including disturbed native and exotic grassland, thus representing a likely overestimation of the community extent (TSSC 2007). The clearance of up to 6.14 ha of INTG equates to 0.12% of this TEC and up to 0.02% of the Lomandra Grassland (all condition classes) in the region, based on the above assessment, noting that the extensive mapping undertaken within the Project Area is likely to add a significant portion of mapped and verified TEC to the current estimates.

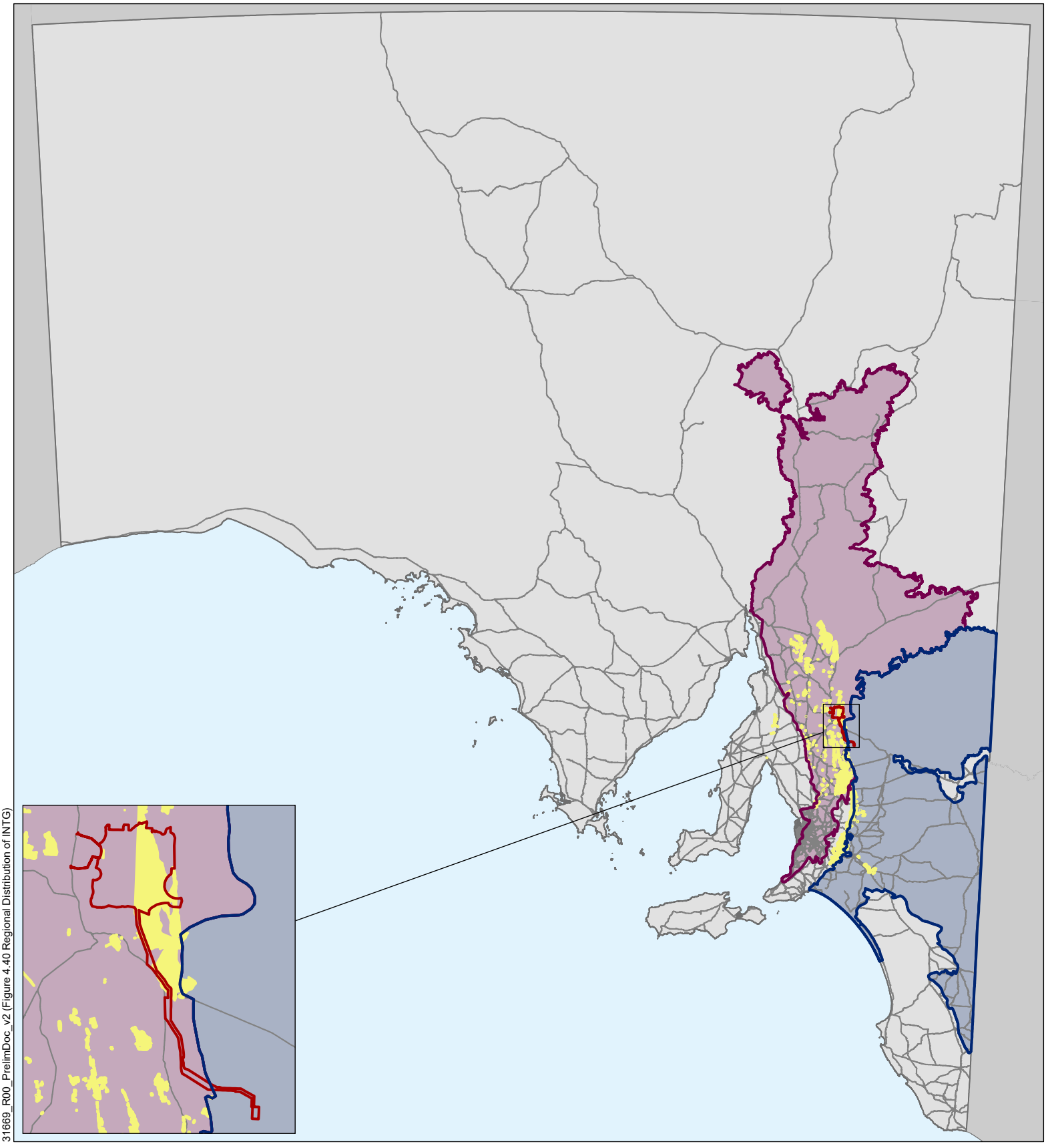
For the purposes of assessing the potential impact of the Project on INTG in a regional context, the following has been compared in Table 4.50 below:

- The area of all INTG / Lomandra grassland (Class A, B and C) proposed to be impacted by the Project as a percentage of the 50,000-ha estimated to be remaining in South Australia; and
- The area of INTG TEC (Class B) which is proposed to be impacted by the Project as a percentage of the area estimated to be remaining in good condition in South Australia (5,000 ha).

Table 4.50: The estimated total area of INTG remaining in SA and proposed impact of the Project

INTG Category	Area / Percent
Total INTG remaining in SA (ha) (Turner 2012)	50,000 ha
Total INTG (all conditions - Class A, B, C) impacted by the Disturbance Footprint (ha)	8.59 ha
Total INTG (TEC – Class A, B) impacted by the Disturbance Footprint	6.14 ha
Percentage of total INTG in SA (~50,000 ha) impacted % (all conditions)	<0.02%
Remaining INTG in 'good condition' in SA (~5,000 ha) (ha) (Hyde 1995)	5,000 ha
INTG TEC impacted by the Disturbance Footprint (ha)	6.14 ha
Percentage of INTG in 'good condition' impacted by the Project	0.12%

Figure 4.40: Regional distribution of INTG in South Australia in relation to the Project Area



GNWF

Iron-grass Natural Temperate Grassland

IBRA Bioregion

Flinders Lofty Block

Murray Darling Depression

31669_R00_PrelimDoc_v2 (Figure 4.40 Regional Distribution of INTG)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

N

0 50 100 km

4.15.7.1 Significance of remnants

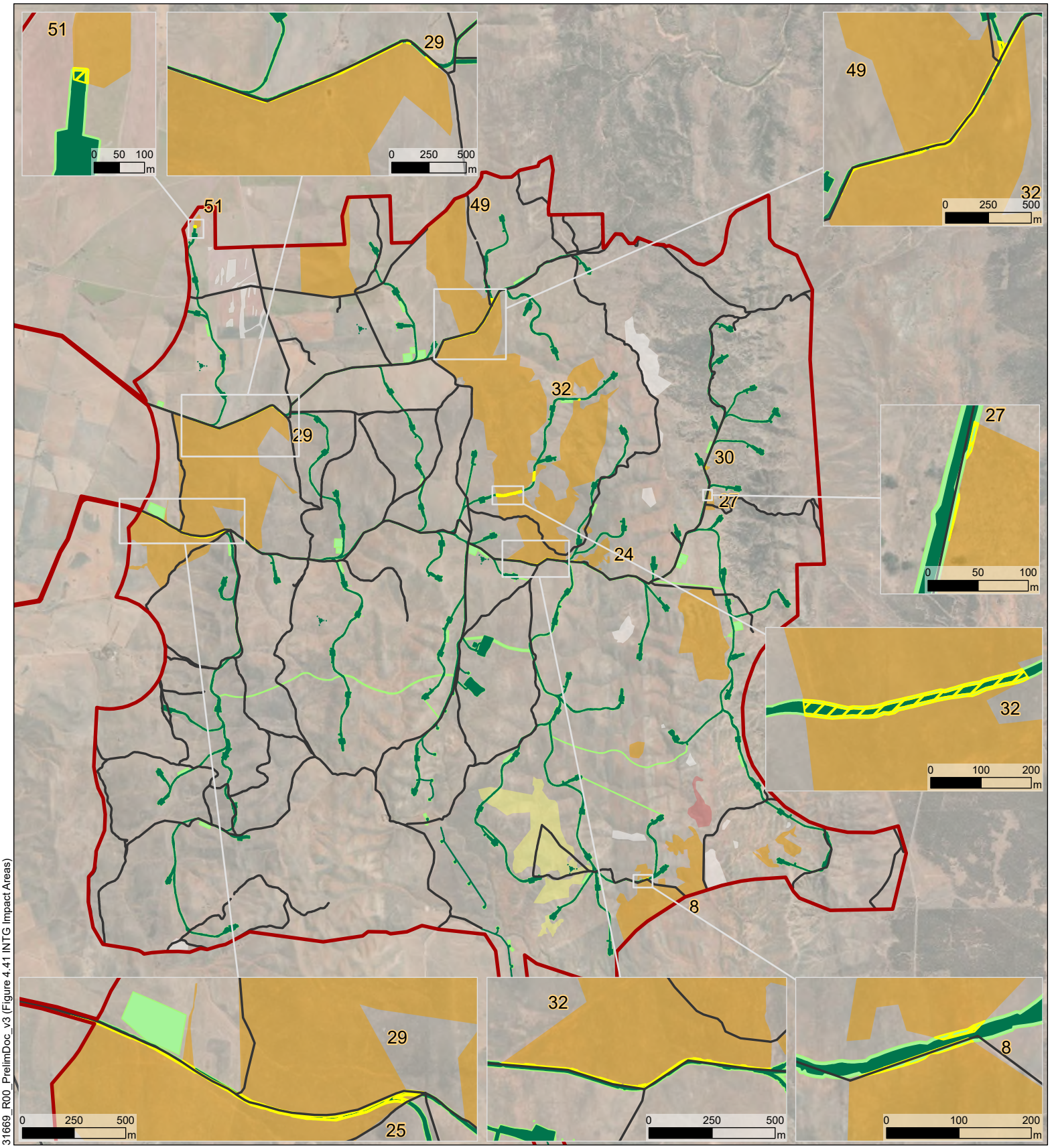
The Recovery Plan (Turner 2012) identifies a range of additional attributes which should be assessed to determine the quality and / or significance of a remnant (Section 4.15.3.1). The patches being impacted by the proposed development are displayed on

Figure 4.41 and listed in Table 4.51 including a range of attributes which help to further quantify their condition and contextualise the areas of impact

Most sites contained SA State listed threatened species Rohrlach's Bluebush (*Maireana rohrlachii;* NPW Act: Rare), which was widespread in most VAs across the Project Area. Other threatened species which occurred less frequently included Blue Devil (*Eryngium ovinum*; NPW Act: Vulnerable) in patch 25, 29 and 51, and Behr's Swainson-pea (*Swainsona behrii*; NPW Act: Vulnerable) in patch 51.

All sites likely have a high potential for restoration with improved management, however, under the current land use for agriculture and with compounding impacts of climate change (drought, heat etc), the sites are likely to have limited potential for restoration.

Figure 4.41: INTG impact areas within remnants



GNWF
Existing road
Impacted INTG Class B

Disturbance Footprint

Permanent
Temporary

INTG Condition

Class A
Class B
Class C
Unsurveyed

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
Date Exported: 2/10/2025 11:28 AM
Created by: sophie.haswell

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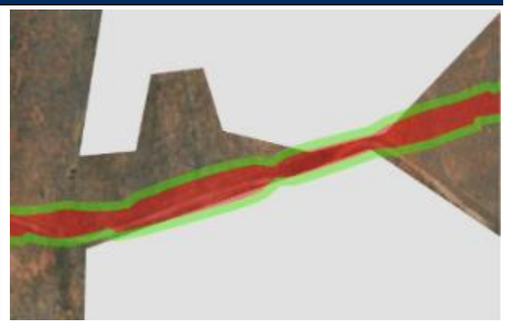
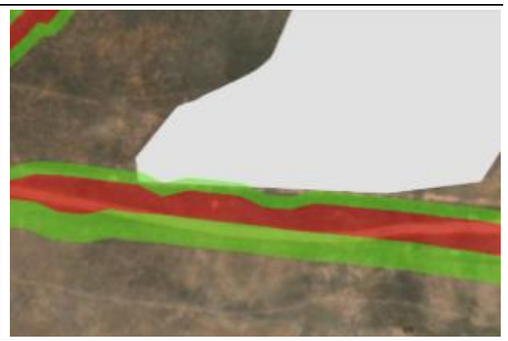
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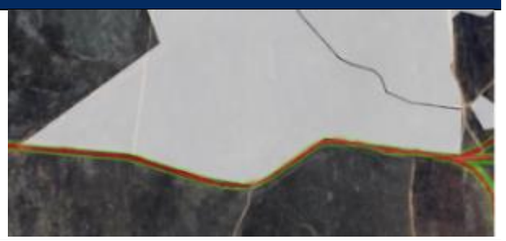
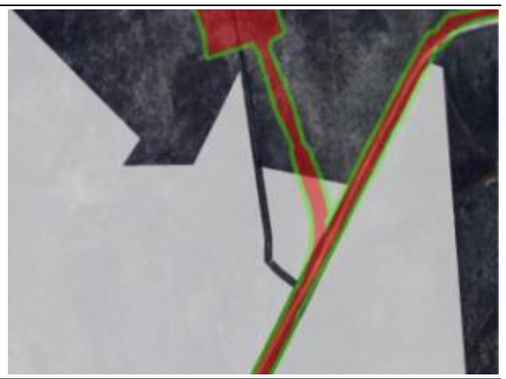
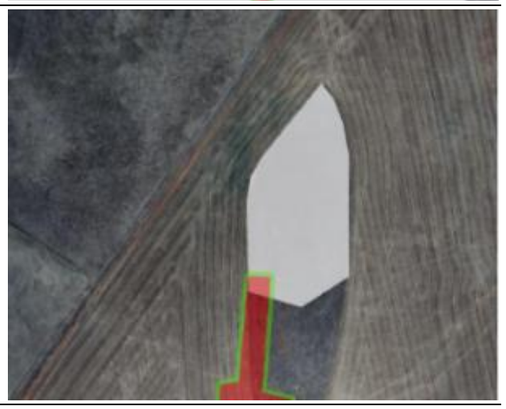
N

31669_R00_PrelimDoc_v3 (Figure 4.41 INTG Impact Areas)

Table 4.51: Local context of INTG (Condition Class B) patches being impacted by the Disturbance Footprint (red = permanent, green = temporary)

Site ID	Survey Sites	Native Species Diversity	Weed Diversity	Threatened Species (number)	Grazing Sensitive Species	Patch Area (ha)	Impacted Portion (ha)	Comments	Figure / Illustration (refer to Figure 4.41 for context)
8	LOM10, A6c	16	13	1	No	116.32	0.13	Heavily grazed, rocky surface, Disturbance Footprint adjacent to existing road.	
24	LOM16	21	10	2	Yes	12.84	0.01	Patch isolated separated from nearby INTG by network of farm tracks and landholder property boundaries. Noted to have been recently burnt (2023) with low regeneration of Lomandra tussocks. Rocky surface covering, low grazing impacts. Temporary impact only from edge of new road, aligning with existing track. Access track in this patch was rerouted in August 2025 revision to avoid a further 489 m a track and resulting patch fragmentation. (Note inset not displayed on map due to minor nature of impact).	
25	A6f	11	13	1	No	99.94	1.92	Mokota Conservation Park southern boundary (patch 25 north of DF), within Goyder Regional Council marked road reserve. Follows existing road. Impacts associated with widening of the existing road.	
27	LOM2	20	10	1	Yes	4.32	0.02	Occurs as an isolated patch on the edge of mallee woodland. Disturbance as a result of widening existing road. Heavy grazing noted, and evidence of recent burn (2023).	

Site ID	Survey Sites	Native Species Diversity	Weed Diversity	Threatened Species (number)	Grazing Sensitive Species	Patch Area (ha)	Impacted Portion (ha)	Comments	Figure / Illustration (refer to Figure 4.41 for context)
29	A6f	11	13	1	No	324.61	1.09	Northern side of Gum Hill Road, within Goyder Regional Council Road corridor, bounding the southern edge of Mokota Conservation Park. Classified as Class B due to precautionary principle, despite lower than required floral diversity. Disturbance occurs along existing public road (Gum Hill Road), with widening required to allow heavy vehicle access.	
30	LOM1	20	12	1	No	0.69	0.13	Heavy grazing noted, and lack of grazing sensitive forbs present. It occurred as a small, isolated patch on the edge of mallee woodland, with impact as a result of widening an existing road. Note: no map inset due to scale.	
32	LOM17, LOM18, A6a	19.5	11	3	Yes	527.59	2.40	Multiple survey sites, all noted heavy grazing and few herbaceous species. Large contiguous patch of INTG. Impact is proposed in three locations of the patch: • Top: road widening along existing public road (White Hill Road). • Middle: required route of electrical cable. Access road aligned with cable to reduce fragmentation, however the length of track required is approximately 570 m. • Bottom: road widening along existing farm access track.	

Site ID	Survey Sites	Native Species Diversity	Weed Diversity	Threatened Species (number)	Grazing Sensitive Species	Patch Area (ha)	Impacted Portion (ha)	Comments	Figure / Illustration (refer to Figure 4.41 for context)
									
49	LOM6, LOM23, A6g	17	12	2	Yes	232.79	0.38	Multiple survey sites, all noted heavy grazing and few herbaceous species. Large contiguous patch of INTG. Impact proposed for road widening along existing public road (White Hill Road), and angled access.	
51	D6b	23	6	2	Yes	2.22	0.08	Small isolated patch surrounded by crops. Noted to have high species diversity and a number of herbaceous species, including two listed as vulnerable in SA, likely due to reduced grazing pressure. Small impact as a result of WTG hardstand construction area.	

4.16 Mallee Bird Community of the Murray Darling Depression Bioregion – Endangered



Plate 4.3: Example of Mallee Bird Community within the GNREF Project Area

4.16.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Mallee Bird Community, as provided within DCCEEW's SPRAT Database (online) SPRAT Profile, are presented in Table 4.52.

Table 4.52: Mallee Bird Community TEC conservation documentation

EPBC Status	Listed as Endangered (Date effective 07-Dec-2021)
Approved Conservation Advice	Department of Agriculture, Water and the Environment (2021a). Approved Conservation Advice for the Mallee Bird Community of the Murray Darling Depression Bioregion. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/151-conservation-advice.pdf. In effect under the EPBC Act from 07-Dec-2021.
Listing Advice	Listing assessment information may be available in the Approved Conservation Advice

Adopted / Made Recovery Plan	There is no adopted or made Recovery Plan for this ecological community. However, BirdLife Australia have published the Threatened Mallee Birds 2024 Conservation Action Plan (Indigo et al. 2024) which includes reference to seven of the MBC species.
Adopted / Made Threat Abatement Plan	No Threat Abatement Plan has been identified as being relevant for this ecological community
Policy Statements and Guidelines	There are no Policy Statements or Guidelines for the TEC.

4.16.2 Ecology

The MBC is a fauna community found in the Murray Darling Depression (MDD) bioregion comprising an assemblage of twenty bird species that are strongly linked to and dependent on the mallee vegetation that characterises the bioregion, including birds categorised as mallee specialist and mallee dependent (detailed in Table 4.53). Mallee habitats are characterised by small eucalypts with multiple stems arising from a lignotuber (DAWE 2021a).

Table 4.53: Mallee Bird Community assemblage and their occurrence in the Project Area

MBC Status	Species Name	Common Name	EPBC Act	NPW Act	Year of Last database record (within 20 km)	Detected in MBC zone of Project Area During Field Surveys?
Mallee specialists	*Amytornis striatus*	Striated Grasswren		R		No
	Cinclosoma castanotum	Chestnut Quail-thrush		R		No
	Leipoa ocellata	Malleefowl	VU	V		No
	Manorina melanotis	Black-eared Miner	EN	E		No
	Neophema splendida	Scarlet-chested Parrot		R		No
	Pachycephala rufogularis	Red-lored Whistler	VU	R		No
	Psophodes nigrogularis	Mallee Western Whipbird	VU	E		No
	Stipiturus mallee	Mallee Emu-wren	EN	E		No
Mallee dependents	*Calamanthus cautus*	Shy Heathwren		R	-	No
	Drymodes brunneopygia	Southern Scrub-robin				No
	Lichenostomus cratitius	Purple-gaped Honeyeater				No
	Malurus splendens	Splendid Fairy-wren			2018	Yes
	Microeca fascinans	Jacky Winter			2018	Yes
	Nesoptilotis leucotis	White-eared Honeyeater			2023	Yes
	Oreoica gutturalis	Crested Bellbird				
	Pardalotus punctatus	Spotted Pardalote			2023	No
	Polytelis anthopeplus	Regent Parrot	VU	E		No
	Ptilotula ornata	Yellow-plumed Honeyeater			2021	Yes
	Ptilotula plumula	Grey-fronted Honeyeater				No
	Purnella albifrons	White-fronted Honeyeater			2023	Yes

MBC Status	Species Name	Common Name	EPBC Act	NPW Act	Year of Last database record (within 20 km)	Detected in MBC zone of Project Area During Field Surveys?
Mallee Associated	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater			2024	Yes
	Acanthiza apicalis	Inland Thornbill			2024	Yes
	Acanthiza iredalei	Slender-billed Thornbill			-	No
	Acanthiza uropygialis	Chestnut-rumped Thornbill			2024	No
	Barnardius zonarius	Australian Ringneck			2024	Yes
	Cacatua leadbeateri	Major Mitchell's Cockatoo			-	No
	Climacteris picumnus picumnus	Brown Treecreeper			2024	Yes
	Cormobates leucophaea	White-browed Treecreeper			-	No
	Eurostopodus argus	Spotted Nightjar			-	No
	Melithreptus brevirostris	Brown-headed Honeyeater			2023	Yes
	Northiella haematogaster	Blue Bonnet			2021	No
	Pachycephala inornata	Gilbert's Whistler		R	-	No
	Petroica goodenovii	Red-capped Robin			2024	Yes
	Plectorhyncha lanceolata	Striped Honeyeater		R	2017	No
	Psephotellus varius	Mulga Parrot			2024	Yes
	Smicrornis brevirostris	Weebill			2024	Yes

Conservation status: EPBC Act (Australia), NPW Act (SA). Conservation Codes: EN/E: Endangered. VU/V: Vulnerable. R: Rare.

4.16.2.1 Condition Classification

Several criteria are required to be met, to classify as MBC TEC (DAWE 2021a):

- Occurs within the MDD bioregion.
- Contains at least 5 ha dominated by mallee habitats, described as mallee woodlands and shrublands with a more developed tree canopy and projected foliage cover of 10% to over 30%, and Mallee open woodlands and sparse mallee shrublands with very open to sparse tree canopy with projected foliage cover of <10%.
- Contiguous native vegetation patches must be over 10 ha in size (including areas separated by non-native vegetation by <100 m).
- Records of at least 3 MBC bird species recorded within 20 km in the last 10 years.

The MBC can be further broken down into condition categories and thresholds depending on the diversity of MBC species identified within certain buffers, and meeting these criteria indicates that the area has potential to support MBC birds in the future if appropriately managed. Condition categories are presented in Table 4.54.

Table 4.54: Condition classifications of MBC

Category	Threshold*
Category A: High number of MBC species	At least 5 MBC species, any mix of mallee specialist and dependent species.
Category B: Moderate number of MBC species including a mallee specialist species	3 to 4 MBC species including at least one mallee specialist species.
Category C: Moderate number of MBC species, as well as mallee associated species.	3 to 4 MBC species PLUS at least 5 mallee associated species.
Category D: Moderate number of MBC species as well as terrestrial bird species.	3 to 4 MBC species PLUS at least 20 or more terrestrial bird species as defined in the survey guidelines (DAWE 2021a).

*Bird species recorded from current bird surveys or collated existing records within 20 km of the site within the past 10 years.

4.16.3 Habitat

The Mallee Bird Community inhabits mallee vegetation, which is characterized by small eucalypts with multiple stems arising from a lignotuber. These habitats are typically found in semi-arid to Mediterranean climates, with long hot summers, mild winters, and low rainfall. The landscape features sandy soils, a sparse overstory, and an understorey of heathy shrubs, sedges, grasses, and herbs.

There are four broadly recognized mallee habitat types that support the MBC:

- Triodia Mallee: This type has a relatively open understorey with hummock grass and sparse sclerophyll shrubs, typically found in areas with 150-300 mm of annual rainfall.
- Chenopod and Tussock Grass Mallee: Characterised by a relatively open understorey with semi-succulent chenopod shrubs and tussock grasses, this type develops in areas with 200-300 mm of annual rainfall.
- Shrubby Mallee: This type has a relatively open understorey of long-lived sclerophyll shrubs with regenerative organs, generally in areas with 200-300 mm of annual rainfall.
- Heathy Mallee: Featuring a relatively dense understorey of sclerophyll shrubs with temperate affinities, this type develops in areas with higher rainfall (300-600 mm/year), with tree and shrub recruitment closely tied to fire events.

These diverse habitat features are crucial for the survival of the Mallee Bird Community, providing essential resources and shelter for various bird species.

Additionally, revegetated or replanted sites or areas of regrowth are included as habitats for the ecological community, so long as the areas meet the description and diagnostics of the habitat for the bird assemblage.

4.16.3.1 Critical Habitat

The Approved Conservation Advice lists several additional criteria, in addition to the key diagnostics for listing as MBC, which define critical habitat:

- Known populations of threatened mallee birds listed individually under national environmental law, especially limited range mallee specialists.
- Areas where several members of the MBC are known to occur and can act as reservoirs or source populations to colonise other nearby sites if populations in the latter suffer.
- Other important areas are:
- Areas where several members of the MBC were formerly known to occur within the last ten years and bird populations and / or mallee habitats may regenerate either naturally or through assisted works.
- Areas where there has been long-term monitoring of either bird populations and /or mallee habitats to preserve their value as scientific sites.

4.16.4 Distribution and Abundance

Mallee ecosystems occur in the semi-arid parts of Australia, where they are generally associated with unconsolidated aeolian sands in low rainfall zones, typically within the 200-350 mm annual rainfall isohyets. Extensive, but discontinuous areas of mallee occur in mainland south-eastern Australian States (SA, NSW and Victoria), predominantly associated with the Murray Darling Depression, Eyre Yorke Block (EYB), Gawler and Great Victoria Desert bioregions (Figure 4.42).

The abundance and richness of mallee specialist and dependent species are influenced by habitat condition, with higher species richness observed in areas with intact mallee vegetation. Habitat fragmentation due to agriculture, invasive species and altered fire regimes pose the most significant threats to this community.



Figure 4.42: MBC distribution within Australia (DCCEEW 2024e)

4.16.5 Key Threatening Processes

The MBC was assessed by the TSSC to be eligible for listing under:

- Criteria 3: Loss or decline of functionally important species, in particular a significant decline in Malleefowl (*Leipoa ocellata*).
- Criteria 4: Reduction in community integrity, through past and ongoing land uses which cause fragmentation, remove functionally important features, increase vulnerability of MBC species through predation, and influence the structure and quality of the vegetation through grazing.
- Criteria 5: Rate of continuing detrimental change, as determined by long term negative trends in reporting rates for mallee bird species during 1999-2013.

4.16.6 Occurrence in Project Area

The TEC is considered known to occur within the Disturbance Footprint and Development Envelope along the southern portion of the OTL only (Umwelt 2025b). MBC mapped within the Project Area, and predicted to occur more broadly, is shown on Figure 4.43.

Survey Findings

Approximately (~) 9.5 km of the southern section of the proposed OTL alignment is within the MDD Bioregion. Mallee vegetation which meets the description of suitable habitat comprises VA18 - Mixed Mallee (inc. *E. oleosa* dominant) over Chenopods and native grasses. Desktop and field assessments undertaken in the Project Area have confirmed that this VA meets the criteria outlined above to classify as MBC TEC. Within the Project Area of Block C (MDD) there is up to 108.85 ha of vegetation mapped as VA18.

A total of 36 bird species were identified at MBC survey sites, during field surveys. Additional species have been reported opportunistically in the broader Project Area over the course of multiple related vegetation surveys, including along the southern portion of the OTL, within the MDD Bioregion. Birds associated with the TEC which have been observed within the 20 km of the MDD portion of the OTL, include five Mallee Dependant species listed in the Approved Conservation Advice: Splendid Fairywren (*Malurus splendens*), Jacky Winter (*Microeca fascinans*), White-eared Honeyeater (*Nesoptilotis leucotis*), Yellow-plumed Honeyeater (*Ptilotula ornata*) and White-fronted Honeyeater (*Purnella albifrons*). Each of these also has historical records, as well one additional mallee dependant bird which has a record within 20 km of the MDD Project Area within the last 10 years but has not been seen in this area during field surveys, Spotted Pardalote (*Pardalotus punctatus*). No Mallee specialist birds have been observed within the MDD bioregion during the field surveys, and there are no historical records. Eight additional mallee associated species listed the Conservation Advice have either historical records or have been seen on site during the course of surveys.

Based on the findings of the desktop and field assessment, any mallee vegetation patches more than 5 ha in size within the MDD are considered to meet the criteria for MBC. With more than five MBC dependent species identified, connected vegetation patches are likely to qualify as Category A (high quality) MBC.

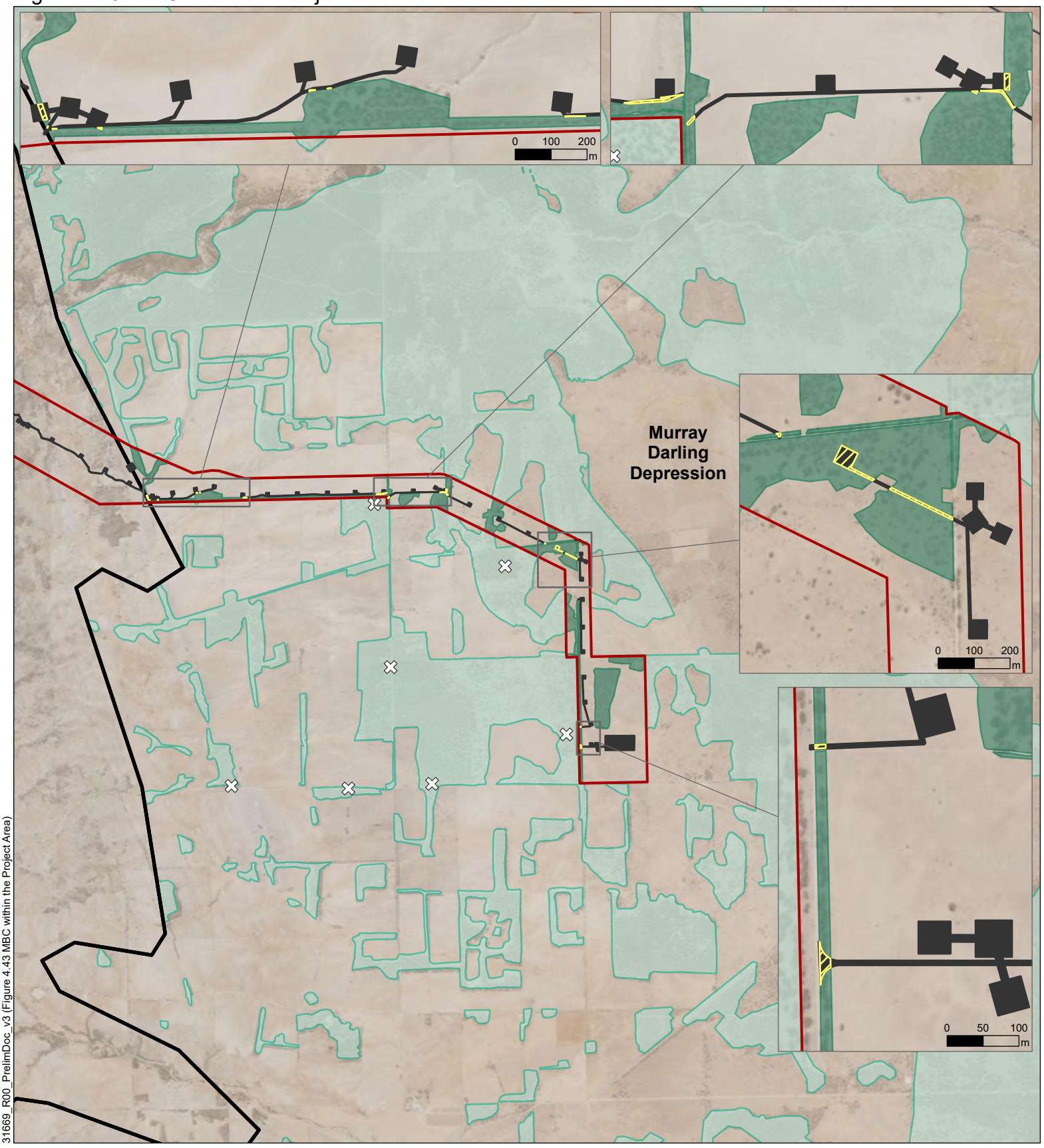
Habitat Suitability

Mallee vegetation has been extensively cleared in the vicinity of the Project Area, evidenced by a patchwork of remnants visible from satellite imagery. However, although patches are fragmented, many of them are large in size (>5 ha) and most patches are connected by other forms of contiguous native vegetation such as chenopod shrublands. Further to the east, towards the Murray River, larger, more connected patches of mallee vegetation occur, which are likely to support a higher diversity of mallee bird species, including mallee specialists, which have not been reported within 20 km of the MDD section of the Project Area in the last 10 years.

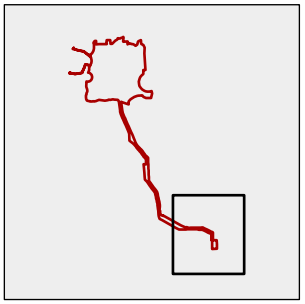
Within patches of mallee woodland high levels of grazing were evident, with many locations utilised for long term agricultural grazing, and also subject to grazing by pest and overabundant native herbivore species. Regeneration of woody species was limited or absent in most areas, and the ground cover was modified by use for shelter, leaving large areas of exposed soil with no soil crust and little diversity in the ground cover for foraging. Although these fragments support MBC species, it is likely that resources are predominantly associated with seasonally flowering Eucalypt species, with six (37.5%) of the reported MBC species being honeyeaters.

All MBC within the Project Area forms part of a larger contiguous patch of mallee vegetation, connected via multiple narrow corridors which extend along fence lines or roads, or are otherwise reduced through historical woody vegetation clearance. Thus, a 0.76 ha total area of disturbance in the Project Area relates to multiple small encroachments within one larger patch, as a result of crossing existing fence lines or roads, or by widening required on the edge of patches. These impact areas and their extent in relation to the MBC in the Project Area and wider area, are presented as insets in Figure 4.43.Figure 4.

Figure 4.43: MBC within the Project Area



GNWF
Disturbance Footprint
IBRA region
MBC
Likely MBC (DEW)
Impacted Mallee vegetation
MBC Survey Sites



Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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Created by: sophie.haswell

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GDA2020 MGA Zone 54

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31669_R00_PrelimDoc_v3 (Figure 4.43 MBC within the Project Area)

4.16.7 Regional Context

In South Australia, the MBC faces threats, including habitat loss, invasive species, altered fire regimes, and climate change. Large-scale historic clearing has left behind small, isolated habitat patches, making them vulnerable to degradation. Grazing pressure from feral and native herbivores, invasive weeds, and unnatural fire patterns further exacerbate the decline of these species. Conservation efforts in South Australia focus on monitoring populations, reducing feral predator numbers, restoring native vegetation, and implementing controlled burns to maintain healthy mallee habitats.

Conservation initiatives such as *Call of the Mallee* aim to improve habitat conditions, build resilience against climate change, and foster leadership among First Nations people. The Murraylands and Riverland Landscape Board (MRLB) collaborates with various partners to ensure the long-term survival of the Mallee Bird Community.

The regional distribution of the MBC in South Australia in relation to the GNWF is shown in Figure 4.44.

Table 4.55: Regional Assessment for MBC TEC

IBRA Subregion	Status Description (DEW Regional Assessment)	Trending	Area (ha) of potential habitat impacted by the Project	Area (ha) of potential MBC mapped within the subregion
Broughton (FLB2)	Does not occur	N/A	N/A	0.00
Olary Spur (FLB3)	Does not occur	N/A	N/A	0.00
Murray Mallee (MDD2)	The mallee bird community is an assemblage of 20 bird species that rely on mallee habitats within the Murray Darling Depression Bioregion for their continued persistence.	Variable (decreasing, stable, or positive) depending on species, with a decreasing trend for most species, as assessed within and outside of Key Biodiversity Areas (KBAs)[2,3].	0.76	236,623.52

[1] LSA MR (2025).

[2] Birdata, BirdLife Australia, accessed May 2021, as cited in DAWE 2021a. Reporting rates were based on bird observations from all standardised 2 ha 20 minute and 500 metre area searches undertaken in the area of interest during 2000 to 2019.

[3] Indigo et al. (2024).

A regional assessment of each of the Mallee Specialist, Dependent and Associated species (Table 4.56) shows that within the Murray Mallee region, most species have a regional conservation status and are trending towards Probable or Definite Decline. Seven species were listed as being Stable / No Change, four species were listed as Data Deficient, whilst one was listed as Regionally Extinct. The distribution of these species varies widely, with some occurring across all subregions of SA and further afield where their conservation status and trend varies, and others restricted to small or isolated regions. Twelve of these species are individually threatened in South Australia (i.e. listed under the NPW Act) and six of these species are individually threatened in Australia (i.e. listed under the EPBC Act).

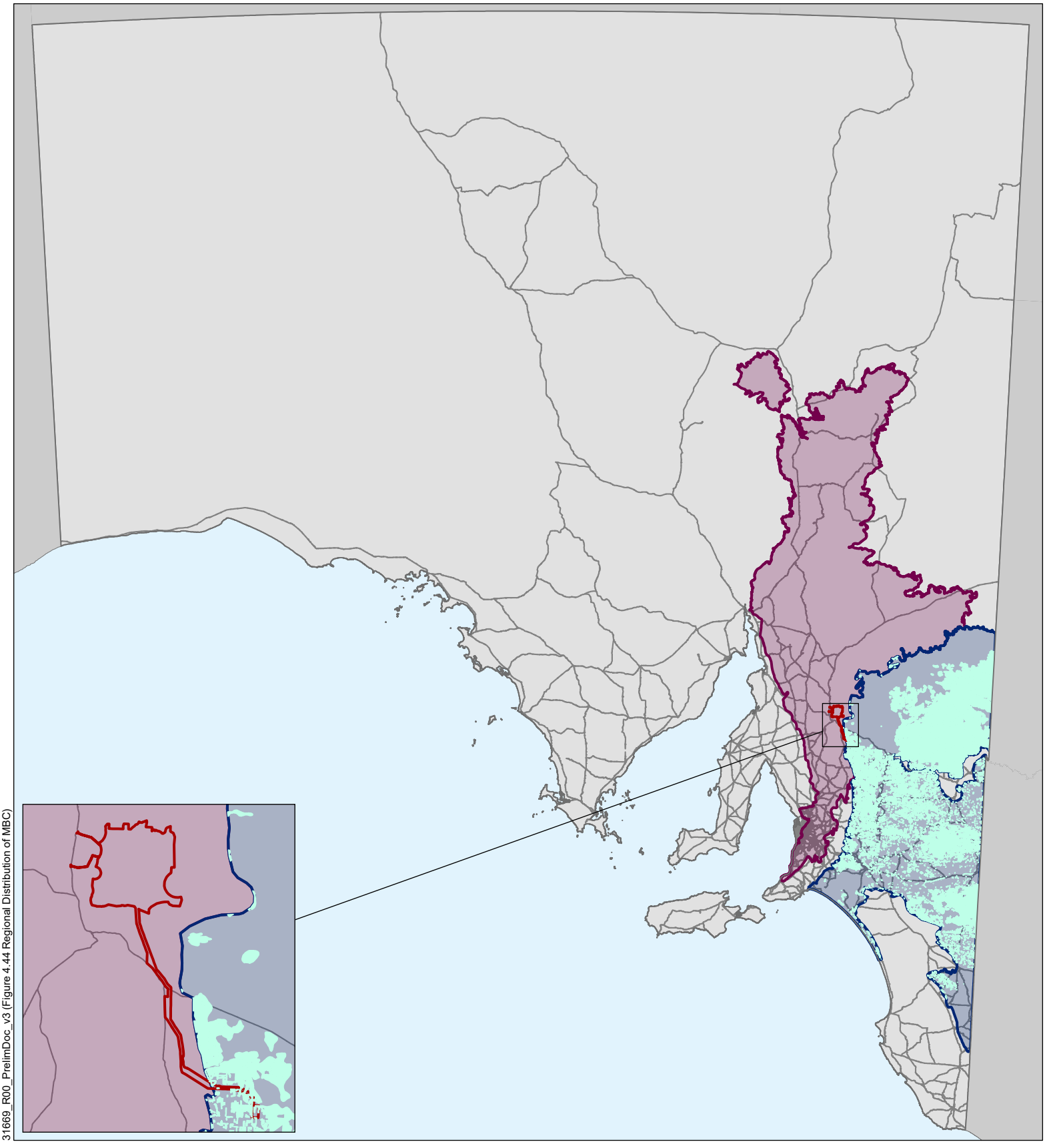
Table 4.56: Regional assessment for MBC Specialist, Dependent and Associated species

Species Name	Common Name	EPBC Act	NPW Act	Murray Mallee (MDD2) Status	Murray Mallee Trend
Mallee Specialist					
Amytornis striatus	Striated Grasswren		R	CE	Definite Decline
Cinclosoma castanotum	Chestnut Quail-thrush		R	RA	Probable Decline
Leipoa ocellata	Malleefowl	VU	V	CE	Definite Decline
Manorina melanotis	Black-eared Miner	EN	E	CE	Data Deficient
Neophema splendida	Scarlet-chested Parrot		R	RA	Data Deficient
Pachycephala rufogularis	Red-lored Whistler	VU	R	CE	Probable Decline
Psophodes nigrogularis	Mallee Western Whipbird	VU	E	NA	Does not occur
Stipiturus mallee	Mallee Emu-wren	EN	E	RE	Regionally Extinct
Mallee Dependents					
Calamanthus cautus	Shy Heathwren		R	VU	Probable Decline
Drymodes brunneopygia	Southern Scrub-robin			VU	Probable Decline
Lichenostomus cratitius	Purple-gaped Honeyeater			RA	Probable Decline
Malurus splendens	**Splendid Fairy-wren**			**NT**	**Data Deficient**
Microeca fascinans	**Jacky Winter**			**RA**	**Probable Decline**
Nesoptilotis leucotis	**White-eared Honeyeater**			**RA**	**Probable Decline**
Oreoica gutturalis	Crested Bellbird			RA	Probable Decline
Pardalotus punctatus	**Spotted Pardalote**			**LC**	**Stable / No Change**
Polytelis anthopeplus	Regent Parrot	VU	E	EN	Definite Decline
Ptilotula ornata	**Yellow-plumed Honeyeater**			**LC**	**Probable Decline**
Ptilotula plumula	Grey-fronted Honeyeater			RA	Data Deficient
Purnella albifrons	**White-fronted Honeyeater**			**LC**	**Stable / No Change**

Species Name	Common Name	EPBC Act	NPW Act	Murray Mallee (MDD2) Status	Murray Mallee Trend
Mallee Associated					
Acanthagenys rufogularis	**Spiny-cheeked Honeyeater**			**LC**	**Stable / No Change**
Acanthiza apicalis	**Inland Thornbill**			**NT**	**Probable Decline**
Acanthiza iredalei	Slender-billed Thornbill			DD	Data Deficient
Acanthiza uropygialis	**Chestnut-rumped Thornbill**			**LC**	**Probable Decline**
Barnardius zonarius	**Australian Ringneck**			**LC**	**Stable / No Change**
Cacatua leadbeateri	Major Mitchell's Cockatoo			CE	Probable Decline
Climacteris picumnus picumnus	**Brown Treecreeper**			**NT**	**Probable Decline**
Cormobates leucophaea	White-browed Treecreeper			NA	Does not occur
Eurostopodus argus	Spotted Nightjar			RA	Probable Decline
Melithreptus brevirostris	**Brown-headed Honeyeater**			**LC**	**Stable / No Change**
Northiella haematogaster	**Blue Bonnet**			**NT**	**Probable Decline**
Pachycephala inornata	Gilbert's Whistler		R	VU	Definite Decline
Petroica goodenovii	**Red-capped Robin**			**NT**	**Probable Decline**
Plectorhyncha lanceolata	**Striped Honeyeater**		**R**	**RA**	**Probable Decline**
Psephotus varius	**Mulga Parrot**			**NT**	**Stable / No Change**
Smicrornis brevirostris	**Weebill**			**LC**	**Stable / No Change**

Conservation Ratings: CE = Critically Endangered, EN = Endangered, VU = Vulnerable, RA = Rare, NT = Near Threatened, LC = Least Concern, RE = Regionally Extinct, DD = Data Deficient.

Figure 4.44: Regional distribution of MBC in South Australia in relation to the Project Area



GNWF

Mallee Bird Community of the Murray Darling Depression Bioregion

IBRA Bioregion

Flinders Lofty Block

Murray Darling Depression

31669_R00_PrelimDoc_v3 (Figure 4.44 Regional Distribution of MBC)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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GDA2020 South Australia Lambert

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5 PROJECT IMPACTS

3. Relevant impacts

a) Describe and assess the likely short-term and long-term impacts (direct, indirect, facilitated, and cumulative) that may occur as a result of all components and project phases of the proposed action to the MNES listed at 2(b). This must also include impacts to suitable habitat for species that may not be present or recorded in the specific area.

b) The direct and indirect loss, disturbance or degradation of habitat from the proposed action. This must include the quality of habitat and total area in hectares, the number of relevant species impacted, and the area of potential habitat for the species likely to be impacted. The loss of vegetation and habitat even when considered temporary must be further described and relevant evidence furnished regarding direct and indirect impacts to MNES.

c) Discussion of the risk of introduction of weeds and pathogens during construction and operation activities as relevant to MNES.

Several potential impact pathways are identified for the Project, differing across various stages of the wind farm development, including pre-construction, construction, operation, through to eventual decommissioning activities. Impacts throughout these project development, operation and decommissioning phases include impacts associated with both Permanent Disturbance and Temporary Disturbance.

As defined in Section 2.2, Permanent Disturbance represents disturbance areas that will not be rehabilitated at the conclusion of construction activities and are typically associated with project infrastructure elements that are required for the life of the Project. The total area of Permanent Disturbance for the Project is approximately 307.56 ha.

Temporary Disturbance typically relates to disturbance associated with early project development activities during construction, or buffer areas outside of the final infrastructure footprint, where physical ground disturbance occurs, but where rehabilitation to meet or exceed the original condition is able to occur at the conclusion of construction activities. Rehabilitation activities would be scheduled to occur at the conclusion of each relevant construction/disturbance activity as outlined in Table 5.1, and may be dependent upon the location of the disturbance and the type of habitat impacted. The total area of Temporary Disturbance for the Project is approximately 229 ha.

As such, a total Disturbance Footprint of approximately 536.82 ha is required for the Project, comprised of both Permanent Disturbance and Temporary Disturbance as outlined above, with approximately 17,166.40 ha to be retained within the Project Area unimpacted by clearance activities associated with the Project. Direct (inclusive of both Permanent Disturbance and Temporary Disturbance), indirect, facilitated and cumulative impacts which may, or are expected to, arise as a result of the Project are described in the following section. Vegetation associations and the associated areas of impact as a result of the Project are outlined in Table 5.2.

5.1 Direct Impacts

Direct impacts are defined as an immediate and observable effect that a Project has on the environment, which occurs as a result of the construction, operation and maintenance of the Project.

Table 5.1 provides a summary of the potential direct impacts which are associated with the Project, with further Project-specific details summarised below. The expected duration of each potential impact is defined as follows:

- Short term: Defined as the duration of impact and up to 3 years
- Long term: Defined as the duration of impact of more than three years up to ~30 years (i.e. the life of operation, and potentially longer should Project elements be upgraded at the end of the life of the current operation).

Table 5.1: Potential direct impacts associated with the Project

Potential Direct Impacts	Phase	Duration	Section Reference
EPBC Act threatened flora and/or ecological communities as listed in Section 4			
Direct clearance or disturbance of native vegetation (including loss, degradation, and fragmentation), potentially impacting MNES threatened species or ecological communities.	Construction and operation	Short-term (2-3 years) / Long-term (minimum 25 years)	5.1.1
Introduction of new weeds and/or pathogens into the Project Area.	Construction and operation	Long-term (minimum 25 years)	5.1.4
Spread or proliferation of existing or newly introduced weeds into the surrounding environment.	Construction. Minor risk during operation.	Short-term (2-3 years)	5.1.4
Potential erosion and sedimentation a result of civil works removing native vegetation and/or fauna habitat.	Construction	Short-term (2-3 years)	5.1.3
EPBC Act threatened fauna as listed in Section 4			
Permanent Clearance or disturbance of native vegetation (including loss, degradation, and fragmentation), which represents fauna habitat (including foraging and nesting) for MNES.	Construction	Long-term (permanent, minimum 25-30 years)	5.1.1
Temporary Clearance or disturbance of native vegetation (including loss, degradation, and fragmentation), which represents fauna habitat (including foraging and nesting) for MNES.	Construction	Short-term (2-3 years)	5.1.1
Noise and vibration from machinery and equipment during construction leading to avoidance behaviours, or behavioural change, by fauna.	Construction	Short-term (2-3 years)	5.1.2
Noise and vibration from WTGs and/or transmission lines during operation leading to a disruption/alteration to fauna behaviour.	Operation	Long-term (minimum 25 years)	5.1.2

Potential Direct Impacts	Phase	Duration	Section Reference
Increase in abundance of existing pest animal species (including rabbits, foxes, cats) through inappropriate waste management and/or increased availability of harbour sites (i.e. laydown areas and soil stockpiles).	Construction and operation	Short-term (2-3 years) / Long-term (minimum 25 years)	5.1.5
Increase in predation or competition of native fauna due to opening up access routes in previously undisturbed areas (e.g. in mallee vegetation south of Mimbara CP, where the OTL traverses steep an inaccessible terrain).	Construction and operation	Short-term (2-3 years) / Long-term (minimum 25 years)	5.1.5
Increased risk of injury or mortality of fauna MNES along access roads due to interactions with vehicles and/or machinery.	Construction and operation	Short-term (2-3 years) / Long-term (minimum 25 years)	5.1.6
Increased risk or injury or mortality of fauna MNES through entrapment (e.g. entrapment within trenches or pits, fencing).	Construction and operation	Short-term (2-3 years) / Long-term (minimum 25 years)	5.1.6
Wildlife collision with WTG rotor blades or transmission lines (including potential impacts from barotrauma)[1].	Operation	Long-term (permanent, minimum 25-30 years)	5.1.6
Increased risk/frequency of vehicle strike with fauna.	Construction and operation	Short-term (2-3 years) / Long-term (minimum 25 years)	5.1.6
Erosion and sedimentation impact to PBTL burrows	Construction and operation	Short-term (2-3 years) / Long-term (minimum 25 years)	5.1.3

[1] Barotrauma relates to the phenomenon whereby an abrupt change in air pressure causes damage to the tissue of air-containing structures (such as lungs) in animals. In recent years barotrauma has been hypothesised to impact aerial species, particularly bats, that come into extremely close proximity to wind turbine blades (Baerwald et al. 2008; Grodsky et al. 2011). Methodologies for quantifying the percentage of bat fatalities that have potentially been impacted by barotrauma rather than the direct impact of being struck by wind turbine blades is currently held in question within the scientific community (Rollins et al. 2012; Lawson et al. 2020; Schuster et al. 2015). It is suggested that direct contact with wind turbine blades is the cause of such fatalities, even when individual bats present with recognised internal trauma consistent with barotrauma impacts (Rollins et al. 2012; Lawson et al. 2020). Grodsky et al. (2011) suggests that the cause of death for bats killed by moving wind turbine blades is a combination of both direct collision and impacts as a result of barotrauma, and that it is difficult to distinguish the cause of the fatalities between the two potential impacts. As such, impacts potentially associated barotrauma have been considered herein but have been combined under the 'wildlife collision with WTG rotor blades or transmission lines' subsection.

5.1.1 Clearance and Disturbance of Vegetation

The Project will result in direct clearance of up to 536.82 ha required for construction of the WF and OTL components, comprising 307.56 ha of Permanent Clearance and 229.26 ha of Temporary Clearance (defined in Section 2.2). The proposed Disturbance Footprint includes 466.86 ha required for WF components (including Bundey sub connection) and 69.96 ha for OTL components. Of this 453.87 ha comprises native vegetation, from a total of 21 vegetation associations (VAs) which are located within the

Disturbance Footprint. As such, there will be direct impact to 453.87 ha of native vegetation, including 261.31 ha of Permanent Disturbance and 192.55 ha of Temporary Disturbance. A further 82.95 ha of direct impact will occur to non-native vegetation (such as cropped, exotic and amenity vegetation) or to existing cleared areas.

Table 5.2 details the direct vegetation clearance impacts associated with the Project including permanent and temporary disturbance and the area of vegetation to be retained which has been mapped in the broader GNWF Project Area. Figure 5.1 shows the areas of temporary and permanent disturbance. These areas are shown on Native vegetation mapped within the broader GNWF Project Area includes two VAs (VA7 and VA17) which are not being impacted by the Project (5.40 ha) (Section 3.3.7.2, Table 3.13), not presented in Table 5.2. All vegetation within the Project Area is presented and mapped in Section 3.3.7 and Figure 3.5.

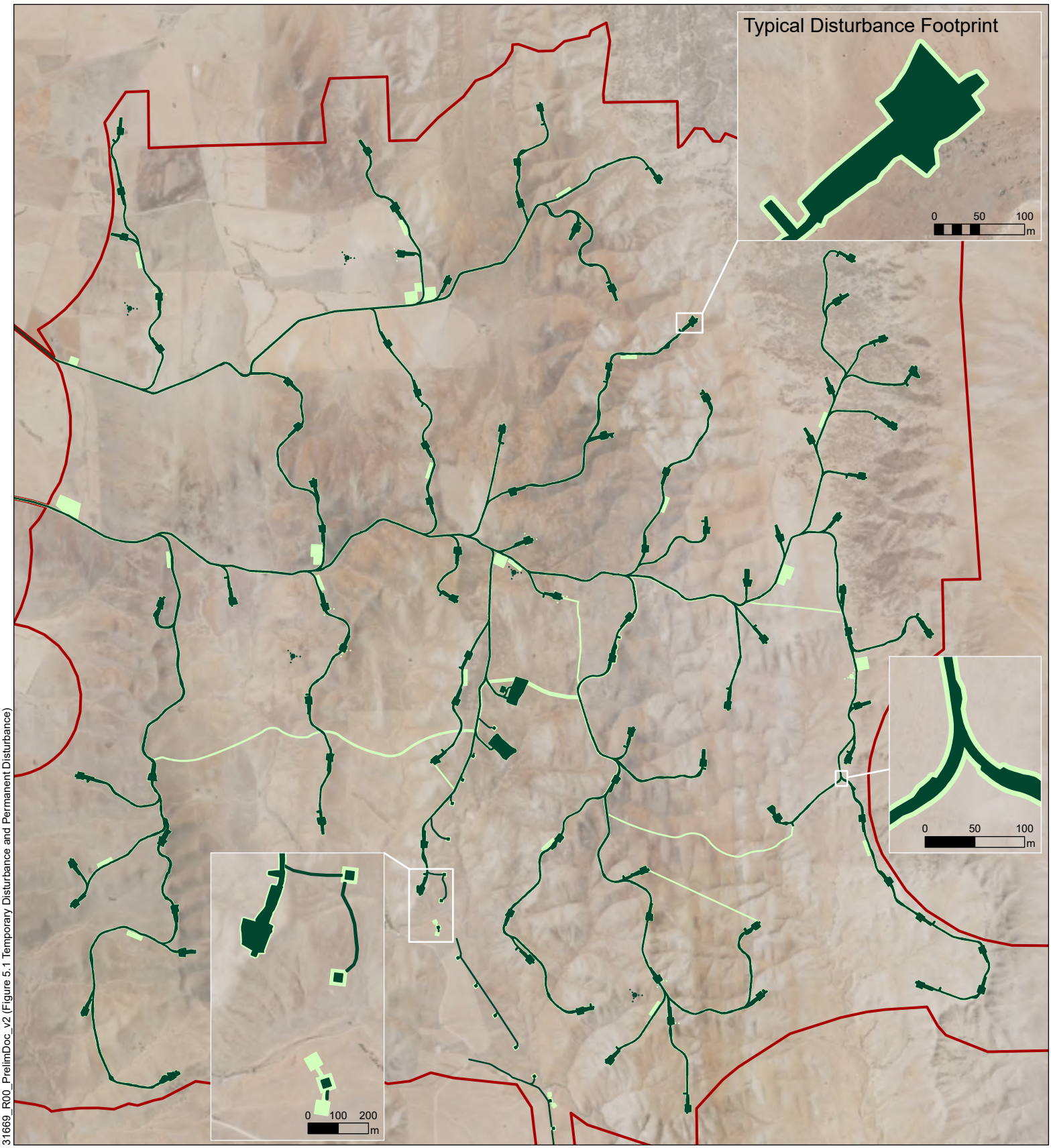
Table 5.2: Direct vegetation clearance impacts associated with the Project

VA	Vegetation Association Description	Permanent Disturbance (ha)	Temporary Disturbance (ha)	Total Direct Impact (ha)	Area Retained in GNWF (ha)
VA1	*Eucalyptus porosa* +/- *E. gracilis* / *E. brachycalyx* Woodland over Chenopods.	11.96	7.60	19.56	706.33
VA2	'Smooth-barked Mixed Mallee' (*E. gracilis* +/- *E. brachycalyx* +/- *E. dumosa* +/- *E. leptophylla* +/- *E. socialis*) over Chenopods.	4.24	1.10	5.34	448.43
VA3	*E. porosa* Woodland over *Senna artemisioides* sp. coriacea and Sclerophyllous Shrubs.	0.81	0.68	1.49	118.04
VA4	*Acacia pycnantha* tall shrubland over grass	0.03	0.03	0.06	0.02
VA5	*Maireana aphylla* low shrubland	0.30	0.39	0.69	17.30
VA6	*Lomandra* spp. Grassland.	3.57	5.02	8.59	1922.65
VA8	*Eucalyptus leucoxylon* ssp. *pruinosa* Woodland over native and exotic grasses +/- *E. odorata*	0.99	0.18	1.17	27.20
VA9	*Maireana rohrlachii* open shrubland over *Austrostipa* sp. and exotics +/- *Lomandra* spp.	10.15	6.39	16.54	528.02
VA10	*Allocasuarina verticillata* over *Cymbopogon ambiguus* and herbs on steep rocky slopes.	0.30	0.37	0.67	32.50
VA11a	Mixed *Austrostipa* spp. and *Rytidosperma* spp. Grassland	202.40	146.68	349.08	9137.19
VA11b	Mixed *Austrostipa* spp. and *Rytidosperma* spp. Grassland +/- emergent *Eucalyptus* (*E. porosa* / *E. socialis*) trees.	0.90	0.61	1.50	73.16
VA12	Mixed Chenopod Shrubland of *Maireana pyramidata* and *Atriplex*	18.41	8.94	27.35	1076.11

VA	Vegetation Association Description	Permanent Disturbance (ha)	Temporary Disturbance (ha)	Total Direct Impact (ha)	Area Retained in GNWF (ha)
	stipitata over native and exotic grasses +/- *Lomandra* spp.				
VA13	VA13: *Hakea leucoptera* ssp. *leucoptera* tall shrubland	0.07	0.14	0.22	13.70
VA14	*Eucalyptus camaldulensis* Riparian Woodland over reeds and sedges	0.00	0.05	0.05	10.36
VA15	*Juncus* spp. Sedgeland +/- *Typha domingensis* associated with minor drainage lines and creeks.	0.01	0.01	0.02	33.14
VA16	*Acacia nyssophylla* shrubland	0.58	1.02	1.61	41.04
VA18	Mixed Mallee (inc. *E. oleosa* dominant) over Chenopods and native grasses.	2.92	3.99	6.92	512.75
VA19	*Dodonaea lobulata* Shrubland +/- Scattered Mallee *Eucalyptus* spp.	1.01	0.83	1.84	102.93
VA20	*Alectryon oleifolius* Low Woodland over Chenopods	0.27	0.63	0.91	29.64
VA21	*Senna* spp. Shrubland	0.02	0.07	0.09	15.97
VA22	*Scaevola spinescens* Shrubland over Grass	0.13	0.14	0.27	30.25
VA23	*Nitraria billardiera* Shrubland	2.21	7.69	9.91	315.29
Total Native Vegetation		**261.31**	**192.55**	**453.87**	**15,192.02**
Amenity	Vegetation planted for shelterbelts, revegetation or ornamental purposes.	0.03	0.03	0.05	17.12
Exotic	Pastures dominated by exotic grasses (i.e., Hordeum vulgare, Barley Grass)	8.07	9.66	17.73	147.15
Cropped	Agricultural land currently or historically utilised for cropping.	11.56	17.30	28.85	1349.67
Cleared / Unsurveyed	Existing cleared land such as roads or infrastructure which have not been surveyed for native vegetation.	26.60	9.72	36.32	455.05
Total Other		**46.25**	**36.71**	**82.95**	**1,968.99**
Grand Total		**307.56**	**229.26**	**536.82**	**17,161.01**

Note: minor discrepancies are due to rounding of numbers.

Figure 5.1: Temporary Disturbance and Permanent Disturbance associated with the Project

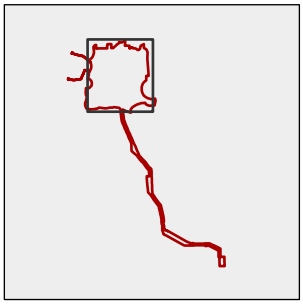


GNWF

Clearance Type

Permanent

Temporary



Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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5.1.2 Noise and Vibration

Noise (mechanical noise and aerodynamic noise) and vibration impacts may occur as a result of both construction and operation of a wind farm and from ancillary infrastructure such as BESSs and transformers at substations. Noise levels generated by renewable energy projects are considered to be well understood and can be predicted with accuracy (Echo 2023). Whilst maximum acceptable noise levels are set for human sensitive receivers (such as homesteads occurring in the vicinity of a wind farm) (EPA 2021), noise disturbance impacts to fauna are largely considered to be poorly understood, although may be minor in relation to wind farms, as suggested in the EPBC Act Policy Statement 2.3 (DEWHA 2009a).

The Environment Protection Authority (EPA) of South Australia Wind farms environmental noise guidelines (EPA 2021), suggests that impacts associated with high degrees of either amplitude modulation or low frequency noise are considered rare and are not expected to impact on sensitive (human) receivers, though it is noted that these noise characteristics may potentially be exacerbated by different weather conditions or during different seasons. Whilst the guidelines are considered to be within the strictest criterion in the world (EPA 2021) they do not, however, provide any reference limits to non-human biota, or provide information on how non-human biota may be impacted. It is also noted that there are currently no national documented upper or lower noise or vibration levels suggested for fauna (as per the Draft Onshore Wind Farm Guidance, DCCEEW 2024b)

Noise levels directly within the GNWF as a result of the predicted operation of WTGs have been calculated and modelled to be approximately 50 dB(A) within a 50 m diameter of each WTG, and within the 45 db(A) range across the majority of the Project Area, gradually reducing with distance from the WTGs (Echo 2023; Echo 2025) (Figure 5.2). In terms of tonality, the assessment predicted that the final WTG layout would not exhibit tonal characteristics, as tonality is not considered a common attribute of contemporary wind farm projects (Echo 2023). For reference, 45 db(A) is typically considered to be comparable to a quiet office or other internal space (e.g. library, residential living room) where noise is dominated by quiet conversation, air conditioning/heating-related noise, or the hum of a refrigerator. The EPA (SA) considers 40 dB(A) to be equivalent to the noise of a typical living room (EPA 2023). Vibrational impacts from modern WTGs are considered improbable and thus inconsequential to sensitive (human) receivers (pers comms. Echo 2025), however, potential vibrational impacts as a result of the WTGs to individual fauna species are not well documented and uncertainty remains.

Potential maximum noise impacts are expected to vary across the course of a day dependent upon load and usage of the electricity network (Echo 2024). The operation of all BESS components with cooling fans at 100% operational capacity is considered unlikely to occur for the majority of the time, and thus the actual noise levels of each system is expected to be less than the manufacturer's data (Echo 2024). Vibrational impacts as a result of BESSs or transmission lines are considered improbable and thus inconsequential to sensitive (human) receivers (pers comms. Echo 2025), however, potential vibrational impacts to fauna are largely unknown.

To date, limited studies have been undertaken on the operational impacts of wind turbines or ancillary infrastructure on terrestrial wildlife such as reptiles. A review on the impacts of emerging energy development on wildlife by Northrup and Wittemyer (2013) found only six studies that examined impacts of wind energy on terrestrial wildlife (two on ungulates, three on desert tortoises and one on ground

squirrels). A more recent study (2023) reviewed the effects of anthropogenic electric, magnetic and electromagnetic fields on flora and fauna. While strong adverse effects of anthropogenic fields were not observed or described, it was noted that these stimuli have the potential to affect the physiology, behaviour and ecology of animals (Pophof et al. 2023). Consequently, the effects of low frequency vibrations and sound generated by turbines on wildlife is understudied and not well understood, and it is noted that the scarcity of before-after-control-impact (BACI) studies hinders the ability to rigorously quantify the effects of wind turbine vibration and noise on wildlife.

Potential adverse impacts to wildlife from noise and vibrations may include physiological damage (stress hormones or hearing loss), behavioural changes as a result of a perceived threat; disturbance to foraging animals reducing their efficiency; displacement of animals avoiding an area; and, hindering animal communication (Teff-Seker et al. 2022).

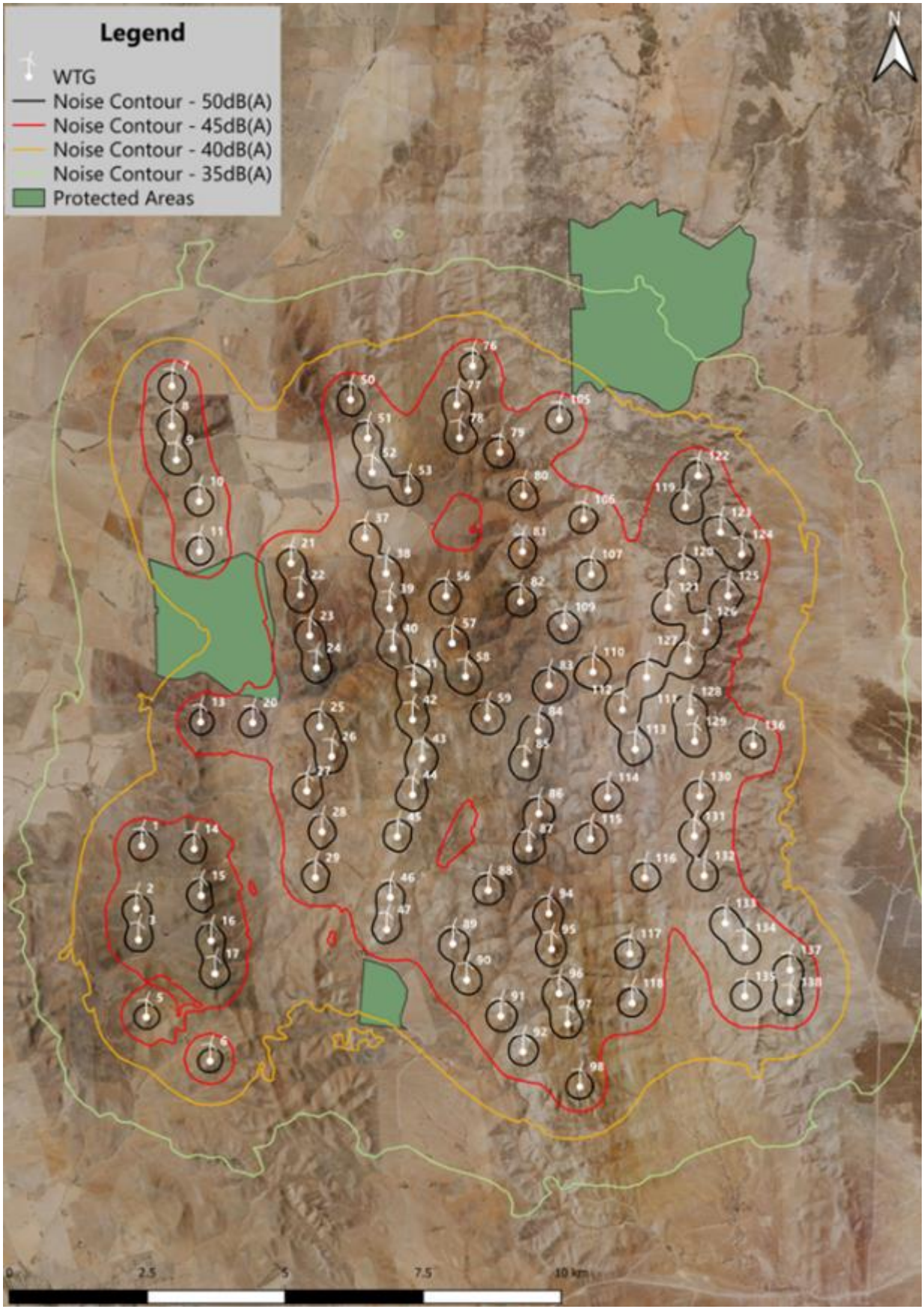


Figure 5.2: GNWF predicted noise level contours (Echo 2025)

5.1.3 Erosion and Sedimentation (including land slippage)

Large scale civil construction projects have the potential to cause local impacts such as soil erosion, changes to drainage and hydrology, and subsequent sedimentation. High risk activities include site and infrastructure establishment, topsoil stripping and approved vegetation removal, aggregate storage and stockpiles, concrete mixing, water provision, and stormwater drainage.

Erosion can result from increased soil disturbance through the clearance of vegetation which provides a natural barrier for erosion, by holding down the soil and channelling water into the soil. Additionally, clearance of vegetation for civil construction of roads and other infrastructure can be compounded in steep terrain, with runoff from rainfall events carrying loose soil from the site. This mobilised soil not only results in erosion, but has potential to deposit sediment into sensitive adjacent environments, including micro-environments such as spider burrows which facilitate habitat or contain PBTL, or into nearby creeks, rivers and drainage lines, causing a decline in water quality and aquatic habitats.

The use of heavy machinery on steep slopes can result in destabilisation of the terrain, in addition to the increased risk of land slippage from building solid foundations for infrastructure on sloping terrain. Land slips can cause danger to workers and equipment but also result in destruction of vegetation which becomes smothered by soil / debris. In the GNWF area, this may include result in additional loss of habitat for PBTL which live in spider burrows in the ground.

A CEMP has been developed for the project (Umwelt 2025k – in draft), with Project specific management plans such as a Soil Erosion and Sedimentation Control Plan, to be adopted by the Engineering Procurement and Construction (EPC) Contractor prior to, and during, construction. As a result of the avoidance, minimisation and mitigation measures in place for the Project, erosion, land slippage and sedimentation are not expected to cause an adverse impact on the GNWF Project Area.

5.1.4 Weeds and Plant Pathogens

An increase in movement of vehicles from further afield, coupled with disturbed soil conditions during construction, create favourable conditions for invasive plants to colonise and spread. Up to 106 weed species have already been recorded in the Project Area including 14 weeds listed as Declared under the LSA Act, two of which are also listed as Weeds of National Significance (WoNS).

The Project is in a moderate-risk Phytophthora area based on annual rainfall measures (DIT 2022), however, there are no records of Phytophthora within the WF or OTL (noting the southern portion of the OTL is considered a low threat area) (DIT 2022).

A CEMP has been drafted for the Project which includes management measures to be implemented during construction, which includes pre-construction surveys within the Development Envelope to understand existing weed conditions and high-risk areas, as well as periodic weed management, stringent weed hygiene measures and ongoing monitoring within the Disturbance Footprint, especially in high-risk areas. An Operational Environmental Management Plan (OEMP) will be in place to address increased risk of weed establishment during operation of the wind farm.

Management measures will prevent the establishment of new weed species or pathogens and prevent proliferation of existing weeds in disturbed areas, and therefore impacts from weeds as a result of the Project are considered unlikely.

5.1.5 Feral Animals

Construction sites and ongoing operational facilities have the potential to attract or proliferate pest animal species through improper storage of waste (i.e. food waste) and / or by providing areas suitable to harbour pest animals (i.e. equipment laydown areas and soil mounds) such as rabbits, cats and foxes.

Additionally, the creation of cleared roads and corridors through previously intact vegetation may support the movement of feral animals, such as foxes and cats into previously unoccupied territory. The Project Area occurs in a location which has been subject to a long history of agriculture and is regularly intercepted by roads and minor tracks which are likely to already facilitate this movement within the landscape. A number of feral and introduced fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (Umwelt 2025b), and thus is it considered unlikely the Project would contribute to the establishment of further pest or invasive species. The Project is not expected to result in provision of further access to these species.

A CEMP has been drafted for the Project which includes management measures to be implemented during construction, including appropriate waste disposal facilities on site, and educational material as well as provisions for monitoring and establishment of a pest control program if required. An Operational Environmental Management Plan (OEMP) will also be in place to address increased risk of pest animal establishment during operation of the wind farm.

Management measures will prevent the proliferation or harbouring of pest animal species and therefore impacts as a result of the Project are considered unlikely.

5.1.6 Injury or Mortality of Fauna from Collision, Including Bird and Bat Impacts

The development and operation of infrastructure has the potential to negatively impact fauna in a number of ways, through direct impacts such as interactions with vehicles, particular Project components (such as wind turbines and overhead transmission lines), ancillary infrastructure, and other Project components during both construction and operation. Potential direct impact pathways considered for fauna species which have potential to occur within the Project Area and include:

- Interactions/collisions with fauna during vegetation clearance activities for proposed infrastructure (e.g. vehicle/machinery interactions with sedentary fauna species that have not dispersed prior to clearance activities).
- Potential for increased risk of vehicle collision on roads and tracks (particularly for terrestrial fauna) due to increased vehicle activity within the Project Area.
- Potential for bird and bat collision with WTG, including moving rotor blades (this includes direct impacts with rotor blades and potential impacts due to barotrauma),

- Potential for collision with other overhead transmission lines, and other ancillary infrastructure.

In terms of fauna strike with WTGs, two MNES species listed under the EPBC Act potentially occur at flight heights which may result in collision with moving rotor blades;

- One bat species; *Nyctophilus corbeni* (Corben's Long-eared Bat, South-eastern Long-eared Bat) is the only threatened bat species categorised as species or species habitat 'may occur' within the feature area. Anabat recorders have been deployed at the Project with the aim to capture ultrasonic bat calls during a number of spring and summer Bird and Bat Utilisation (BBUS). As the WF and OTL are at the extremity of the species known range, and there is a lack of preferred habitat (box, ironbark, and cypress pine woodland) within the WF and OTL, the species was not detected during the 8 BBUS, and is considered unlikely to occur. As such potential direct and indirect impact pathways are considered unlikely to occur (Lathwida 2025).
- One EPBC Act Migratory species has been recorded within the GNWF: a single Fork-tailed Swift (*Apus pacificus*) recorded at Site 12 (grassland) as a flyover species. The Fork-tailed Swift is a non-breeding visitor to Australia and is almost exclusively an aerial species. In South Australia the species is present from October to May but is most common from December to March (DCCEEW 2025b) This species may be considered to occur in low numbers in the aerial space above all habitats within the GNWF, however, these habitats are not considered to represent an important foraging area for this species.
- No other migratory species listed under the EPBC Act have been identified as known or likely to occur within the Project Area (Umwelt 2025b; Lathwida 2025).

Results from the BBUS and a risk assessment will inform a Bird Adaptive Management Plan (BAMP), if required, for the WF. Results from the eight BBUS conducted indicate that MNES have demonstrated at risk flight behaviours within the GNWF Project Area, other than the Fork-tailed Swift noted above. The BAMP, if required, will continue to monitor for any impacts to listed bird species during the operation of the WF from WTG strikes, and if any impacts are detected, to implement mitigation measures necessary to ensure impacts are measured, reported and remain insignificant.

Bird collisions with power lines are a significant concern in Australia, affecting various species such as raptors, waterfowl, and songbirds. Factors contributing to collision risk include species-specific traits like vision and flight behaviour, site-specific conditions such as topography and weather, and power line characteristics like wire arrangement and height (Bernardino et al. 2018). Raptors and waterfowl are particularly vulnerable due to their size and flight patterns.

5.1.6.1 Goyder North Wind Farm BBUS Summary

Eight Bird and Bat Utilisation Surveys (BBUS) have been conducted at Goyder North Wind Farm. Following finalisation of these surveys, a summary and risk assessment will be compiled to provide an understanding of the minimum and maximum flight heights of at-risk species and the likely level of risk to these species. This will include raptor species, birds known to occur within the Project Area or considered likely to occur within the Project Area based on BDBSA records. This will further assist Neoen to understand the level of risk to birds and bats. A summary of the results and brief risk assessment based on BBUS results to date, is provided below.

Across seven BBUS surveys to June 2025, a total of 4,180 individual birds from 72 species have been recorded at the 16 dedicated bird monitoring sites. This has included 2,930 individuals from 68 native species and 1,250 individuals from four introduced species. A further 1,334 observations from 24 species have been recorded at the four vehicular transects, including 22 native and two introduced species.

Two conservation rated species have been recorded at designated bird monitoring sites:

- Pacific Swift (*Apus pacificus pacificus*) - listed as Migratory under the EPBC Act.
- Southern Whiteface (*Aphelocephala leucopsis leucopsis*) - listed as Vulnerable under the EPBC Act.

One Pacific Swift (EPBC Act: Migratory) was recorded at Site 12 (grassland) as a flyover.

One-hundred-and-ten Southern Whiteface have been recorded across three sites – Site 5 (mallee woodland, 26 individuals), Site 10 (shrubland, 78 individuals), and Site 16 (mallee woodland, 6 individuals) across all surveys. This likely includes repeat observations of the same individuals across separate survey sessions. A further 23 observations across each of four surveys were reported at Transect 4, however, this site traverses nearby Site 10 and these individuals are likely to be the same individuals and / or population.

Details regarding flight height have been recorded for all bird species observed during the BBUS. A preliminary analysis of flight height data collected during BBUS events has been undertaken for this report. For the purposes of this analysis, flight heights of 20 m and above are considered 'at-risk movements', as this airspace corresponds with the Rotor Swept Area (RSA) of the currently proposed WTGs. Based on this threshold, 29 bird species were identified as being at risk (Table 5.3), including 25 native species (four of which were raptors) and four introduced species. Of these, one was conservation rated:

- Pacific Swift (*Apus pacificus pacificus*) - listed as Migratory under the EPBC Act. One individual recorded across all surveys.

Additionally, four of the raptor species identified at the Project Area during BBUS surveys have been observed making at risk movements.

Preliminary assessment of data from the eighth and final survey (winter 2025) did not result in any additional species being included in this at-risk movement assessment. Table 5.3 only includes movements which were observed, thus, species which were recorded through call identification only, are not reported below.

Table 5.3: Avian species observed making 'at risk movements' within the Project Area

Scientific Name	Common Name	EPBC Act	NPW Act	Min Flight Height	Max Flight Height	At Risk Flights Recorded
Acanthagenys rufogularis	Spiny-cheeked Honeyeater			0	3	No, below RSA
Acanthiza apicalis	Inland Thornbill			0	10	No, below RSA
Acanthiza chrysorrhoa	**Yellow-rumped Thornbill**			**0**	**25**	**Yes, in RSA**
Acanthiza uropygialis	Chestnut-rumped Thornbill			0	10	No, below RSA
Acrocephalus australis australis	Australian Reed Warbler			0	0	No, below RSA
Aegotheles cristatus	Australian Owlet-nightjar			0	0	No, below RSA
Alauda arvensis arvensis	**Eurasian Skylark***			**0**	**150**	**Yes, at RSA**
Anas gracilis gracilis	Grey Teal			0	0	No, below RSA
Anas superciliosa	Pacific Black Duck			0	0	No, below RSA
Anthus australis	**Australian Pipit**			**0**	**30**	**Yes, at RSA**
Aphelocephala leucopsis leucopsis	Southern Whiteface	VU		0	10	No, below RSA
Apus pacificus pacificus	**Pacific Swift**	**Mi**		**0**	**50**	**Yes, at RSA**
Aquila audax audax	**Wedge-tailed Eagle**			**0**	**1000**	**Yes, at RSA**
Artamus cyanopterus	Dusky Woodswallow			0	10	No, below RSA
Barnardius zonarius	**Australian Ringneck**			**0**	**30**	**Yes, at RSA**
Chenonetta jubata	Maned Duck			1	5	No, below RSA
Cheramoeca leucosterna	**White-backed Swallow**			**0**	**100**	**Yes, at RSA**
Cincloramphus cruralis	**Brown Songlark**			**0**	**100**	**Yes, at RSA**
Climacteris picumnus picumnus	Brown Treecreeper			1	5	No, below RSA
Colluricincla harmonica	Grey Shrikethrush			0	6	No, below RSA
Columba livia	**Rock Dove***			**0**	**80**	**Yes, at RSA**
Coracina novaehollandiae	Black-faced Cuckooshrike			0	0	No, below RSA
Corcorax melanorhamphos	White-winged Chough		R	0	7	No, below RSA
Corvus coronoides	**Australian Raven**			**0**	**300**	**Yes, at RSA**

Scientific Name	Common Name	EPBC Act	NPW Act	Min Flight Height	Max Flight Height	At Risk Flights Recorded
Corvus mellori	**Little Raven**			**0**	**200**	**Yes, at RSA**
Coturnix pectoralis	Stubble Quail			0	2	No, below RSA
Cracticus torquatus leucopterus	Grey Butcherbird			0	10	No, below RSA
Daphoenositta chrysoptera	Varied Sittella			2	5	No, below RSA
Dicaeum hirundinaceum hirundinaceum	Mistletoebird			0	5	No, below RSA
Dromaius novaehollandiae	Emu			0	0	No, below RSA
Egretta novaehollandiae	**White-faced Heron**			**0**	**60**	**Yes, at RSA**
Elanus axillaris	Black-shouldered Kite			0	10	No, below RSA
Eolophus roseicapilla	**Galah**			**0**	**100**	**Yes, at RSA**
Epthianura albifrons	White-fronted Chat			0	15	No, below RSA
Epthianura aurifrons	Orange Chat			0	4	No, below RSA
Falco berigora berigora	**Brown Falcon**			**0**	**100**	**Yes, at RSA**
Falco cenchroides cenchroides	**Australian Kestrel**			**0**	**90**	**Yes, at RSA**
Falco longipennis murchisonianus	**Australian Hobby**			**0**	**120**	**Yes, at RSA**
Fulica atra	Eurasian Coot			0	0	No, below RSA
Gavicalis virescens	**Singing Honeyeater**			**0**	**100**	**Yes, at RSA**
Grallina cyanoleuca cyanoleuca	**Magpie Lark**			**0**	**40**	**Yes, at RSA**
Gymnorhina tibicen	**Australian Magpie**			**0**	**150**	**Yes, at RSA**
Hirundo neoxena neoxena	**Welcome Swallow**			**0**	**50**	**Yes, at RSA**
Malurus assimilis assimilis	Purple-backed Fairywren			0	0	No, below RSA
Malurus leucopterus leuconotus	White-winged Fairywren			0	5	No, below RSA
Manorina flavigula	**Yellow-throated Miner**			**0**	**30**	**Yes, at RSA**
Manorina melanocephala	Noisy Miner			0	10	No, below RSA
Mirafra javanica	**Horsfield's Bushlark**			**0**	**40**	**Yes, at RSA**
Ocyphaps lophotes lophotes	Crested Pigeon			0	8	No, below RSA

Scientific Name	Common Name	EPBC Act	NPW Act	Min Flight Height	Max Flight Height	At Risk Flights Recorded
Pardalotus sp.	Pardalote sp.			0	0	No, below RSA
Pardalotus striatus	**Striated Pardalote**			**0**	**20**	**Yes, at RSA**
Passer domesticus domesticus	**House Sparrow***			**0**	**25**	**Yes, at RSA**
Petrochelidon nigricans	**Tree Martin**			**2**	**35**	**Yes, at RSA**
Petroica goodenovii	Red-capped Robin			0	10	No, below RSA
Phaps chalcoptera	Common Bronzewing			0	0	No, below RSA
Phylidonyris albifrons	White-fronted Honeyeater			0	0	No, below RSA
Pomatostomus superciliosus	White-browed Babbler			0	4	No, below RSA
Psephotellus varius	Mulga parrot			0	5	No, below RSA
Psephotus haematonotus	Red-rumped Parrot			0	0	No, below RSA
Ptilotula penicillata	White-plumed Honeyeater			0	15	No, below RSA
Pyrrholaemus brunneus	Redthroat			0	5	No, below RSA
Rhipidura albiscapa	Grey Fantail			0	15	No, below RSA
Rhipidura leucophrys leucophrys	**Willie Wagtail**			**0**	**50**	**Yes, at RSA**
Smicrornis brevirostris	Weebill			0	15	No, below RSA
Strepera versicolor	Grey Currawong			0	5	No, below RSA
Struthidea cinerea cinerea	Apostlebird			0	3	No, below RSA
Sturnus vulgaris vulgaris	**Common Starling***			**0**	**100**	**Yes, at RSA**
Tachybaptus novaehollandiae	Australasian Grebe			0	0	No, below RSA
Taeniopygia guttata castanotis	Zebra Finch			0	10	No, below RSA
Todiramphus pyrrhopygius	Red-backed Kingfisher			1	2	No, below RSA
Trichoglossus moluccanus	**Rainbow Lorikeet**			**20**	**50**	**Yes, at RSA**
Vanellus tricolor	Banded Lapwing			0	10	No, below RSA
Zosterops lateralis	**Silvereye**			**0**	**40**	**Yes, at RSA**

* Indicates non-native species.

Conservation Ratings: VU = Vulnerable, R = Rare

5.2 Indirect Impacts

Indirect impacts are effects or consequences that are not immediately or directly caused by the Project, but rather, are the result of other impacts or effects caused by the Project. As such they are considered secondary or tertiary effects which may occur at a later time. Indirect impacts are reasonably foreseeable and can include changes in land use patterns, economic effects, and ecological changes that result from the direct impacts which are associated with project activities.

In most locations, particularly along access roads, indirect impacts are effectively managed within the temporary Disturbance Footprint. This footprint will eventually contain the boundary of permanent infrastructure, such as access roads, once construction is complete. Rehabilitation is planned for disturbed areas outside of the permanent infrastructure areas, and a large portion of the potential indirect impacts like dust deposition and sedimentation will typically occur at the edges of construction zones, within these temporarily disturbed areas. Temporary clearance zones have been fully integrated into all Disturbance Footprints and are treated as direct impacts. Consequently, offsets for EPBC residual impacts (and native vegetation clearance) encompass both permanent and temporary clearances, meaning large portions of the potentially indirectly impacted areas are already offset.

Table 5.4 provides a summary of the potential indirect impacts which are associated with the Project, with further Project-specific details summarised below.

Table 5.4: Potential indirect impacts associated with the Project

Potential Indirect Impacts	Phase	Duration	Section
Change in land use caused by location / operation of the wind farm, for example a change to the grazing regime or change to area of grazing pressure caused by changed location of fences / watering points and farm practices, resulting in changes to vegetation condition (for example INTG degradation outside of approved Disturbance Footprint).	Operation	Long-term (minimum 25 years)	5.2.2
Increase in edge effects adjacent to wind farm infrastructure, degrading native vegetation and decreasing the quality of habitat for fauna.	Construction and Operation	Long-term (minimum 25 years)	5.2.2
Displacement of fauna through avoidance behaviours related to the presence of wind farm infrastructure and increased noise, activity and movement, including potential altered migration patterns of birds and bats due to presence of infrastructure.	Operation	Long-term (minimum 25 years)	5.2.2
Reduction in habitat quality of surrounding vegetation caused by introduction of new weed species (or disease) or spread of existing weed species along access tracks and inspection points through transport of organic materials on maintenance vehicles.	Construction Operation Decommissioning	Long-term (minimum 25 years)	5.2.5
Dust generation during ground disturbance activities affecting air quality and subsequently suppressing vegetation, and therefore habitat, in the surrounding environment.	Construction	Short term (2 to 3 years)	5.2.4

Potential Indirect Impacts	Phase	Duration	Section
Reduction of, or change to natural genetic dispersal of, localised small fauna species such as small reptiles (PBTL) due to barriers to movement and migration caused by infrastructure (i.e. impassable roads).	Construction and Operation	Long-term (minimum 25 years)	5.2.5
Alteration of microclimates by influencing local wind patterns and temperature distributions which may affect plant growth and soil moisture levels, with cascading effects on the local flora and fauna, potentially altering the composition of plant communities and availability of resources for wildlife.	Operation	Long-term (minimum 25 years)	5.2.6
Changes in surface water flows and local hydrology and subsequently riparian environments from long term impacts of infrastructure such as soil compaction on roads or altered slopes / drainage channels.	Operation	Long-term (minimum 25 years)	5.2.7
Altered hydrology affecting soil and water quality.	Construction Operation Decommissioning	Long-term (minimum 25 years)	5.2.7
Increased human activity in previously undisturbed areas during construction, through the development of access roads and other infrastructure, leading to: • disruption of wildlife behaviour • introduction of invasive species • facilitating movement of introduced species through previously less accessible areas.	Construction Decommissioning	Short-term (2 to 3 years)	5.2.8
Reduced habitat suitability due to shadow flicker from WTGs leading to a disruption/alteration to fauna behaviour.	Operation	Long-term (minimum 25 to 30 years)	5.2.9
Increased risk of hazards such as bushfire caused by infrastructure (i.e. OTL) and increased activity.	Construction Operation Decommissioning	Long-term (minimum 25 years)	5.2.10
Increased risk of illegal flora or fauna poaching risk (for example PBTL) as a result of increased awareness of the presence of MNES in the GNWF Project Area	Construction Operation Decommissioning	Long-term (minimum 25 years)	5.2.11

5.2.1 Changes in Habitat Condition due to Change in Land Use

Wind farm developments inevitably result in some short- and long-term changes in land use, initially through disturbance and activities occurring during construction, and subsequently through placement of permanent infrastructure. However, permanent infrastructure such as access roads and WTGs only occupy a small portion of the total area of land and most agricultural practices, including livestock grazing and cropping, can continue around them with minimal disruption.

Initially potential indirect impacts to MNES may be associated with subtle physical changes to property boundaries and infrastructure, for example the altered location of fencing or watering points to accommodate wind farm infrastructure may result in new or increased stock disturbances or tracks in some areas of remaining vegetation, such as around stock watering points. These changes more easily predictable and can be managed through careful planning and controls in the CEMP, to ensure that

changed boundaries or stock watering points are not relocated to areas which increase susceptibility of negative impact to areas of vegetation such as INTG.

Longer term changes to land use are more complex and less predictable and may include changes to current grazing regimes, such as the location of agriculture/grazing practices or grazing pressures (type of stock, stocking rates). These changes may result from landholder or land manager decisions independent of any wind farm activities (i.e. business as usual) or may be related to increased or secured income from wind farm compensation, allowing landholders to reduce reliance on high livestock density, or conversely increase stock density due to increased income. These changes may have either negative or positive impacts on surrounding habitats, or a combination of both, observed at different locations, however the changes are likely to be somewhat unpredictable and difficult to quantify.

Additionally, the installation of wind farm infrastructure may result in changes to animal behaviour, such as:

- Preferential grazing and / or increased grazing pressure in areas directly adjacent to roads, including new roads.
- Changes in movement patterns of livestock, either through altered location of artificial watering points, feed stations, construction of roads in new locations resulting in increased access, and /or change in location of paddock gate through which livestock are moved throughout the property.
- Easier access to areas which were previously difficult to reach, through establishment of roads which act as least resistance pathways for livestock. Resulting in subsequent changes in grassland condition in affected areas, which may be either positive or negative and include:
    - Changes to species composition and diversity if new areas are selectively grazed for palatable species.
    - Weed cover increase or decrease or spread of weeds into new areas.
    - Formation of new livestock trail networks.

Should these changes occur at all, such impacts are expected to be managed under the CEMP/OEMP (e.g. weed monitoring and management) and in collaboration with land holders and land managers, and is likely to include provision of activity datasheets, and reporting of any observed changes in livestock movements which may require further attention.

However, it should be noted that net positive gains for MNES (and potentially other species) may occur as a result of the GNWF, potentially including:

- Contributing to mitigating and reducing the potential impacts of climate change by assisting in the reduction of net greenhouse gas emissions (which is listed as a threatening process for several MNES herein, including the PBTL).
- Furthering research initiatives on MNES, particularly with regards to improved land management of INTG TEC / Lomandra and PBTL. Further to this, livelihood subsidisation through landholders hosting WTG may mean that grazing pressures are more able to be reduced.
- Offsets which exceed the level of impacts arising from the Project, and which place MNES under conservation reserves for protection in perpetuity, resulting in a net positive gain.

5.2.2 Displacement of Fauna MNES through Edge Effects or Avoidance Behaviours

Fauna may potentially be indirectly displaced by changes to the landscape in which they currently reside due to 'edge effects' (which are defined as a change in abundance or occurrence of a species near the edge of a patch of habitat), or by avoidance behaviours, as a result of nearby development. Displacement may occur as a result of fauna deliberately avoiding the Project Area, either by dispersing away from the Project Area, or by avoiding dispersing into the Project Area.

The impact of edge effects on fauna and potential avoidance behaviours is typically species-specific, and influenced by the species' ability to move through the landscape. For example, some avian species may deliberately avoid the area, whilst other more sedentary species may not be able to disperse or avoid the potential impact. As noted above, the Disturbance Footprint includes both temporary and permanent disturbance, but of which are included in the direct impacts for the project. Some of the indirect impacts associated with edge effects would occur in the temporary disturbance footprint area adjacent to linear infrastructure components such as access roads.

A European study (Łopucki et al. 2017) investigated the behaviour of four terrestrial animals including Roe Deer, European Hare, Red Fox and Pheasant. The study found that all fauna used wind farm areas, however the frequency of use of areas near turbines was different than the use of land away from turbines, with impacts observed within a 700 m buffer zone around each wind farm. For deer and hare, the association was negative, with less activity observed near turbines. This was hypothesised to be caused by their reliance on auditory cues to avoid predators, which may be diminished in proximity to turbines where background noise is higher than at locations further away from turbines. Pheasant were found to have a positive association, utilising grit resources on turbine hardstands which were more abundant in disturbed areas, while foxes had a more neutral response. The study was undertaken at a wind farm which had been in operation for less than five years, and the authors speculated that species may adapt to the presence of wind farm infrastructure, and that more studies are required to better understand the influence of wind farm infrastructure on various terrestrial fauna.

Impacts as a result of edge effects associated with GNWF are considered to be minimal, as the Disturbance Footprint is typically narrow and linear and will utilise existing roads, tracks and corridors where practicable, with habitat outside of the Disturbance Footprint expected to remain intact and of the same or improved quality due to improved land management practices. As noted above, areas of temporary disturbance immediately adjacent the final infrastructure footprint are also already factored into the direct disturbance impact areas and will be rehabilitated. These areas often align with the areas potentially subjected to edge effects. Any fauna potentially displaced during the construction or operation of the wind farm will be able to disperse into large areas of adjoining similar habitat within the Project Area and beyond. Additionally, it is noted that large areas of habitat under conservation directly adjoin the Project Area of the GNWF (i.e. Mokota CP, Tiliqua Nature Reserve, and Mongolurring Nature Reserve), further mitigating the potential impacts of edge effects.

5.2.3 Degradation of Habitat Through Weeds or Pathogens

The introduction and/or spread of weeds is discussed above as a direct impact (Section 5.1.4). A potential indirect impact of the Project is that existing habitat within the Project Area has the potential to degrade as a result of the introduction or proliferation of introduced weed species, which can outcompete native vegetation. This can result in a secondary/indirect impact; a change in habitat suitability which may include changes to soil composition and structure, resulting in flow-on implications the habitat suitability and the broader ecology of the area.

To date, a total of 106 species of introduced flora species have been recorded within the Project Area, including two WoNS (Commonwealth) and 14 Declared Weeds (state listed weed species regulated under the LSA Act) (Umwelt 2025b), and common agricultural weeds are already widespread within the Project Area. Whilst this may be considered a large suite of weed species, it should be noted that key MNES, as listed in Section 4, are able to persist within somewhat weedy environments, including PBTLs, although potentially to a lesser extent.

A CEMP has been drafted for the Project which addresses broad management measures to be implemented during construction, which will include pre-construction surveys within the Development Envelope to understand existing weed conditions and high-risk areas, as well as periodic weed management, stringent weed hygiene measures and ongoing monitoring within the Disturbance Footprint, especially in high-risk areas. An Operational Environmental Management Plan (OEMP) will be in place to address increased risk of weed establishment during operation of the wind farm. Such management measures are widely applied to large infrastructure projects and are known to be effective when implemented correctly. As such, there are not expected to be indirect impact of habitat degradation as a result of introduction of, or spread of, weed species across the Project Area.

5.2.4 Degradation of Habitat due to Dust Deposition

Dust generation typically occurs during construction as a result of vegetation clearance activities, exposed soil stockpiles, or through vehicle traffic along unsealed roads and vehicle tracks. Deposition of dust on surrounding vegetation has the potential to result in subsequent degradation of habitat quality.

Specifically in terms of potential impacts to vegetation, dust deposition may:

- Reduce the transpiration capacity of a plants leaf surface, thereby increasing the temperature of the leaf surface
- Reduce the plant's ability to effectively undertake photosynthesis
- Cause damage to the leaf surface due to the physical nature of the dust particles as it comes into contact with the leaf.

Potential dust generation as a result of the Project is localised, short-term in nature, and most likely to occur only during the construction phase of the Project. Thus, dust generation is considered to be a temporary impact.

Furthermore, dust generation is likely to be most significant along the regular access routes to and within the site. All access routes have been designed with a temporary clearance buffer which allows for a wider corridor during construction as well as placement of aligned infrastructure, such as electrical cables. These buffer areas are proposed to be rehabilitated following construction, however, have all been incorporated into all Disturbance Footprint calculations and subsequent offset requirements. Thus, the majority of indirect impacts associated with habitat degradation from dust are likely to be constrained within the temporary clearance areas, which have already been accounted for as a direct impact.

The draft CEMP for the Project addresses broad management measures to be implemented during the construction phase of the Project, inclusive of a Dust (Air Quality) Management Plan. Such measures include site wide traffic controls, with additional dust suppression measures or further reduced speed limits imposed for access roads within INTG TEC. Dust control and suppression measures are considered to be effective, as previously demonstrated during the construction of the GSWF. In addition, although not to be relied upon, natural rainfall events are also known to be effective in washing off any settled dust which also mitigates any potential impacts of dust deposition on plants.

By implementing dust control measures as outlined in the CEMP, no notable indirect impacts to vegetation or subsequent habitat degradation are expected as a result of dust deposition in the environment.

5.2.5 Reduction of, or Change to, Natural Genetic Dispersal of Fauna Species

Some terrestrial small fauna MNES (such as FRWL or PBTL) may be potentially impacted by the construction of infrastructure which can create a permanent physical barrier in the landscape. As outlined in Section 2.2.6, due to the topography at the site, the required clearance will be wider than the required trafficable road width of 5.5m, with the final road width based on 3D modelling of the site incorporating existing terrain and cut and fill and drainage requirements which can extend the road in excess of the trafficable distance, for example in some sections the permanent road with batters might be 7 m and in other sections (typically where it is steeper terrain) the permanent road width may be in the order of 15 m. Typically permanent road widths are around 10-12 m. Whilst this may potentially impose a constraint on the dispersal of these two species, it is not expected to impact the species to the degree that the species are unable to disperse across and throughout the Project Area at all or prevent genetic exchange within the Project Area and into adjacent habitat.

Avifauna and large terrestrial fauna species are expected to easily move across and/or around the landscape within and adjacent to the GNWF and thus are not expected to be impacted by infrastructure associated with the wind farm.

5.2.6 Changes to the Microclimate within the Project Area

Microclimate refers to the localised set of atmospheric conditions that differ from the broader surrounding area. Microclimate is typically influenced by the local topography of an area, vegetation type and cover, moisture levels, and by human developments and activities. The microclimate directly within the vicinity of the Project Area has the potential to be impacted by the development of wind farm infrastructure, including by the WTGs themselves. This may include localised changes in wind speed,

humidity, turbulence and mixing of air, and the vertical distribution of heat (Armstrong et al. 2014). Whilst small temporal shifts in the microclimate may occur within the direct vicinity of WTGs, these changes are not expected to result in any significant impacts to the flora and fauna within the Project Area, including MNES as listed in Section 4.

5.2.7 Changes in Surface Water Flows / Altered Hydrology

The development of a wind farm has the potential to impact on surface water flows, through the construction of new infrastructure which dissects the landscape and diverts the natural flow of water or intersects with existing waterways or drainage lines. These changes to surface water flow have the potential to result in erosion, sediment deposition and changed water runoff and infiltration which in turn has the potential to change the composition of vegetation communities such as INTG, and impact fauna, such as burrowing spiders and Pygmy Blue-tongue Lizards but depositing sediment in their burrows.

Additionally, construction of wind farms requires significant use of water for a range of activities, including construction (such as concrete batching and dust suppression measures), which may have localised impact on ground water availability, recharge, distribution and flows from non-permeable infrastructure foundations, as well as create potential for contamination or pollution from accidental spills of hazardous chemicals.

The GNWF Project Area is not situated within a flood plain area, and no water diversion activities are planned with the GNWF, however, to minimise the impact to surface water flow and avoid localised flooding, Neoen has undertaken (or is undertaking) the following:

- LiDAR survey to understand detailed contours of land including waterways.
- Hydrological study to estimate the existing flow of surface water across the land, the relevant catchment areas and potential flood incidence.
- 3-dimensional (3D) civil concept designs, including drainage, to determine the potential impact on existing natural flow paths, which also optimises road placement to avoid creeks where possible and utilise natural land contours to minimise earthworks and flow impacts.
- Detailed drainage design to finalise placement of roadside drainage and culverts where necessary.

Neoen has also engaged expert hydrologists to undertake a construction water sourcing assessment to ensure that any groundwater used during construction is sourced sustainably, A significant proportion of construction water will be sourced from mains supply in Burra.

Additionally, all construction and operation activities associated with the GNWF will be undertaken in accordance with the comprehensive CEMP and OEMP, with specific sub-plans to address the management of soil erosion and drainage and stormwater, to address and mitigate impacts to soil and surface water flow across the Project Area. Careful planning and implementation of the comprehensive management plans will ensure that any minor changes to surface water flows which may arise are unlikely to modify habitat for EPBC listed species or ecological communities which may be present within the Project Area, and no indirect impacts are expected to occur outside of the Project Area.

5.2.8 Increased Human Activity in Previously Undisturbed Areas

Increased human activity in previously undisturbed areas, through the development of access roads and other infrastructure. A number of roads and tracks, and human activity already occur within the Project Area, however, increased human activity has the potential to lead to:

- disruption of wildlife behaviour for some species
- increase the risk of wildlife-vehicle collisions
- loss of biodiversity
- introduction of invasive species.

These impacts can occur throughout the construction, operation and decommissioning phases, or within discrete periods of time. Specifically in relation to the GNWF, it is possible these impacts may be mostly noted during the construction period, when the site is likely to be subjected to a range of activities in a short space of time, however, ongoing or chronic impacts are considered less likely to occur. This increased human activity may temporarily preclude some species from those impacted areas during the construction phase, for example aerial/bird species which may avoid foraging or nesting behaviours within the disturbed areas during this time. However, for species identified as occurring within the GNWF, particularly in reference to MNES, these impacts are considered to be insignificant, noting a range of management and mitigation measures incorporated under the CEMP and/or OEMP would be considered effective.

5.2.9 Reduced Habitat Suitability due to Shadow Flicker and Potential Impact of Shadow Flicker on Fauna

Shadow flicker is the 'strobing' light produced from intermittent shadows. A "shadow flicker" is caused when a rotating device, such as a wind turbine blade, intermittently casts shadows onto a surface. The area of exposure to shadow flicker from a turbine is determined by the hub height and the diameter of the blades, the angle of the sun in the sky, and the direction of the blades relative to the area. These variables are affected by a large number of variables including, but not limited to, the time of day, time of year, wind direction and speed, surface topography and aspect, intervening vegetation, weather (cloud cover), and geographical location (latitude) (EPHC 2010).

The effect is at its greatest during sunrise and sunset when the shadows are longest and also at high wind speeds (Bhushan et al. 2013). When several turbines are in line with the sun's shadow there is flicker from a combination of blades from different turbines, which can have a higher frequency than from a single turbine. If the blades of a turbine are reflective then there is the possibility of flicker from reflected light at viewing positions that are unaffected by shadows.

The National Wind Farm Development Guidelines (Draft) (EPHC 2010) specify accepted limits for human related impacts (such as annoyance for residents), however there are no guidelines for the impact to non-human residents of wind farm sites. Specifications are not standard at a national or international level, with State regulations in place in Australia, and generally referring to the Victorian guideline which sets a

limit of 30 hours per year (hr/yr) within 50m of a sensitive receptor (EPHC 2010). Internationally, regulations include 30 hr/yr and 30 minutes per day (min/day), and 8 hr/yr of actual shadow flicker.

The potential impact of shadow flicker on animals is understudied, however it has been raised in the National Recovery Plan for Pygmy Blue-tongue Lizard (Duffy et al. 2012) as a potentially important impact to the species, along with vibration and noise from the turbines, affecting the usual behaviour and movements of the species. The impact as it relates to PBTL is discussed in more detail in Section 7.1.2.

Wind turbine facilitated shadow flicker as a result of the GNWF has been modelled by GHD (GHD 2024a; GHD 2025), with modelling updated to reflect the current layout of the 99 WTGs.

No changes in habitat suitability are expected for any flora MNES, as listed in Section 4. Potential impacts as a result of shadow flicker are not expected to lead to a significant or sustained change in the availability of sunlight, nutrients, or soil health within the Project Area.

No changes in habitat suitability are expected for fauna MNES, as listed in Section 4, with the potential exception of the PBTL, noting impacts as a result of potential sustained shadow flicker are localised to certain aspects around individual WTGs, as presented from modelling of the 'expected case' of shadow flicker influence in Figure 7.2 and in the expected case (greater than 100 hours per year) in Figure 7.3. All MNES are expected to be able to readily disburse across their home ranges, thereby avoiding any areas that are subjected to sustained shadow flicker at levels which may be detrimental to the species (e.g. avian MNES).

A comprehensive assessment of the potential impacts of shadow flicker on PBTLs, including presentation of shadow flicker modelling results, is presented in Section 7.1.2.2.

5.2.10 Bushfire Risk Associated with the Construction and Operation of the GNWF

There are several records for fires having occurred within or adjacent to the GNWF in the last 40 years (DEW 2025a). This includes a large bushfire that occurred in the eastern portion of the WF in January 2023, a bushfire near Worlds End in October 2017 (west of the OTL), as well as a number of prescribed (controlled) burns within Mokota CP (2003, 2004, 2010, 2012, 2013) (DEW 2025a).

Some construction activities have the potential to cause the ignition of fire, for example during welding activities, which could result in loss of habitat and individual MNES species. Construction activities will be undertaken in accordance with the draft CEMP, with a specific sub-plan to address the Project's fire and emergency response.

There is also a risk that operation of the GNWF may cause the ignition of fire, with historic examples of turbines catching fire, typically due to mechanical or electrical issues, or lighting strike, or due to the OTL resulting in fire. Transmission lines may have potential to ignite and cause fires in a number of ways; including via downed or fallen lines (due to falling trees or strong winds) which may come into contact with dry vegetation, direct contact with overgrown vegetation consequently causing a spark, via 'conductor slap' which refers to adjacent lines coming into contact thereby creating high-energy sparks, or due to faults. However, the potential for fire of wind turbines due to malfunction is considered inherently low (CEC 2018; CFS 2016).

A recognised benefit of wind farms that has materialised in recent history elsewhere in the region, is that through established access tracks associated with the wind farm, it can be much easier and quicker to respond effectively to fire.

Bushfire prevention measures for construction activities are standard and are known to be effective. Operation measures are also well understood for wind farm projects. The CEMP and OEMP will outline the specific measures in place to manage fire risk during construction and operation in the Fire and Emergency Response sub-plans, which include training of staff, having fire-fighting equipment available on site, and managing fuel loads around high-risk areas. With such measures in place, the likelihood of fire ignition causing major environmental damage due to the Project is considered low, and therefore no significant impacts to MNES or MNES habitat are expected.

5.2.11 Elevated Flora or Fauna Poaching Risk as a Result of Raised Awareness of the Presence of MNES in the GNWF Project Area

Illegal trafficking of wildlife is cited as being one of the fourth largest illicit economies in the world and is considered inclusive of live animals and plants as well as a vast array of wildlife products derived from them (DCCEEW 2025c). The exploitation of wildlife through illegal trade has the potential to deplete populations of some species, particularly threatened species.

Australia is signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), an international agreement between governments which aims to ensure that the international trade in wild animals and plants does not threaten their survival. In Australia, CITES is given effect and regulated through part 13A of the EPBC Act. Additionally, state conservation laws are also in place in each jurisdiction, including the National Parks and Wildlife Act 1972 (SA) (as well as the Biodiversity Act 2025 (SA) which is soon to be enacted).

The risk of increased potential poaching activities as a result of the raised awareness of the presence of MNES in the GNWF Project Area is not expected to materially result in an increased threat of poaching activities. While information contained herein is specific to a number of threatened species that occur or have the potential to occur in the broader region, it is noted that data for some of these species is already publicly available. For other species where data is considered particularly sensitive, data has been denatured in publicly available databases. The presence of landholders and their employees working across a number of properties that collectively comprise the GNWF Project Area acts as a mechanism to ensure illegal trespassers do not wilfully encroach upon their properties (or adjacent areas) to undertake illegal wildlife poaching.

Reporting mechanisms are in place for both Commonwealth and state reporting agencies, and include:

- ‘Suspicious Matter Reports’ (SMRs) via the Australian Government AUSTRAC website (available at https://www.austrac.gov.au/business/core-guidance/reporting/suspicious-matter-reports-smrs).
- Reporting online or via the phone to Crime Stoppers in South Australia (available at https://crimestopperssa.com.au/campaigns/stolen-smuggled-and-suffering-native-wildlife-campaign).
- Reports direct to the South Australian Police.

- Reports direct to the NYLB, e.g. to the District Ranger at the Head Office in Clare, or via the Burra regional office (https://www.landscape.sa.gov.au/ny/contact-us).

As such, it is considered unlikely that species information made available through the approval and development of the Project would increase the risk of illegal poaching activities.

5.3 Facilitated Impacts

Facilitated impacts are a subset of indirect impacts. They refer specifically to the effects that arise because the project facilitates or accelerates existing processes or conditions. These impacts are not direct consequences of the project itself but occur because the project creates conditions that enable or enhance other activities. For instance, the construction of access roads for a wind farm might facilitate the spread of invasive species by providing new pathways for their movement.

The impacts are not direct consequences of the project itself but are facilitated by the changes the project introduces to the environment or community. These may include:

- Increased human activity in previously undisturbed areas.
- Facilitating the spread of invasive species by creating new pathways for movement.
- Habitat alteration caused by local microclimates created by turbines which alter local wind patterns and temperature distributions which may affect plant growth and soil moisture levels. These can have cascading effects on the local flora and fauna potentially altering the composition of plant communities and the availability of resources for wildlife, such as facilitating the growth of certain plant species (i.e. disturbance resistant species) over others.
- Increased risk of illegal animal trafficking behaviour due to access and publicity created by the Project.
- Increased local economic activity leading to more development in the region.
- Improved access roads facilitating increased human activity in natural areas (including for recreational use).
- Changes in land use patterns affecting local ecosystems.
- Increased tourism impacting local wildlife and habitats.
- Ongoing employment opportunities leading to sustained population growth and associated infrastructure development.
- Waste generation from dismantling projects (decommissioning) affecting local disposal sites.

Where the potential for impacts to MNES through facilitated indirect impacts, these are covered in Section 5.2 above. No facilitated impacts are expected to have a significant impact on MNES.

5.4 Cumulative Impact Assessment

3. Relevant impacts

g) A local and regional scale analysis of likely impacts. This should include an assessment of connectivity, and potential short-term and long-term cumulative impacts of the proposed action in the context of regional development within the broader region. The analysis of cumulative impacts must specifically address the long-term viability of the Pygmy Blue-tongue Lizard and Iron-grass TEC if the proposed action was to proceed. This must consider all relevant past, present and reasonably foreseeable activities within the mid-north region of South Australia.

The Goyder Regional Council region has an extensive history of primary agriculture, predominantly cropping and grazing, with vast areas having been historically cleared of native vegetation, a requirement as set out under relevant legislation at the time during European settlement. Smaller areas of remnant native vegetation occur throughout the region, typically fragmented by farming areas.

The region hosts a number of wind farms and renewable energy projects, with more currently under construction and/or development, in order to reduce net greenhouse gas emissions and reach renewable energy targets as set out by the South Australian Government. The Goyder Renewable Energy Zone (inclusive of GSWF and GNWF) is the largest of the projects to date. Other operational wind farms in the region include the Hallett Wind Farm (combined capacity of 350 MW) and Waterloo Wind Farm (130 MW).

Wind farms typically utilise land that has historically been used for agriculture, including cropping and grazing on derived grasslands that were previously cleared of native grassland and woodland habitats. While cumulative impacts related to habitat loss do occur, the stringent requirements for establishing environmental offsets mean that previously unprotected lands, which were subject to ongoing threatening processes, are now being safeguarded as a result of the offsets. These areas are now protected under established management plans, with initiatives in place to rehabilitate and restore the natural environment (as presented in Section 5.4.2).

Cumulative impacts to MNES are the result of the overall impact of direct, indirect and facilitated impacts associated with multiple individual windfarms as well as other projects. With regards to threatened species, cumulative impacts may include:

- Habitat fragmentation – exacerbated from multiple projects combined.
- Cumulative collision risk for avifauna species – potentially creating a population level risks rather than a localised/individual risk. Risks can be exacerbated for species which are already experiencing population declines due to other threatening processes such as habitat loss and climate change.
- Cumulative collision risk for migratory bird species – particularly for species where multiple wind farms align with migratory flight paths, and for species which migrate in large numbers resulting in risks to increased number of individuals.
- Lack of knowledge around recovery in areas of 'temporary clearance' intended for rehabilitation, with construction happening faster than research outcomes are known.
- Combined impact on the availability of useable / safe airspace for common and threatened bird and bat species.

- Increased traffic congestion arising from multiple projects, road wear, and activity leading to higher rates of animal mortality caused by vehicle strike.
- Habitat clearance and fragmentation from multiple projects potentially leading to reduced biodiversity in the region.
- Increased incidence and severity of dust storms, erosion and dust deposition caused by larger areas of cleared land in the region for wind farm infrastructure (i.e. wind farm access tracks and regular trafficking of them).

The cumulative impact assessment herein has considered all known projects referred to the Commonwealth via the EPBC Act Public Portal, inclusive of those considered likely and unlikely to have a significant impact on MNES. Projects have been grouped by distance from the GNWF Project Area boundary (i.e. within 10 km, 10 km to 25 km, 25 km to 50 km, and beyond 50 km for other projects that occur within the Pygmy Blue-tongue Lizard extent of occurrence) and are presented in Table 5.5 and Figure 5.3. Those projects which are/were considered controlled actions are highlighted in bold text in Table 5.5, meaning that impacts to MNES may be considered significant. Pygmy Blue-tongue Lizard extent of occurrence was determined spatially by applying a polygon to the outer boundary of publicly available sensitised data. Each project was reviewed, and those projects which impacted upon MNES which are relevant to the GNWF were annotated accordingly in terms of potential or known impacts to EPBC listed threatened species and/or communities. The criteria and survey efforts used to identify suitable habitats or determine significant impact for each listed threatened species were not verified for each referral and may vary significantly in terms of methodology.

There are nine MNES categories listed by the Commonwealth, with the list reviewed every five years to see whether further matters should be included (LSCSA 2025). Each of the nine MNES categories are also regularly assessed, with any member of the public able to nominate a threatened species, ecological community or key threatening process for listing each year (DCCEEW 2025a). Thus, the following list of cumulative impacts may not address impacts to MNES which were not listed at the time of the application. For example, the listing date of several species relevant to this GNWF application are very recent (2023) and these species were not listed during the EPBC assessment of some of the reviewed actions. This includes Southern Whiteface (March 2023), South-eastern Hooded Robin (March 2023), Blue-winged Parrot (March 2023), Diamond Firetail (March 2023), Mallee Bird Community of the Murray Darling Depression TEC (December 2021) and Spiller's Wattle (December 2009). All other species of relevance to this application were listed in 2000.

The Significant Impact Guidelines 1.1 (DotE 2013a) cite that 'if the minister decides that the action is likely to have a significant impact on a matter of national environmental significance, then the action requires approval under the EPBC Act' and is considered a controlled action. Those projects which are considered not a controlled action therefore mean that the project has been assessed as 'not likely to have a significant impact on a matter of national environmental significance' and thus does not require approval under the EPBC Act (DotE 2013a). These projects are therefore likely to be less consequential in terms of cumulative impacts to MNES, as their impacts are relatively minor in mature.

Project whose impacts are assessed as not controlled action (particular manner) means 'approval is not required if the action is taken in accordance with the manner specified' in the relevant referral documentation (referral or preliminary documentation) (DotE 2013a).

Most projects potentially relevant to the GNWF have completed the referral assessment with decisions made for each project (i.e. not controlled action, not controlled action if undertaken in a particular manner as prescribed, or controlled action). A number of projects are currently in the assessment stage, with the assessment approach or outcome yet to be determined, and have also been considered herein where information has been publicly available on the EPBC Act Public Portal.

The following information was obtained for each project using publicly available information on the EPBC Act Referral Portal (DCCEEW 2025d):

- Proximity to GNWF Project Area.
- Details on MNES values that overlap with those considered known or having a moderate or high likelihood of occurrence.
- Area of MNES value within the Project Area (where publicly available).
- Area of MNES value within the Disturbance Footprint (where publicly available).

Eight projects within the search area have either been withdrawn, cancelled or decision expired, and as such these projects are not proceeding and have not been included in Table 5.5. These include:

- Electricity Transmission Line (EPBC 2001/380). Assessment completed (controlled action) prior to the project being withdrawn.
- Nava-1 Cable System (EPBC 2001/510). Assessment completed (controlled action) prior to the project being withdrawn.
- SA-NSW Electricity Interconnector, Monash-Robertstown Section (EPBC 2002/726). Assessment completed (controlled action) prior to the project being withdrawn.
- Temporarily disconnect nine wetlands from the Murray River for drought management (EPBC 2007/3496). Assessment completed (controlled action) prior to the project being withdrawn.
- Worlds End Wind Farm (EPBC 2006/2764) has not been constructed and is yet to be officially withdrawn (decision status has expired).
- Proposed Wind Farm (EPBC 2008/4555). Assessment completed (controlled action) prior to the project being withdrawn.
- Stony Gap Wind Farm (EPBC 2012/6340). Assessment completed (controlled action) prior to the project being withdrawn.
- MARA Team Testing (2024/09849). Cancelled.

Table 5.5: Existing EPBC Referral applications within 10 km, 25 km and 50 km of the GNWF and/or within the PBTL extent of occurrence

Title of referral and reference number[1, 2]	Assessment stage and/or description	Referral outcome	Potential or known impacts to EPBC listed threatened species and/or communities[3]
Within 10 km buffer (from GNWF)			
Hallett Wind Farm (EPBC 2004/1715)	Completed	Not Controlled	Up to 160 WTGs and associated infrastructure with a total clearance of approximately 54.62 ha, potentially impacting: • Silver Daisy Bush (*Olearia pannosa* ssp *pannosa*) (known). No impact as *Eucalyptus bicostata* vegetation association avoided by development. • Lowly Greenhood Orchid (*Pterostylis despectans*) (potentially occurring). No impact as *Eucalyptus odorata* vegetation association avoided by development. • Pygmy Blue-Tongue Lizard (*Tiliqua adelaidensis*) (potentially occurring). Surveys conducted for this species in November 2003 and March 2004 did not detect the species, despite the investigation of over 250 spider holes in suitable habitat types. It was considered that if the species is present, it would be at a low density. • Flinders Worm Lizard (*Aprasia pseudopulchella*) (potentially occurring). This species was not found during surveys conducted within the project area, though it was considered likely that this species was abundant across the project area occurring in native and exotic Grassland. • Plains Wanderer (*Pedionomus torquatus*) (potentially occurring). It was considered unlikely that the Plains-wanderer would be common within any of the proposed cluster sites. • Some areas of *Triodia scariosa* ssp. *bunicola* and *Lomandra multiflora* ssp. *dura* Tussock Grassland were noted as occurring in some discrete areas within the project area. No significant impacts to MNES were expected as a result of the project.
Substation for Hallet Hill Wind Farm (EPBC 2007/3535)	Completed	Not Controlled	Development of a substation approximately 4.4 km west of the township of Mt Bryan, with a total disturbance footprint of approximately 0.5 ha for the substation and approximately 2 ha for the feeder lines and access track entering the substation. Potential impacts to relevant MNES include: • Potentially PBLT as the species is known to occur in the region, but was not detected on-site, despite extensive searching in the potential habitat areas in 2003, 2004 and May 2007. Although no PBTL were detected, there is some possibility of the species occurring in low densities. Some development is proposed in suitable habitat for this species, such as the *Lomandra multiflora* ssp. *dura* Very Open Tussock Grassland and the *Austrostipa* sp. (Spear-grass) +/- *Themeda triandra* (Kangaroo Grass) Grassland. • The Fork-tailed Swift (*Apus pacificus*) is the only listed migratory species, which was considered likely to occur over the project area. Others are members of listed families. The Fort-tailed Swift is aerial during its stay within Australia, however, may pass through the proposed wind farm area. No significant impacts to MNES were expected as a result of the project.
Wind Farm and Transmission Line, Mt Bryan, SA (EPBC 2009/5025)	Post-Approval	Not Controlled (Particular Manner)	Up to 38 WTGs, a substation and associated infrastructure approximately 3-7 km east of the township of Hallett. The total area to be disturbed by the transmission line corridor is approximately 7.6 ha. Potential impacts to relevant MNES include: • approximately 0.58 ha of disturbance of INTG • Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia. No areas of Peppermint Box Grassy Woodland of South Australia were located within the survey area. Isolated trees and a small patch of Peppermint Box (*E. odorata*) occur within the infrastructure corridor, however little understory exists, hence the patch does not meet the criteria of the threatened Peppermint Box Grassy Woodland ecological community. • Flinders Ranges Worm Lizard (*Aprasia pseudopulchella*). This species was not detected during field surveys, however, the entire project area was considered potential habitat for the FRWL. • PBTL. There is a known population less than 5 km from a proposed turbine location, within Hard Mat-rush (*Lomandra multiflora* ssp. *dura*) and Spear Grass (*Austrostipa* sp.)/Wallaby Grass (*Austrodanthonia* sp.) Tussock Grasslands. Approximately 159.3 ha of potential Pygmy Blue-tongue Lizard habitat was identified within the wind farm site boundary. It was also considered possible that PBTL are present within the non-cropped areas of the transmission line corridor. It is expected that a number of PBTL would be observed with a more detailed survey of the wind farm site, but at low density. No significant impacts to MNES were expected as a result of the project should the project be undertaken as defined in the referral.
Willogoleche Wind Farm, SA (EPBC 2011/5850)	**Post-Approval**	**Controlled Action**	Up to 37 WTGs and associated infrastructure located approximately 3.5 km to the west of the town of Hallet. (Development of the 26-turbine wind farm on the site was previously determined a non-controlled action under the EPBC Act on 9 September 2004 (EPBC 2004/1715)). The total proposed area of the development footprint is 29 ha. Potential impacts to relevant MNES include: • 0.82 ha of INTG • Native Grasslands that exist in the vicinity of the proposed site could provide suitable habitat for PBTL and the FRWL, however, no nationally threatened fauna species were recorded at the site during the surveys.
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia (EPBC 2015/7522)	Completed	Not Controlled Action	To release a second strain (designated K5) of rabbit haemorrhagic disease virus (RHDV) to improve the biological control of the introduced European rabbit across the rabbit's distribution in Australia (i.e. The area is the southern two thirds of the Australian continent: the entire area of distribution of the European rabbit (*Oryctolagus cuniculus*) in Australia). No significant impacts to MNES were expected.
INDIGO Marine Cable Route Survey (INDIGO) (EPBC 2017/7996)	Post-Approval	Not Controlled Action (Particular Manner)	Desktop Cable Route Study to identify a potential marine route for any offshore linear project (such as a fiber optic submarine cable). No significant impacts to MNES were expected.
INDIGO Central Submarine Telecommunications Cable (EPBC 2017/8127)	Completed	Not Controlled Action	Supply and installation of a submarine fibre optic cable from Perth to Sydney. No significant impacts to MNES were expected.

Title of referral and reference number[1, 2]	Assessment stage and/or description	Referral outcome	Potential or known impacts to EPBC listed threatened species and/or communities[3]
SA-NSW Energy Interconnector, Robertstown to NSW Border, SA (EPBC 2019/8468)	**Post-Approval**	**Controlled Action**	Construction and operation of 190 km transmission line (Project EnergyConnect) between Robertstown and the SA-NSW border with a total disturbance footprint of approximately 1,330 ha, including a maximum clearance of: • 201 ha of habitat for Black-eared Miner (*Manorina flavigula melanotis*) • 250 ha of habitat for Regent Parrot (*Polytelis anthopeplus monarchoides*).
Goyder South Hybrid Renewable Energy Facility - Wind Farm 1b, 5 km south Burra (EPBC 2021/8957)	**Post-Approval**	**Controlled Action**	Up to 37 WTGs and associated infrastructure, including the following construction/clearance limits: • Clearance or no more than 31.35 ha of PBTL habitat within the project area • Clearance of any areas of the Peppermint Box (*E. odorata*) Grassy Woodland of South Australia threatened ecological community within the project area.
Goyder South Hybrid Renewable Energy Facility - Wind Farm 1A, 10 km south Burra (EPBC 2021/8958)	**Post-Approval**	**Controlled Action**	Up to 38 WTGs and associated infrastructure, including the following construction/clearance limits: • Clearance of no more than 8.30 ha of PBTL habitat within the project area • Clearance of no more than 18 individual plants of Trailing Hop-bush (*Dodonaea procumbens*) within the project area • Clearance of no more than 12.67 ha of the INTG TEC within the project area.
Goyder South Hybrid Renewable Energy Facility - OTL and Substation, Worlds End (EPBC 2021/8959)	**Post-Approval Under Variation**	**Controlled Action**	Construction and operation of an overhead transmission line and substation, including the following clearance/construction limits: • Clearance of no more than 1.36 ha of INTG TEC within the project area • Clearance of no more than 3.88 ha of PBTL habitat within the project area • Translocate and/or relocate or otherwise impact more than 60 PBTLs • No impact to any Spiller's Wattle (*Acacia spilleriana*) or Peep Hill Hop-bush (*Dodonaea subglandulifera*), including within the locations shown in the maps (presented in the approval decision) • No impact any protected matter, except for what is allowed under condition 1a, 1ab, 1ac, or 1b within the project area or within access tracks.
Goyder South Hybrid Renewable Energy Facility - Battery, 5 km north Robertstown (EPBC 2021/8960)	Completed	Not Controlled	Construction and operation of a large lithium-ion battery facility (to 900MW/1800MWh - 2 hours) and associated electrical equipment, approximately 5 km north-east of Robertstown. No significant impacts to MNES were expected as a result of the project.
Morgan Whyalla Pipeline No.1 Renewal – Stage 1 (EPBC 2022/09438)	**Post Approval**	**Controlled Action**	Replacement of up to six sections of the Morgan Whyalla Pipeline between Morgan and Hanson, and includes the following clearance limits: • Clearance of no more than 33.12 ha of Southern Whiteface habitat • Clearance of no more than 12.75 ha of South-eastern Hooded Robin habitat • Clearance of no more than 13.98 ha of MBC TEC.
Razorback Iron Ore Project, SA (EPBC 2024/09787)	**Assessment Approach Determined by accredited assessment under the *Mining Act 1971* (SA)**	**Controlled Action**	Proposed open-pit iron ore mine in the Braemar region, approximately 240 km north-east of Adelaide, with a disturbance footprint of approximately 8,443.67 ha, including provision of an overhead transmission line extending southward to Bundey Substation. Potential significant impacts (including those listed in the approved variation of proposal dated 30 January 2025) to: • 1.85 ha of MBC of the MDDB TEC • *Acacia carneorum* (Needle Wattle) – considered unlikely to occur, thus no significant residual impacts expected. • *Codonocarpus pyramidalis* (Slender Bell-fruit) – up to 1.4 ha of potentially suitable habitat, however, no significant residual impacts expected. • *Aphelocephala leucopsis* (Southern Whiteface) – up to 1,484.8 ha of potentially suitable habitat (foraging and breeding across a number of VAs), however, no significant residual impacts expected. • *Falco hypoleucos* (Grey Falcon)- up to 8,422.7 ha of potentially suitable foraging habitat, however, no significant residual impacts expected. • *Lophochroa leadbeateri* (Major Mitchell's Cockatoo) – up to 1,228.3 ha of potentially suitable foraging habitat, however, no significant residual impacts expected. • *Melandryas cucullata cucullata* (South-eastern Hooded Robin) – up to 8,422.7 ha of potentially suitable habitat (foraging and breeding across a number of VAs), however, no significant residual impacts expected.
Solar River Project (EPBC 2024/09922)	Controlled Action, under assessment by PD	Pending	Construction and operation of a 230 MW solar array, up to 2,048 MWh BESS and will involve the development of an overhead transmission line to connect the array to the existing Bundey Substation, with a disturbance footprint of 621.37 ha. Potential impacts to relevant MNES include: • A total of 0.875 ha of MBC TEC habitat is proposed to be permanently cleared and 1.451 ha will be temporarily cleared, i.e. total of 2.21 ha. • A total of 0.115 ha of the Plains Mallee Box Woodland (PMBW) TEC is proposed to be cleared. (temporary clearance but still constitutes a direct impact). • 34.78 ha of Southern Whiteface (*Aphelocephala leucopsis*) habitat • 29.01 ha of South-eastern Hooded Robin habitat.

Title of referral and reference number[1, 2]	Assessment stage and/or description	Referral outcome	Potential or known impacts to EPBC listed threatened species and/or communities[3]
10 km to 25 km buffer (from GNWF)			
Clare Valley water supply scheme (EPBC 2003/996)	Completed	Not Controlled (Particular Manner)	Construction and operation of a 83 km below-ground pipeline and associated infrastructure, including water storage tank, booster pump and new pump station. Potentially impacted species included: • Spalding Blown Grass (*Agrostis limitanea*) • Krefft's Tiger Snake (*Notechis ater ater*). No significant impacts to MNES were expected as a result of the project should the project be undertaken as defined in the referral.
Wind farm & infrastructure (EPBC 2005/1998)	Completed	Not Controlled	Construction and operation of 39 WTGs and associated infrastructure at Waterloo, approximately 30 km south of Clare. No significant impacts to MNES were expected as a result of the project.
Waterloo Wind Farm Stage 2 (WLWF2), SA (EPBC 2012/6451)	Post-Approval	Not Controlled (Particular Manner)	Up to 6 WTGs approximately 35 km south-east of Clare, including the following provisions: • No clearance of Peppermint Box (*E. odorata*) on site, and that buffers are implemented as described within the referral decision. No significant impacts to MNES were expected as a result of the project should the project be undertaken as defined in the referral.
Whyte Yarcowie Wind Farm (EPBC 2024/09961)	**Awaiting Delegate Decision** **Invitation for Public Comment on Referral**	**Controlled Action**	Up to 83 WTGs, ~18 km transmission line, one BESS, and associated infrastructure approximately 20 km north of Hallett. A total disturbance footprint within the project area of approximately 645.814 hectares and includes: • Impact up to 49.31 ha of INTG TEC • Impact up to 450.72 ha of PBTL habitat (known or likely) • Impact up to 139.61 ha of SWF habitat.
25 to 50 km buffer (from GNWF)			
Construction and operation of electrical connection line for Barunga Wind Farm (EPBC 2004/1803)	Completed	Not Controlled	Construction and operation of a 132kV and 33kV electrical connection line and four substations to service the Barunga Wind Farm. No significant impacts to MNES were expected as a result of the project.
Wind Energy Facility (EPBC 2008/4303)	Completed	Not Controlled	Up to 70 WTGs approximately 3 km north of Gulnare. No significant impacts to MNES were expected as a result of the project.
Construction of four dams for use by livestock and household (EPBC 2008/4536)	Post Approval	Not Controlled (Particular Manner)	Construction of four dams with a total disturbance footprint of 400 ha, potentially impacting: • PBTL, known to occur at/near dam site 1 • Grasslands, however, not likely to be classified as INTG TEC No significant impacts were considered plausible for PBTL or INTG TEC. A final clearance survey was required to be undertaken for PBTL by the Recovery Team to ensure no PBTL were in the vicinity of Dam 1, with any identified PBTL approved for relocation within the project area under the approval of the Recovery Team.
North Brown Hill Wind Farm (EPBC 2008/4666)	Post-Approval	Not Controlled (Particular Manner)	Up to 63 WTGs and associated infrastructure. No significant impacts to MNES were expected as a result of the project should the project be undertaken as defined in the referral.
Hornsdale Wind Farm, SA (EPBC 2012/6573)	**Post-Approval**	**Controlled Action**	Up to 105 WTGs and associated infrastructure including a substation, north of Jamestown. A number of MNES were considered known or likely to occur including: • Silver Daisy-bush (*Olearia pannosa* subsp. *pannosa*) (avoided by exclusion zone) • PBTL (avoided by exclusion zones and use of disturbed/cropped pastures) No significant impacts to MNES were expected as a result of the project, however: • A 3.1 ha offset was required to offset potential for indirect impacts to PBTL associated with the clearance of approximately 300 m to realign a road of 'possible' PBTL habitat near T83.
Riverine Recovery Project - Wetlands Project Phase 1B, South Australia (EPBC 2013/7045)	Completed	Not Controlled Action	To improve ecological conditions in a suite of wetlands of various types along the River Murray by improving hydrological management.
Twin Creek Wind Farm, 80 km north-east of Adelaide, SA (EPBC 2018/8208)	**Under assessment by PD, assessment active**	**Controlled Action**	Up to 51 WTGs and associated infrastructure, including a substation and BESS, approximately 10 km north of Kapunda. Potential significant impact to: • 30.78 ha of likely PBTL habitat
Carmody's Hill Wind Farm (EPBC 2020/8790)	Completed	Not Controlled	Up to 45 WTGs and associated infrastructure approximately 7 km east of Georgetown. No significant impacts to MNES were expected as a result of the project.
Horrocks Highway Safety Upgrade – Rhynie (EPBC 2022/09309)	Completed	Not Controlled Action	Safety improvement works for a 1.14 km section of the Horrocks Highway, south of Rhynie, including • impacts to approximately 1,032m^2 (0.10 ha) of Class B Peppermint Box Grassy Woodland TEC.

Title of referral and reference number[1, 2]	Assessment stage and/or description	Referral outcome	Potential or known impacts to EPBC listed threatened species and/or communities[3]
>50 km from GNWF, but considered within current known extent of occurrence of PBTLs[4]			
Barunga Wind Farm (EPBC 2004/1357)	Completed	Not Controlled	Up to 130 WTGs and associated infrastructure, with the project to be staged (one grouping for 85 WTGs and the other for up to 45 WTGs), west of Snowtown. No significant impacts to MNES were expected as a result of the project.
Salvage of disused railway infrastructure (EPBC 2007/3332)	Completed	Not Controlled	Removal and salvage of existing Peterborough-Eurelia Railway Line, with land to be reinstated. No significant impact to MNES were considered with the exception of two heritage listed items, both which are not relevant to MNES within this preliminary document.
Wetland Drought Management: Temporary disconnection of the River Murray Wetlands (EPBC 2007/3564)	Completed	Not Controlled Action	To temporarily disconnect from the River Murray, 7 permanent connected wetlands as part of South Australia's response to drought, resulting in an evaporative water saving of 46 GL on an annual basis. The temporary strategy was likely to impact three species listed under the EPBC Act, and a number of listed species under the NPW Act, however, no significant impacts were expected.
North Brown Wind Farm (EPBC 2008/4666)	Post Approval	Not Controlled (Particular Manner)	Up to 63 WTGs and associated infrastructure approximately 12 km south-east of Jamestown, potentially impacting: • INTG TEC • PBTL • FRWL No significant impacts to MNES were expected as a result of the project should the project be undertaken as defined in the referral.
Walk the Yorke Leisure Trail Project (EPBC 2013/7059)	Completed	Not Controlled	Provision for 500 km of continuous shared walking/cycling leisure trail around the coastline of the Yorke Peninsula. No significant impact to MNES were considered likely. No significant impacts to MNES were expected as a result of the project.

[1] All nearby referrals are within the South Australian jurisdiction.

[2] Projects assessed as Controlled Actions have been highlighted in bold text.

[3] All relevant information derived from publicly available supporting documents via the EPBC Act Public Portal (DCCEEW 2025d), with the exception of Goyder South Renewable Energy Facility projects (EPBC 2021/8957, 2021/8958, and 2021/8959) where data has been provided by Neoen.

[4] PBTLs extent of occurrence derived from sensitised data available from ALA Spatial Portal (ALA 2025).

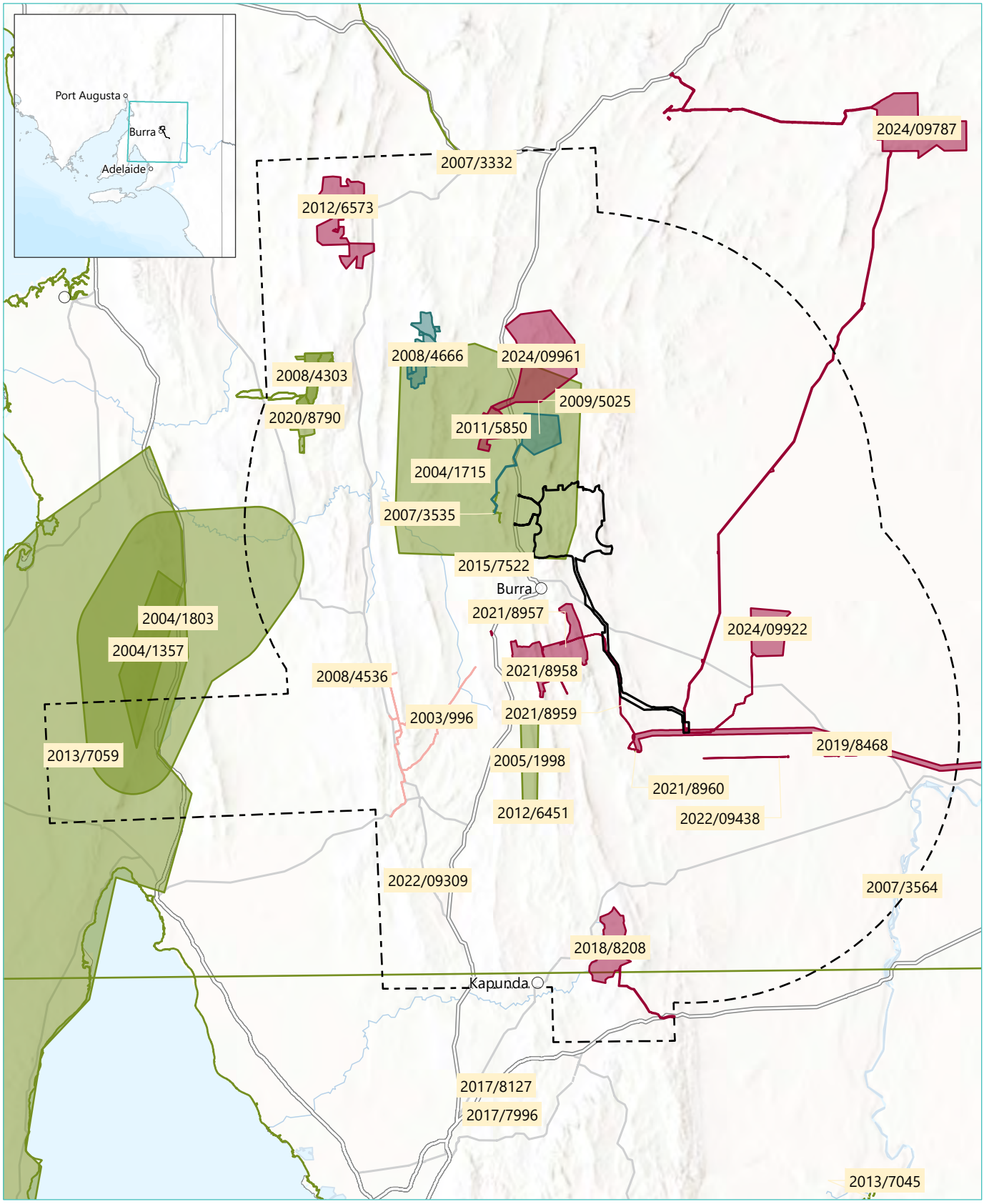


Figure 5.3: All known EPBC Act referred projects within 50 km of the Goyder North Wind Farm and/or within Pygmy Blue-tongue Lizard Extent of Occurrence

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5.4.1 Cumulative Impacts to MNES Relevant to GNWF

The assessment of cumulative impacts from those projects which have been considered as likely to have a significant impact on MNES (i.e. 10 Controlled Action projects) potentially relevant to the GNWF is summarised further in Table 5.6 below, as cumulatively these projects have the potential to result in the disturbance or clearance of habitat for MNES on a broader/regional scale when assessed collectively.

It should be noted that potential impact areas (presented in hectares) for individual MNES are not confirmed for all projects that have not yet commenced construction (e.g. some referred projects may be withdrawn or cancelled).

It should also be noted that the GNWF is a highly efficient energy generation project with a world class wind resource that has a strong likelihood of proceeding post approvals Project's competitiveness and the external support and prioritisation it has received. External support and prioritisation of the project is demonstrated by:

- Securing of a signed Power Purchase Agreement to sell the power from the Project to an industrial customer, underpinning the Project's business case.
- GNWF is the only wind generation project in South Australia to be declared a Priority Project on the National Renewable Energy Priority List by DCCEEW. Projects were selected that support the integration of renewables into the grid, with selection criteria encompassing environment, heritage, regional economic importance and community engagement, amongst others (DCCEEW 2025h).
- GNWF has been awarded a Capacity Investment Scheme contract with DCCEEW, only one of two wind farms to do so in South Australia[1].

Cumulative impacts on fauna should consider a range of factors, such as the distributional ranges of different species, and include:

- Sedentary fauna (e.g. reptiles, some mammal species, some bird species): Risks exist for local portions of the overall population of these species whose home range coincides with projects deemed likely to have a significant impact. For example, the Southern Whiteface (*Aphelocephala leucopsis*) is considered to be a largely sedentary species, maintaining a relatively localised home range in habitat with low tree densities with a herbaceous understory litter cover (DCCEEW 2023a). As such, only those individuals whose home ranges intersect with wind farms and that have flight heights of a minimum of ~20 m are at risk of turbine collisions, while the majority of the population is at no risk from this source at all (EPHC 2010). However, it should be noted that no threatened fauna species listed under the EPBC Act considered to be sedentary have been recorded as flying at heights equivalent with the minimum rotor sweep (i.e. 20 m above ground) within the GNWF Project Area.

[1] This contract forms part of the commitments made between the state and federal governments in their Renewable Energy Transformation Agreement. This Federal, but state-supported, scheme aims to help deliver the 82% renewable energy by 2030 target, support the transition from ageing coal power and put downward pressure on electricity prices.

- Migratory species: These species often migrate along narrow flyways within their non-breeding range. Therefore, the risk is high as large numbers of the population, or the entire population, may pass through multiple wind farm sites during an annual migratory cycle (i.e. Orange Bellied Parrot).
- Nomadic birds and bats: These species can be cryptic or difficult to observe and thus it can be difficult to quantify.

Projects that have received a referral outcome of controlled action, including controlled actions currently under assessment, and which impact MNES potentially relevant to GNWF have been included in Table 5.6 and Table 5.7 and are displayed relative to the GNWF Project Area in Figure 5.4.

It should be noted that the manner in which MNES surveys and assessments have been undertaken for other projects described below cannot be verified, and that impacts as listed below are based upon information provided by the proponent or by the Commonwealth in the Decision Approval notices.

Table 5.6: Projects with potential significant impacts to MNES which are relevant to GNWF

Title of referral and reference number	Referral outcome	Proximity to GNWF	Disturbance Footprint (ha)[1]	Impact on EPBC listed threatened species or communities relevant to GNWF
Willogoleche Wind Farm, SA (EPBC 2011/5850)	Controlled Action	~12 km north-west of WF (not including access roads)	29	0.82 ha of INTG
Goyder South Hybrid Renewable Energy Facility - Wind Farm 1b, 5 km south Burra (EPBC 2021/8957)	Controlled Action	~2.3 km to the west of the GNWF OTL	236.83	31.35 ha of PBTL habitat
Goyder South Hybrid Renewable Energy Facility - Wind Farm 1A, 10 km south Burra (EPBC 2021/8958)	Controlled Action	~8.3 km to the west of the GNWF OTL	224.38	8.30 ha of PBTL habitat No more than 18 individual Trailing Hop-bush 12.67 ha of INTG TEC
Goyder South Hybrid Renewable Energy Facility - OTL and Substation, Worlds End (EPBC 2021/8959)	Controlled Action	Sections of this OTL run in parallel with proposed GNWF OTL	Substation: 14.7 OTL: 16.17	1.36 ha of INTG TEC 3.88 ha of PBTL habitat Translocate and/or relocate or otherwise impact more than 60 PBTLs
Morgan Whyalla Pipeline No.1 Renewal – Stage 1[2] (EPBC 2022/09438)	Controlled Action	~10 km west of OTL, and ~5.5 km south-east of Bundey Substation	62.54	33.12 ha of SWF habitat 12.75 ha of South-eastern Hooded Robin habitat 13.98 ha of MBC TEC
Razorback Iron Ore Project, SA (EPBC 2024/09787)	Controlled Action, Assessment Approach Determined by accredited assessment under the Mining Act 1971 (SA)	Abuts southern part of OTL and extends north-east of the Project Area	6,535.42 (inc. buffers)	1.85 ha of MBC of the MDDB TEC 1.4 ha of potentially suitable Slender Bell-fruit habitat 1,484.8 ha of SWF habitat 8,422.7 ha of Grey Falcon foraging habitat 8,422.7 ha of South-eastern Hooded Robin habitat
Solar River Project (EPBC 2024/09922)[2]	Controlled Action, under assessment by PD[3]	~20 km north-east of OTL near Bundey Substation / ~28 km south-east of WF	Solar facility: 589.83 OTL: 12.90	0.86 ha of MBC TEC 34.78 ha of SWF habitat 29.01 ha of South-eastern Hooded Robin Habitat

Title of referral and reference number	Referral outcome	Proximity to GNWF	Disturbance Footprint (ha)[1]	Impact on EPBC listed threatened species or communities relevant to GNWF
Whyte Yarcowie Wind Farm (EPBC 2024/09961)	Controlled Action, under assessment by PD[3]	~20 km north of GNWF	645.81	49.31 ha of INTG TEC 450.72 ha of PBTL habitat (known or likely) 139.61 ha of SWF habitat
Hornsdale Wind Farm, SA (EPBC 2012/6573)	Controlled Action	~52 km north-west of GNWF	37	~0.5 ha of PBTL possible PBTL habitat
Twin Creek Wind Farm, 80 km north-east of Adelaide, SA (EPBC 2018/8208)	Controlled Action, under assessment by PD[3]	~35 km south of the GNWF OTL	90	30.71 ha of likely PBTL habitat

[1] Disturbance Footprint area derived from publicly available data via the EPBC Act Public Portal (DCCEEW 2025d), with the exception of Goyder South Renewable Energy Facility projects (EPBC 2021/8957, 2021/8958, and 2021/8959) where data has been provided by Neoen. Note some areas are provided through the projects referral, but may have been updated at a later date through a variation or preliminary documentation.

[2] All controlled actions listed within this table are within the NYLB area with the exception of these projects which principally or wholly occur within the MRLB area.

[3] PD refers to preliminary documentation.

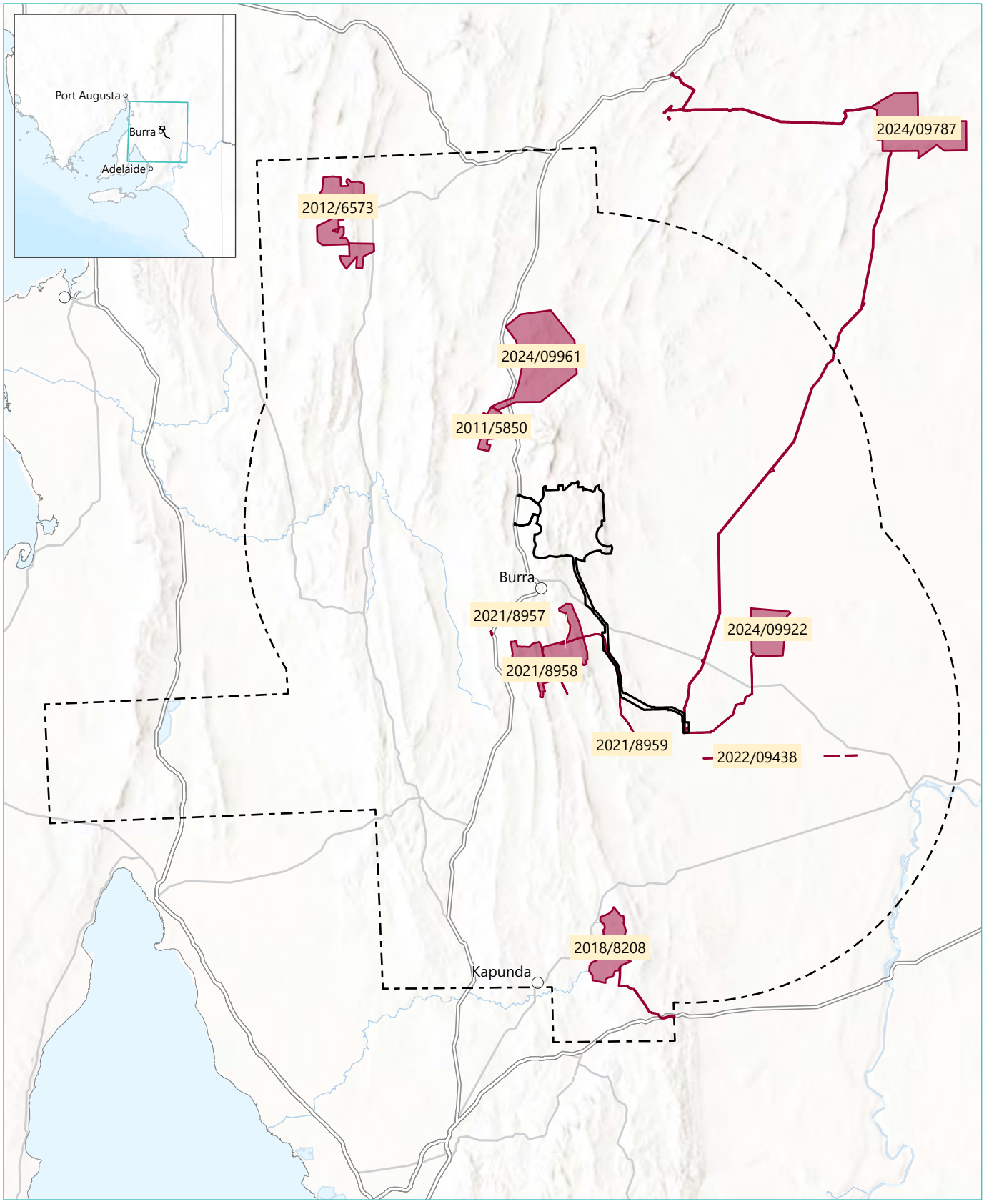


Figure 5.4: EPBC Act controlled actions within 50 km of the Goyder North Wind Farm and/or within Pygmy Blue-tongue Lizard Extent of Occurrence

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Table 5.7: Extent (ha) of potential or known impacts on MNES or MNES habitat which are relevant to GNWF from projects within 50 km[1]

Habitat or TEC impacted	Willogoleche WF	GSWF 1B	GSWF 1A	GS OTL and substation	Morgan Whyalla Pipeline Stage 1	Solar River Project*	GNWF	Whyte Yarcowie WF*	Hornsdale WF	Twin Creek WF*	Razorback Iron Ore Project	Total (ha)
INTG TEC	0.82	-	12.67	1.36	-		6.14 (Class B)	49.31	-	-	-	70.30
MBC TEC	-	-	-	-	13.98	0.86	0.76*** (OTL only)	-	-	-	1.85	17.45
Pygmy Blue-tongue Lizard	**	31.35	8.30	3.88	-	-	368	450.72	~0.5	30.71	-	893.46
South-eastern Hooded Robin	-	-	-	-	12.75	29.01	41.07***	-	-	-	8,422.7***	8505.53
Southern Whiteface	-	-	-	-	33.12	34.78	57.97***	139.61	-	-	1,484.8***	1,750.28
Flinders Ranges Worm-lizard	**	-	-	-	-	-	153.10***	-	-	-	-	153.10
Blue-winged Parrot	-	-	-	-	-	-	471.87***	-	-	-	-	471.87
Diamond Firetail	-	-	-	-	-	-	31.42***	-	-	-	-	31.42
Fork-tailed Swift	-	-	-	-	-	-	-	-	-	-	-	-
Spiller's Wattle	-	-	-	-	-	-		-	-	-	-	-
Trailing Hop-bush	-	-	18 individual plants only	-	-	-	-	-	-	-	-	18 individual plants

* Indicative area (ha) only, project still under assessment.

** Potentially suitable habitat for these species, however, species not detected during surveys.

*** These areas of impact include all areas of potential habitat (inclusive of, but not limited to critical habitat) where impacts were not considered to have a significant residual impact according to the impact assessments undertaken for those projects. These have been included here as potentially part of the cumulative impact from multiple projects.

[1] Note a range of other MNES were considered for these projects, however, only those MNES relevant to GNWF have been included here.

Note: these figures are based on the publicly available Referral information, and the projects have not necessarily been approved, and / or revisions to the impact areas may be in process.

Cumulatively, these projects have the potential to result in the disturbance or clearance of habitat for a number of MNES that are relevant to the GNWF. However, these outcomes are not certain, with some projects still subject to regulatory assessment and approval, with proponents continuing to progress towards development. It should also be noted that for many of these projects, a number of impacts are likely to be subject to temporary disturbance rather than permanent disturbance, with some disturbance expected to be short-term only (e.g. these areas may be amenable to revegetation), and thus may not accurately reflect long-term impacts (i.e. long-term impacts may be less than what is shown in the Table 5.7 and described below). Where impacts from projects are considered significant following the full assessment process, offsets would be required for any impacts which actually eventuated. A summary of the potential cumulative impacts for MNES relevant to GNWF, including other projects which are yet to be assessed, is provided below.

5.4.1.1 INTG TEC

For the Iron-grass Natural Grassland of South Australia TEC, cumulative impacts result in the potential disturbance or clearance of approximately 70.30 ha for all known projects that occur either wholly or partially within a 50 km buffer of the GNWF. Due to intensive efforts and scrutiny to minimise impacts to INTG TEC throughout design phase to date, GNWF is now only expected to contribute approximately 6.14 ha of clearance of Class B INTG TEC (of which, 2.43 ha is Permanent Disturbance, and 3.72 ha is Temporary Disturbance). This equates to approximately 8.73% of the cumulative clearance of INTG of all known projects within a 50 km radius of the GNWF. Lomandra Grassland, including likely TEC is found more broadly in the Mid-North region, outside of the Project Area, with an estimated 50,000 ha in the region, of which an estimated 5,000 ha constitutes the TEC (Turner 2012). As such, the cumulative clearance of approximately 70.30 ha of INTG TEC for all known projects represents approximately 1.41% of the entire mapped INTG TEC in the region, and approximately 0.14% of Lomandra Grassland (all condition classes) in the region. It should be noted that these clearance areas for all known projects are associated with INTG TEC within the Condition Class A or Condition Class B only, and do not account for any Condition Class C or other Lomandra vegetation communities.

5.4.1.2 MBC of the MDD TEC

For the Mallee Bird Community of the Murray Darling Depression Bioregion TEC, cumulative impacts result in the potential disturbance or clearance of approximately 17.45 ha for all known projects that occur either wholly or partially within a 50 km buffer of the GNWF. The GNWF expected to contribute approximately 0.76 ha (of which 0.44 ha is Permanent Disturbance and 0.32 ha is Temporary Disturbance). This equates to approximately 4.35% of the cumulative clearance of MBC of the MDD TEC of all known projects within a 50 km radius of the GNWF. This TEC is not expected to be significantly impacted by the GNWF (as reflected by the significant impacts assessment against the Significant Impact Guidelines 1.1 (DotE 2013a) in Section 7.16.3).

5.4.1.3 PBTL

For Pygmy Blue-tongue Lizard, cumulative impacts are likely to result in the disturbance or clearance of approximately 893.46 ha for all known projects that occur within the PBTLs extent of occurrence (pending approval of some projects), with the GNWF expected to contribute approximately 368 ha or 41% of the cumulative clearance of known of likely habitat for this species. It should be noted that the areas categorised as known or likely PBTL habitat may be considered to appear larger for the GNWF than other known projects in the region, due to the extensive survey effort that has been undertaken within the GNWF which has likely exceeded efforts of other projects. The survey effort conducted at GNWF has also notably occurred during a number of years of particularly favourable conditions for PBTL, where the population may have been near the upper carrying capacity of the environment, and potentially extended into areas that would normally be considered sub-optimal habitat.

The current accepted extent of occurrence for the species is estimated to be 7,000 km^2 / 700,000 ha (Delean et al. 2013 cited in DCCEEW 2023d). The most recent area of occupancy calculated for this species is estimated to be approximately 500 km^2 / 50,000 ha (Fenner et al. 2018 cited in DCCEEW 2023d), and therefore the cumulative disturbance or clearance as a result of all known projects that may significantly impact upon the species (893.46 ha) represents approximately 1.78% of the species' total AOO.

5.4.1.4 South-eastern Hooded Robin

For the South-eastern Hooded Robin, cumulative impacts are likely to result in the disturbance or clearance of approximately 8,505.53 ha for all known projects that occur either wholly or partially within a 50 km buffer of the GNWF, with the GNWF expected to contribute approximately 41.07 ha or 0.48% of the cumulative clearance of potential habitat for this species. The subspecies' extent of occurrence is estimated to be approximately 1,200,000 km^2 / 120,000,000 ha with an AOO of approximately 30,000 km^2 / 3,000,000 ha (Ford et al. 2021 cited in DCCEEW 2023b). The cumulative disturbance or clearance as a result of all known projects that may significantly impact upon the species in proximity to the GNWF is approximately 28.35% of the species total AOO. Despite extensive ecological surveys across the Project Area, this species has not been recorded within the WF or OTL, however, it is noted there are several records of the species occurring in land adjacent to the Project Area. As a result, this species is not expected to be significantly impacted by the GNWF (as reflected by the significant impacts assessment against the Significant Impact Guidelines 1.1 (DotE 2013a) in Section 7.2.3).

5.4.1.5 Southern Whiteface

For Southern Whiteface, cumulative impacts are likely to result in the disturbance or clearance of approximately 1,750.28 ha for all known projects that occur either wholly or partially within a 50 km buffer of the GNWF, with the GNWF expected to contribute 57.97 ha or 3.31% of the cumulative clearance of potential habitat for this species (noting that the species was not considered by earlier projects which were assessed prior to its listing under the EPBC Act). The species entire AOO is estimated to be 70,000 km^2 / 7,000,000 ha across an EOO of 4,190,000 km^2 / 419,000,000 ha (DCCEEW 2023a). The AOO estimate for the south-east subspecies is 60,000 km^2 / 6,000,000 ha within an EOO 3,800,000 km^2 / of 380,000,000 ha (Garnett and Baker 2021). From a bioregional perspective the Flinders Lofty Block IBRA

Bioregion AOO is 4,400 km^2 / 440,000 ha (within an EOO of 116,885 km^2 / 11,688,500 ha), and the Murray Darling Depression IBRA Subregion AOO is 5,168 km^2 / 516,800 ha (within an EOO of 75,089 km^2 / 7,508,900 ha) (as calculated within ALA spatial portal using IBRA shapefile import, 0.02 degree grid (ALA 2025). As such, the clearance of approximately 1,750.28 ha of potentially suitable habitat for all known projects within a 50 km radius of the GNWF represents approximately 0.025% of the reported Area of Occupancy of the species broadly across Australia. Further, within the Flinders Lofty Block and Murray Darling Depression the species' AOO is estimated to be 440,000 ha and 516,800 ha (ALA 2025), representing a maximum of 0.40% and 0.34% respectively. For SWF, while the species is largely understood to be relatively sedentary and remain within a somewhat limited home range throughout the year, it should be noted that this species has broad habitat requirements. This species is not expected to be significantly impacted by the GNWF (as reflected by the significant impacts assessment against the Significant Impact Guidelines 1.1 (DotE 2013a) in Section 7.3.3), or by cumulative impacts from the projects considered here.

5.4.1.6 FRWL

For the Flinders Ranges Worm-lizard, no other known projects that occur either wholly or partially within a 50 km buffer of the GNWF have been identified as likely to result in significant impacts to this species. The GNWF is likely to result in the disturbance or clearance of up to approximately 153.10 ha of potential habitat (35.41 ha known habitat, and 117.69 ha of possible habitat). Temporary Disturbance is likely to result in a loss of or disturbance to the rocky surface layer and would be considered a permanent impact to this species. The AOO for the species is estimated to be approximately 196 km^2 / 19,600 ha (Chappel et al. 2017). The clearance of approximately 153.10 ha as a result of the GNWF represents approximately 0.78% of the species AOO. Of note, while many of the other projects as listed in Table 5.7 were likely to impact Flinders Ranges Worm-lizard habitat, these projects were not expected to significantly impact this species, and likewise, this species is not expected to be significantly impacted as a result of the GNWF (as reflected by the significant impact assessment against the Significant Impact Guidelines 1.1 (DotE 2013a) in Section 7.4.3), or by cumulative impacts from the other projects considered here.

5.4.1.7 Blue-winged Parrot

For Blue-winged Parrot, no other projects that occur either wholly or partially within a 50 km buffer of the GNWF have been identified as likely to result in significant impacts to this species (noting the species was only recently listed and therefore not assessed by earlier projects), and thus cumulative impacts to this species are based solely on potential impacts as a result of the GNWF, which results in the clearance of 471.87 ha of potential habitat for this species, including, 268.65 ha of Permanent Disturbance and 203.22 ha of Temporary Disturbance. It is noted that the species has not been recorded within the GNWF, and that the closet record (2001) to the GNWF is approximately 8.5 km to the south-east of the WF boundary and approximately 7 km east of the OTL at its nearest point within Red Banks Conservation Park (DEW 2025a). At best, the potential habitat within the GNWF represents potential foraging habitat only (i.e. no breeding or roosting habitat). The species extent of occurrence is estimated to be approximately 170,000 km^2 / 17,000,000 ha, with an area of occupancy of approximately 11,000 km^2 / 1,100,000 ha, as such the clearance of approximately 471.87 ha represents approximately 0.04% of the species AOO. As

such, this species is not expected to be significantly impacted by the GNWF (as reflected by the significant impacts assessment against the Significant Impact Guidelines 1.1 (DotE 2013a) in Section 7.5.3), or by cumulative impacts.

5.4.1.8 Diamond Firetail

For the Diamond Firetail no other known projects that occur either wholly or partially within a 50 km buffer of the GNWF have been identified as likely to result in significant impacts to this species, and thus cumulative impacts to this species are based solely on potential impacts as a result of the GNWF, which includes clearance of 31.42 ha of potential habitat for this species (17.91 ha of Permanent Disturbance and 13.50 ha of Temporary Disturbance). An area of approximately 3.45 ha within the Disturbance Footprint includes elements which contain features listed as critical habitat, including *Eucalyptus*, *Acacia* or *Casuarina* woodlands, open forests, and other lightly timbered habitats, and Low tree density, few large logs, and little litter cover but high grass cover for foraging, roosting, and breeding. However, despite extensive surveys the species has not been recorded within the GNWF, with the species only outside of GNWF, but within the search area during MBC targeted surveys along Black Peake Road, associated with *Eucalyptus porosa* open grassy woodland (VA1). Other records of the species occurring near the GNWF occur to the south or west of the GNWF, with only one record (2005) of the species occurring approximately 15 km to the north-east of the WF (DEW 2025a). The species has a large extent of occurrence which is estimated to be 1,500,000 km^2 and a moderate area of occupancy of approximately 25,000 km^2 / 2,500,000, as such the clearance of approximately 31.42 ha represents approximately 0.001% of the species AOO. As such, this species is not expected to be significantly impacted by the GNWF (as reflected by the significant impacts assessment against the Significant Impact Guidelines 1.1 (DotE 2013a) in Section 7.6.3), or by cumulative impacts associated with other projects considered here.

5.4.1.9 Fork-tailed Swift

For the Fork-tailed Swift, no other known projects that occur either wholly or partially within a 50 km buffer of the GNWF have been identified as likely to result in significant impacts to this species. The species is considered to be an almost exclusively aerial, non-breeding migrant to Australia, typically flying at heights between 1 m and 300 m, during the months between October to May. The species mostly occurs over dry and open habitats including woodland, shrubland, heath and saltmarsh. However, they may also occur over treeless grassland and open farmland. They occasionally feed amongst treetops, but instances of birds using terrestrial habitat while in Australia are rare. One Fork-tailed Swift was observed flying briefly over grassland above the WF during targeted BBUS surveys for the GNWF in summer 2024. Four historical BDBSA records are reported within the search area for the GNWF ranging from 2006 to 2012. Given the aerial nature of this species, impacts to vegetation as a result of the Disturbance Footprint are unlikely to constitute impact, rather impacts are likely to be restricted to rotor-blade strike from WTGs during the operational phase of WF projects. This species is not expected to be significantly impacted by the GNWF (as reflected by the significant impact assessment against the Significant Impact Guidelines 1.1 (DotE 2013a) in Section 7.7.3), or by cumulative impacts associated with other projects considered here.

5.4.1.10 Spiller's Wattle

For Spiller's Wattle, no other known projects that occur either wholly or partially within a 50 km buffer of the GNWF have been identified as likely to result in significant impacts to this species. The species is typically found on rocky hills, commonly along watercourses and roadsides, with the current extent of occurrence estimated to be 1,800 km^2 / 180,000 ha. There are no current estimates of total population numbers for this species, however, most roadside populations are reported to consist of one or two plants (State Herbarium of South Australia as cited in DEWHA 2009b), Despite extensive surveys, including targeted surveys, one individual plant has been recorded in or near the GNWF; occurring on the verge of Gum Hill Road (the proposed access option), however, this this plant is unlikely to be impacted as a result of the GNWF. Whilst some suitable habitat occurs within the GNWF Development Envelope, current access designs indicate these areas will be avoided by the Disturbance Footprint. In addition, it is considered unlikely for additional records to be detected in the current Development Envelope based upon the species being readily identifiable and the extent of previous survey work. No records of this species are within the current GNWF Disturbance Footprint, and no impacts are expected to this species following the application of measures to avoid any potential indirect impacts caused by proximity to the Project Area. This species is not expected to be significantly impacted by the GNWF (as reflected by the significant impact assessment against the Significant Impact Guidelines 1.1 (DotE 2013a) in Section 7.8.3), or by cumulative impacts associated with the other projects considered here.

5.4.1.11 Trailing Hop-bush

For Trailing Hop-bush, only one other known project occurring either wholly or partially within a 50 km buffer of the GNWF has been identified as impacting this species; GSWF 1A, whereby the project received EPBC approval to clear no more than 18 individual plants of Trailing Hop-bush with the project area. For GNWF, despite extensive surveys, including targeted surveys, the species has not been recorded within the GNWF with the exception of within Mokota CP, where the species is protected from herbivore grazing. No records of this species are within the current GNWF Disturbance Footprint, and no impacts are expected to this species following the application of measures to avoid any potential indirect impacts caused by proximity to the Project Area. This species is not expected to be significantly impacted by the GNWF (as reflected by the significant impact assessment against the Significant Impact Guidelines 1.1 (DotE 2013a) in Section 7.12.3), or by the cumulative impacts from the projects considered here.

5.4.1.12 Other MNES

No other MNES are expected to be impacted, significantly or otherwise, as a result of the GNWF, and thus potential cumulative impacts are not considered further, i.e. the GNWF is unlikely to impact upon:

- *Acacia glandulicarpa* (Hairy-pod Wattle)
- *Codonocarpus pyramidalis* (Slender Bell-fruit)
- *Dodonaea subglandulifera* (Peep Hill Hop-bush)
- *Olearia pannosa* ssp. *pannosa* (Silver Daisy-bush)
- *Senecio megaglossus* (Superb Groundsel).

5.4.2 Mitigation Measures Relevant to Potential Cumulative Impacts on MNES

Neoen have invested in, and continue to commit to, a number of measures which broadly contribute to minimising the potential cumulative impacts as a result of combined development, including renewable energy facilities. These include:

- Continued investment in research initiatives (i.e. PBTL research plan) to resolve uncertainties around wind farm impacts and potential mitigation strategies (such as PBTL translocations/relocations), to aid in future decision making.
- Demonstrated significant and meaningful offset outcomes from previous projects (i.e. Worlds End Gorge NP – transferred 1,000 ha of previously privately owned agricultural land to the South Australian Government).
- Commitment to securing high-quality, on-ground offsets for the entire clearance associated with the GNWF for both Significant Environmental Benefit (SEB) Native Vegetation offset obligations (for which approximately half have already been secured) in addition to EPBC offset requirements. Neoen is also committed to rehabilitating all temporarily disturbed area as soon as practicable after clearance, for which offsets will also be established as an above and beyond measure to ensure a net environmental gain is achieved.
- Partnerships with conservation organisations. Neoen is currently developing a partnership framework with Nature Foundation to manage our Goyder North offsets and establish meaningful conservation research on threatened species, including Lomandra grasslands and PBTL as part of future offsets.
- Working with and contributing to local landscape boards such as the NYLB, and Murraylands and Riverlands Landscape Boards, to improve collaboration and knowledge sharing between private and government stakeholders, with a particular focus on threatened species management. Neoen are also exploring opportunities to support and enhance existing conservation programs that target restoration of Lomandra grasslands and PBTL in the region.
- Collaboration and sharing of survey data and knowledge with members of the PBTL Recovery Team to work together to optimise outcomes for PBTL.
- Studies during the planning phases on birds and bats that build knowledge for government and industry.
- Provision of data on bird strike and collision risk as a means to improve future decision making, potentially including outcomes of adaptive measures to reduce collision risk and other negative effects on avifauna, if implemented.
- Reduction in carbon emissions – offsetting carbon emissions generated across their 30-year lifespan in just two years of operation by replacing fossil-fuel based energy sources.

6 CONSIDERATION OF MITIGATION HIERARCHY

This section summarises the following section from the RFI:

> **4 Proposed avoidance, management and mitigation measures**
>
> b) For the PBTL, a comprehensive discussion of how all reasonable measures have been taken to avoid impacts to the PBTL, including the selection of the site and layout of access tracks and wind turbine generators.
>
> e) State the environmental and conservation objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing for each environmental issue.
>
> f) Details of pre-clearance, clearance and construction procedures, including pre-clearance surveys, to ensure that MNES are adequately detected and managed to minimise impacts (e.g., the translocation management protocols for specific species).
>
> g) Include a description of any rehabilitation or revegetation of temporarily disturbed areas. This should also address management, methodology, timing, duration and effort of rehabilitation works. Details of proposed revegetation activities should address Specific, Measurable, Achievable, Relevant and Timebound (SMART) commitments that deliver like-for-like vegetation and EPBC habitat outcomes.
>
> h) Include maps that illustrate the location of any proposed construction exclusion zones or buffer zones, and details on how these areas will be excluded, or protected
>
> i) Details of the vegetation or habitat to be retained must include the location and quantification of the total area, presence of protected matters, protection measures such as fencing and road underpasses, management measures and their suitability with respect to any protected matters present and any conservation arrangements.
>
> j) Provide details of ongoing research and monitoring programs to support an adaptive management approach and determine the effectiveness of the proposed mitigation measures.

The Mitigation Hierarchy involves the following, in order of importance: avoid, minimise, mitigate, offset. Following initial site selection (2.3.1), Neoen has been committed to applying the mitigation hierarchy throughout the planning and development phase of the Project, to minimise potential residual impacts on all MNES, and the broader environment (natural, built and social). Neoen is also committed to continual application of the mitigation hierarchy during all phases of the project, using best practice methods and investigating novel approaches to reducing impacts from the Project.

The below sections summarise how the mitigation hierarchy has been and will be applied, with further details for each sub-section provided in Project specific documents, including:

- Construction and Environmental Management Plan (and associated sub-plans).
- INTG Management Plan
- PBTL Management Plan

6.1 Avoid

6.1.1 Design

Avoidance of impact to MNES and other sensitive issues is achieved primarily during the design process. As stated previously (Section 2.3) the GNWF Project infrastructure layout has proceeded through a series of changes and adjustments through an iterative process of initial and then subsequent investigations, layout review and refinement, which has occurred a number of times as information became available from the engagement process, and as data has become available from specialist investigations and Neoen's own technical and construction advice. Over time, the infrastructure layout has been continually adjusted in response to:

- establishment of voluntary setbacks and policy-required setbacks;
- extensive consultation with neighbours, landowners, Council and other interest groups;
- specialist advice and the findings of specialist investigations and technical advisors; and
- consideration of commercial and technical requirements for energy and the electricity system.

Neoen have undertaken a significant number of technical investigations (see Section 2.3.2 and Section 3.1) during the planning phase to identify potential impacts of the proposed action on the environment and have adjusted the design, particularly the location and layout of infrastructure, as much as possible and practicable, to avoid and/or minimise impacts on the environment. Technical investigations which have been undertaken are detailed in Section 2.3.2 and Table 2.2, and in summary, cover the following aspects:

- noise
- visual amenity
- shadow flicker and blade glint
- flora and fauna
- heritage
- aeronautical impact assessment
- electromagnet interference assessment
- traffic impact assessment
- flood modelling
- contaminated land assessment.

Flora and fauna assessments for the Goyder North Project has enabled Neoen to identify and understand constraints, and potential impacts to flora and fauna, including MNES, and apply a risk mitigation to the design. All stages of the Goyder North Project design have been undertaken with consideration of vegetation mapping, threatened ecological community mapping and the known locations of threatened species populations and habitat, in particular, Iron-grass Natural Temperate Grassland, Mallee Bird Community of the Murray Darling Depression Bioregion and Pygmy Blue-tongue Lizard.

Through the design process, Neoen has effectively avoided impact to all known populations and individuals of threatened flora species. However, whilst every effort has been made to avoid MNES and other sensitive areas where possible, engineering and landscape constraints mean that some impacts (to fauna and a TEC) cannot be completely avoided.

Neoen has investigated a number of specific design measures to avoid (or minimise) impact to native vegetation, MNES and MNES habitat, summarised in the following section, with specific areas of avoidance relative to each MNES presented in the relevant location in Section 7.

6.1.1.1 Advanced civil design

Neoen has advanced their civil design particularly in the wind farm where impacts to INTG TEC and PBTL are concentrated to ensure that the Disturbance Footprint under application is refined and does not include an excessive buffer to account for potential blow out due to the topography (or other factors). This careful planning and design optimisation are beneficial as they help to minimise the ecological impacts under application and ensure that the construction contractors maintain the tension for minimising impacts and are environmentally sensitive in their detailed design finalisation and construction, adhering to high environmental standards. They must implement sustainable practices and reduce ecological impacts, for example in the temporary disturbance corridor at the outer extents of the road footprint which has been constrained to five metres either side and overlaps with underground electrical cable. This approach by Neoen fosters a culture of environmental stewardship and responsibility within the construction industry.

6.1.1.2 Alignment with existing infrastructure and cleared areas

Based on ecological mapping undertaken in early phase of design, Neoen have aligned the Disturbance Footprint design towards existing degraded areas as far as practicable to minimise impacts to native vegetation and thus threatened species habitats, for example:

- 6.76% of Disturbance Footprint (36.31 ha) occurs within existing cleared areas (such as approximately 40 km of existing roads and tracks being utilised across WF and OTL), despite only ~.21% of the GNWF Project Area comprising existing cleared areas.
- 5.37% of the Disturbance Footprint within existing cropped areas (28.85 ha), in proportion to the 7.78% of GNWF Project Area comprising cropped land. Increasing utilisation of cropping areas was one of the factors for Neoen submitting a Project Variation in April 2025.
- 3.30% of the Disturbance Footprint within areas mapped as exotic grassland (17.73 ha), comprising <5% native species cover, of 0.93% of total GNWF Project Area.

Additionally, Neoen have aligned a significant proportion (~11.7 km) of the proposed OTL with GSWF OTL infrastructure to minimise ecological impacts (clearance, fragmentation) as well as social and visual impacts. This has avoided the requirement for the OTL to have an access track along its entire length, instead, using access tracks already existing for GSWF OTL, requiring only minor deviations to bridge the gap.

6.1.1.3 Non-conventional stringing methods

Neoen investigated non-conventional stringing methods to remove the requirement for a temporary transmission line stringing corridor (typically 10 m width) to be cleared along the length of the OTL corridor. Specifically, this method was targeted to remove the requirement for a stringing corridor in areas of high value vegetation, as determined by its biodiversity score obtained from detailed vegetation surveys, and habitat which comprised MNES, including INTG, PBTL known and likely habitat, and mallee woodland which comprised potential habitat for a number of MNES. This method resulted in avoidance of 27.31 ha of high value native vegetation (between initial Referral application (October 2024) and Referral Variation (March 2025) and a further 11.94 ha of native vegetation in August 2025. The outcome of this method includes reduced impact (~39.25 ha) on potential habitat for Southern Whiteface, South-eastern Hooded Robin, Diamond Firetail, MBC TEC, and INTG, as well as removing stringing corridor through approximately 2.6 km of potential PBTL habitat, further reducing impact on this species.

6.1.1.4 Transmission tower height adjustment

Neoen investigated the feasibility of increasing the height of transmission towers in selected locations and placing them strategically within the landscape to avoid the requirement for a permanent vegetation maintenance zone, which would typically require ongoing maintenance for the life of the infrastructure. Specifically, in the initial referral, these maintenance zones were referred to as the inner maintenance zone (IMZ) which required trimming of all vegetation over three metres, and the outer maintenance zone (OMZ) which required trimming of all vegetation over six metres. Trimming in this zone is typically required to reduce risks of electrical faults and potential fire hazard from sparking into vegetation. This vegetation maintenance zone requirement has now been removed, effectively avoiding 10.52 ha of high value native vegetation, particularly mallee woodland, with avoidance of habitat likely to be suitable for Southern Whiteface, South-eastern Hooded Robin, Diamond Firetail and Mallee Bird Community of the Murray Darling Depression Bioregion TEC.

6.1.1.5 Alignment of electrical cabling and constraining temporary road construction disturbance extent

A temporary clearance area is designated around all access roads within the wind farm to allow for construction activities, such as movement of heavy vehicles and access of wind farm components. Neoen not only constrained this corridor to five metres either side of the road, batter and drainage design but optimised the design of underground electrical cabling to align with the area designated as temporary clearance along the access roads wherever practicable. These methods not only reduce requirement for additional clearance but also reduces fragmentation of habitat and potential edge effects. This initiative is likely to require considerable coordination with the selected contractors; however, it has been adopted as an approach to ensure that best practice and minimisation is applied at the design stage. This method has resulted in avoidance of approximately 18 ha of vegetation clearance.

6.1.1.6 Site access selection

Neoen initially proposed up to three access tracks into the proposed wind farm from the Barrier Highway to the west. However, ecological considerations resulted in removal of one of these access options, to avoid potential for indirect impact to planted specimens of the threatened flora species, Spiller's Wattle. Additionally, of the two remaining access routes, Neoen intends to designate a single primary access through which 90% of traffic will be channelled, further reducing the magnitude of potential for indirect impacts caused by regular traffic and allowing mitigation measures to be targeted more effectively in one location. Additional methods are being investigated to reduce potential indirect impacts of this access route, detailed further in Section 6.2.

6.1.1.7 OTL Optimisation

Neoen undertook a number of desktop assessments to inform selection of the OTL route, finding that there was no significant difference in the potential constraints between each option. Additional constraints regarding landholder agreements and the requirement for the OTL to ultimately connect to the existing Bundey Substation as well as reduction in ecological impact by considering alignment with existing OTL infrastructure for GSWF, resulted in the final proposed OTL location. An alternate OTL was submitted with the original Referral (October 2024), however this option was subsequently removed due to several factors, including avoidance of MBC (30.66 ha proposed), reduction in impact to native vegetation and landholder negotiations.

6.1.2 Construction Exclusion Zones and WTG Setbacks

Throughout the development of GNWF, Neoen has maintained a constraint register which includes infrastructure exclusion zones and WTG setbacks (i.e. construction buffers) designed to protect sensitive locations. These zones and setbacks are summarised in Table 6.1. The constraint register is a live document and will continue to be updated during the later stages of development and throughout construction, to ensure that potential impacts are avoided as the project design is finalised.

Table 6.1: Constraint Register - Construction Exclusion Zones and WTG Setbacks

Location	Distance	Reasoning
Exclusion Zones		
Aboriginal heritage sites (known and potential)	Determined in consultation with Traditional Owners	Protect cultural heritage values and preserve heritage sites.
European heritage sites	N/A	Preserve historical and cultural significance.
Conservation parks	N/A	Avoid disturbance to protected habitats and biodiversity.
Environmental Heritage Agreement areas	N/A	Avoid disturbance to protected habitats and biodiversity.

Location	Distance	Reasoning
Crown land parcels (unless otherwise agreed with relevant stakeholders)	N/A	Respect tenure restrictions and government land use policies.
Landholder-specified exclusion areas	N/A	Honour negotiated agreements and minimise land-use conflicts.
Class A INTG MNES	N/A	Avoid significant ecological impacts.
WTG Setbacks		
Wedge-tailed eagle nests	Determined in consultation with qualified ecologists based on nest activity and location.	Protect breeding Wedge-tailed eagles from disturbance and collision risk.
Tiliqua Nature Reserve	500 m, determined in consultation with key stakeholders, PBTL species experts and ecologists based on modelled shadow flicker and noise data.	Maintain buffer to avoid impacts to significant populations of PBTLs.
Mokota Conservation Park	450 m	Maintain buffer to avoid impacts on conservation values and significant populations of INTG.
Residential zones / townships (Burra and Mount Bryan)	3000 m	To reduce landscape and amenity impacts for residents and visitors (aligned with Planning Code).
Tourist accommodation	1500 m	Reduce visual impact on the amenity of tourist development (aligned with Planning Code).
Dwellings (uninvolved landholders)	2000 m	Reduce visual impact on the amenity of residential development (note that this is 500 m greater than the Planning Code requirement).
Dwellings (involved landholders)	Determined by minimum EPA noise requirements unless otherwise specified by the landholder.	Ensure compliance with EPA noise guidelines.
National Heritage Areas	3000 m	To reduce visual impact on the amenity of heritage areas.
State Heritage Areas	3000 m	To reduce the visual impact on the amenity of heritage areas.
Telstra Electromagnetic Interference (EMI) Fresnel Zones	150 m from radio path centreline, determined in consultation with Telstra.	Prevent obstruction of direct line-of-sight communications.
South Australian Government Radio Network (SAGRN) EMI Fresnel Zones	Setback to ensure that the blade remains outside the second Fresnel Zone (i.e. 90 m for 90 m blades), determined in consultation with SAGRN.	Prevent obstruction of direct line-of-sight communications.

Neoen remains committed to minimising environmental, cultural, and social impacts throughout the life of the project. The exclusion register is supported by ongoing site investigations, specialist input, and consultation with key stakeholders—including Traditional Owners, regulatory agencies, and landholders. As new information emerges, the project design will continue to adapt to ensure that identified values are respected and protected to the greatest extent practicable. This will be carried out through the process of micro siting, as defined in Section 6.1.3.

Exclusion zones and WTG setbacks are managed in a number of ways throughout development and construction to ensure that effective measures are put in place to avoid and mitigate impacts. These methods include:

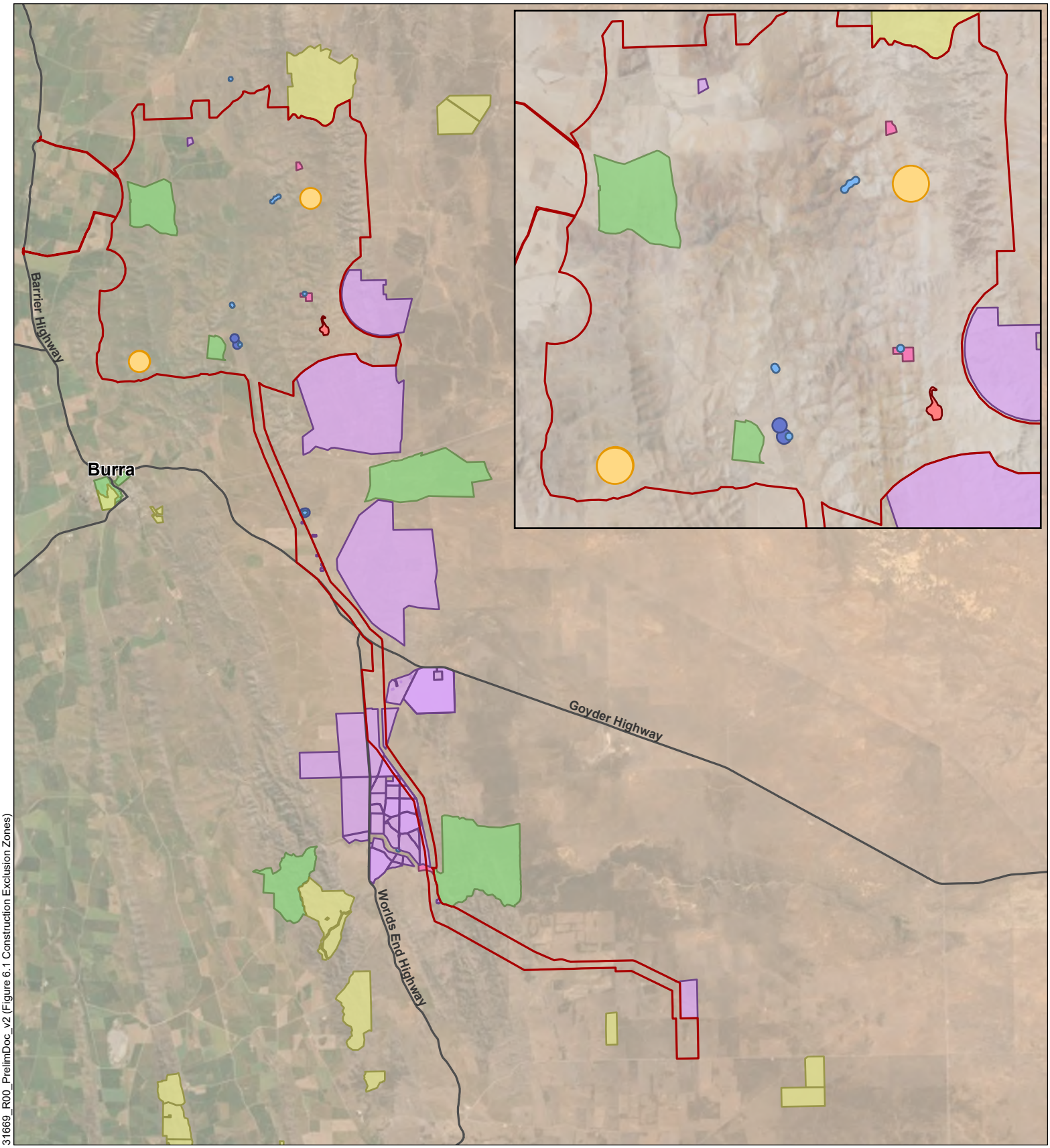
1. Desktop and Field Mapping
    - All exclusion zones are first identified via a desktop analysis of existing heritage registers, cadastral data, ecological mapping and Crown-land boundaries.
    - Specialist consultants (e.g. heritage archaeologists and ecologists) then undertake targeted field surveys to confirm the location and extent of each constraint using the concept design.
2. GIS Integration into Design
    - Exclusion and WTG setback areas are digitised in a central GIS database throughout the development phase. Every design iteration (micro-siting and detailed design) would reference this GIS layer to flag any proposed turbine, access track, substation or ancillary infrastructure that encroaches on a defined zone.
    - Where a proposed element intersects an exclusion zone or encroaches a WTG setback, the design is amended, or the feature is relocated. This is always in consultation with the relevant specialists or aligned with the appropriate management plans.
3. Contractor Briefings & On-Site Controls
    - Prior to ground-disturbing works, all contractors will receive an induction which provides context and information on exclusion zones in relation to surveyed points and the correct methods of impact avoidance when working in proximity to these areas.
    - Spatial data will be provided to the contractor to ensure clear identification of agreed construction footprint. Physical signage, flagging tape or temporary fencing may also be installed where practicable around high-priority buffers (for example, known heritage sites or MNES) to prevent inadvertent encroachment during construction.
4. Ongoing Monitoring and Review
    - A qualified environmental officer, cultural heritage monitor or specialist visits the site during key phases of construction (e.g., micro siting and pre-ground-disturbance surveys or post construction of infrastructure) to verify works are not proposed within exclusion zones or that no works have occurred within exclusion zones.

- If new ecological or heritage values are discovered (for instance, an unrecorded cultural artefact or a previously undetected patch of Class A INTG), the constraint register is updated immediately, and the GIS layers are amended. This triggers a design review to ensure that infrastructure is not placed within defined exclusion zones.

5. Stakeholder Engagement
    - Traditional Owner groups, local landholders and relevant government agencies receive periodic updates on the project.
    - Any amendments to the exclusion register are communicated promptly to the design team and contractors so that everyone remains aligned on which areas are off-limits.

Micro siting and pre-ground-disturbance surveys may identify additional sensitive areas. Where impacts are assessed as potentially unacceptable to a species' population, Neoen will work with the relevant subject matter experts to mitigate those risks. Current known exclusion zones are presented in Figure 6.1.

Figure 6.1: Construction exclusion zones, including protected areas and setbacks associated with the Project



GNWF

Exclusion Zones

- Conservation Area
- Crown land
- Heritage Agreement
- Aboriginal Heritage Site (known)
- Aboriginal Heritage Site (potential)
- INTG Class A
- Landholder
- WTE Nest (500m)

31669_R00_PrelimDoc_v2 (Figure 6.1 Construction Exclusion Zones)

umwelt

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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6.1.3 Micro siting

Micro siting is defined as a slight shift or adjustment of infrastructure components within the Development Envelope which may occur prior to construction works to further avoid or minimise impacts to MNES or other currently unknown project constraints, such as buried artefacts or remains which may not be discovered until civil works begin, or in the case of unacceptable geotechnical conditions in a given position. Notwithstanding any of the above, Neoen commits that micro siting will not increase impacts to MNES.

The location and layout of infrastructure, including (but not limited to) WTGs, access tracks and underground electrical reticulation, has been adjusted throughout the design development process as various constraints, such as (but not limited to) visual amenity and landform, residential properties (dwellings), and flora and fauna including MNES, have been identified, to avoid and minimise impacts to the constraints. This process has resulted in numerous refinements during the design phase of the Project prior to submission for approval.

The Project was submitted for approval, under the state *Planning and Development and Infrastructure Act 2016* (PDI Act) prior to it being referred under the EPBC Act. The State Planning Consent that Neoen sought and received includes a Development Envelope comprising up to 200 m around all the permanent project elements (subject to compliance with other performance measures). This Development Envelope was included as design development was still in progress at the time of applying for State Planning Consent. The purpose was to maintain some flexibility to enable ongoing application of the mitigation hierarchy and ensure that the Project could maximise shared land use opportunities and generation efficiencies, and minimise impacts on landform, flora and fauna (including MNES) and residents using a micro siting approach.

Although Development Approval was granted by the State Commission Assessment Panel (SCAP) on 28 October 2024, the design development process continued, with the design refined and minor adjustments made where possible, to reduce impact to constraints, including MNES. A particular focus was applied to the location and layout of access tracks, WTGs and underground cable reticulation. However, some impacts are unavoidable due to minimum infrastructure requirements, specific design constraints, safety requirements, local topography (steep hills and creeks/drainage lines) and constructability constraints.

The Disturbance Footprint is now mature particularly across the wind farm, however, Neoen expects that further minor changes may be required at the time of construction to incorporate any site-specific constraints which have not already been identified. Additionally, Neoen intends to use a micro siting approach to further avoid or minimise ecological impacts. For example, infrastructure may be micro sited (shifted and/or adjusted slightly) prior to construction works to further minimise/reduce impacts to MNES such as (but not limited to) INTG and PBTLs and their habitat, where possible. The only purpose of micro siting any infrastructure will be:

- to reduce potential impacts to MNES from the levels previously identified (i.e. the impact levels detailed in the EPBC referral documentation)

- to avoid other project constraints, such as buried artefacts or remains which may not be discovered until civil works begin
- in case of unacceptable geotechnical conditions in a given position, such as an underground cavity.

Notwithstanding any of the above, Neoen commits that micro siting will not increase impacts to MNES. Infrastructure will not be micro sited (shifted and/or adjusted slightly) if it does not result in a reduction of potential impacts to MNES (or avoidance of other project constraints, or avoidance of unacceptable geotechnical conditions).

As micro siting will be undertaken immediately prior to or even during the commencement of construction works (such as ground disturbing activities), a detailed investigation and report on micro siting cannot be provided at this point in time. However, more information on the proposed micro siting approach is provided below.

6.1.3.1 Proposed Approach

The majority of micro siting has already been achieved through the design development process to date, and the design layout and Disturbance Footprint submitted as part of the EPBC Referral reflects a largely complete design layout and infrastructure footprint. However, Neoen wishes to apply an adaptive approach to further minimise impacts to MNES such as (but not limited to) INTG TEC and PBTLs and their habitat, and therefore infrastructure may be micro sited (shifted and / or adjusted slightly) up until and during construction. The approach will be undertaken in the order of avoid, minimise and then mitigate as follows:

1. Pre-clearance check:
    a. Conduct a pre-clearance check (PCC) on site shortly before construction is scheduled to commence, in all areas where vegetation disturbance will occur.
    b. Detailed pre-clearance surveys with a focus on potential for micro siting to further avoid and minimise impacts, will be undertaken on areas where the Disturbance Footprint overlaps with the known location of MNES, such as INTG TEC and PBTL and their habitats.
    c. For PBTL: if found within a section of the proposed access track or other adjustable infrastructure component (i.e. electrical cables, transmission towers, temporary laydown areas), investigate the potential to shift the infrastructure away from the PBTL to avoid relocation.
    d. For INTG: If an access track is located on the edge of INTG TEC, investigate the potential to shift or narrow the track.
    e. If information comes to light that indicates a reasonable opportunity to avoid said impacts, a micro siting assessment will be undertaken to ensure that micro siting will not cause any additional adverse impacts on the MNES or other ecological or cultural matters.
2. Micro siting assessment:
    a. Consult with construction engineer to determine if the infrastructure can be micro sited based on information gathered during the pre-clearance survey.

b. Aim to avoid impacts if there is a reasonable opportunity to do so, otherwise, minimisation.

c. Undertake additional pre-clearance surveys in areas determined as suitable for micro siting if not previously assessed to ensure that micro siting only results in a reduced impact to MNES. Micro siting will not occur if impacts are found to be higher in the proposed micro siting location.

d. Pre-clearance surveys will also assess for presence of any other potential constraints such as EPBC listed threatened plant species and cultural heritage, not currently known to occur in those locations. A Chance Find Procedure (or similar) will be in place to outline actions required if previously unknown environmental or heritage sites are encountered during construction

e. Select feasible option with least impact on MNES.

3. Relocation of PBTLs if impact unavoidable:

   a. Refer to the Goyder North Wind Farm PBTL Management Plan for more information on the relocation process.

Due to the significant size and extent of the Disturbance Footprint, it is likely that survey as part of the micro siting process will be undertaken via a staged approach, where separate areas/zones are surveyed and micro sited at a time, shortly before construction begins in that area. This will ensure currency for species such as PBTLs which may relocate or increase in numbers and minimise the likelihood of PBTL moving into the area after the survey for micro siting.

As stated previously, Neoen commits that micro siting will not increase impacts to MNES as infrastructure will not be micro sited (shifted and/or adjusted slightly) if it does not result in a reduction of potential impacts to MNES (or avoidance of other project constraints, or avoidance of unacceptable geotechnical conditions).

6.2 Minimise

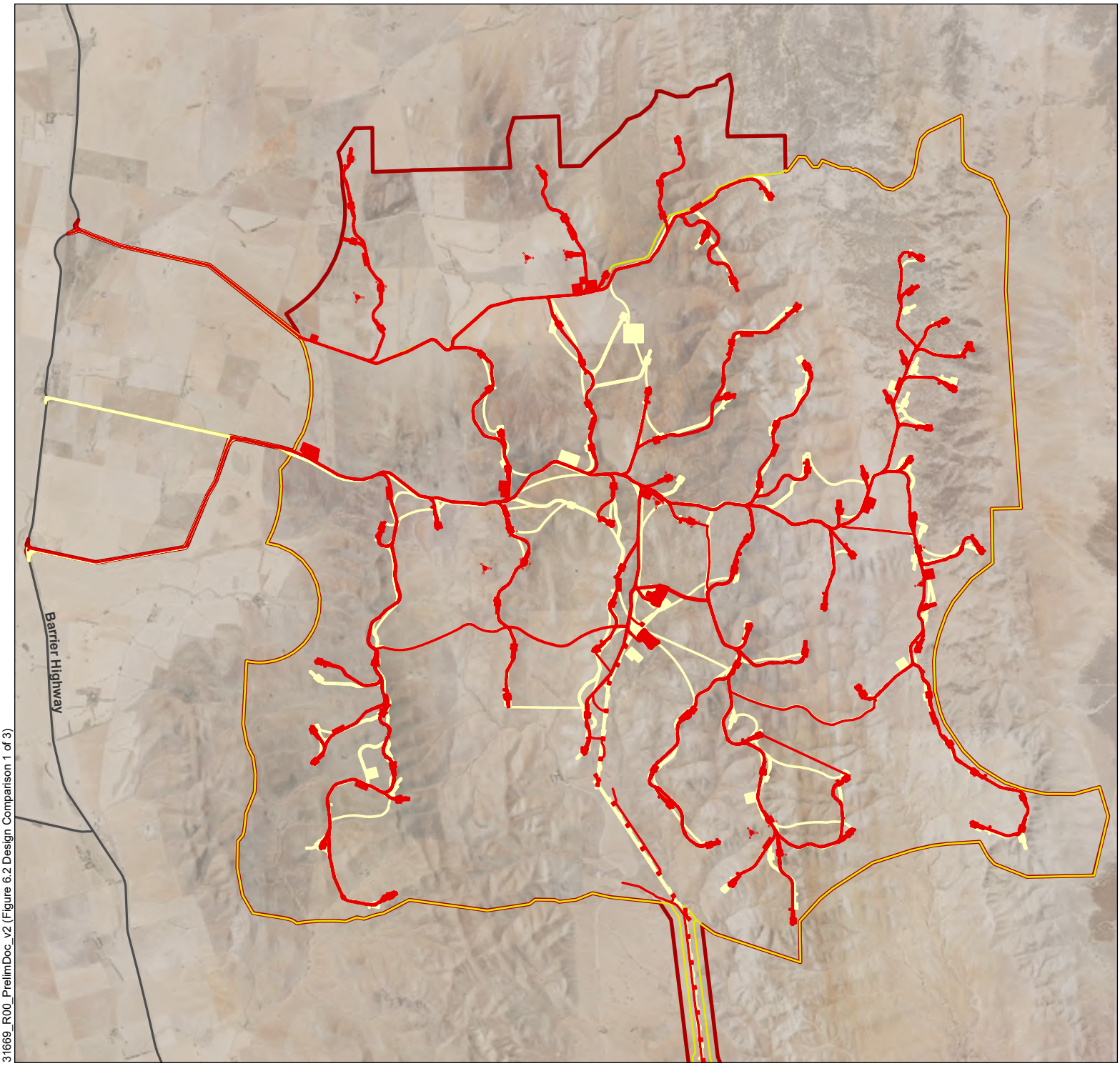
Minimisation of impacts to MNES and other sensitive issues is achieved initially during the design process via the same avoidance measures outlined above. Although the number of turbines has increased since the initial referral in October 2024, the Disturbance Footprint has been optimised and reduced.

The design submitted for Referral in October 2024 comprised a total of up to 595.78 ha of clearance or vegetation impact (including maintenance zones), which has since been reduced to 536.82 ha through further design optimisations and investigation into non-conventional methods. Regarding native vegetation, the current design proposes impact to 453.87 ha of native vegetation compared to 595.78 in the design submitted for Referral in October 2024 (Figure 6.2 to Figure 6.4).

The design has specifically been amended, wherever possible, to avoid and/or minimise impacts to MNES and areas of high conservation and biodiversity value, and impact areas considered to have lower conservation and biodiversity value. For example, infrastructure has been located within areas of cropping land, which are more highly disturbed and unsuitable habitat for MNES, including INTG TEC and PBTLs, and other areas outside of INTG TEC and PBTL habitat, to avoid and/or minimise impact to INTG TEC and PBTLs, wherever possible Where impacts to MNES and other sensitive issues cannot be completely

avoided by design, they will be minimised during the construction and operation phases of the Project via implementation of targeted management plans for various stages of the Project, including a Construction Environmental Management Plan (CEMP) and associated sub-plans such as Operation Environmental Management Plan (OEMP), Rehabilitation Management Plan, and targeted MNES management plans for PBTL and INTG, as outlined below.

Figure 6.2: Design comparison between Referred (October 2024) and current design (Map 1 of 3)



Current Project Area
Current Disturbance Footprint
EPBC Referral Disturbance Footprint
EPBC Referral Project Area

31669_R00_PrelimDoc_v2 (Figure 6.2 Design Comparison 1 of 3)

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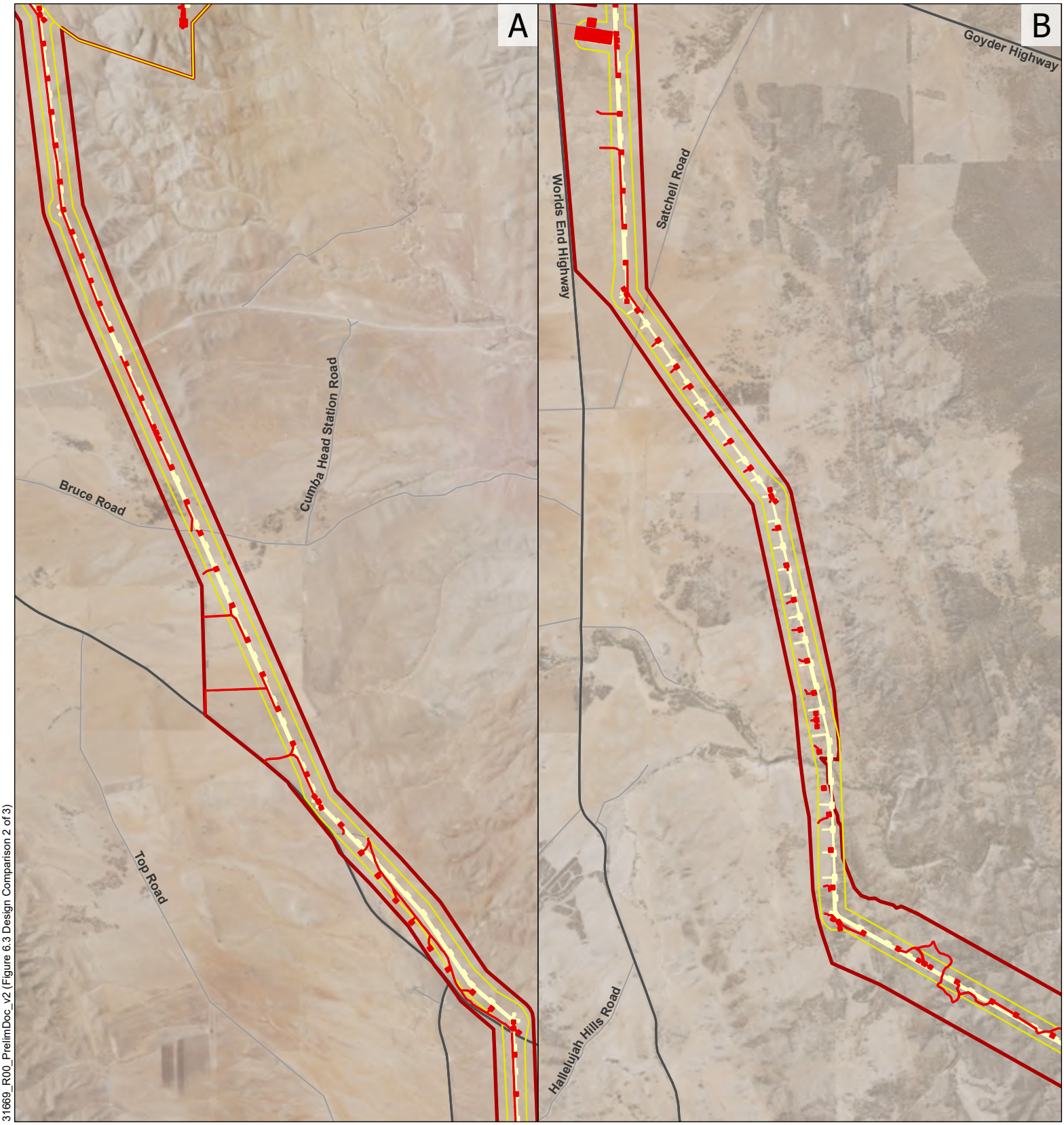
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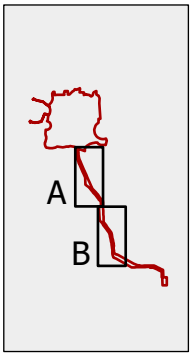
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Figure 6.3: Design comparison between Referred (October 2024) and current design (Map 2 of 3)



Current Project Area
Current Disturbance Footprint
EPBC Referral Project Area
EPBC Referral Disturbance Footprint



31669_R00_PrelimDoc_v2 (Figure 6.3 Design Comparison 2 of 3)

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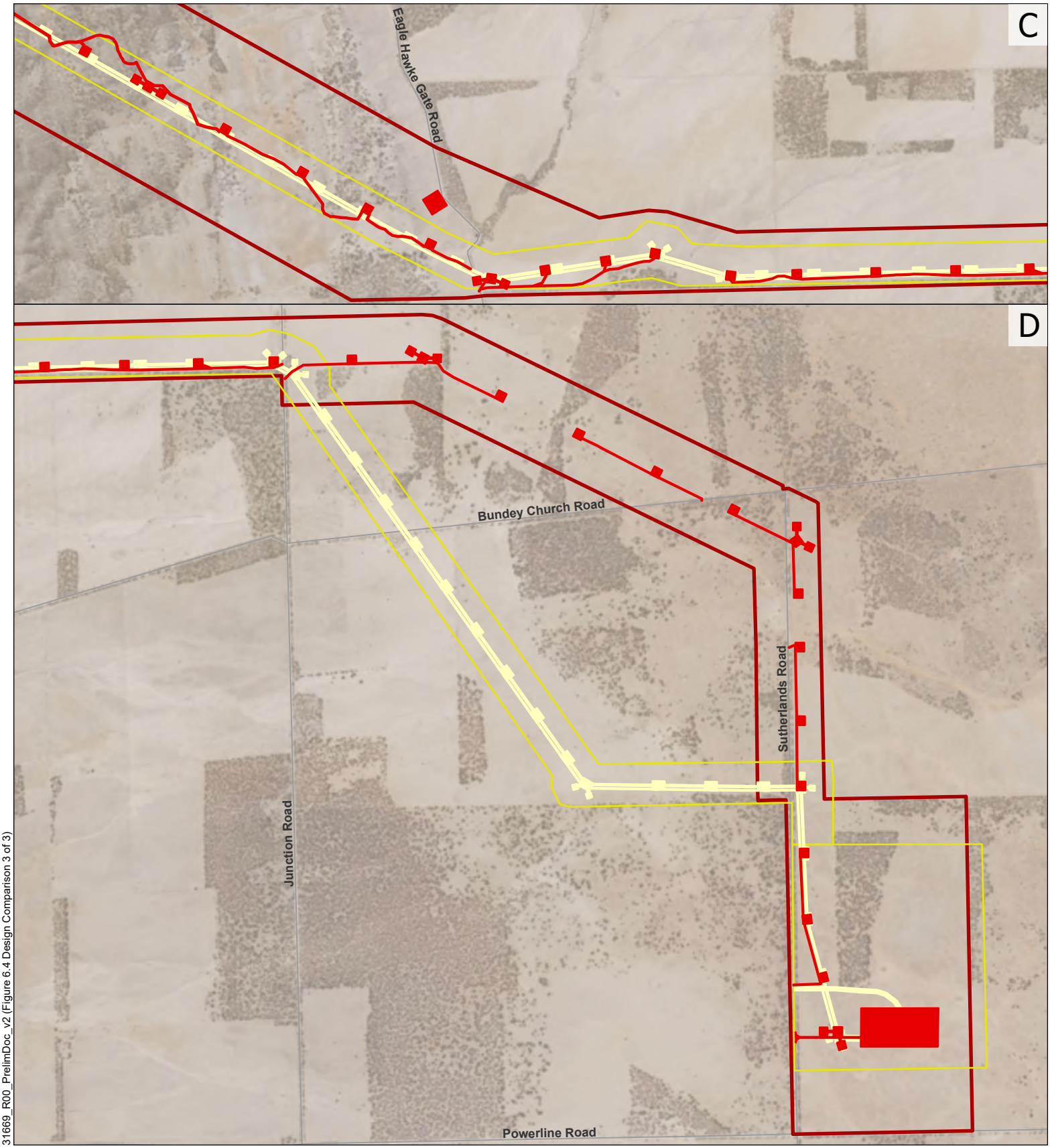
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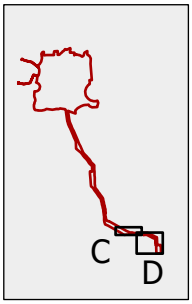
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Figure 6.4: Design comparison between Referred (October 2024) and current design (Map 3 of 3)



Current Project Area
Current Disturbance Footprint
EPBC Referral Project Area
EPBC Referral Disturbance Footprint



31669_R00_PrelimDoc_v2 (Figure 6.4 Design Comparison 3 of 3)

umwelt

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
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6.2.1 CEMP

A CEMP has been prepared by Umwelt (Umwelt 2025k – in draft; Att11 GNWF CEM) to detail the environmental management and mitigation measures which will be implemented during the construction phase of GNWF including the OTL. The CEMP has been prepared with consideration to all content within the Commonwealth's recently revised environmental management plan guidelines (DCCEEW 2024a).

The primary objective of the CEMP is to reduce any associated adverse environmental impacts and satisfy regulatory requirements. It provides a framework for actions, responsibilities and protocols associated with environmental management within which contractors are required to adhere. The broad objective of the CEMP is to provide an Environmental Management System that will:

- Facilitate appropriate and timely responses to equipment failure, emergencies, or other unusual conditions that may cause environmental harm.
- Facilitate documentation, communication, and implementation of contingency plans.
- Ensure that all personnel responsible for the construction of the Project are aware of their environmental responsibilities.
- Ensure that environmental monitoring and review occurs to manage environmental components of the construction and to ensure continual improvement in the CEMP.
- Ensure that relevant information is retained and is communicated throughout the organisation.
- Ensure communication with the DCCEEW, Department of Environment and Water (DEW), and Department of Infrastructure and Transport (DIT), Goyder Regional Council or other authorities as required by legislation.

For information on specific items requested in the Preliminary Document RFI (4e), refer to Table 6.2 for a brief description and reference to section within the CEMP that each item is addressed.

Table 6.2: Summary of CEMP environmental and conservation objectives, performance criteria, monitoring, reporting, corrective action, responsibility and relevant section within the document

Item	Brief Description	Section
Environmental and conservation objectives	The overarching objective of the CEMP is to describe the environmental management and impact avoidance, minimisation and mitigation measures that will be implemented during the construction phase of GNWF. The CEMP provides a framework for the protocols, responsibilities and actions associated with environmental management which Neoen and their contractors are required to adhere to. The primary objectives are to: • Avoid and minimize any adverse environmental impacts associated with construction activities. • Satisfy the requirements of Neoen / the Contractor's Environmental Management Policy • Satisfy regulatory requirements and approval conditions.	Section 1.3: Purpose and Objectives of the CEMP.
	Environmental objectives for each potential management category are detailed in tables within each relevant section.	Section 8: Construction Management Measures.

Item	Brief Description	Section
Performance criteria	Targets for each potential management category are detailed in tables within each relevant section.	Section 8: Construction Management Measures.
Monitoring and reporting	Details the key monitoring actions identified within Section 8, as well as an auditing, reporting and CEMP review schedule (and review triggers).	Section 11: Monitoring, Audits and Reporting
Response Measures and Corrective action	Triggers for corrective action are detailed within each relevant impact category.	Section 8: Construction Management Measures
	Response measures and corrective action, including adaptive management, is detailed for both direct and indirect impacts.	Section 10: Response Measures and Corrective Action
Responsibility and timing for each environmental issue	Outlines the contractor's organization and structure and the roles and responsibilities of key roles associated with implementation of the CEMP.	Section 6: Roles and Responsibilities
	Responsibility, timing (i.e. pre-construction, construction) and frequency is detailed for each management action / measure in the relevant sections.	Section 8: Construction Management Measures

A number of project specific sub-plans are associated with the CEMP, listed and summarised in Table 6.3.

Table 6.3: Project specific sub-plans to be developed for environmental management during construction and operation (ordered alphabetically)

Plan	Implementation Phase	Summary of content	Document Reference / Section (if applicable)
Construction Noise and Vibration Management Plan	Construction and Operation	The Noise and Vibration Management Plan aims to protect the health and well-being of workers and nearby communities, as well as to minimize disturbances to the environment. Key components include identifying potential sources of noise and vibration, assessing the associated risks, and implementing control measures such as sound barriers, equipment maintenance, and scheduling noisy activities during less sensitive times. The plan also outlines monitoring protocols to ensure compliance with relevant noise and vibration standards and to address any complaints promptly.	CEMP, Section 8.8.
Construction Soil Erosion and Drainage Management Plan	Construction	The Soil Erosion and Drainage Management Plan details strategies to manage potential stormwater quantity and quality impacts caused by wind farm development as well as reasonable and practicable measures required to prevent soil loss, reduce sedimentation into nearby water bodies and effectively manage the modified landscape, in accordance with regulatory requirements. It will also include a review of natural flow paths on the existing site, a description of preliminary hydrological studies and recommendations, identification of potential impacts from the development, and a conceptual design of appropriate stormwater management measures.	CEMP Section 8.10 Separate sub-plan to be developed.
Decommissioning	Decommissioning	The Decommissioning Plan involves assessing the condition of the wind farm, obtaining necessary permits, and ensuring regulatory compliance. The process includes dismantling and removing wind turbines and infrastructure, restoring the site to its original condition, and managing waste responsibly. Ongoing monitoring and reporting will be conducted to ensure successful restoration and address any environmental issues.	Separate Decommissioning Management Plan to be developed.
Dust Management Plan	Construction	The Dust Management Plan aims to minimise the generation and spread of airborne dust to protect the health of workers, nearby residents, and the environment. Key components include identifying potential sources of dust, assessing associated risks, and implementing control measures such as water sprays, barriers, and modifying work processes. The plan also outlines monitoring protocols to ensure dust levels remain within acceptable limits and comply with regulatory standards.	CEMP Section 8.1
Fire and Emergency Response Plan	Construction and Operation	A Fire and Emergency Response Plan aims to ensure the safety of personnel and minimise damage during emergencies such as fires, natural disasters, or other critical incidents. A Fire and Emergency Response Plan will establish clear procedures and responsibilities for responding to emergencies promptly and effectively, and will include: • Risk Assessment. • Emergency Procedures: such as identifying evacuation routes, and courses of action in response to fire, hazardous material spill or other major incident. • Communication Plan: for alerting and communicating with employees, emergency services, and other stakeholders during an emergency. List of emergency contacts. • Inductions, training and drills. • Resourcing to ensure fire extinguishers, first aid kits, and emergency equipment are readily available and functioning.	CEMP Section 8.5 Separate Fire and Emergency Response Plan to be developed.
Flora and Fauna Management Plan	Construction and Operation	A Flora and Fauna Management Plan aims to avoid, minimise and manage the impact on local ecosystems, native flora and fauna and habitats. The plan outlines how the construction (and operation) will be managed in accordance with Development Approval Conditions, Native Vegetation Approval Conditions and EPBC Approval Conditions. Developed to allow for detailed constraints mapping and mitigation treatments. It will include weed and pest management and mitigation measures and will be developed in accordance with pending EPBC Referral Notice (i.e. approval) requirements.	CEMP Section 8.3 and 8.4. Separate Flora and Fauna Management Plan to be developed.
INTG Management Plan	Pre-construction, construction, operation and decommissioning	The INTG Management Plan highlights the high-risk areas within the Project Area specific to the nationally (EPBC Act) listed TEC. Specific management actions are highlighted which aim to avoid and further minimise impact to this TEC. Includes provisions for micro siting, avoidance (protection zones) and to address erosion, sedimentation, dust and weeds.	INTG MP (Umwelt 2025m)
Operational Environmental Management Plan (OEMP)	Operation	Operation of the development must be in accordance with the approved OEMP, which as a minimum shall include specific management measures for the following aspects: noise and vibration; air quality and dust; native flora and fauna; revegetated areas, Aboriginal and European heritage; weeds and pests; traffic and access; erosion and stormwater management; site rehabilitation (post construction); storage and handling of hazardous substances; water quality; fire risk; contamination; public safety; emergency response planning; complaints management, including an on-going monitoring and mitigation protocol in respect to raptor and other bird species that may be impacted by the development. The OEMP will be developed to document the way in which the wind farm operator manages ongoing activities that have the potential to impact the environment following the construction phase. The plan outlines the systems that identify and assess environmental risks including statutory and approval requirements, the controls and procedures that manage these risks, and measures to review the system including, its effectiveness and subsequent reporting to the various relevant authorities. In addition, both the GNWF INTG TEC Management Plan and the GNWF PBTL Management Plan will also be implemented during operation of the Project. Each of these plans contains specific measures and controls for operation of the Project to avoid and/or minimise impact to INTG TEC and PBTLs respectively.	To be developed.

Plan	Implementation Phase	Summary of content	Document Reference / Section (if applicable)
PBTL Management Plan	Pre-construction, construction, operation and decommissioning	The PBTL Management Plan highlights the specific procedures in place to protect, avoid and minimise impact to the nationally listed (EPBC Act) Endangered PBTL and PBTL habitat within the Project Area. This includes specific legislative approvals as they relate to this protected species. Includes provisions for micro siting, pre-clearance surveys, pre-construction monitoring or relocated individuals etc. Additional provisions to address PBTL specific indirect impacts as a result of the construction and operation of the wind farm, including, but not limited to, sedimentation of burrows, noise and vibration, weeds, herbicide use and feral animals.	PBTL MP (Umwelt 2025l)
Rehabilitation Management Plan	During construction and post-construction	The Rehabilitation Management Plan identifies and addresses relevant issues for rehabilitation of temporary disturbance following construction. The plan will include methodology to undertake the rehabilitation and any monitoring requirements. A rehabilitation plan specific to INTG is included within the INTG MP and includes a monitoring program. This includes a commitment that Neoen (or the operator at the time or decommissioning) will be responsible for all decommissioning and rehabilitation activities and expenses, including preparation of a Decommissioning Rehabilitation Management Plan using best practice methods at the time the operation ceases.	
Soil Erosion and Drainage Management Plan	Construction and Operation	The Soil Erosion and Drainage Management Plan details strategies to manage potential stormwater quantity and quality impacts caused by wind farm development as well as reasonable and practicable measures required to prevent soil loss, reduce sedimentation into nearby water bodies and effectively manage the modified landscape, in accordance with regulatory requirements. It will also include a review of natural flow paths on the existing site, a description of preliminary hydrological studies and recommendations, identification of potential impacts from the development, and a conceptual design of appropriate stormwater management measures.	To be developed
Traffic Management Plan	Construction and Operation	The Traffic Management Plan will collate all existing information on the impacts of the Project on the surrounding road network and provide details on conditions of approval, required permits, mitigation and management measures and consultation outcomes.	CEMP Section 8.11. Separate Traffic Management Plan to be developed.
Waste Management Plan	Construction and Operation	The Waste Management Plan identifies the types and quantities of waste expected to be generated during construction and details procedures for managing different types of waste in an environmentally responsible manner, guidelines for storage and handling of different types of waste, monitoring and reporting requirements, and education resources.	CEMP Section 8.12. Separate Waste Management Plan to be Developed
Wombat Management Plan	Construction	The Wombat Management Plan for Southern Hairy-nosed Wombat prioritises humane management methods and ensures compliance with relevant laws when undertaking construction related activities which may impact wombats or wombat burrows.	Separate Wombat Management Plan to be developed.

6.2.2 PBTL Management Plan

A PBTL Management Plan (PBTL MP) has been developed for the Project (Umwelt 2025l – in draft) which aims to minimise the impact of construction and operation of the wind farm on PBTL habitat and individuals. Briefly, the PBTL MP:

- Details the ecology of PBTL and describes their occurrence within the WF, highlighting potential impacts as a result of the WF development.
- Details how the PBTL MP will be implemented, including timeframes, permitting requirements, roles and responsibilities and risks to implementation.
- Provides a risk assessment of potential impacts, including a review of lessons learnt from Goyder South Wind Farm.
- Details management targets and performance indicators, response measures and corrective actions, and management actions to be implemented during construction and operation.
- Provides a detailed preclearance check, micro siting and relocation procedure for PBTL.

The PBTL MP draws on research to guide best practice for relocation (and translocation) of PBTL, factoring in considerations which have been shown to improve their chance of survival in more controlled translocation experiments. This may include:

- Pre-selecting suitable relocation sites within proximity to the Disturbance Footprint, which meet the grass use requirements of PBTL and have an abundance of spider burrows.
- Consider habitat augmentation, such as installation of artificial burrows in relocation areas, to increase survivorship of relocated individuals.
- Considering the timing of construction to minimise necessity to relocate neonates (i.e. avoiding or minimising in higher density areas in February/ March).
- Consider use of 'soft release' techniques shown to improve survivorship such as supplementary feeding and construction of temporary enclosures at relocation site for 1-3 days following relocation to reduce chance of immediate dispersal from release site.
- Development of research program (in partnership with Flinders University) to determine best practice methods for relocation of PBTLs, investigating survivorship, dispersal and genetic implications of such activities.

Refer to *Goyder North Wind Farm Pygmy Blue-tongue Lizard Management Plan* (Umwelt 2025l) (Att13_GNWF PBTL MP) for full details of the PBTL MP.

6.2.3 INTG Management Plan

An INTG Management Plan (INTG MP) has been developed for the Project (Umwelt 2025m – in draft) which aims to minimise or avoid the direct and potential indirect impacts on INTG as a result of construction and operation of the wind farm. Briefly, the INTG MP:

- Details the ecology of INTG TEC and describes its occurrence within the WF, highlighting potential impacts as a result of the WF development.
- Details how the INTG MP will be implemented, including timeframes, permitting requirements, roles and responsibilities and risks to implementation.
- Provides a risk assessment of potential impacts.
- Details management targets and performance indicators, response measures and corrective actions, and management actions to be implemented during construction and operation.
- Provides a detailed preclearance check and micro siting procedure.
- Details INTG specific rehabilitation measures in areas of temporary clearance and an associated monitoring plan to assess the trajectory of the rehabilitated areas of INTG, including adaptive management measures.

The INTG MP draws on research to guide best practice for minimising impacts to native vegetation in proximity to infrastructure. Many management measures associated with protection of INTG will be covered as standard best practice methods in a CEMP and OEMP and any construction specific plans. Additional measures implemented as part of an INTG management plan will include:

- Maximum speed limit of 40 km /hr on access roads, with additional dust suppression or reduced speed limits (25 km /hr) on access roads within 200 m of INTG.
- Soil stockpiling and quarantine from areas of temporary clearance for later use in rehabilitation activities.
- Where possible, locate dedicated soil stockpile storage areas a minimum distance of 200m from any mapped area of INTG. If this minimum separation distance cannot be achieved, maximise separation distance and additional mitigation measures will be imposed.
- Monitoring of Class B INTG recovery at sites of temporary clearance to measure time until recovery and identify trigger points for intervention if required.

Refer to Goyder North Wind Farm Iron-grass Natural Temperate Grassland Threatened Ecological Community Management Plan (Umwelt 2025m) (Att12_GNWF _INTG MP) for full details of the INTG MP.

6.2.4 OEMP

An Operational Environmental Management Plan (OEMP) will be developed for the Project prior to commissioning of the wind farm, to detail the specific environmental management and mitigation measures which will be implemented during the operational phase of GNWF including the OTL.

Although the majority of direct and indirect risks are associated with the construction phase of the wind farm, a number of specific risks associated with operation of the wind farm are detailed in Section 5, including direct impacts (5.1) and indirect impacts (5.2). The direct and indirect impacts considered for the operational phase of the wind farm include, but are not limited to:

- Introduction or spread of weeds, pathogens or pest fauna.
- Noise, vibration and shadow flicker from WTGs and / or transmission lines leading to disruption or alteration of fauna behaviour.
- Increased risk of fauna mortality through collision with WTG rotor blades, or vehicle strike.

The primary objective of the OEMP is to reduce any associated adverse environmental impacts, and satisfy regulatory requirements. It provides a framework for actions, responsibilities and protocols associated with environmental management within which contractors are required to adhere. The broad objective of the OEMP is to provide an Environmental Management System that will:

- Facilitate appropriate and timely responses to equipment failure, emergencies, or other unusual conditions that may cause environmental harm.
- Facilitate documentation, communication, and implementation of contingency plans.
- Ensure that all personnel responsible for the operation of the Project are aware of their environmental responsibilities.
- Ensure that environmental monitoring and review occurs to manage environmental components of the operation and adapt management accordingly (i.e. weed monitoring and management and collision monitoring).
- Ensure that relevant information is retained and is communicated throughout the organisation.
- Ensure communication with the DCCEEW, DEW, Goyder Regional Council or other authorities as required by legislation.

6.3 Mitigate

6.3.1 Rehabilitate

Neoen is committing to rehabilitate temporarily disturbed areas above and beyond offset requirements, accounting for over 40% of the total footprint, with targeted rehabilitation measures proposed for INTG restoration. Neoen is not seeking an offset obligation reduction (that could have reduced the Native Vegetation SEB offset obligations in the order of $1-2 million) demonstrating commitment to a net positive environmental outcome.

Areas which are not required to be clear or free of vegetation and habitat post construction of the Project, such as but not limited to, temporary construction compounds, construction buffers, batter slopes and areas impacted by installation of cables, will be rehabilitated following the completion of each construction phase of the Project, in accordance with the Rehabilitation Management Plan (post construction), which is a sub-plan of the CEMP. This plan includes a program for monitoring rehabilitation success using appropriate indicators. The draft CEMP states that rehabilitation:

- Shall be a continuing process over the life of the project and occur as soon as possible following disturbance, taking advantage of natural rainfall. This will include:
    - areas following completion of construction works,
    - tracks and disturbed areas not to be used for ongoing access and maintenance.
- Rehabilitation methods will continue throughout the year utilising techniques that allow for stabilisation and long-term revegetation despite the season.
- Successful rehabilitation will reinstate to a quality that at least matches pre-construction conditions.
- Areas of native vegetation, including road verges, which have been impacted during the construction phase will be:
    - reinstated in accordance with the NVC Clearance Approval requirements.
    - topsoil and mulched vegetation will be returned to approximately the same area from which it was extracted.
- General rehabilitation monitoring requirements will be included in the Rehabilitation Management Plan.

Neoen is actively engaging with key stakeholders, including the NYLB, the PBTL Recovery Team, Flinders University and other conservation and ecological restoration groups, to facilitate knowledge sharing and strengthen the scientific and conservation outcomes of the Project, particularly in rehabilitation efforts of key species such as PBTL and INTG.

6.3.1.1 Rehabilitation of temporary INTG clearance

Rehabilitation of temporary impacts in areas of INTG are specifically addressed within the INTG Management Plan (Section 9.2 and Section 11.2). In summary, rehabilitation activities will commence as soon as practicable within two years of the temporary impact occurring and construction activities being completed in the area. Rehabilitation will involve the replacement of topsoil (specific to that site) and natural regeneration or recovery of the vegetation through natural processes. Rehabilitation goals, targets, triggers and management actions, which follow the Specific, Measurable, Achievable, Relevant and Time-bound (SMART) framework, are described in Table 6.4. Monitoring is proposed (INTG MP Section 11.2) to identify any of the below triggers, with subsequent corrective or adaptive actions to be implemented.

Table 6.4: INTG rehabilitation goals, targets, triggers and management actions

Action	Description
Goal	To restore INTG in areas of temporary clearance through natural regeneration, following spreading of topsoil derived from the original site.
Target	In Class B and Class C INTG, return the area to its original condition, prior to construction, within 10 years of temporary impact ceasing.
Triggers for corrective action or adaptive management	No natural regeneration of Lomandra tussocks observed during monitoring in disturbed temporary clearance within 3 years of rehabilitation commencing.
	Perennial native grass tussock density does not equate to more than or equal to 1 per square metre after five (5) years in Condition Class B INTG.
	Declared weeds detected in rehabilitation areas.
	Disturbance resistant species or other broad-leafed herbs identified in the National Recovery Plan for INTG (Turner 2012) are not detected on site within 5 years of rehabilitation commencing.
	Grazing impacts (from native or introduced herbivores) identified as cause for low or unsuccessful establishment of native species, through grass tussock measurements.
	Any one of excessive sedimentation, erosion or excessive dust deposition from ongoing use of adjacent road or infrastructure component identified in rehabilitation area.
Adaptive Management	• Investigate suitability for livestock fencing in areas of rehabilitating INTG. • Investigate suitability for grazing management in areas of rehabilitating INTG. • Investigate opportunities for revegetation works through planting of tube stock (native grasses, Lomandra and diversity plantings of herbaceous species).
Corrective Management	• Treatment (as deemed suitable) to areas identified as containing Declared weeds, or other weeds of environmental or site significance. • Treatment of any identified areas of erosion, sedimentation or dust deposition as per corrective actions identified in a site-specific Sedimentation, Erosion and Dust Management Plan, or as otherwise deemed suitable.

6.3.2 Offset

Neoen is required to offset impacts caused by the project to native vegetation and impacts to MNES under state and national legislation respectively.

6.3.2.1 On-ground Offset

A 1,300-ha property has been secured as a Significant Environmental Benefit (SEB) site, required to offset impacts to native vegetation in accordance with the *Native Vegetation Act 1991* (SA). The site has previously been subjected to agricultural grazing practices and minor areas of dryland cropping and is currently in a degraded natural state, containing like for like vegetation with the impact site. The site provides approximately half of the native vegetation offset required to offset impacts to native vegetation and Neoen is actively investigating opportunities to secure additional suitable sites to fulfil the remainder of the SEB Offset. The site is located adjacent to two existing Heritage Agreement areas and within 1 km of Caroona Creek Conservation Park, ensuring that the site has high importance in a landscape context. The site contains potentially suitable habitat for MNES impacted at GNWF including PBTL, INTG, Southern Whiteface, South-eastern Hooded Robin, Diamond Firetail, Flinders Ranges Worm Lizard and Blue-winged Parrot, as well as a number of State listed threatened species (flora and fauna). A detailed SEB management plan has been developed for the site (Umwelt 2025o – in draft), with negotiations underway with Third Party Accredited providers as well as Ngadjuri Traditional Owners for potential land management and stewardship involvement.

Additionally, Neoen has developed an EPBC Offset Strategy (Umwelt 2025n) for residual impacts to INTG and PBTL (Att14_GNWF EPBC Offset Strategy). Further details are provided here in Section 9, including Section 9.2.1 for PBTL Offset Strategy and Section 9.4 for INTG Offset Strategy.

Neoen is committed to securing high value on ground offsets which provide a net environmental gain which outweighs the impact at the Project Site and intends to continue to work closely with the SA Department of Environment and Water (DEW), DCCEEW, NYLB and species experts in the selection, establishment and management of offset sites.

6.3.2.2 PBTL Monitoring and Scientific Research Plan

Neoen is currently funding a Flinders University Research Plan as part of the GSWF Project. The key research objective of the PBTL Monitoring and Scientific Research plan is to determine whether wind turbines and associated infrastructure have a long-term impact on populations of Pygmy Blue-tongue Lizards as a result of human disturbance, noise, vibration, shadow flicker and / or habitat fragmentation.

These potential impacts have been discussed over a number of years with wind farms occurring throughout the Mid North region SA where the PBTL occurs. However, no real data or answers have been generated to date as previous studies have been short in duration and there was a lack of PBTL in close proximity (within 200 m) of wind farm infrastructure, particularly wind turbines.

This research plan aims to collect long-term (10 years) data to assess the impacts of wind turbines on PBTL both directly and indirectly. The primary focus of the 10 years of data collection will be to measure the impacts of vibration, noise and shadow flicker generated by wind turbines on PBTL.

To gain a better understanding of the potential direct impacts of windfarms on PBTLs, a series of research questions have been developed, which can be broken down into the following:

- Q1: Do lizards closer to the turbines have reduced body condition?
- Q2: Do individuals live for longer when they are further way from the turbines?
- Q3: Do lizards abandon their burrows or move more frequently closer to turbines?
- Q4: Is the growth rate of lizards closer to turbines less than those further away?
- Q5: Do lizards closer to the turbines reproduce less than others further away?
- Q6: Do lizards closer to turbines have reduced number of mates resulting in reduced genetic diversity of offspring?
- Q7: Do lizards closer to windfarms have reduced responses to aerial predators?
- Q8: Will lizards move across wind farm access tracks?

These questions are best answered by field-based studies investigating lizards at varying distances to proposed wind turbines with research examining before and after wind turbines are installed. Some research questions may also benefit from examining other areas outside the windfarms such as where lizard populations are bisected by roads of varying establishment dates. The 10-year phase of data collection is imperative to allow long-term changes to be detected and account for changes as a result of seasonal conditions. The data analysis for the research plan will focus on clearly answering the questions posed above.

Understanding the indirect impacts of windfarms on PBTL burrows

In addition to the above targeted research regarding PBTL, the research will also collect long-term data on spiders and spider-burrows which are a critical habitat component for PBTL. The spiders may be more sensitive to potential impacts than PBTL, which may indirectly result in impacts to PBTL in the long term if spiders are not as abundant or move away from areas close to wind turbines. This may lead to a decrease in available spider holes which may reduce the density of PBTL in an area.

Spider holes are a critical component of PBTL habitat, without them, the PBTL will not occupy an area. The wind turbines may impact on the species of spiders that dig the suitable burrows for PBTL. Whilst not a direct impact on PBTL, a reduction or absence of spiders in an area may have long-term consequences for the viability of a PBTL population. To gain a better understanding of the potential indirect impacts of windfarms on the burrows utilised PBTLs, a series of research questions have been developed:

- Q9: Is recruitment/number of spiderlings close to turbines less than further away?
- Q10: Is the survival of individuals reduced close to the turbines?
- Q11: Do spiders abandon their burrows more when they are closer to turbines?
- Q12: Is the growth rate of spider closer to turbines reduced compared to those further away?
- Q13: Is the body condition of spiders closer to turbines reduced compared to those further away?
- Q14: Is the rate of burrow development decreased close to turbines compared to further away?

- Q15: Do spiders closer to the turbines defend the burrow less vigorously (which would simulate defence from predators or parasitoid wasps) than spiders further from the turbines?
- Q16: Is the composition of spider communities different in turbine areas compared to turbine free areas?
- Q17: Will spiders move across wind farm access tracks?
- Q18: Do spiders re-colonise areas that have been utilised during wind farm construction where topsoil has not been striped (e.g. either side of cable install)?

Neoen, in consultation with key members of the PBTL Recovery Team is investigating opportunities to expand the research program to include sites within the proposed GNWF, to enable more robust baseline data to be captured, prior to commencement of construction.

6.3.2.3 Proposed Future Research

Neoen is also pursuing additional research projects, or expansion of the existing project, to be associated with GNWF as part of the proposed EPBC Offset Strategy as an additional compensatory offset. Research will investigate PBTL relocations, specifically, survivorship of relocated individuals, factors that improve success of relocations and genetic implications of relocations.

Additional research may be introduced, in consultation with DCCEEW and the PBTL Recovery Team, to research potential methods for, and time to success of, establishing suitable habitat for PBTL on small portions of land which have been historically cropped and are therefore currently unfavourable for PBTL to occupy. Neoen understands that restoration of cropped areas into potentially suitable habitat, presents a high-risk option for an on-ground offset, however, views the idea as a potential opportunity to further research into the species, with the outcome to inform potential future net gain of PBTL habitat. This opportunity will be explored in close consultation with DCCEEW and the PBTL Recovery Team and only constitute a small portion of PBTL offset strategy, if any and only if deemed to be acceptable.

6.3.3 Monitoring and Reporting

Management Plans associated with construction and operation of the wind farm (CEMP, OEMP, INTG MP, PBTL MP, associated sub-plans), as well as for offset sites (i.e. Offset Management Plans; OMP), outline monitoring and auditing requirements for that specific phase of the Project. Monitoring for each of the plans is outlined in the following sections.

Reporting of progress, activities and implementation of management measures including monitoring, non-compliance and corrective action, will be required to ensure compliance with the regulatory commitments and obligations of the Project. Some reporting events will be for the purposes of internal record-keeping should a future audit be required whereas others will provide evidence to regulators of compliance with licence or permit conditions.

Management plans will be reviewed on a regular basis, at least quarterly, or following any trigger event to ensure that the plan remains current and utilising best practice. Any updates to a management plan approved by DCCEEW, will require approval from the Minister prior to any changes being made. Any changes will be recorded on a change register.

6.3.3.1 CEMP

Monitoring and reporting requirements of the CEMP are detailed in Section 11 of the CEMP (Att11 page 101 to 104). The primary objective of monitoring during construction is to ensure that controls are working effectively, and that any deviations from the plan are identified in real time, allowing for implementation of immediate corrective action. In summary, the management requirements include:

- Regular auditing of native vegetation clearance areas to ensure compliance with approval conditions.
- Regular audits and visual inspections of any controls in place for erosion or sedimentation to ensure controls are functioning effectively, with additional monitoring undertaken during high-risk events such as after heavy rainfall.
- Weed monitoring within the Disturbance Footprint, including soil stockpiles and disturbed areas.
- Dust monitoring in areas around concrete batching works, or elsewhere if detected (such as unsealed roads in proximity to native vegetation), to ensure that it is in accordance with relevant standards.
- Monitoring of any temporary trenches or locations which have potential to trap fauna.
- Reporting system in place with landholder / manager to identify any substantial changes to the usual grazing regime or placement of watering points required due to construction.
- Reporting procedure for any fauna mortalities recorded during construction of the WF. For PBTL this includes reporting for any individual found alive or deceased.
- Reporting and stop work procedure for any unexpected / chance finds of MNES in the Development Envelope.
- Regular internal and external inspections to inspect the work site, assess contractor activities and identify any environmental risks.
- Reporting schedule for progress, activities and implementation of management measures, for both internal record keeping and to fulfil licencing or permitting requirements or compliance conditions.

CEMP sub plans will have their own specific detailed monitoring and reporting requirements.

6.3.3.2 INTG MP

Monitoring and reporting requirements of the INTG MP are detailed in Section 11 of the INTG MP (Att11 page 62 to 67). In summary the following monitoring and reporting is proposed:

- Regular auditing within the Disturbance Footprint during construction, to report on performance indicators and identify triggers for adaptive management or corrective actions.
- Targeted 10-year monitoring program at INTG rehabilitation sites (i.e. areas of temporary clearance) to assess trajectory and success of rehabilitation measures and identify triggers for adaptive management. Proposed monitoring includes established photo points, 50 m transects to monitor perennial native grass tussocks, Lomandra regeneration and native species diversity, and an active search within the rehabilitation area to detect presence of Declared weeds, erosion, sedimentation or excessive dust deposition, evidence of altered land use, and other opportunistic observations of relevance.
- Targeted 10-year monitoring of paired sites in adjacent INTG (i.e. areas not impacted directly by the Project) to assess long-term condition of INTG patches in the Project Area (i.e. EPBC Condition Class Assessment).
- Annual reporting to detail results of the monitoring program and provide recommendations on necessity for implementation of additional, adaptive management measures.

6.3.3.3 Other Monitoring and Reporting

A number of management plans have not yet been drafted due to the stage of the Project; however this is likely to include:

- An OEMP and associated sub plans (as required), which will have ongoing monitoring and reporting requirements with regard to environmental aspects of wind farm operation including:
    - Bird and Bat Adaptive Management Plan (sub plan) and periodic reporting incorporating BUS surveys, carcass detectability trials, Scavenger efficiency trials, WTG mortality monitoring program.
    - Compliance tracking and monitoring and non-compliance reporting.
    - Weed and pest monitoring (and management).
    - Incident reporting.
    - Complaints register.
- Offset Management Plans (OMPs) for INTG, PBTL and SEB Offset sites, with monitoring and reporting likely to include detailed condition monitoring of vegetation and / or populations of PBTL, reporting of management actions undertaken and annual compliance reporting on trajectory of targets in relation to the individual OMP(s).

6.3.4 Adaptive Management

An adaptive management framework is a dynamic and systematic approach to managing environmental impacts during the construction and operation of developments such as GNWF. This approach recognises that on-ground conditions are dynamic and variable and allows early identification of potential issues and thus enables early intervention to improve the outcome. This is particularly crucial in ensuring that any unexpected findings related to MNES or other environmental concerns are promptly and effectively addressed to minimize or avoid adverse impacts.

Adaptive management is integrated into all associated environmental management plans and sub-plans (as outlined in Section 6.2). This integration ensures that the project can respond swiftly to any unforeseen environmental issues that may arise and have specific detailed triggers for each potential impact. For instance, if a previously unidentified species or habitat is discovered during construction, the adaptive management framework allows for immediate assessment and implementation of mitigation measures to protect the newly identified environmental values.

Adaptive management is also applied to both monitoring and offsets. This means that the project continuously evaluates the effectiveness of its environmental protection, monitoring and rehabilitation measures and adjusts them as necessary to ensure the best outcome for that aspect of the project. By doing so, the project can incorporate the latest best practices and scientific knowledge leveraged from species experts in the region, ensuring a robust and flexible approach to environmental management. This iterative process helps in refining strategies over time, leading to improved environmental outcomes and compliance with regulatory requirements.

By embedding adaptive management into the environmental management plans of wind farm construction projects, developers can ensure that they are prepared to handle unexpected environmental challenges effectively. This proactive approach not only safeguards environmental values but also enhances the overall sustainability and resilience of the project.

Examples of how an adaptive management framework can improve environmental outcomes is presented in Table 6.5.

Table 6.5: Adaptive management framework examples of environmental outcomes

Plan	Adaptive management framework	How it improves environmental outcomes
CEMP	Regular auditing of all control measures	Identifies controls which are / are not working effectively and allows trigger to be identified to change control to improve the outcome.
	Stop Work procedures for unexpected or chance finds.	Allows any worker to stop operations when an environmental or safety risk is identified, which enables immediate risk mitigation to prevent further harm, and enables time to evaluate causes and effectiveness of current controls, and recommend corrective actions.
	Regular CEMP review schedule	Provides an opportunity to reassess effectiveness of plan and current controls and mitigation measures and to incorporate any new best practice methods which may not have been identified at the time of writing.

Plan	Adaptive management framework	How it improves environmental outcomes
INTG MP	Annual monitoring of rehabilitation areas and defined trigger values for intervention.	Enables early identification of the need to investigate additional measures such as grazing management, fencing or active revegetation (direct seeding or tubestock), to achieve desired outcome.
PBTL MP	Pre-clearance checks	Identifies individuals and populations of PBTL present in Disturbance Footprint at time of construction which enables micro siting of infrastructure to avoid or minimise impacts.
Other	WTG collision monitoring (if required)	Informs risk of collision and identifies triggers or thresholds of impact which require additional management. Knowledge of species impacted, and timing of impacts can inform the types of adaptive management that might be considered. For example, it identifies potential problem areas (WTGs), higher risk windows or conditions (i.e. seasonal). Adaptive management will be based on the specific circumstance and best practice methods available at the time.

7 ASSESSMENT OF IMPACTS ON MNES

3. Relevant Impacts

a) Describe and assess the likely short-term and long-term impacts (direct, indirect, facilitated and cumulative) that may occur as a result of all components and project phases of the proposed action to the MNES listed at 2(b). This must also include impacts to suitable habitat for species that may not be present or recorded in the specific area.

b) The direct and indirect loss, disturbance or degradation of habitat from the proposed action. This must include the quality of habitat and total area in hectares, the number of relevant species impacted, and the area of potential habitat for the species likely to be impacted. The loss of vegetation and habitat even when considered temporary must be further described and relevant evidence furnished regarding direct and indirect impacts to MNES.

e) Analyse, discuss and determine, using the department's Significant Impact Guidelines 1.1, whether the proposed action will likely have significant impacts on relevant threatened species and ecological communities.

f) Any technical data and other information used or needed to make a detailed assessment of the relevant impacts. Provide copies of any surveys or ecological reports referenced in the preliminary documentation and ensure that the surveys and any other technical data information used is clearly referenced.

4. Proposed avoidance, management and mitigation measures

d) An assessment of the predicted effectiveness of the avoidance and mitigation measures for each threatened species and ecological community. This includes the scale and intensity of impacts of the proposed action and the on-ground benefits to be gained through each of these measures. Measures must be assessed and justified for their effectiveness in the context of this proposal and under varying conditions e.g., weather, change of operations, bushfire.

This section outlines the potential impacts on Matters of National Environmental Significance (MNES), detailing how both direct and indirect impacts discussed in Section 5 may apply to specific MNES. It further explains how the mitigation hierarchy has been specifically applied to avoid, minimise and mitigate these impacts and outlines the effectiveness of such measures. Lastly, it provides a significant impact assessment against the *Significant Impact Guidelines 1.1*. (DotE 2013a) for each MNES, ensuring a comprehensive evaluation of the potential environmental consequences of the Action.

Comparisons between the Referred, Varied, and current designs are indicative only. Due to the evolving maturity of the design, infrastructure components are not always directly comparable. Vegetation and habitat mapping has been refined through additional survey work, and while comparisons have been made using current mapped data where possible, these are not always directly aligned. Minor discrepancies may also occur due to rounding when spatial data is distributed across multiple parameters.

7.1 Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*) – Endangered

This section provides a comprehensive evaluation of the potential impacts on the Pygmy Blue-tongue Lizard due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Pygmy Blue-tongue Lizard is known to occur within the Project Area, Disturbance Footprint and Development Envelope (Umwelt 2025b).

7.1.1 Impact Summary

An overview of the direct impacts to Pygmy Blue-tongue Lizard as a result of the GNWF is provided in Table 7.1.

Table 7.1: Summary of direct impact to Pygmy Blue-tongue Lizard

		Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat quality	Known	18.98	1.06	20.04
	Likely	338.41	9.65	348.06
Total habitat impacted (ha)		**357.38**	**10.71**	**368.10**
Estimated # individuals impacted		206 (range 192 to 274)		

Source: Umwelt 2025a.

A maximum of approximately 368.10 ha of likely or known PBTL habitat is impacted by the proposed Disturbance Footprint. This includes 210.44 ha of permanent clearance and 157.65 ha of temporary clearance, however, for this species temporary clearance is considered equivalent to permanent impact due to the disturbance to the topsoil. Within this area, an estimated 206 individual PBTL (range 192 to 274) may be directly impacted, however this number is likely to be a conservative over-estimate.

Additional indirect impacts may affect PBTL and PBTL habitat within the Project Area. Indirect impacts include noise, vibration, shadow flicker and light disturbance to foraging and breeding activities during construction and operation, degradation of habitat from incursion of weeds, and potential sediment deposition, erosion and hydrology changes from built landscapes. These impacts are discussed broadly in Section 5.1.2 and Section 5.2.9 and in more detail in Section 7.1.1, Section 7.1.2.2 and Section 7.1.2.3.

The following PBTL characteristics and/or traits have been taken into consideration when assessing potential and/or likely impacts to PBTLs associated with the Project:

- PBTLs use unoccupied burrows of trapdoor (Mygalomorphae) and wolf (Lycosidae) spiders as refuges, basking sites and ambush points (Milne et al. 2003).
- PBTLs are sensitive to both movement and noise, retreating to their burrow if disturbed.
- PBTLs generally don't move far from their burrow (no more than 20 – 30 m) (Schofield 2015).

- PBTLs go into brumation (a state of torpor exhibited by reptiles) over winter (June/July/August) and many burrows become covered by debris, until the lizards become active again in spring (Schofield 2006).
- PBTLs breed in spring (October and November) and young are born from mid-January to mid-March, with juveniles dispersing from the mother's burrow within weeks of their birth to find burrows of their own (Clarke 2000; Duffy et al. 2012; Milne and Bull 2000).
- When PBTLs are not in brumation, most of the time they are either taking refuge within their burrow or basking with their back legs or tip of the tail remaining in the entrance of their burrow, waiting for passing invertebrate prey (Duffy et al. 2012).

An assessment of the Project Disturbance Footprint has determined that the GNWF has the potential to directly impact approximately 368.10 ha of potential PBTL habitat and indirectly impact (i.e. through potential noise, vibration and shadow flicker) up to 0.20 ha of additional habitat (Section 7.1.2.2). Impacts are quantified in terms of habitat quality in Table 7.2. The details of direct and indirect impacts to this species is presented in Table 7.14.

Table 7.2: Direct and Indirect impacts to PBTL as a result of the GNWF Project

Impact Type	Wind Farm	OTL	Phase	Duration
Direct Impacts				
Habitat loss (permanent) (ha)	204.64	5.81	Construction	Long-term / permanent
Habitat loss (Temporary) (ha)	152.75	4.91	Construction	Medium to long term
Displacement	Individuals within DF will be relocated to adjacent areas of suitable habitat, resulting in displacement of an estimated 206 (range 192 to 274) individuals.	No individuals are known to occur on OTL outside of WF boundary.	Construction	Short-term
Indirect Impacts				
Degradation of habitat or unauthorised clearance of habitat outside of DF	Low risk of unauthorized clearance due to specific controls and management measures outlined in CEMP and PBTL MP.	Low risk of unauthorized clearance due to specific controls and management measures outlined in CEMP and PBTL MP.	Construction	Short-term
Vehicle Collision Risk	Low risk of collision with vehicles as a result of new roads and increased traffic. Low risk of collision caused by vehicles driving off formed tracks. Specific controls and measures in place in CEMP and PBTL MP.	Low risk of collision outside of WF boundary as no PBTLs are known to occur on OTL outside of WF boundary.	Construction / Operation	Long term / life of Project
Pitfall (PBTLs getting trapped in trenches, pits and other open excavations).	Low risk due to sedentary nature of PBTL and PCC to microsite around or relocated impacted individuals.	Low risk as no PBTLs are known to occur on OTL outside of WF boundary.	Construction	Short-term
Degradation of habitat due to dust emissions	Minor risk of dust smothering flora and leading to loss of vegetation condition and PBTL habitat suitability. Managed by specific controls in CEMP and PBTL MP	No risk, as no known PBTL habitat occurs along OTL outside of WF.	Construction	Short-term
Altered grazing regimes (increased grazing, preferential grazing,	Low risk as PBTL are known to occur in grazed environments. Managed through site specific CEMP, OEMP and PBTL MP. Any potential	No risk as PBTL are known to occur in grazed environments and none are currently known	Construction /Operation	Short-term, intermittent, ongoing

Impact Type	Wind Farm	OTL	Phase	Duration
reduction or loss of grazing, altered grazing times).	impact is expected to be short-term in nature and temporary. Furthermore, the Project Owner (Neoen) will not have any direct control over grazing regimes as it is controlled by landowners or managers.	to occur on OTL. Managed through site specific CEMP, OEMP and PBTL MP.		
Sedimentation of PBTL burrows and/or PBTL habitat	Low risk of sedimentation from construction run-off (soil) and access tracks during construction. Managed through specific controls in CEMP, OEMP and PBTL MP.	No risk as PBTL are not known to occur along OTL outside of WF.	Construction / Operation	Short-term
Noise and vibration disturbance during construction and operation.	Potential disturbance to PBTLs in close proximity to construction areas or close to turbines from turbine noise and/or vibration. Potential for impact is unknown, however short-term studies at GSWF have shown PBTL to persist in areas close to infrastructure (WTGs, roads and substation) following 2-3 years of construction activity (Umwelt 2025a).	No risk as PBTL are not known to occur along OTL outside of WF.	Construction / Operation	Short term during construction and then Long-term / Ongoing
Introduction of new weeds to the Project Area,	Low risk or introduction or increase in weeds, through use of contaminated construction material, machinery and vehicles, leading to loss of vegetation condition and PBTL habitat suitability. However, risk is low due to specific controls in CEMP, OEMP and PBTL MP, and the Project Area is subject to high existing weed cover and PBTL are known to persist.	No risk as PBTL are not known to occur along OTL outside of WF.	Construction / Operation	Long-term / Ongoing
Fragmentation	Low to moderate risk of division and isolation of PBTL sub-populations by construction of vehicular access tracks. Managed through micro siting during construction.	No risk as PBTL are not known to occur along OTL outside of WF.	Construction / Operation	Long-term / Ongoing
Chemical spills causing degradation of PBTL habitat.	Chemical spills (e.g. fuel/diesel) causing degradation of PBTL habitat. Manageable through specific controls outlined in CEMP, OEMP and PBTL MP.	No risk as PBTL are not known to occur along OTL outside of WF.	Construction	Short-term, isolated

Impact Type	Wind Farm	OTL	Phase	Duration
Shadow flicker	Potentially meaningful level of disturbance to PBTL behaviour in 0.20 ha of PBTL habitat in close proximity to WTG 017 from blade shadow flicker resulting in: • Increase in predation of PBTLs by birds of prey (due to PBTLs becoming accustomed to shadows). • Potential decrease in PBTL body condition due to PBTLs basking less. • Potential decrease in breeding and / or genetic dispersal due to PBTLs taking refuge in their burrow more often.	No risk as shadow flicker is associated with WTGs are not present on OTL.	Operation	Long-term, Ongoing
Increased risk of illegal poaching risk as a result of increased awareness of the presence of MNES in the GNWF Project Area	Potential risk of increased awareness of the species occurrence within the GNWF Project Area or broader regional area, potentially leading to illegal poaching of the species.	Potential risk of increased awareness of the species occurrence within the GNWF Project Area or broader regional area, potentially leading to illegal poaching of the species.	Construction Operation Decommissioning	Long-term (minimum 25 years)

7.1.2 PBTL Specific Impacts

3. Relevant Impacts

i) Specifically, for the PBTL:

i. a comprehensive analysis of the impacts of sound, vibration and shadow flicker on PBTLs within the proposed action area,

ii. the direct and indirect impacts to the function and viability of Tiliqua Nature Reserve,

iii. the direct and indirect impacts of the proposed action on the spiders that build the burrows which the PBTL occupy.

7.1.2.1 Impact of noise (sound) and vibration on PBTLs

Predicted noise levels within the GNWF were modelled based upon A-weighted noise levels for the Goldwind GWH175-7.8 WTG option with serrated trailing edge. Predicted modelling suggests that the operation of the WTGs would result in a noise level of approximately 50 db(A) within a discrete 50 m radius of each WTG, with the noise prediction contour figure providing the A-weighted predicted noise levels between 35 and 50 dB(A), in 5 dB(A) increments (Echo 2025) (Figure 5.2). Outside of the discrete 50 m radius of individual WTGs, the noise level is predicted to be within the 45 db(A) range, gradually reducing with distance from the WTGs (Echo 2023; 2025), which may be considered comparable to natural background noise levels. The noise contour figure has been prepared based on weather and operational conditions which are most conducive to noise propagation and generation. Lower noise levels will occur for other weather and operation scenarios (Echo 2025). Vibrational impacts from modern WTGs may be considered improbable and thus inconsequential to sensitive (human) receivers (pers comms. Echo 2025).

The impacts of noise and vibration on PBTLs is largely understudied, particularly in reference to the construction and operation of wind farms and ancillary infrastructure. While there may be gaps in the current understanding of these specific impacts, it is widely accepted that lizards do respond to anthropogenic noise and vibration stimuli, with typical stress responses in lizards including a freeze response, which occurs when the lizard perceives fighting or fleeing to be too dangerous (Fabiola Mancera Alarcon 2015). Whilst this response to noise and/or vibration has not been observed specifically within PBTLs, stress responses have been recorded in a related species of blue-tongue lizard (*Tiliqua scincoides*) during a study observing the impacts of high-frequency, high amplitude noise used to replicate potential impacts in the mining industry during simulated control and impact studies (Mancera et al. 2017). Potential impacts as a result of low frequency noise/stimuli, such as those from wind farms, are less known, however, inaugural studies indicate the species is able to persist in close proximity to wind farms.

A recent preliminary, small sample size, study at the Goyder South Wind Farm indicated a sustained/stable presence of PBTL individuals within a buffer area of approximately 200 m adjacent to WTGs and other infrastructure such as roads and the substation (Umwelt 2025a). Further details of this study are presented in Section 7.1.5. The small numbers of individuals detected within areas adjacent to wind farm disturbance may be attributed to the disturbance footprint of the Goyder South Wind Farm deliberately avoiding areas of known PBTL habitat in the first instance, rather than an artefact of reduced occupancy of PBTL near and adjacent to WTGs and other infrastructure due to impacts associated with the WTGs.

Case Study: Preliminary Investigation into Indirect Impacts on PBTL at Goyder South Wind Farm

Neoen engaged Umwelt to conduct a preliminary observational study to investigate trends in PBTL occurrence around different components of the Goyder South Wind Farm. This project, approved by DCCEEW in 2021, is nearing construction completion.

A significant portion of the Goyder South Project Area has been heavily cleared and cultivated for crop production, particularly in areas with deeper soils and gentle slopes. The surrounding hills were historically cleared of native vegetation and now only support small, scattered patches of grassy woodland or native grassland in varying condition, which are utilised for grazing by livestock. There is a large and significant population of PBTL that occurs within areas of remaining grassland, which are found in close proximity to a variety of wind farm infrastructure.

Habitat mapping for the GSWF project found 782.08 ha of likely or potential habitat. The location of infrastructure within the Goyder South Project varies according to the topography, which naturally influences the habitat suitability for Pygmy Bluetongue Lizards (PBTL). As a result, some infrastructure components are naturally less likely to impact suitable PBTL habitat. For instance, WTGs are typically situated on hills with steep terrain and rocky soil, which are less ideal for PBTL habitats. In contrast, access roads and substations, often located on lower slopes with deeper soils, may traverse or be situated in areas that provide more suitable conditions for PBTL habitats, detailed in Table 7.3.

However, within these development areas, Neoen undertook further extensive design modifications and micro siting during construction to ensure that impacts to known PBTL and PBTL habitat were minimised, thus infrastructure is inherently situated away from existing population of PBTL as much as possible.

Table 7.3: Habitat Characteristics of the Various Infrastructure Components

Infrastructure Component	Habitat Characteristics
Wind Turbine Generator	Typically situated on hills, where the elevated terrain and open spaces provide optimal conditions for wind energy generation. However, these locations may not be ideal for PBTL (or burrowing spider) habitats due to steep terrain, rocky soil covering and generally shallower soils, as well as the lower quality of grassland due to livestock activity which is often concentrated on tops of hills.
Access Roads	Access roads are more often located on lower slopes and are required for transportation and ongoing maintenance. Their suitability as habitat for PBTL varies across the site, being less ideal at the tops of hills near WTGs, and traversing areas of more suitable habitat on the lower slopes.
Substation	The Substation is constructed on deep soils on low slopes adjacent to a creek line. The area provides more stable ground conditions for burrowing spiders and PBTL, however, the area is also extensively accessed by livestock at the nearby watering points.

Methodology

Surveys were conducted within a 200 m radius around four WTGs and the substation, as well as within a 50 x 200 m area at five sites on either side of access roads and four sites further away from infrastructure. Each site had previously supported a population of PBTLs before any infrastructure was built, however the density of PBTL populations was not known. Transects were systematically traversed by two surveyors approximately 5-10 m apart, with all burrows marked with a handheld GPS. The occupant and depth of

each burrow were recorded, and for PBTL-occupied burrows, the number of individuals and their age class (juvenile or adult) were noted. Data was analysed based on the distance from relevant infrastructure.

Survey Findings

Burrow occupancy: A total of 1,587 burrows were surveyed, with PBTLs recorded at each site. There were 151 PBTL-occupied burrows (9.51%). Specifically:

- Sites at WTGs: 659 burrows, 23 containing PBTLs.
- Sites at access roads: 431 burrows, 45 containing PBTLs.
- Site at the substation: 301 burrows, 47 containing PBTLs.

Proximity to infrastructure: The closest PBTL to each infrastructure component was found approximately 65 m from a WTG (7 m from the hardstand), 1-2 m from an access road, and 10 m from the substation boundary (65 m from the centre).

Burrow characteristics: PBTLs were more likely to be recorded in deeper burrows and were observed in close proximity to the different components of the Goyder South Project Infrastructure. No correlation was observed between the distance from infrastructure and the percentage of burrows containing PBTLs.

Spider occupancy: Burrow occupancy by spiders decreased closer to the WTGs, with more empty burrows and fewer deeper than 30 cm within 100 m of the WTGs. Similarly, burrows within 10 m of access roads showed lower occupancy by burrowing spiders and a higher incidence of empty burrows. No such patterns were observed beyond the 10 m range.

Conclusion

The study observed trends in PBTL occurrence and habitat near infrastructure, indicating that in the short-term PBTL persist in the presence of construction activities and wind farm infrastructure. However, the lack of comparable pre-construction data limits the ability to draw definitive conclusions about the potential contributing factors to these patterns. Environmental factors such as soil quality and habitat structure associated with the placement of various infrastructure components, are likely to have a strong influence on results. Additionally micro siting of infrastructure was undertaken to relocate infrastructure components away from PBTL populations and known habitat in the first instance, thus it is expected that the baseline occurrence of PBTL (and spiders) in these locations would be inherently lower than the surrounding, more suitable habitat. Long-term studies that include baseline data collected before construction are needed to better understand these potential impacts of noise, vibration and shadow flicker on populations of PBTL in proximity to wind farm infrastructure.

A research project led by Flinders University is currently underway for the GSWF, with the research plan developed as part of the conditions of approval for the GSWF Project, however baseline data was not available for this site, due to the timing of approvals, conditions and construction commencement. Thus, further studies are required to obtain baseline data on PBTL populations prior to any construction commencing. Given the patchy and sometimes sparse nature of PBTL populations, and the need for micro siting to move infrastructure away from known individuals, it is challenging to find suitable conditions to obtain this data.

7.1.2.2 Impact of shadow flicker from WTGs on PBTLs

Turbine blades are expected to be maximum 90 m in length, with a maximum blade tip height of 240 m (i.e. maximum rotor swept height), with a maximum rotation speed of 9-10 revolutions per minute. While turbine nacelles rotate with the wind direction to achieve maximum generation capacity, shadow flicker will occur predominantly on the southern side of a turbine, and the actual location of shadow flicker relative to individual PBTL would vary depending on the wind direction (and alignment of nacelles), time of day and time of year. The distance at which shadow flicker has potential to impact on PBTLs would vary with the position of the sun and the turbine relative to each individual PBTL.

A shadow flicker assessment was initially undertaken by GHD (GHD 2024a) to inform the development application for the Project, which was subsequently revised to align with the 99 WTG Project layout as part of Neoen's response to the DCCEEW RFI dated 5 December 2024 relating to the Project. Very minor subsequent alterations to the location of a single WTG (WTG 011) occurred to increase the set-back from Mokota CP to 470 m in response to feedback from stakeholders, which are discussed where relevant below.

The shadow flicker assessment consisted of modelling shadow flicker and blade glint within the Project (i.e. GNWF plus any subsequent stages), initially for 135 WTGs, and subsequently revised to 99 WTG locations within the Project Area. The assessment included modelling the proposed (WTG) configuration (at the time of the assessment) and the surrounding buildings (sensitive receptors), whilst identifying relevant impacts and potential mitigation measures for potential impacts on sensitive receptors located near the GNWF. The shadow flicker model outputs have been applied here to assess the degree of potential impact to PBTL.

Potential impacts to PBTL caused by Shadow flicker

Whilst the impact of shadow flicker on PBTL is largely unknown, it could be predicted that the species may respond in a variety of ways. Such changes may include:

- A change in temporal activity, i.e. the species activity is reduced during daily periods of shadow flicker, compared with individuals not impacted by shadow flicker
- Increased stress response, leading to an increase in metabolic rate and energy expenditure and subsequent reduced body condition
- Reduced foraging behaviour as a result of reduced activity during periods of shadow flicker influence, leading to reduced body condition
- Localised changes in mate seeking; the species may seek refuge for longer periods of time
- Individuals outside of the shadow flicker area may not disperse into areas impacted by shadow flicker, thereby leading to less recruitment into areas impacted by shadow flicker and a reduction in population size over time
- Change in response to predators during period of shadow flicker influence. This could include a heightened predatory response where the species remains in their burrows for longer period of

time, or alternatively desensitisation to overhead shadows potentially leading to reduced awareness of predators and an increase in mortality

- Behavioural impacts to burrowing spiders in areas of shadow flicker influence, leading to long term population reductions and therefore no succession of burrows in the area, which ultimately leads to a reduction in PBTL populations due to lack of available burrows.

Methodology

GHD undertook the shadow flicker modelling for the GNWF using the EMD windPRO 4.0 software package against the wind turbine layout and sensitive receptor locations provided by Neoen at the time (GHD 2024a). A revised shadow flicker model was developed by GHD based upon the revised GNWF layout, inclusive of 99 WTGs (spatial model data, GHD 2025). The revised model was used to interpret potential impacts to PBTL, which are described here. The assessment was based upon design details including:

- maximum hub height of 160 m
- maximum rotor diameter of 180 m (noting a rotor diameter of 190 m is currently proposed)
- maximum tip height of 240 m

The shadow flicker model simulates the path of the sun over the course of a year to calculate the position of the sun at different times of the day across seasons relative to the proposed wind turbines, and considers land topography to predict the areas which would be subjected to shadow flicker in the vicinity of the wind farm from a purely geometrical standpoint. The calculations provide the theoretical number of hours of shadow flicker experienced across the area of influence.

The shadow flicker assessment was undertaken in accordance with the Draft National Wind Farm Development Guidelines for Australia (EPHC 2010; GHD 2024a). The shadow flicker maximum distance of influence was evaluated in accordance with the Draft National Guidelines using a distance of 265 m x the maximum blade chord (estimated to be approximately 6.6 m) and based upon a minimum sun angle of 3 degrees.

Of note, a series of assumptions were made during the shadow flicker assessment, including the turbine model and blade glint (model and manufacturer is yet to be determined, thus agreed proxy numbers were applied, where relevant), to provide a 'worst case' and 'expected' scenario. The 'worse case' scenario assumes complete sunshine during daylight hours and has been modelled on the basis of no tree coverage or obstacles blocking shadow flicker. The 'expected' case modelling results are scaled according to the statistical likelihood of cloud cover for different times of the day, and applies additional assumptions to determine a more realistic output, (such as expected cloud cover, impact of wind direction on orientation of WTG during periods of potential shadow flicker, WTG downtime (e.g. below cut-in speed, during maintenance). Details of the different scenarios are outlined in the GHD (2024a) report.

For the purposes of the assessment of potential impacts to PBTL, shadow flicker was broken down into categories based on the number of hours of shadow flicker influence over the course of a year. Whilst the shadow flicker modelling provides results in hours per year, an approximate conversion into equivalent number of days per year, based on an average of 12 hours per day of daylight hours across a year, is applied to assist with interpretation of data. Based on the equivalent days per year of estimated shadow

flicker, an assessment of potential temporal and behaviour disruption to PBTL and an expected level of significance to PBTL has been undertaken for each of the shadow flicker impact categories.

As impacts of wind turbine generated shadow flicker on PBTLs have not previously been assessed, and as there is currently no relevant peer reviewed reference material available, it is difficult to accurately predict the species response. As such, a conservative approach has been applied to the assessment, where in reality, it may be expected that individuals within a population may respond to changes within their environment in different ways, i.e. there may be a varied response to anthropogenic shadow flicker, and therefore varied potential impacts of shadow flicker across a year. The shadow flicker categories applied, and corresponding assessment of PBTL predicted responses to wind turbine generated shadow flicker is presented Table 7.4 below.

Table 7.4: Shadow flicker categories applied and predicted PBTL responses to wind generated shadow flicker

Hours per year of shadow flicker	Approximate equivalent days per year[1] (spread over year)	Temporal nature of potential impact[2]	Potential temporal impacts to PBTL and PBTL response Assessment / expected level of significance (if any)[3]
1-10	<1	Areas subjected to less than the equivalent of a single day of shadow flicker impact throughout a year. Areas are likely to be impacted for only very short periods of individual days (e.g. during early morning or late afternoon), for only a small number of days within a single season (e.g. potentially during winter when the sun is in the most northern portion of the sky). Impact duration considered very minor over very small portions of the year.	Negligible / no discernible impact expected to PBTL. No changes to PBTL behaviour or activity expected. This amount of shadow flicker could be perceived as somewhat equivalent to light aircraft activity (e.g. associated with weed/pest control) above PBTL habitat throughout a year.
11-30	1 to 2.5	Areas subjected to up to the equivalent of 2.5 days of shadow flicker impact throughout a year. Areas are likely to be impacted for short periods of individual days (e.g. during morning or afternoon), and for a relatively small number of days within a single season (e.g. for an hour a day for around a month, or for shorter period per day over more than a month). Impact duration considered very minor over small portions of the year.	Negligible / no discernible impact expected to PBTL. No changes to PBTL behaviour or activity expected. This amount of shadow flicker could be perceived as similar to, or equivalent of, natural ground shadow movements arising from typical patchy weather and changes in cloud cover over very short periods of time, spread across a year.
31-100	2.6 to 8.3	Areas subjected to up to the equivalent of 8.3 days of shadow flicker impact throughout a year. Areas are likely to be impacted for short periods of individual days across a season (e.g. for an hour a day for around 3 months), or for very short periods (less than an hour) per day over more than 3 months of the year. Impact duration considered minor over small portions of the year.	Negligible impact expected to PBTL. No long-term changes to PBTL behaviour or activity expected. PBTLs are expected to recover from any short-term temporary pause in activity, or change in behaviour, on effected days, and be able to successfully complete daily activities to complete life cycle requirements. This amount of shadow flicker could be perceived as slightly beyond the natural ground shadow movements arising from typical patchy weather and changes in cloud cover one days of the year when influenced by shadow flicker.
101-250	8.4 to 20.8	Areas subjected to up to the equivalent of 20.8 days of shadow flicker impact throughout a year. Areas are likely to be impacted for periods of individual days across multiple months (e.g. for up to 3 hours a day for 2.7 months of the year, or for up to 4 hours a day for 2 months of the year), or for shorter periods per day (e.g. up to 2 hours a day) for up to 4 months of the year. Impact duration considered moderate over small portions of the year.	Possible changes to PBTL behaviour for portions of the population, i.e. to individuals that may be more sensitive to environmental change or disturbance. Temporal disruption may include remaining within burrows and therefore reduced potential foraging behaviour during times of shadow flicker influence, due to an increased predator response (leading to increase in metabolic rate and use of energy) for predisposed individuals. Possible negligible impact to other individuals, as it may be assumed that certain individuals within a population will respond less to anthropogenic/artificial stimuli (in this case shadow flicker) or recover quicker from any pause in activity. Differences in response to stimulus may be differences between sexes, or age classes. This category may be considered the lower threshold for potential changes in PBTL behaviour. However, there is a chance that it may not impact PBTL behaviour at all, as a maximum of the equivalent of 20 days of impact spread over a year (including winter and early mornings late and afternoons when no basking is expected) may result in no measurable change for PBTL and therefore be considered inconsequential or insignificant.
251-500	20.9 to 41.6	Areas subjected to up to the equivalent of 41.6 days of shadow flicker impact throughout a year. Areas are likely to be impacted for periods of individual days across multiple months (e.g. for up to 3 hours a day for 5.5 months of the year, or for up to 4 hours a day for 4 months of the year), or for shorter periods per day (e.g. up to 2 hours a day) for over 8 months of the year. Impact duration considered moderate over meaningful portions of the year.	Potential impact to PBTL behaviour or temporal activity of individuals within the direct area subjected to shadow flicker. Impacts may include avoidance of foraging behaviour during times of shadow flicker influence, increased predator response (leading to increase in metabolic rate, use of energy, reduction in body condition), reduced opportunity to mate during breeding periods due to reduced activity (i.e. individuals may remain in their burrows or retreat to their burrows at increased rates compared to those in unimpacted areas). Individuals outside of the shadow flicker area may disperse into areas impacted by shadow flicker at reduced rates, thereby leading to a possible reduction in numbers of PBTL within shadow flicker impact area (i.e. less recruitment) over the longer term. This category may be considered to represent a moderate impact area. Impacts may potentially be significant to the individuals within the shadow flicker area, or may not impact PBTL behaviour at all, as a maximum of 41.6 days of shadow flicker influence spread over the year (including winter and early mornings and late afternoons when no basking is expected) may not be sufficient to result in significant impacts.

Hours per year of shadow flicker	Approximate equivalent days per year[1] (spread over year)	Temporal nature of potential impact[2]	Potential temporal impacts to PBTL and PBTL response Assessment / expected level of significance (if any)[3]
501-750	41.7 to 62.5	Areas subjected to up to the equivalent of 62.5 days of shadow flicker impact throughout a year (noting that for the 'expected' scenario, a maximum number of hours per year of 516 was modelled, equating to up to the equivalent of 43 days of shadow flicker impact) Areas are likely to be impacted for long periods of individual days across multiple months (e.g. for up to 4 hours a day for 6 months of the year, or for up to 8 hours a day for 3 months of the year, or all day for 2 months of the year), or for shorter periods per day (e.g. up to 3 hours a day) for around up to 8 months of the year. Impact durations considered high over meaningful portions of the year.	Possible sustained impact to PBTL behaviour or temporal activity of individuals within the direct area subjected to shadow flicker. As per above category, but for more prolonged period of the year, impacts may include avoidance of foraging behaviour during times of shadow flicker, increased predator response (leading to increase in metabolic rate, use of energy, reduction in body condition), reduced opportunity to mate during breeding periods due to reduced activity (i.e. individuals may remain in their burrows or retreat to their burrows at increased rates compared to those in unimpacted areas). Individuals outside of the shadow flicker area may not disperse into areas impacted by shadow flicker area, thereby leading to a possible reduction in numbers of PBTL within shadow flicker impact area (i.e. less recruitment) over the longer term. This category may be considered to represent a high impact area. Impacts may potentially be significant to the individuals within the shadow flicker area. Individuals within these areas would be priority individuals for relocation or translocation mitigations (or could be used as part of the Goyder South Research Project on PBTL response to shadow flicker impacts).
751-1,000[4]	62.6 to 83.3	Areas subjected to up to the equivalent of 83.3 days of shadow flicker impact throughout a year (noting that this category exceeds the maximum number of hours modelled for the 'expected' scenario of 516, and is only relevant for the 'worst case' scenario). Areas are likely to be impacted for long periods of individual days across multiple seasons (e.g. for up to 4 hours a day for 8 or more months of the year, or for up to 8 hours a day for 4 months of the year, or all day for 2.6 months of the year), or for shorter periods per day (e.g. up to 3 hours a day) for the majority of the year. Impact durations considered high over significant portions of the year.	Possible/probable ongoing/chronic impact to PBTL behaviour or temporal activity of individuals within the direct area subjected to shadow flicker. As per above categories, but for greater durations and for more prolonged periods of the year, impacts may include avoidance of foraging behaviour during times of shadow flicker leading to a loss of body condition, increased predator response (leading to increase in metabolic rate, use of energy, reduction in body condition), poorer mating success due to loss of body condition, reduced opportunity to mate during breeding periods due to reduced activity (i.e. individuals may remain in their burrows or retreat to their burrows at increased rates compared to those in unimpacted areas). Individuals outside of the shadow flicker area may also not disperse into areas impacted by shadow flicker, thereby leading to a reduction in numbers of PBTL within shadow flicker impact area (i.e. less recruitment) over the longer term. The areas impacted by this category are relatively small, and are only relevant to the 'worst-case' scenario which is not adjusted for cloud cover and other reducing factors. This category may be considered to represent a very high impact area. Impacts are likely to be significant to the individuals within the shadow flicker area. Individuals within these areas would be priority individuals for relocation or translocation mitigations (or could be used as part of the Goyder South Research Project on PBTL response to shadow flicker impacts).

[1] Based upon average of 12 hours sunlight per day across a year.

[2] Temporal disruption to PBTL has been subjectively assessed based on the maximum estimated impact due to shadow flicker for each category.

[3] Hypothesised impact or disruption to PBTL only. It is possible that PBTL may not exhibit these behaviours in response to shadow flicker.

[4] Note a maximum of 516 hours per year for the 'expected' scenario, and 899 hours per year for the 'worst case' scenario was modelled in the GHD assessment (GHD 2025), however, the range up to 1,000 was used as a buffer.

PBTL ecology and behaviour in relation to shadow flicker

Key information on the unique ecology and behaviour of PBTL are described in Section 4.1, and have been taken into consideration during the shadow flicker assessment herein.

Little is currently known regarding outcomes from controlled experiments using 'before-after / control-impact' (BACI) designed assessments regarding wind farm developments and interactions with PBTL, however, as cited in Section 7.1.2.2, recent preliminary, small sample size studies at the GSWF indicate a sustained/stable presence of PBTL individuals within a buffer area of approximately 200 m adjacent to WTG, and other infrastructure such as roads and a substation, within the Goyder South project (Umwelt 2025a. The short study found noted that further investigations are required to better understand the impacts of wind farms, and particularly shadow flicker on both spiders and PBTLs.

Other earlier research undertaken as part of a Scientific Monitoring and Research Plan: *The Impact of the Hornsdale wind farm on lizard body condition and behaviour* (EBS Ecology 2017) found that PBTLs close to turbines (about 50 m from a turbine) were more conservative in their basking compared to PBTLs further away from turbines (about 500 m from a turbine). However, this study is based on very limited data set of <10 individuals, did not include granularity on intermediate distances, and so should not be considered conclusive information.

It is not possible to provide a detailed, empirically based, assessment of the potential for long-term and cumulative impacts to PBTL from shadow flicker, or to know exactly how PBTL might be impacted by shadow flicker, due to a lack of scientific data on shadow flicker impacts to PBTL. Current research is proposed as a condition of EPBC Approval in conjunction with GSWF, to look more closely at the abovementioned potential impacts of shadow-flicker on populations of PBTL.

PBTL habitat used in the assessment

PBTL broad habitat requirements are described in Section 4.1.3. In summary, a total of 181.86 ha has been mapped as known PBTL habitat, and 10,972.26 ha has been mapped as likely PBTL habitat within the Project Area (i.e. areas within the Wind Farm, and within an approximate 3 km alignment in the northernmost portion of the OTL outside of the Wind Farm), equating to a total of approximately 11,154.12 ha collectively considered known or likely PBTL habitat. This shadow flicker assessment used this mapping to determine the likely and potential impacts to known and likely PBTL habitat.

Results of shadow flicker assessment on PBTL

Blade Glint Assessment

Blade glint is not considered to impact PBTL. Many wind turbine blade manufacturers produce blades finished with a low-reflective treatment, and thus the risk of blade glint is considered low. As such no further assessment of blade glint was undertaken (GHD 2024a). Neoen will commit to ensuring appropriate, industry accepted low-reflective treatment blades are selected and used for each WTG across the GNWF.

Shadow flicker assessment

The shadow flicker maximum distance of influence as a result of the GNWF is calculated to be approximately 1,760 m (i.e. the farthest reach of potential shadow flicker, based upon worst case scenario) (GHD 2025). As such, shadow flicker impacts extend beyond the GNWF Project Area at some locations.

A total maximum area of approximately 16,391.76 ha (expected scenario) and 16,395 ha (worst case scenario) will be impacted by shadow flicker as a result of the GNWF, with a total maximum area of approximately 13,633.18 ha (expected case) and 13,635.02 ha (worst case) occurring within the GNWF Project Area. Shadow flicker impacts to the areas noted occur at varied times during the year (for both expected and worst case), and varies markedly across the total area of influence, from areas impacted by only a few hours of shadow flicker per year, to areas subjected to the equivalent of over 80 days of impact per year.

The predicted occurrence of shadow flicker (hours per year) (GHD 2025) against habitat criteria for all of the PBTL habitat types (i.e. known, likely, unlikely and unsurveyed PBTL habitat) (Umwelt 2025b) is provided in Table 7.5 for both the 'worst case' and 'expected' scenarios, with Figure 7.1 and Figure 7.2 showing the two scenarios respectively. Figure 7.3 shows only areas affected by more than 100 hours of shadow flicker per year for the 'expected case'. Table 7.6 shows the combined known and likely PBTL habitats predicted to be impacted by shadow flicker within the GNWF, representing the areas of impact arising from shadow flicker to PBTL known and likely habitat. These areas overlap with/are inclusive of the Disturbance Footprint, and thus are considered an over-representation of the area for which shadow flicker will influence PBTLs, noting that any PBTLs identified in pre-clearance surveys within the Disturbance Footprint will be relocated (or translocated) outside of the Disturbance Footprint.

It is noted that the above outcomes are from modelling undertaken before the minor shift of WTG 011 (which was undertaken as part of continual application of the mitigation hierarchy), but this minor shift in location of a single turbine does not notably influence these, or any of the shadow flicker outcomes, as the single turbine area of shadow influence is not overlapping with any other turbine's areas of shadow influence either before or after the shift, and the PBTL habitat suitability categories are the same in the previous and revised locations. A minor reduction in shadow influence within Mokota CP is achieved.

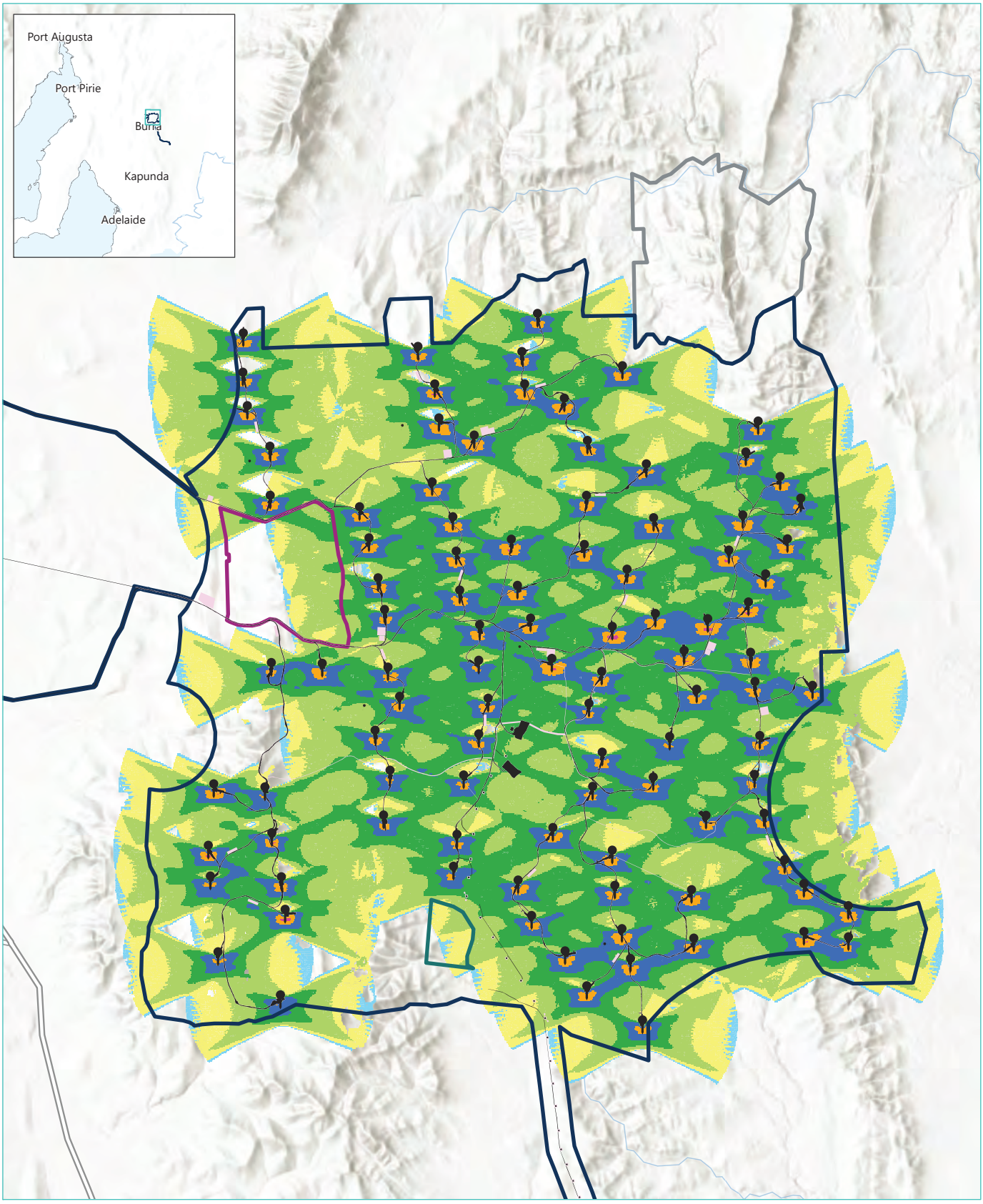


Figure 7.1: Goyder North Wind Farm shadow flicker worst case

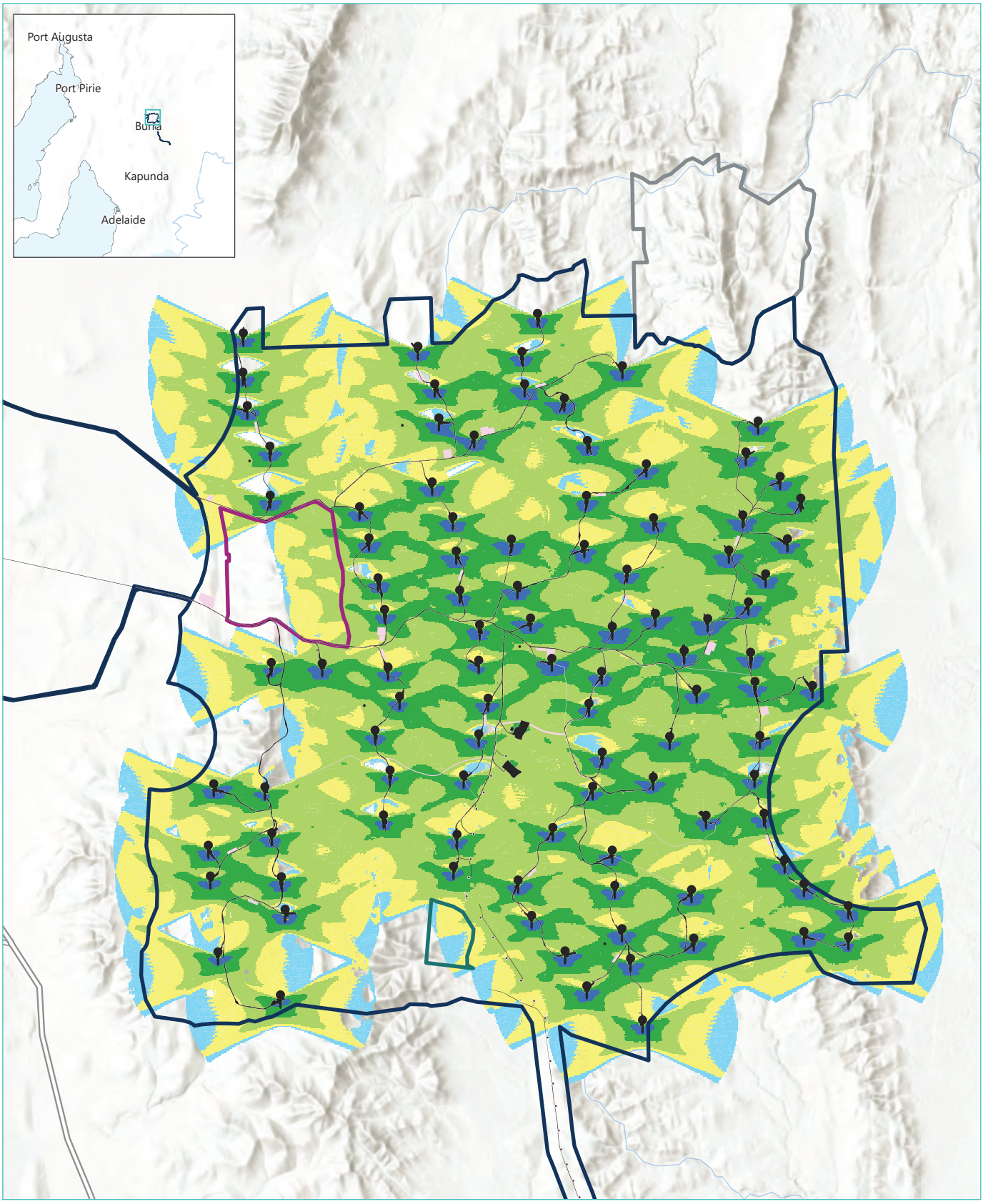


Figure 7.2: Goyder North Wind Farm shadow flicker expected case

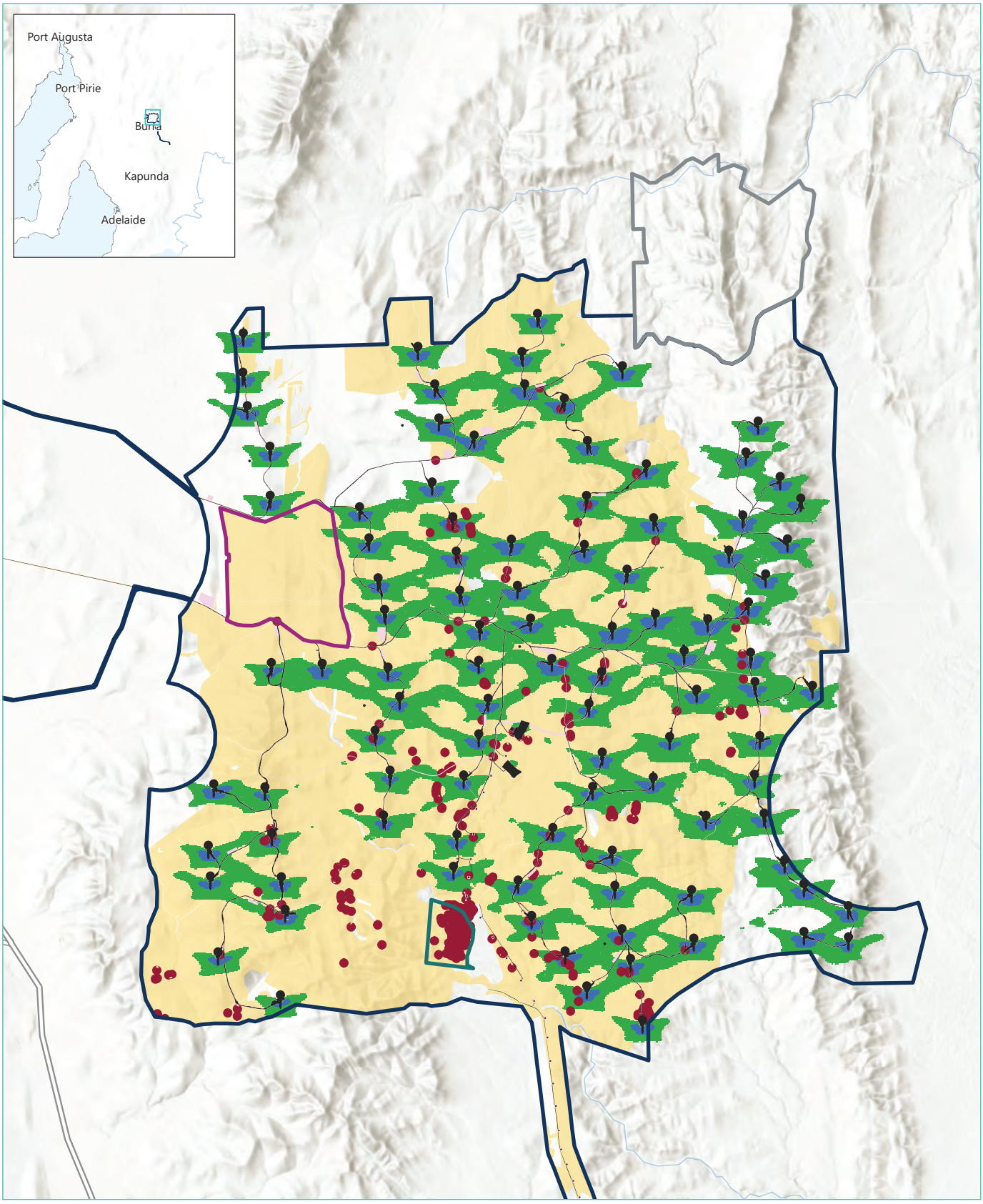


Figure 7.3: Goyder North Wind Farm shadow flicker expected case greater than 100 hours per year

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Table 7.5: Area of shadow flicker influence by impact category within PBTL habitat types within GNWF (expected and worst-case scenarios)*

Hours per year of shadow flicker	Approximate equivalent days per year[1] (spread over year)	Known PBTL Habitat (ha)[2]		Likely PBTL Habitat (ha)[2]		Unlikely PBTL Habitat (ha)		Unsurveyed Habitat (ha)	
		Expected	Worst case	Expected	Worst case	Expected	Worst case	Expected	Worst case
1-10	<1	15.31	2.18	472.61	158.69	185.57	52.60	185.57	52.60
11-30	<1 to 2.5	54.56	33.01	1,852.51	1,018.75	865.67	425.21	865.67	425.21
31-100	2.6 to 8.3	64.46	67.05	4,604.73	3,270.90	1,385.93	1,374.45	1,385.93	1,374.45
101-250	8.4 to 20.8	28.76	48.48	2,731.86	3,984.08	696.88	932.62	696.88	932.62
251-500	20.9 to 41.6	15.72	17.79	511.03	1,455.01	159.00	416.11	159.00	416.11
501-750	41.7 to 62.5	-	10.21	0.20	282.49	-	90.72	-	90.72
751-1,000	62.6 to 83.3	-	0.10	-	4.58	-	1.88	-	1.88
Maximum area influenced by shadow flicker[3]		178.81	178.81	10,172.94	10,174.50	3,293.04	3,293.61	3,293.04	3,293.61

[1] Average of 12 hours of sunlight per day assumed

[2] PBTL known and likely categories include areas within vegetation associations VA6, VA9, VA11 and exotic grassland, as described in Section 4.1.6.

[3] These areas include areas that will be impacted by the Disturbance Footprint. Concession for the Disturbance Footprint has been presented in Table 7.7.

* Results based on modelling undertaken prior to minor shift of WTG 011, however impacts to PBTL habitat are not expected to have increased.

Table 7.6: Area of shadow flicker influence by impact category within PBTL 'known' and 'likely' habitats combined within GNWF (expected and worst-case scenarios)*

Hours per year	Equivalent days per year[1]	Combined 'known' and 'likely' PBTL habitat (ha)[2]	
		Expected case	Worst case
1-10	<1	487.91	160.86
11-30	<1 to 2.5	1,907.08	1,051.75
31-100	2.6 to 8.3	4,669.18	3,337.95
101-250	8.4 to 20.8	2,760.62	4,032.56
251-500	20.9 to 41.6	526.76	1,472.80
501-750	41.7 to 62.5	0.20	292.70
751-1,000	62.6 to 83.3	-	4.68
Maximum area influenced by shadow flicker[3]		10,351.75	10,353.31

[1] average of 12 hours of sunlight per day assumed.

[2] PBTL habitat as assessed in Umwelt (2025b), and as described in Section 4.1.6.

[3] These areas include areas that will be impacted by the Disturbance Footprint. Concession for the Disturbance Footprint has been presented in Table 7.7.

*results based on modelling undertaken prior to minor shift of WTG 011, however impacts to PBTL habitat are not expected to have increased

The overall areas influenced by shadow flicker in the modelling presented above includes areas within the Disturbance Footprint, which will ultimately not represent PBTL habitat once construction is complete. Table 7.7 below provides revised modelling which excludes the Disturbance Footprint from the areas of shadow flicker influence, which reduces the potential area of impact from shadow flicker across each category, and in total by approximately 348.54 ha for the expected case, representing approximately 64% of the total Disturbance Footprint. This is considered a more representative approach to the assessment of indirect impact of shadow flicker to PBTLs within the GNWF Project Area. Consequently, these areas of potential impact have been used to assess potential indirect impacts and overall Project residual impacts and therefore offset calculations.

Table 7.7: Area of shadow flicker influence by impact category within PBTL 'known' and 'likely' habitats combined within GNWF (expected and worst-case scenarios) excluding Disturbance Footprint*

Hours per year	Equivalent days per year[1]	Combined 'known' and 'likely' PBTL habitat (ha)2	
		Expected case	Worst case
1-10	<1	471.52	155.96
11-30	<1 to 2.5	1,854.44	1,023.01
31-100	2.6 to 8.3	4,541.83	3,239.80
101-250	8.4 to 20.8	2,663.95	3,923.69
251-500	20.9 to 41.6	471.26	1,403.94
501-750	41.7 to 62.5	0.20	254.26
751-1,000	62.6 to 83.3	-	4.05
Maximum area influenced by shadow flicker[3]		10,003.21	10,004.72

[1] average of 12 hours of sunlight per day assumed.

[2] PBTL habitat as assessed in Umwelt 2025b, and as described in Section 4.1.6.

[3] These areas exclude areas impacted by the Disturbance Footprint.

*results based on modelling undertaken prior to minor shift of WTG 011, however impacts to PBTL habitat are not expected to have increased.

Areas within the combined 1-100 hours per year categories (i.e. equivalent to <1 to 8.3 days per year) account for a large portion of the combined known and likely PBTL habitat within the GNWF (6,867.79 ha of the expected case with the Disturbance Footprint removed) representing 68.66% of the total area of known or likely PBTL habitat which is influenced by shadow flicker. These areas are expected to be minimally impacted by shadow flicker, with no predicted changes to PBTL behaviour or activity expected in these areas.

Areas within the 101-250 hour per year category (i.e. equivalent to 8.4 to 20.8 days per year) also account for relatively large portions of the area of influence (26.67% of the known and likely habitat impacted by shadow flicker) in the expected case including the Disturbance Footprint (2,760.62 ha) and represent approximately 2,663.95 ha (26.63%) in the expected case with the Disturbance Footprint removed. In these areas, some small/initial changes to PBTL behaviour or activity may occur in some individuals within the population that may be more sensitive to environmental stimuli, whilst it is possible there may be a negligible impact / no discernible disruption to other individuals. This may be considered the lower threshold for potential changes in PBTL behaviour, or may not impact PBTL behaviour at all, as a maximum of the equivalent of 20.8 days of impact spread over the year (including through winter and in early mornings and late afternoons when PBTL are not expected to be basking) may not be enough to cause a notable change in PBTL life cycle and may still be considered inconsequential.

Areas within the 251-500 hours per year category (i.e. 20.9 to 41.6 days per year) account for an area of 526.76 ha for the expected case with the Disturbance Footprint included (representing 5.09% of the shadow impacted area) and 471.26 ha (4.71%) for the expected case with the Disturbance Footprint removed. In these areas there may be a possible impact to PBTL behaviour or temporal changes to activity to individual PBTL within the direct area subjected to shadow flicker. This may include avoidance of foraging behaviour during times of shadow flicker, an increased predator response (leading to increase in metabolic rate, use of energy, reduction in body condition), reduced opportunity to mate due to reduced activity or avoidance behaviours (i.e. individuals may remain in their burrows or retreat to their burrows at increased rates compared to those in unimpacted areas). Individuals outside of the shadow flicker area may not disperse as readily into areas impacted by shadow flicker, thereby leading to a possible reduction in population numbers within the shadow flicker impact area (i.e. less recruitment) over the longer term. But again, the maximum of 41.6 days of impact is spread over the year and includes periods of non-basking time (winter, early mornings, late afternoons) and this category carries uncertainty whether indirect impacts would cause a measurable impact to PBTLs.

For the two highest impact categories within the 'expected' case scenario, there is a single 0.20 ha area subjected to shadow flicker within the 501-750 hours per year category. This discrete area occurs on a north-facing slope slightly to the south of WTG 017, and represents only 0.002% of the known or likely PBTL habitat. There are no predicted areas impacted within the 751 to 1,000 hours per year category for the expected case (or equally for the expected case with the Disturbance Footprint removed). These durations of shadow flicker influence may be expected to result in a sustained impact to PBTL behaviour or temporal activity to individual PBTLs within the direct area subjected to sustained shadow flicker across any given year. PBTLs within this discrete area may avoid foraging behaviour during times of shadow flicker, increase their predator response (leading to increase in metabolic rate, use of energy, reduction in body condition), and have reduced mating opportunity during breeding periods due to reduced activity (i.e. individuals may remain in their burrows or retreat to their burrows at increased rates compared to those in unimpacted areas). Individuals outside of the shadow flicker area may not disperse into areas impacted by shadow flicker, thereby leading to a possible reduction in numbers of PBTL within shadow flicker impact area (i.e. less recruitment) over the longer term. This discrete area of 0.20 ha in close proximity to WTG 017 may be considered to represent a high impact area with potentially significant impacts to any individuals within this shadow flicker area. It is worth noting that there are no PBTL records currently recorded within this discrete area (BDBSA records and Umwelt records as cited in Umwelt 2025b and Umwelt 2025c), and that WTG 017 has been micro sited during the targeted surveys to avoid known PBTL locations (Umwelt 2025b, Umwelt 2025c).

As noted above, the shadow flicker potential maximum distance of influence as a result of any WTG is calculated to be approximately 1,760 m (i.e. the farthest reach of potential shadow flicker, based upon worst case scenario) (GHD 2024). As such, some shadow flicker has been modelled to extend beyond the GNWF Project Area at some locations, including into surrounding conservation reserves.

The potential occurrence of shadow flicker (hours per year) within the nearby conservation areas (Mokota Conservation Park, Tiliqua Nature Reserve, and Mongolurring Nature Reserve) is provided in Table 7.8. The Disturbance Footprint, however, does not encroach upon these conservation areas, and as such, the expected case and worst-case scenarios are provided in Table 7.8.

Table 7.8: Area and duration of shadow flicker within conservation areas in or adjacent to GNWF (expected and worst-case scenarios)

Hours per year of shadow flicker	Approximate equivalent days per year1 (spread over year)	Mokota CP (ha)		Tiliqua Nature Reserve (ha)		Mongolurring Nature Reserve (ha)	
		Expected	Worst case	Expected	Worst case	Expected	Worst case
1-10	<1	20.22	13.33	26.73	5.38	6.31	2.60
11-30	<1 to 2.5	136.89	56.65	38.73	42.09	9.99	12.11
31-100	2.6 to 8.3	138.00	187.40	1.57	19.55	-	1.67
101-250	8.4 to 20.8	6.21	43.64	-	-	-	-
251-500	20.9 to 41.6	-	0.37	-	-	-	-
501-750	41.7 to 62.5	-	-	-	-	-	-
751-1,000	62.6 to 83.3	-	-	-	-	-	-
Maximum area influenced by shadow flicker		301.32	301.40	67.02	67.02	16.30	16.38

[1] average of 12 hours of sunlight per day assumed.

As can be seen in Table 7.8 above, whilst shadow flicker is anticipated to impact parts of Mokota Conservation Park, Tiliqua Nature Reserve, and Mongolurring Nature Reserve, this predominantly occurs within the 1-100 hours per year categories, whereby potential impacts of shadow flicker would likely only occur for small periods per day over a small number of weeks to months per year. As these potential impacts of shadow flicker as considered relatively minor, no predicted changes to PBTL behaviour or activity is expected in these areas (should the species occur in Mongolurring Nature Reserve 1264), and noting the species has never been located within Mokota CP despite previous targeted surveys, as Mokota CP is considered unsuitable due to a low number of spider burrows and having a vegetation community equivalent to other uninhabited areas of known lizard inhabited sites (Souter et al. 2007). No other direct or indirect impacts as a result of the GNWF are expected to impact Tiliqua Nature Reserve or Mongolurring Nature Reserve.

For Mokota CP only (where PBTL has not been identified), areas within the 101-250 hours per year category (i.e. 8.4 to 20.8 equivalent days) equate to 6.21 ha for the 'expected' scenario (based on the earlier 99 WTG layout, which has been further reduced with the relocating of WTG 011 further from the CP boundary). In these areas, if the species is present, some small/initial changes to PBTL behaviour or activity may occur in some individuals within the population that may be more sensitive to environmental stimuli/stressors, whilst it is possible there may be a negligible impact / no discernible disruption to other individuals. This may be considered the lower threshold for potential changes in PBTL behaviour, or may not result in an impact to PBTL behaviour at all, as a maximum of the equivalent of 20 days spread throughout the year may be considered inconsequential.

Also for Mokota CP only, a very small area of 0.37 ha occurs within the 251-500 hours per year category (i.e. 20.9 to 41.6 equivalent days per year), and this area will reduce or be eliminated entirely with the revised WTG 011 location. In this area, if the species is present, there may be a possible impact to PBTL behaviour or temporal activity to individual PBTL within the direct area subjected to shadow flicker, should the species occur in this area at all. This may include avoidance of foraging behaviour during times of shadow flicker, increased predator response (leading to increase in metabolic rate, use of energy, reduction in body condition), reduced opportunity to mate due to avoidance behaviours (i.e. individuals may remain in their burrows or retreat to their burrows at increased rates compared to those in unimpacted areas). Individuals outside of the shadow flicker area may disperse into areas impacted by shadow flicker at reduced rates, thereby leading to a possible reduction in population numbers within shadow flicker impact area (i.e. less recruitment) over the longer term.

Summary of shadow flicker outcomes for PBTL

No impacts to PBTL are expected as a result of blade glint due to the selection of wind turbine blades for the GNWF which do not result in blade glint.

Whilst the assessment has taken into consideration both the expected and worst case scenarios, the worst case is considered unrealistic and thus unlikely to occur, and therefore while both cases have been presented above, impacts to PBTL are more accurately assessed using the expected case model with the Disturbance Footprint removed (since impacts in the Disturbance Footprint have already been taken into account as a direct impact).

Within the GNWF, based upon the shadow flicker model and assessment, it is predicted that:

- Large portions of the GNWF are considered to be within areas which result in no predicted change to PBTL behaviour or activity (i.e. within the 1-100 hours per year categories, <1 to 8.3 days per year), accounting for approximately 6,867.79 ha for the expected case with the Disturbance Footprint removed (i.e. 68.66% of the total area of known or likely PBTL habitat which is influenced by shadow flicker, and 61.57% of the combined known and likely PBTL habitat within the GNWF).
- Areas within the 101-250 hour per year category (i.e. 8.4 to 20.8 days per year) account for approximately 2,663.95 ha in the expected case with the Disturbance Footprint removed (i.e. 26.63% of the total area of PBTL habitat which is impacted by shadow flicker, and 23.88% of the known and likely PBTL habitat within the GNWF). In these areas, some small/initial changes to PBTL behaviour or activity may occur in individuals within the population that may be more sensitive to environmental stimuli/stressors, whilst it is possible there may be a negligible impact / no discernible disruption to other individuals. This may be considered the lower threshold for potential changes in PBTL behaviour, or may not impact PBTL behaviour at all, as a maximum 20 days per year may be considered inconsequential/insignificant.
- Collectively, areas within the 1-100 hour per year and 101-250 hours per year categories represent approximately 85.45% of the known and likely PBTL habitat within the GNWF.
- Areas within the 251-500 hours per year category (i.e. 20.9 to 41.6 days per year) account for an area of 471.26 ha for the expected case with the Disturbance Footprint removed within GNWF (representing 4.22% of the known and likely PBTL habitat within the GNWF). This more sustained potential shadow flicker may impact PBTL in a number of ways, including avoidance of foraging behaviour during times of shadow flicker, increased predator response, thereby leading to increase in metabolic rate, use of energy, reduction in body condition, reduced opportunity to mate due to avoidance behaviours (i.e. individuals may remain in their burrows or retreat to their burrows at increased rates compared to those in unimpacted areas). Individuals outside of the shadow flicker area may not disperse into areas impacted by shadow flicker, thereby leading to a possible reduction in population numbers within shadow flicker impact area (i.e. less recruitment and genetic exchange). These impacts may potentially be significant to the individuals within the shadow flicker area, or may not impact PBTL behaviour at all.
- For the two highest impact categories within the expected scenario, there is a single, discrete area of approximately 0.20 ha subjected to 501-750 hours per year of shadow flicker, occurring on a north-facing slope to the south of WTG 017. This discrete area represents only 0.002% of the total known and likely PBTL habitat. There are no predicted areas impacted within the 751 to 1,000 hours per year category. As this area (0.20 ha) is considered to have an indirect impact on PBTL, potential residual significant impacts to PBTL (should the species occur within this discrete area) have been included as part of the offset strategy for this species.

For conservation areas in or adjacent to the GNWF, based upon the shadow flicker model, it is predicted that:

- Shadow flicker only occurs within the 1-100 hours per year categories for Tiliqua Nature Reserve and Mongolurring Nature Reserve, whereby no predicted changes to PBTL behaviour or activity are expected within this range.
- No other direct or indirect impacts as a result of the GNWF are expected to impact Tiliqua Nature Reserve or Mongolurring Nature Reserve.
- For Mokota CP, while up to approximately 6.21 ha for the expected case is modelled to potentially impact Mokota CP in the 101-250 hours per year category (i.e. 8.4 to 20.8 equivalent days, and a small area of 0.37 ha may impact Mokota CP within the 251-500 hours per year category (i.e. 20.9 to 41.6 equivalent days per year), these impacts are considered unlikely to impact PBTL on the basis that despite previous targeted surveys, the species is considered unlikely to occur within the CP, as the CP is considered unsuitable to PBTLs due to a low number of spider burrows and having a vegetation community equivalent to other uninhabited areas of known lizard inhabited sites (Souter et al. 2007). These outcomes reflect a conservative, worst-case, scenario for Mokota CP, as WTG 011 was moved to provide a larger buffer distance to this reserve (470 m) after the shadow flicker modelling was undertaken, resulting in a reduction in shadow flicker influence on this reserve.

7.1.2.3 Impact of development on spider burrows

Impacts to burrowing spiders and spider burrows may occur as an indirect result of construction and operation activities of the wind farm. Impacts to populations of burrowing spiders results in a delayed indirect impact to PBTL due to a subsequent reduction in their available habitat which is reliant on the presence of suitable spider burrows.

There are no published studies in the literature, undertaken to date, which examine the potential impact of wind farms on burrowing spider populations. The anticipated impacts include:

- Short term disturbance to spiders and burrows as a result of noise and vibration during construction.
- Long-term disturbance to spiders and burrows as a result of the ongoing noise, vibration and shadow flicker associated with the wind turbine operation which may lead to:
    - Damage to the integrity of burrows, for example vibrations leading to collapsed burrow walls or entrances.
    - Abandonment of burrows by spiders due to avoidance behaviour associated with the ongoing noise, vibration and shadow flicker associated with the turbine.
- Other impacts may include damage to or infilling of burrows due to dust deposition and sedimentation run off from cleared areas during both construction and operation.

A preliminary study at GSWF found that spider burrows closer to the WTGs were found to be occupied by burrowing spiders less frequently, with a higher number of empty burrows and fewer burrows which were deeper than 30 cm, however, this is likely explained by the location of WTGs on the tops of steep hills, which provides less favourable habitat in the first instance due to high rocky component, shallow soil and steep sided slopes, along with infrastructure being located in areas of least favourable habitat as far as practicable. Thus, with no baseline data available, it is not possible to correlate these findings with an actual material impact.

7.1.2.4 Tiliqua Nature Reserve

Tiliqua Nature Reserve is a privately owned and managed reserve within the Project Area, dedicated to the protection of the PBTL. The reserve occurs in the south-central part of the Project Area on Wandilah Station, occurring directly to the west of Wandillah Road. The Reserve protects an 85-ha area known to support a population of PBTL and is dedicated to protecting and researching the species, through its long-running partnership with Flinders University (located in Adelaide, South Australia).

No infrastructure is proposed to be placed within the Tiliqua Nature Reserve and therefore no direct impacts are likely to result from the Project.

Potential indirect impacts on Tiliqua Nature Reserve as a result of the Project include wind turbine facilitated shadow flicker, as described in the Section Results of shadow flicker assessment on PBTL, and dust and noise. No direct or indirect impacts as a result of erosion or sedimentation are expected as a result of the Project, principally due to distance from Project-related infrastructure (e.g. WTGs, roads and tracks), and topography of the area creating a physical barrier from this potential impact. Infrastructure in proximity to Tiliqua Nature Reserve which will result in some shadow flicker includes:

- Two WTGs (WTG 047 and WTG 046) approximately 625 m and 1,209 m to the north of the northern boundary respectively. Impacts from these two WTGs are likely to impact Tiliqua Nature Reserve when the sun is in its northernmost phase during winter, and is likely to occur concurrently with winter cloud cover, and during PBTL torpor/brumation (Schofield 2006).
- Three WTGs (WTG 089, WTG 090, and minimally WTG 091) approximately 1,133 m, 1,086 m and 1,714 m to the east of the eastern boundary respectively. Impacts from these three WTGs area likely to impact Tiliqua Nature Reserve during the early morning only and are within the lower impact categories of less than 100 hours per year.
- OTL running parallel to the eastern boundary for approximately 1300 m, offset by approximately 220 m and 270 m to the closest towers.

Shadow flicker modelling indicates approximately 67.02 ha of the Tiliqua Nature Reserve may experience at least some duration of shadow flicker impacts across the year. These impacts occur within the 1-100 hours per year categories, which are expected to be only minimally impacted by shadow flicker for small periods per day over a small number of weeks/months per year, with no predicted changes to PBTL behaviour or activity expected in these areas.

Noise levels within Tiliqua Nature Reserve have been calculated and modelled to be at 40 db(A), gradually reducing with distance from the WTGs (Echo 2023; Echo 2025), which may be considered comparable to natural background noise levels. As suggested in Section 7.1.2.1, potential impacts of noise and vibration on PBTLs is largely understudied, particularly in reference to the construction and operation of wind farms and ancillary infrastructure. However, due to the distance from the closest WTG (approximately 625 m) and OTL infrastructure (approximately 220 m to 270 m), it is considered that Tiliqua Nature Reserve is unlikely to be impacted by noise, vibration, sedimentation or erosion, or dust impacts as a result of the Project.

7.1.2.5 Increased risk of illegal poaching risk of PBTL as a result of increased awareness of the presence of MNES in the GNWF Project Area

As outlined in Section 5.2.11, it is considered unlikely that information, specifically information relating to PBTLs, made available through the approval and development of the Project would increase the risk of illegal poaching activities. Information relating to aspects of the species' ecology is publicly available via a number of publicly available resources, noting that for this species specifically, data is considered sensitive and is denatured when presented publicly. As such, this information is largely considered already within the public domain. Protection mechanisms to prevent illegal wildlife poaching include the regular presence of landholders and their employees working across a number of properties that collectively comprise the GNWF Project Area, who ensure illegal trespassers do not wilfully encroach upon their properties (or adjacent areas).

Additionally, as stated in Section 5.2.11, reporting mechanisms are in place for both Commonwealth and state reporting agencies, and include 'Suspicious Matter Reports' (SMRs) via the Australian Government AUSTRAC website (available at www.austrac.gov.au/business/core-guidance/reporting/suspicious-matter-reports-smrs), and/or via Crime Stoppers in South Australia (available at https://crimestopperssa.com.au/campaigns/stolen-smuggled-and-suffering-native-wildlife-campaign), via the South Australian Police, or the NYLB (https://www.landscape.sa.gov.au/ny/contact-us).

7.1.3 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

4 Proposed avoidance, management and mitigation measures

b) For the PBTL, a comprehensive discussion of how all reasonable measures have been taken to avoid impacts to the PBTL, including the selection of the site and layout of access tracks and wind turbine generators.

The infrastructure layout has proceeded through a series of changes and adjustments as the iterative process of initial investigation, layout review and refinement has occurred a number of times, as information became available from the engagement process, the specialist investigations and Neoen's own technical and construction advice. Design of the Disturbance Footprint has been weighted towards existing degraded areas (roads and other cleared areas), cropped areas and exotic vegetation, to minimise impacts to native vegetation and thus threatened species habitats.

Flora and fauna assessments for the GNWF have enabled Neoen to identify and understand constraints, and potential impacts to flora and fauna, including MNES, and apply a risk mitigation to the design. All stages of the GNWF design have been undertaken with consideration of vegetation mapping, and the known locations of threatened species populations and habitat, particularly PBTL.

Extensive PBTL surveys have been undertaken across the Disturbance Footprint to map PBTL habitat and determine an accurate, but conservative estimate of the potential impact on PBTL habitat and individuals. This information has also been utilised to determine hotspot areas, and to minimise the Disturbance Footprint in these locations, through design modifications. The current assessment represents the worst-case assessment of impacts. Ongoing application of the Mitigation Hierarchy will seek to avoid impacts even further, by undertaking pre-clearance checks prior to construction to inform the current location of PBTL individuals and populations, allowing for further micro siting of infrastructure to reduce direct and indirect potential impacts to those individuals and populations. Neoen commits that micro siting will not increase impacts to PBTLs and/or PBTL habitat. Where micro siting cannot avoid direct impact to PBTLs, the individual(s) will be relocated to the nearest suitable release site in accordance with the procedure outlined in the PBTL Management Plan (see Att13_GNWF PBTL MP, Section 9.2, page 59).

Furthermore, while the Project has the potential to cause indirect impacts to PBTLs, such as, but not limited to, sedimentation of burrows, noise and vibration, weeds, herbicide use and feral animals, these indirect impacts will be avoided and/or minimised during construction and operation of the Project via implementation of specific management measures contained within the Construction and Environmental Management Plan and associated sub-plans, including a site specific PBTL Management Plan. As such, the potential indirect impacts associated with erosion and stormwater drainage (i.e., sedimentation of PBTL burrows), weeds, herbicide use, and feral animals are not expected to cause a significant impact on PBTLs. Other indirect impacts such as the impact of shadow flicker on behaviour of individuals is not known, however, analysis of shadow flicker data for GNWF indicates that the area of potentially significant shadow flicker impact applies to only 0.2 ha of PBTL habitat (see Section 7.1.2.2). Additionally, a Flinders University research plan is currently in place, funded by Neoen under the Goyder South Wind Farm Project, which aims to reduce uncertainty around shadow flicker impacts to enable more robust assessment of the magnitude of these impacts.

Whilst every effort has been made to avoid MNES and other sensitive areas where possible, engineering and landscape constraints mean that some impacts cannot be completely avoided.

Between the EPBC Referral and EPBC Variation design refinements have resulted in a 19.85% reduction in disturbance to potential PBTL habitat, from 459.14 ha to 368.10 ha, based on a combination of design refinements and survey effort to refine mapping. A direct comparison between the Referred and current design, finds a 13.46% reduction in impact to known and likely PBTL habitat. A summary of specific mitigation measures implemented during each stage of the Project and their effectiveness is presented Table 7.9.

Table 7.9: Mitigation hierarchy implemented at all stages of the Project for Pygmy Blue-tongue Lizard

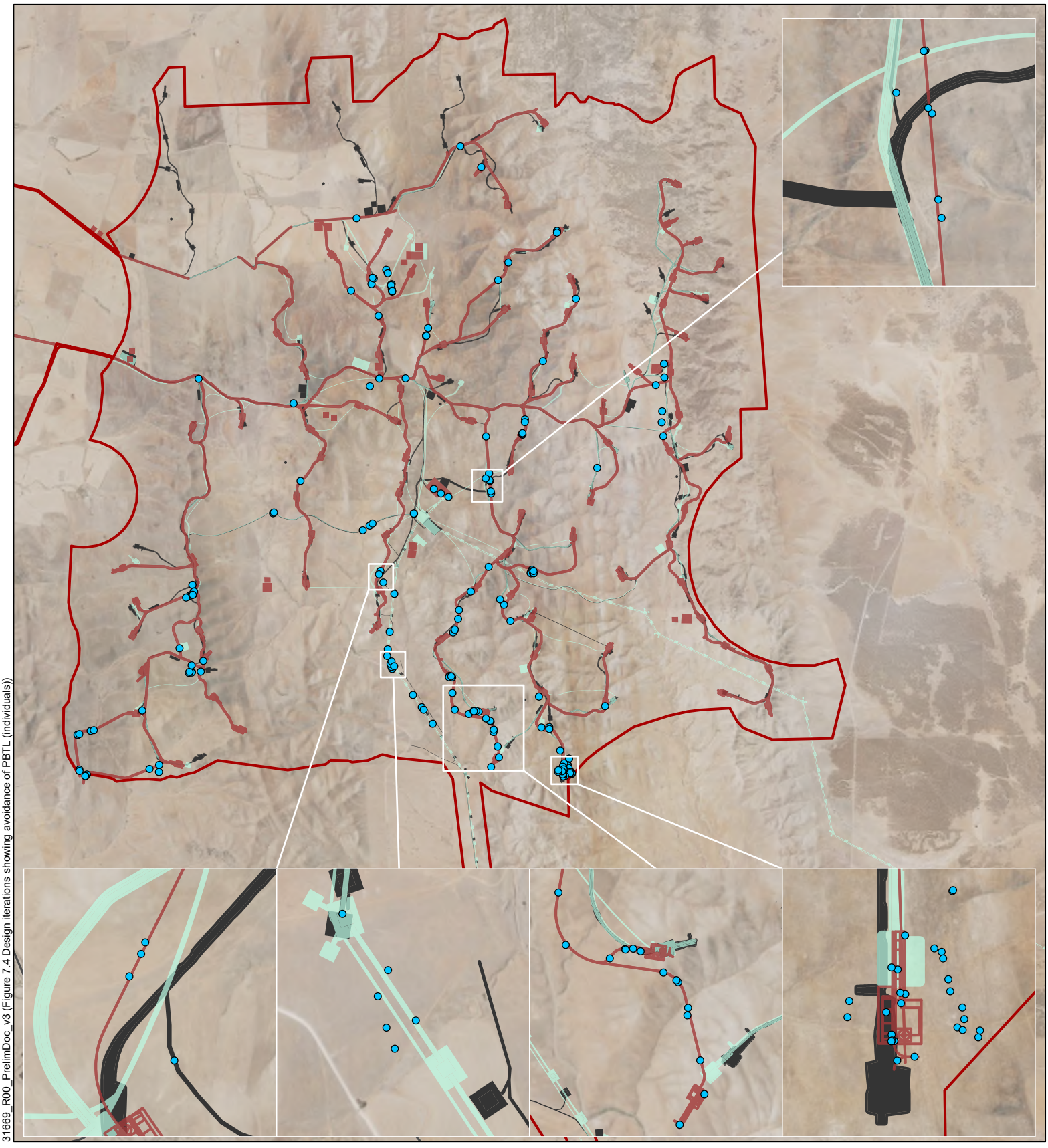
Avoidance / Mitigation Measures	Description	Effectiveness
Pre-construction design		
Site selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
	Setback of over 500 m placed around Tiliqua Nature Reserve for WTG infrastructure, to reduce potential for shadow flicker impacts. Setback developed in consultation with PBTL Recovery Team.	Reduction in potential for indirect impacts (shadow flicker, noise and vibration), to negligible. Shadow flicker modelling indicates that there are minimal impacts to conservation reserves where PBTL are known to occur.
Alignment with existing infrastructure	Infrastructure components have maximised potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation which comprises potential PBTL habitat.	Approximately 65.16 ha of potential PBTL habitat avoided through this method including: • 36.31 ha of existing roads or other clearance • 28.85 ha of cropped land Plus, an additional: 17.73 ha of exotic pasture (may constitute poor quality PBTL habitat).
	Electrical layout refined and aligned with existing roads, proposed access tracks and other infrastructure.	Approximately 68.71 ha of PBTL habitat avoided through this method, representing a 78.59% reduction between the Referred and current design.
Non-conventional stringing methods	Removal of stringing corridor in areas of high value MNES habitat through application of non-conventional stringing methods (i.e. helicopter stringing)	Approximately 7.93 ha of PBTL habitat avoided through this method. An additional 31.75 ha of other habitat avoided through this method (total 39.68 ha of native vegetation avoided).
PBTL Surveys	The entire DF searched for PBTL to determine the extent of the population and guide final placement of infrastructure (Figure 7.4). The surveys provide high confidence in population estimates during optimal conditions, and they significantly enhance understanding of the distribution, patchiness, and habitat use across the landscape. Additionally, they result in well-informed population estimates in both the DF and DE, contributing to an overall better understanding of the Project Area context.	Determined areas of high density PBTL populations and resulted in micro siting of turbines and roads to minimise impacts. Also allows for informed decision making and allowance of adequate time to plan and undertake pre-clearance surveys and relocations during construction.

Avoidance / Mitigation Measures	Description	Effectiveness
PBTL Pre-clearance Surveys and micro siting for Geotechnical investigations	Early works (geotechnical investigations) included pre-clearance surveys for all test pit and bore hole sites and access routes in PBTL habitat, with requirement to avoid all located PBTL.	No impact to individual PBTL during geotechnical investigations.
Construction		
Construction Environmental Management Plan	A comprehensive document with multiple associated sub-plans which aim to avoid or minimise indirect impacts from construction such as dust emissions, erosion, altered hydrology and general site matters. Includes measures for spatial data system to minimise the chance of unauthorised or incorrect clearance areas.	Indirect impacts effectively avoided.
PBTL Management Plan	Specific document intended as a sub-plan of CEMP which details procedures to further avoid as well as minimise and mitigate potential indirect impacts to PBTL. This includes inductions and educational material for all workers, preclearance checks, micro siting, unexpected finds procedure, signage and exclusion zones, trench or pit management, sensitive weed management, pre-clearance checks prior to land disturbing works (including rabbit warren control).	Direct impacts minimised. Indirect impacts effectively avoided.
Pre-clearance Check	PCC to be undertaken in all areas of Project Area which contain mapped known and likely habitat. With the aim of relocating any PBTL individuals within DF, which are unable to be effectively avoided via micro siting at the time of construction to the nearest suitable location. If more substantial PBTL populations or 'hotspots' are detected, implement micro siting procedure to avoid or minimise impact on individuals, and consider requirement for translocation.	Determines presence and numbers of PBTL in DF and allows for micro siting to minimise the impacts, prior to construction.
Micro siting infrastructure	Micro-adjustments to infrastructure to avoid individuals, populations and PBTL 'hotspots' identified during PCC. Will result in no net increase in impact to PBTL or PBTL habitat. Micro siting will only be considered if it reduces impact on MNES.	No net increase in impact to PBTL or PBTL habitat. Micro siting will only be considered if it reduces impact on MNES.

Avoidance / Mitigation Measures	Description	Effectiveness
Relocation	Relocation of individual PBTL detected and marked in pre-clearance surveys, if unable to be avoided by micro siting.	Relocation implemented for scattered individuals. Survivorship unknown, however, studies have demonstrated the ability of PBTL to survive following relocation.
Translocation	Translocation is considered as alternative for larger populations of PBTL or where relocation of individuals is assessed as potentially causing negative impact to surrounding existing populations and will only be undertaken in consultation with DCCEEW and the PBTL Recovery Team.	Translocation implemented, with individuals translocated to suitable offset site(s), to be protected in perpetuity. Short-term success of translocation demonstrated at Goyder South Wind Farm Offset Site (World's End Gorge), including high survivorship in the first two years and evidence of breeding.
Operation		
Operational Environmental Management Plan	Management measures enforced to ensure no unforeseen direct or indirect impacts occur to PBTL during the operational phase of the GNWF.	Ensures that direct impacts to PBTL during operational works are avoided and indirect impacts are minimized, through application of appropriate management measures.
Maintenance works	Any maintenance works (including ripping of rabbit warrens for pest control) will require additional surveys to determine the presence of PBTL within the area to be impacted.	Determines presence and numbers of PBTL in the area affected by maintenance works. Allows for micro siting of works to avoid additional direct or indirect impacts or adoption of alternative methods if PBTL is unavoidable.
Monitoring and research	Proposed research project (developed separately and proposed nominally as 10% contribution to EPBC Offset but potentially up to 20-30% by Flinders University predominantly with potential to also support existing regional programs) to monitor relocated portion of PBTL to determine effectiveness of mitigation strategy. Also, additional scope to extend existing study on indirect impacts, e.g. impacts of shadow flicker, to include GNWF (in addition to GSWF) which would enable adaptive management where required.	Provides valuable species insight and informs improved future planning and management.
On-ground Offset establishment for Native Vegetation	Neoen has purchased a 1,300 ha property to the north of GNWF to be utilized as a native vegetation SEB offset site. Suitability of this site for EPBC PBTL offsets is currently being assessed. Additional on-ground offsets will be sought to achieve the remainder of the SEB Offset obligations and EPBC Offset obligations, which are likely to comprise additional habitat suitable for PBTL.	High – the site provides up to 284.13 ha of potential habitat for PBTL, including native *Austrostipa* sp. and *Lomandra* sp. grassland, historically cropped land (>20 years) and documented evidence of occupancy by burrowing spiders (including trapdoor and wolf spiders). Further surveys are underway to determine if PBTL currently occur at this site.

Avoidance / Mitigation Measures	Description	Effectiveness
EPBC Offset Management	Additional EPBC Offsets will be established specifically for PBTL, with an Offset Management Plan to be developed, specific to the site, to be managed for the life of the Project.	The EPBC Offset will result in a net gain for PBTL in the region to account for direct and indirect impacts which cannot be managed or avoided. The Offset will aim to rehabilitate habitat in areas of former range, using managed grazing and supplementary habitat such as installation of artificial burrows. This has been demonstrated to be effective at sites such as Tiliqua Nature Reserve.
Relocation Success Study	Proposed research project (developed separately to this plan as part of the EPBC Offset proposal, comprising nominally 10% of the Offset, and potentially up to 20-30%) by Flinders University to monitor relocated portion of PBTL to determine effectiveness of mitigation strategy.	Success of relocation currently unknown, however preliminary studies of translocation suggest that PBTL are able to survive relocation, with varying success dependent on methods utilized. See Section 7.1.5.
Decommissioning		
Reassessment and further surveys	To be developed at time of decommissioning. It is likely to include targeted PBTL surveys, Significant Impact Assessment (under relevant legislation and guidelines at the time of decommissioning) and approvals, if required.	Follows regulatory process relevant at the time of impact.

Figure 7.4: Design iterations showing avoidance of PBTL (individuals)



GNWF

PBTL record (Umwelt)

Design iteration

27/02/24

30/04/24 (referral)

20/08/25 (current)

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
Date Exported: 1/10/2025 11:03 AM
Created by: sophie.haswell

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7.1.4 Relocation as a Tool for Impact Mitigation

Relocation (as opposed to translocation) involves the movement of an organism from unsuitable habitat into the nearest suitable habitat. For use as a mitigation measure, it is undertaken for the purpose of salvaging animals (or plants) from an area adversely affected by development to an area reserved or protected from ongoing impacts, providing them a means to escape. DCCEEW *Policy Statement on the Translocation of Listed Threatened Species -Assessment under Chapter 4 of the EPBC Act* (DSEWPaC 2013), states that unless it can be demonstrated there is high degree of certainty that a particular translocation (or relocation) attempt will be successful, the proposed removal of individuals of a species from a site should usually be considered as equivalent to the complete loss of those individuals. On that basis, relocation of PBTL which is proposed here as a mitigation to minimise potential impacts to the species is not considered to reduce the impact to PBTL or to subsequently reduce the offset requirement for impacts.

Considerations for the relocation of species such as PBTL include:

- Suitability and carrying capacity of the surrounding habitat.
- Survival rate of the relocated individuals due to behavioural or physiological stress.
- Site fidelity and dispersal limitations of relocated individuals.
- Suitable distance for relocation to 1) avoid indirect impacts through competition, 2) prevent dispersal of individuals back to impact site, and 3) maintain population genetics at a local level.
- Impact on resident population of PBTL population in relocation site, including competition for resources and population genetics.

Given the species low dispersal ability and reliance on specific microhabitats, natural recolonisation of unoccupied areas or dispersal away from encroaching impacts is unlikely without intervention. However, with targeted habitat restoration or augmentation and considered relocation or translocation protocols, suitable surrounding habitats can support displaced individuals if ecological quality and timing are carefully managed.

Suggested methods for improving the likelihood of successful relocation includes:

- Conducting surveys at any proposed relocation sites in advance to evaluate:
    - the current population density and location of resident PBTL at the proposed relocation site
    - the resource availability (availability of suitable burrows).
- Conducting relocations at favourable times based on PBTL ecology, including:
    - During late spring or early summer, after the mating season, but before birthing of neonates, or late autumn when activity rates have reduced, but prior to brumation.
- Preparing a relocation site to increase suitability by:
    - recording micro-habitat details of PBTL to be relocated (i.e. proximity to grass tussock, aspect, depth of burrow)

- installing artificial burrows to replicated micro-habitat conditions of PBTL to be relocated (Michael et al. 2024)
- ensuring adequate resource partitioning (>1m between lizards) to avoid competition with resident PBTL (Ebrahimi and Bull 2014b)
- preparing and installing soft-release enclosures to limit dispersal of relocated individuals in the first 1 to 2 days following relocation (Ebrahimi and Bull 2013)
- employing soft release methods such as provision of supplementary food immediately following relocation.

- Conducting post-relocation research to assess both short- and long-term success of relocation and potential implications including:
  - survivorship
  - factors affecting survival
  - post-release behaviour (dispersal, site selection, foraging)
  - genetic implications on the resident population.

7.1.5 Translocation as a Tool for Impact Mitigation

Translocation, the deliberate movement and release of organism, can be utilised as a powerful tool in conservation management, generally divided into one of two categories: conservation translocation and salvage translocation (DSEWPaC 2013). Conservation translocations can be used to recover populations of locally extinct species by reintroducing them to areas where they have been lost, or to restore ecological functions in ecosystems which have lost critical roles, such as pollinators, seed dispersers or predators. It can also be utilised to improve survival of threatened species in the face of climate change, by moving them to areas with more suitable current or future conditions. Salvage translocations are utilised to mitigate immediate threats such as habitat destruction or human-animal conflicts and is often proposed as a mitigation, compensation or offset strategy for impacts on species or habitat as a result of actions referred under the EPBC Act (DSEWPaC 2013).

Whilst generally considered a useful tool for conservation, translocations are not always successful. Defining 'success' itself is problematic but generally considered to be the establishment of a self-sustaining viable population (Morris et al. 2021).

The *Policy Statement for Translocation of Listed Threatened Species* (DSEWPaC 2013) does not consider salvage translocations as generally effective, when relating to its effectiveness in contributing to the long-term conservation of the species or community. Based on this fact, it must be demonstrated that there is a high degree of certainty that a translocation attempt will be successful, or the proposed removal of individuals of a species from a site would be considered as equivalent to complete loss of those individuals.

A global study, *Factors affecting success of conservation translocations of terrestrial vertebrates* (Morris et al. 2021) found the following trends or correlations which contributed to translocation 'success', simplistically:

- Success of translocations has increased over time.
- The number of individuals released and threat classification of 'Endangered' (IUCN) had positive effects on success.
- The translocation taking place in Oceania or locations with a high Corruption Perception Index score (i.e. low corruption) negatively affected success.
- Translocation of wild versus captive animals did not result in higher success but did result in higher population growth rates.
- Soft releases did not result in higher categorical success, whereas hard releases were linked to higher mean population growth rates.

Translocation has been identified as a conservation management strategy to mitigate potential impacts of climate change on PBTL, by relocating northern populations of PBTL to milder climates further south. PBTL are found on agricultural land and in highly fragmented populations, with limited ability to disperse. This fragmentation coupled with increasing drought and heat, puts PBTL at significant risk of climate induced extinction (Michael et al. 2024).

Several research projects have been undertaken which explore the factors which influence the success of PBTL translocation specifically. Daniell (2021) highlights several key findings:

- Neonates (newborns) are less suitable for translocation compared to adults as their behaviours such as basking and burrow movements, decrease their likelihood of survival. Notably, neonates generally have lower survival rates than their adult counterparts regardless of translocation, due to exhibiting these same behaviours.
- PBTL show a decline in activity as they age.
- Hand feeding may increase predation risk by altering their behaviour.
- Captive bred individuals showed lower survival rates due to lack of predator avoidance behaviours
- Suitable grass cover is crucial for successful translocation. Ideal grass cover includes dense grass, native grass (especially *Aristida behriana*), and the availability of spider burrows nearby.

Another study by Ebrahimi and Bull (2013) investigated the use of short-term confinement as a tool for improving lizard success, with the idea that confinement would allow animals to become familiar with the new habitat and overcome handling related stress. However, on the contrary, the study found that short-term confinement of lizards within enclosures at translocation sites may induce additional stress and initiate higher likelihood of dispersal, with effects compounding over the length of enclosure from day one to day five. The study recommends that further investigations are required to understand factors which affect the success of PBTL translocations, and that soft releases, including limited confinement, may still be a useful tool compared to hard release to mitigate the effects of initial handling stress.

On the basis of the information presented above, translocation of PBTL as a potential option to mitigate potential impacts to the species is not considered to reduce the impact to PBTL, or to subsequently reduce the offset requirement for impacts caused. Translocation will only be considered as alternative for larger populations of PBTL detected during pre-clearance checks, or where relocation of individuals to the nearest suitable habitat is assessed as potentially causing negative impact to surrounding existing populations. Any future proposal to undertake translocation will be undertaken in consultation with DCCEEW and the PBTL Recovery Team and would require a site specific PBTL Translocation Plan to be developed.

7.1.5.1 Case Study: Translocation of PBTL from GSWF to Worlds End Gorge National Park

A short case study was prepared by Umwelt (Australia) Pty Limited, to evaluate the short-term success of translocating PBTL affected by the GSWF development, as a method to mitigate impacts to individuals.

An offset site was established for the Project, which included a proposed site for the PBTL translocation. The translocation site had a small existing population of PBTL, indicating that the site provided suitable habitat for the species. A 50 m x 50 m enclosure was constructed within the PBTL habitat at the offset site and fitted with clusters of artificial burrows to supplement the existing low density of suitable spider burrows.

The initial translocation involved 60 lizards over two separate translocation events approximately six months apart, with 44 individuals translocated in the first event and 16 in the second. The population was reported to have increased inside the enclosure to 82 individuals by April 2025—a 36.67% rise. Notably, a peak of 97 lizards was recorded in January 2024, including 40 neonates, followed by a decrease to 74 PBTLs over the ensuing 11 months. Their survival rate aligns with documented juvenile survival ranges of between 6.7 %-36.0 % (Milne 1999). The population has fluctuated around 80 individuals since the second translocation, and the population is likely to continue to fluctuate around that size until further resources are made available by either installing more artificial burrows or by removing the enclosure.

A camera trap was installed at the time of initial translocation to observe the behaviour of translocated PBTL immediately following the translocation. Over approximately 27 hours of observation, 194 behavioural events revealed typical activity patterns such as burrow use, basking, and exploration, as well as attempts at predation. However, some behaviours suggested potential discomfort or unfamiliarity with the new habitat, although the absence of pre-translocation data limited definitive conclusions.

The study demonstrated that in the short-term translocation may be used successfully to mitigate the impacts of wind farm developments on individual PBTL. The study shows evidence that translocated individuals have high survivorship, readily accept artificial burrows, exhibit typical behaviours and can reproduce successfully.

The definition of ‘success’ for a translocation typically includes establishment of a self-sustaining population. Given the short timeframes of the study and the continuing use of an enclosure fitted with artificial burrows, there is insufficient long-term data to determine if the translocated population of PBTL can or will establish a self-sustaining PBTL population once these structures are removed, though the initial data is positive. Therefore, the long-term viability and conservation value of translocations of the

species remain uncertain. Continued monitoring and research are essential to determine whether translocated populations can persist, reproduce, and establish a self-sustaining population.

For full details of the translocation, refer to the *Preliminary Pygmy Blue-tongue Lizard Study: Short-term Translocation Success at Goyder South Wind Farm EPBC Offset Area* (Umwelt 2025a).

7.1.6 Significant Impact Assessment

A SIA was undertaken to assess the significance of potential residual impacts of the GNWF on the Pygmy Blue-tongue Lizard, which is known to occur within the Project Area, within the Disturbance Footprint (principally within the WF) and within the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation, and has taken into consideration all expected disturbance activities associated with the Project (i.e. both Permanent Disturbance and Temporary Disturbance, the latter which is considered equivalent to Permanent Disturbance for this species, as any ground disturbance is likely to alter soil conditions and preclude development of appropriate spider burrows for the medium to long term). The SIA for the PBTL against the significant impact criteria for Endangered species (DotE 2013a) is presented in Table 7.10.

Table 7.10: SIA for PBTL, listed as Endangered under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Lead to a long-term decrease in the size of a population.	Yes	No	Possible. Targeted field surveys undertaken by Umwelt between February 2024 and April 2025 have recorded a total of 186 individuals in the GNWF Project Area to date (Umwelt 2025b). An estimated number of between 192 to 274 (206) individuals will be impacted within the Disturbance Footprint during the construction phase (EBS 2025b). No Pygmy Blue-tongue lizards have been recorded along the OTL outside of the WF, despite potentially suitable habitat within the first 3 km of the OTL alignment from the WF, with the species considered unlikely to occur for the remainer of the OTL alignment. A total of approximately 11,154.12 ha of potentially suitable habitat for the species has been mapped in the GNWF Project Area, compared with approximately 20.04 ha of known PBTL habitat (known records plus a 50 m buffer) and 348.06 ha of 'likely' habitat (combined maximum area of 368.10 ha) within the Disturbance Footprint (i.e. 3.3% of known and likely habitat within the Project Area). More PBTL habitat is known regionally beyond the Project Area. Approximately 206 (range 192 to 274) individuals within the Project Area are estimated to be impacted by the Disturbance Footprint, and although individuals are proposed to be relocated away from the Disturbance Footprint during pre-construction surveys, the entire area of disturbance is considered lost to the Project (both permanent and temporary disturbance) and is proposed to be offset. Indirect impacts as a result of WTG facilitated shadow flicker have been assessed as only likely adjacent to a small number of WTGs, and are only predicted to adversely affect individuals within 0.2 ha, at a location where no PBTL have been identified, based upon the expected case modelled scenario (GHD 2024a, GHD 2025) as presented in Figure 7.3. No impacts are expected as a result of potential blade glint from WTGs, as wind turbine blade manufacturers produce blades finished with a low-reflective treatment, and thus the risk of blade glint is considered low (GHD 2024a). Population numbers of PBTL are known to fluctuate markedly over seasons and years, likely in response to resource availability, and a loss of individuals as a result of the Project may be difficult to measure. Regardless, it is considered possible that the GNWF Project may lead to a long term decrease in the size of a population, through reduced habitat availability.
Reduce the area of occupancy of the species.	Yes	No	Likely. The current understanding of the species' extent of occurrent is cited as 7,000 km^2 or 700,000 ha (Delean et al. 2013 cited in DCCEEW 2023d), with a known AOO cited as less than 500 km^2 or 50,000 ha (Fenner et al. 2018 cited in DCCEEW 2023d). As above, an estimated maximum area of known or likely habitat of 368.10 ha (or 3.3% of known or likely suitable PBTL habitat within the Project Area) has been mapped within the current Disturbance Footprint, which would be impacted by the Project. This represents approximately 0.05% of the species' EOO or 0.74% of the species' AOO, and therefore, the proposed Temporary Disturbance and Permanent Disturbance activities within the species known or likely habitat as a result of the Project are likely to reduce the overall AOO of the species.
Fragment an existing population into two or more populations.	No	No	Unlikely. Temporary Disturbance due to construction activities, and Permanent Disturbance as a result of the development of infrastructure, has the potential to create a permanent physical barrier for small, terrestrial species such as the PBTL. An estimated maximum of 368.10 ha of known and likely PBTL habitat will be impacted as a result of the GNWF, however, the disturbance will typically be narrow and linear, comprised of roads and tracks, as well as localised WTG hardstand areas and OTL towers, rather than large continuous or wide areas. Information from ecological surveys has informed the design of the Project, which has been refined iteratively over time. Batter and drainage design was incorporated into the permanent road width's 3D civil modelling. Based on this modelling the road width is required to vary across the site, depending on topographical requirements. For the purposes of this assessment the typical road width is assumed to be nominally 11 m (variable across site) excluding temporary disturbance corridors either side. It is noted that PBTLs are understood to exhibit limited dispersal (Schofield et al. 2012), with males typically dispersing further than females, and females typically moving distances of less than 20 m from their burrows, and though relatively uncommon, some individuals have been recorded dispersing up to 200 m (Milne 1999; Smith et al. 2009 cited in DCCEEW 2023d). Project areas such as WTG hardstand areas and new roads and tracks may hinder the movement of some PBTL within the population, however, the Project is unlikely to inhibit the movement of this species completely nor restrict gene flow or genetic exchange between individuals in the population. Additionally, it is noted that a number of existing roads and tracks already occur within the Project Area, and where practicable, these will be utilised by the Project. As such, while the direct clearance of 368.10 ha (or 3.3% of the known or likely PBTL habitat within the GNWF Project Area) will occur as a result of the Project, the Project is considered unlikely to fragment a population into two or more populations.
Adversely affect habitat critical to the survival of a species.	Yes	No	Likely. All known current and future identified habitat is considered critical to the survival of the species, with critical habitat including the AOO for all known populations, including within all areas of the species' historical occurrence, and all areas of potential habitat throughout its geographical and ecological range (DCCEEW 2023d). Impacts listed as temporary, which require the removal of or disturbance to topsoil are likely to be equivalent in impact to Permanent Disturbance for this species, with any ground disturbance likely to alter soil conditions and preclude development of appropriate spider burrows for the medium to long term. Whilst approximately 10,786.02 ha or 96.7% or the mapped known or likely PBTL habitat within the GNWF will not be directly impacted by the Project, the clearance of approximately 368.10 ha, or 3.3%, of the known or likely habitat within the GNWF is considered likely to adversely affect habitat critical to the survival of the species. While Temporary Disturbance has been accounted for as Permanent Disturbance for this species, it is worth noting that the Temporary Disturbance would be amenable to rehabilitation at the conclusion of construction activities, and would likely be suitable for the species as foraging areas, and potentially burrowing within medium to long-term following rehabilitation activities and land management practices suitable to PBTLs.
Disrupt the breeding cycle of a population	Yes (likely during construction only)	No	Possible. As above, a maximum of 368.10 ha or 3.3% of known and likely PBTL habitat within the Disturbance Footprint will be impacted by the Project. As above, the species typically exhibits limited dispersal (Schofield et al. 2012). Whilst approximately 10,786.02 ha or 96.7% of the mapped known and likely PBTL habitat within the Project Area will not be directly impacted by the Project, it is noted that impacts associated with construction activities and the development of infrastructure such as WTG hardstand areas and new roads and tracks may impact upon the species ability to disperse across the landscape in those areas. However, while these Project areas may hinder the movement of some PBTL within the population, impacts as a result of the Project are considered unlikely to inhibit the movement of this species completely nor restrict gene flow or genetic exchange between individuals in the population. Indirect impacts as a result of WTG facilitated shadow flicker have been assessed as limited to an area of approximately 0.2 ha, noting that uncertainty remains around whether the influence of shadow flicker across broader areas may negatively effect PBTL behaviour, and thus breeding success. Based on the above, it is considered possible the Project may disrupt the breeding cycle of the PBTL, principally during the construction phase of the Project in localised areas within the Disturbance Footprint.

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	No	No	Unlikely. As above, a total of approximately 11,154.12 ha of known or likely PBTL habitat has been mapped within the GNWF Project Area (Umwelt 2025b), with a maximum area of 368.10 ha or 3.3% occurring within the Disturbance Footprint. Impacts associated with Temporary Disturbance (157.65 ha), which require the removal of or disturbance to topsoil are considered to be equivalent to the Permanent Disturbance (210.44 ha) for this species, as any ground disturbance is likely to alter soil conditions and preclude development of appropriate spider burrows for the medium to long term. While this Temporary Disturbance has been accounted for as Permanent Disturbance for this species, it is worth noting that Temporary Disturbance would be amenable to rehabilitation at the conclusion of construction activities and would likely be suitable for the species within medium to long-term following rehabilitation activities and land management practices suitable to PBTLs. The result of the disturbance activities to habitat is the expected loss of an estimated 206 individuals (range 192 to 274), equivalent to 3.11% of the local GNWF population, from an estimated total of 6,519 potential individuals (range 5,596 to 8,991). Whilst individuals present are proposed to be relocated during pre-clearance surveys, as outlined in the PBTL MP, and may not be lost, for the purposes of this assessment both the habitat and the individuals are considered lost. Thus whilst it is considered that impacts as a result of the Project may modify, destroy and remove habitat for this species within the Disturbance Footprint, the mitigation strategies to be implemented, such as successful relocations (or translocations where necessary), mean that it is possible but unlikely the Project will modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species as a whole is likely to decline. Any areas of disturbance impacted by the Project would be offset.
Result in an invasive species that is harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two Weeds of National Significance (WoNS) (Umwelt,2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline.	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species.	Yes	No	Possible. Whilst there is no current estimate available for the entire population of the species, it is reported that there is a decreasing trend (Fenner et al. 2018 cited in DCCEEW 2023d). The most recent population estimate cited as 5,000 individuals was made in 2000 and was based upon 10 known populations at the time (Milne et al. 2000 cited in DCCEEW 2023d), however, an additional 20 subpopulations have since been discovered, resulting in populations occurring at a total of 37 disjunct sites (Clayton et al. 2020 cited in DCCEEW 2023d). All known and future identified habitat is considered critical to the survival of the species, with critical habitat including the AOO for all known populations, as well as all areas of the species' historical occurrence, and all areas of potential habitat throughout its geographical and ecological range (DCCEEW 2023d). The species has an unusual ecology, inhabiting spider burrows which in itself require a suite of favourable ecological conditions, with both groups only persisting in unploughed areas of open grassland, and/or in combination with areas that have historically been used for sheep grazing. Whilst approximately 10,786.42 ha or 96.59% of the mapped known or likely PBTL habitat within the GNWF will not be directly impacted by the Project, the clearance of approximately 368.10 ha or 3.3% of the known or likely habitat within the Project Area is likely to adversely affect habitat critical to the survival of the species. This represents approximately 0.05% of the species' EOO or 0.74% of the species' AOO. Project areas such as WTG hardstand areas and new roads and tracks may hinder the movement of some PBTL within the population, however, the Project is considered unlikely to completely inhibit the movement of this species nor restrict gene flow or genetic exchange between individuals in the population. While Temporary Clearance has been accounted for as Permanent Clearance for this species, it is worth noting that Temporary Clearance would be amenable to rehabilitation at the conclusion of construction activities, and may be suitable for the species within medium to long-term following rehabilitation activities and land management practices suitable to PBTLs. Additionally, any area of disturbance impacted by the Project would be offset through establishment of on-ground offset properties, which place a focus on providing habitat for PBTLs. Additionally, by implementing a range of strategies, such as rehabilitation and improved land management practices to increase the condition class of existing Lomandra grassland within the GNWF, there is the potential for an increase in the quality and availability of habitat suitable for PBTLs. Considering the above, impacts to the PBTL as a result of the Project within the WF may possibly interfere with the recovery of the species, though there may also be some conservation benefits gained through establishment of offset areas.
Significant impact outcome: Significant residual impacts likely.			

7.1.6.1 Acceptability of relevant impacts

The impact on the PBTL must be carefully evaluated to determine the level of acceptability based on statutory documents and project-specific risk controls.

The Conservation Advice for PBTL notes that all PBTL populations are considered important due to the restricted and fragmented distribution of the species. Given the comprehensive avoidance and minimisation measures outlined in the document, such as site selection, alignment with existing infrastructure and non-conventional stringing methods, the Project aims to minimize direct and indirect impacts on PBTL habitat as far as possible, however, given the widespread occurrence of the species across otherwise degraded habitats within the Project Area, avoidance of all impact has not been possible and a significant impact assessment has determined that a significant impact is likely for this species.

Pre-clearance surveys, micro siting, relocation, and translocation further ensure that impacts to individual PBTLs are minimised as far as practicable, despite impacts to an area of their habitat. The CEMP and PBTL MP provide additional layers of protection by addressing indirect impacts like dust emissions, erosion, and altered hydrology, which is further captured in the Project design by provision of a temporary clearance area to be rehabilitated, whilst being offset in full.

The ecological studies contributing to the Project have contributed significantly to the body of knowledge of the species in the region, presenting opportunities for important research that will help determine the balance between developments such as this and species protection. The Offset Strategy will result in a net positive for the species and its habitat, providing opportunities for research to further understand the species and the effectiveness of conservation efforts, such as relocation success. The eventual offset will address a number of priority conservation and recovery actions as outlined in the Conservation Advice, including improving understanding of ex situ recovery actions such as translocation, increasing knowledge on population dynamics and genetics through monitoring (and potential research) and formal protection of PBTL sites. Table 7.11 outlines how the Project addresses actions outlined in the Recovery Plan (Duffy et al. 2012).

Ultimately, the acceptability of the impact on PBTL hinges on the effectiveness of the proposed mitigation measures and their alignment with regulatory requirements, and the likelihood of achieving a net positive outcome for the species through strong offsetting.

Table 7.11: PBTL specific threatening processes and assessment of GNWF

Threatening Process	Associated issues and activities	Risk to PBTL	Recovery Actions (Duffy et al. 2012)	How has Neoen addressed the threat?
Urban, Industrial and Infrastructure Development	Establishment of: • Buildings • **Roads** • **Wind farms** • **Telecommunications infrastructure**. In particular the access roads cabling and other associated infrastructure which are developed on flats and lower slopes.	• Destruction of lizard (and spider) burrows and mortality of lizards. • Weed invasion along roads and around infrastructure creating less suitable habitat • Habitat fragmentation restricting movement for feeding and dispersal • Changes to the hydrology from extra water run-off affecting the soil structure and vegetation composition. • Shadow-flickering, vibration and noise from the turbine effecting the ability of PBTL to bask, feed and move around.	Action 1.1: Ensure landholders and relevant agencies are aware of, and protect, known PBTL populations and their habitat.	• Engaged accredited consultants to advise ecological constraints pertaining to the Project Area, in which PBTL habitat was identified early in the design phase and subsequently considered as a priority in the design refinement process and resulted in Neoen engaging accredited consultants to undertake extensive targeted surveys of PBTL across the GNWF site to further inform the potential for the development to impact on PBTL. • Surveys provided valuable species, population and habitat information across the GNWF (~17,703 ha) including the OTL, with a particular focus on the Disturbance Footprint (536.82 ha) and Development Envelope (4,779.88 ha). • Ensures high confidence in the potential for impact, with low risk of unexpected finds and ability to micro site infrastructure based on location of identified hotspots and individuals, to minimize impact on individuals.
			Action 1.2. Encourage private land conservation agreements and other measures to secure protection of PBTL populations and habitat.	• Neoen will implement an EPBC Offset Strategy which provides a net environmental gain for PBTL in the region. This will include options to protect land which is known to contain PBTL under Heritage Agreement, protect and improve habitat in previously degraded sites, and restore unsuitable habitat to a condition suitable for PBTL occupation. The strategy will include potential for translocation of individuals to new sites, if appropriate and deemed beneficial.
			Action 1.3 Undertake threat and risk assessment of known PBTL populations.	• Neoen has undertaken a threat and risk assessment for GNWF associated with the development, and has identified the potential consequence of this impact, which includes potential for clearance of up to 368.10 ha of PBTL habitat and an estimated 206 individual PBTL (range 192 to 274). • Management actions outlined in a site specific PBTL Management Plan have been tailored to reduce the potential threat to populations and individuals. The impact to potential habitat has been reduced as far as possible by using a range of avoidance and mitigation measures detailed in Section 6 and Section 7.1.3.
			Action 2.1 Determine the extent and size of known PBTL populations.	• Neoen engaged accredited consultants with experience in PBTL survey methodology to undertake extensive targeted surveys for PBTL across GNWF, exceeding the extent of survey efforts undertaken for the species at other similar developments in suitable habitat to date. The surveys and subsequent population estimates indicated that approximately 206 individual PBTL (range 192 to 274) may occur in the Disturbance Footprint, with between 5,596 and 8,991 PBTL in the broader GNWF Project Area (4.1.6). • The Recovery Plan indicates that population estimates should be derived from more comprehensive surveys and incorporate spatial variation in abundance. Given the size of the Project Area (17,703 ha), surveys were targeted to the Disturbance Footprint (536 ha) and Development Envelope (4,780 ha), however, surveys were undertaken in both what would be considered 'core' habitat, and in areas of marginal habitat, such as shrublands, on rocky hills and in woodland. Records of individuals indicate that there were 'hotspots' of PBTL, but that parameters such as grassland condition, slope, topography and soil covering were not strong indicators of presence or absence. However, woodland habitats and low / flat topography were indicators of absence. Based on this, population density indices were developed for each vegetation association and extrapolated to cover the remainder of area in that association. Subsequent research (Bilby et al. 2025) determined that 50 m x 50 m quadrats were the most reliable survey quadrat size and indicated that surveying approximately 10% of any given area was likely to obtain adequate estimates of population density. Although 50 m x 50 m quadrats were not specifically adopted in targeted surveys, a high proportion of the Disturbance Footprint and Development Envelope was surveyed (approximately 39.50% and 10.85% of suitable habitat respectively), providing high confidence in estimates. • Methodology used to survey and estimate population density was independently validated by leading experts in PBTL research (letter of support provided in Appendix B), and indicated that estimations were likely to be overstated, thus representing a worst-case scenario.
			Action 2.2 Identify and map potential habitat.	• Engaged accredited consultants to undertake extensive surveys and develop habitat suitability mapping for PBTL based on findings of targeted field surveys. • Surveys indicate that an estimated 11,154.12 ha of the GNWF provides known (181.86 ha) or likely (10,972.26 ha) habitat for PBTL. • Survey methodology and habitat suitability parameters have been independently validated by leading experts in PBTL research (Appendix B)
			Action 2.3 Search additional potential habitat for new populations	• Limited 'absence' data is available to indicate locations which have been surveyed and have not found PBTL. Thus, it is difficult to say with certainty if the areas surveyed for the Project had previously been surveyed. • However, in addition to the extensive survey work undertaken at GNWF (including in areas which are thought not to have been previously surveyed along the OTL and north of White Hill Road), Neoen engaged accredited consultants to undertake PBTL surveys at properties under potential consideration as offset sites.

Threatening Process	Associated issues and activities	Risk to PBTL	Recovery Actions (Duffy et al. 2012)	How has Neoen addressed the threat?
				• An assessment of potentially suitable habitat at each surveyed property was made in an Offset Area Assessment Report (Umwelt 2024c), of six properties. Surveys indicated that two of the properties contained potential PBTL habitat (totaling approximately 400 ha). Additional targeted PBTL surveys were undertaken at one site, which included surveying 426 potentially suitable spider burrows. No PBTL were detected, however the presence of trapdoor and wolf spiders indicated that the site may provide suitable habitat for PBTL. The surveys were not exhaustive and did not confirm absence.
			Action 3.1 Work with landholders to implement Best Practice Management Guidelines	• The Northern Yorke Landscape Board is working with landholders, the Mid North Grasslands Working Group, and Flinders University to improve grazing management practices and knowledge of PBTL populations in the Mid North and rangelands. This project is funded through the Australian Government's Environmental Restoration Fund Priority Species Grant (Landscape Boards South Australia 2025). Opportunities exist for knowledge sharing and broader application of these methods, which may be relevant to the GNWF Project Area and involved landholders. Neoen has engaged with the Landscape Board and is investigating ways to contribute to or support this existing project within GNWF to allow landholders to maintain their agricultural practices, whilst improving the quality of the current habitat to support a larger and healthier PBTL population in the immediate vicinity of the GNWF. The survey undertaken to date has provided valuable insight into the population of PBTL within GNWF and would allow maximum benefit to be achieved by targeting patches of land which are known to support, or which are adjacent, populations of PBTL. This initiative may form part of the compensatory measures component of the offset requirements of the Project.
			Action 3.2 Implement measures to increase suitable PBTL habitat at known populations.	• As above, Neoen is investigating opportunities to contribute to an existing program, with the aim to support landholders to undertake management actions to support a larger and healthier PBTL population in the immediate vicinity of the GNWF. This may include grazing management and installation of artificial burrows. • The EPBC Offset Strategy for PBTL includes measures to improve PBTL habitat through the abovementioned measures, in addition to potential grassland rehabilitation and translocation of PBTL to suitable sites, if appropriate.
			Action 4.1 Continue to undertake (and refine as required) long-term population monitoring at selected sites.	• Neoen has engaged Flinders University researchers to undertake a research project as part of the Goyder South Wind Farm to investigate the health of populations in relation to the wind farm infrastructure. Neoen hopes to expand this research to include a number of sites at GNWF to better capture any potential before-after impacts (if present). The study will include a number of control sites at known populations within GNWF. • Additionally, a PBTL OMP will detail a long-term monitoring program (minimum 10-years) for the final offset area (s).
			Action 5.2 Undertake land management trials to refine regimes required to improve habitat quality.	• This action includes the following: *"establish trial to improve historically ploughed land to increase the area of occupancy of existing populations and to improve linkage of existing populations"* • The PBTL Offset Strategy may include an option, potentially constituting a small part of the overall offset strategy, to be developed in consultation with DCCEEW and PBTL Recovery Team, to rehabilitate historically cropped land, which would include a research / monitoring component to determine at a minimum, the length of time required for the habitat to become suitable for PBTL, and the methods required to undertake successful habitat restoration.
			Action 6.1 Promote community awareness and ownership of, and involvement in, the recovery of the Pygmy Bluetongue Lizards	• Neoen is actively engaging involved landholders in PBTL management activities, including through potential for hosting an EPBC Offset Area on their land, or becoming involved in the programs to improve habitat through improved grazing practices.
			Action 7.1 Maintain an effective recovery team which supports, guides and evaluates the implementation and outcomes of the recovery plan	• Neoen is not directly involved in the PBTL Recovery Team, but has directly engaged the Recovery Team regarding the GNWF project, including to discuss: ○ potential indirect impacts of the project such as shadow flicker, and the appropriateness of the shadow flicker impact analysis ○ and the appropriateness and adequacy of setbacks of WTGs around areas such as Tiliqua Nature Reserve.

7.2 South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) – Endangered

This section provides a comprehensive evaluation of the potential impacts on the South-eastern Hooded Robin due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The South-eastern Hooded Robin is considered likely to occur within the Disturbance Footprint and known to occur in the Development Envelope (Umwelt 2025b) within the area of the OTL only. The species is considered conservatively as possibly occurring in the WF. though it has not been observed despite extensive survey effort.

7.2.1 Impact Summary

An overview of the potential direct impact to South-eastern Hooded Robin by Goyder North Wind Farm is provided in Table 7.12.

Table 7.12: Summary of impact to South-eastern Hooded Robin

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	28.81	12.24	41.05
Habitat quality	Low to Moderate	Moderate	Low to Moderate
Individual impacts	No Hooded Robin have been detected in the wind farm despite extensive field surveys. Two historical records occur approximately 2.5 km to the east of the WF Project Boundary.	Eight records of South-eastern Hooded Robin have been detected in the vicinity of the southern section of the OTL. A further 22 records have been historically reported within the vicinity of the OTL.	As noted for WF and OTL

Source: Umwelt 2025b

There is a total of 2,795.87 ha of potentially suitable habitat mapped in the GNWF, with disturbance of 41.05 ha equivalent 1.47% of the available habitat within the Disturbance Footprint, or 0.43% of habitat within the Disturbance Footprint within the OTL. Aerial imagery shows the potential habitat to be much more widespread, especially in the Olary Spur and Murray Mallee subregions, with up to 756,979 ha of potentially suitable habitat in the affected subregions, of which the DF represents 0.005% of the potentially suitable habitat available in the subregions (Section 4.2.7).

Direct impacts because of the project include loss of habitat, risk of collision and potential for displacement of birds from surrounding habitats. Given the relatively small territories occupied by South-eastern Hooded Robin during the breeding season and strong territorial occupation (Section 4.2.2.1), impacts to habitat may result in displacement of individuals from a portion of their

territory, however, the linear nature of the infrastructure is unlikely to impact the entire territory of any individual or pair. Disturbance during construction may result in temporary and short-term displacement from a territory, or disruption to breeding if undertaken during the breeding season.

Except for a section of OTL which passes through the Hallelujah Hills south of Mimbara CP, all other impacts to potential South-eastern Hooded Robin habitat along the OTL is within small patches or narrow bands of suitable vegetation, likely to be considered low quality for nesting, though potentially providing foraging resources. Large areas of more suitable habitat occur in the surrounding area. Direct and indirect impacts are summarised for the OTL and WF in Table 7.13.

Where access is required through the hills, Neoen has investigated non-conventional stringing methods to minimise potential impacts. Where access roads are required, they have been sited to follow existing roads, tracks or natural contours or clearings to further minimise potential impact. These locations will be accessed temporarily during construction, and visitation thereafter will be minimal, only for intermittent required maintenance to OTL infrastructure.

Table 7.13: Potential direct and indirect impacts to South-eastern Hooded Robin

Impact Type	Wind Farm	OTL	Phase	Duration
Direct Impacts				
Habitat loss (permanent) (ha)	18.68	5.34	Construction	Long-term / permanent
Habitat loss (Temporary) (ha)	10.13	6.90	Construction	Medium term
Collision Risk	Low risk of collision due to location of known population and flight height typically being less than the lowest WTG height of 20m.	Low risk of collision with stationary OTL infrastructure.	Operation	Long term / life of Project
Disturbance / Displacement	Low risk of disturbance during construction due to location of known populations occurring outside of the WF boundary.	Likely disturbance during construction, including local displacement from areas under active construction.	Construction / Operation	Short-term
Indirect Impacts				
Habitat fragmentation	Impacted habitat occurs on the eastern edge of Project Area. No patches of habitat will be isolated from the broader patch.	OTL corridor will be narrow and easily traversable by Hooded Robin. No single entire territory of a Hooded Robin is likely to be impacted by the OTL due to the narrow and linear nature of the corridor.	Operation	Permanent
Noise and vibration	Low risk of disturbance due to operation of WTGs due to location of known populations	Minor risk of ongoing displacement due to noise impacts from OTL, however existing OTL	Operation	Ongoing for the life of the Project.

Impact Type	Wind Farm	OTL	Phase	Duration
	occurring outside of the WF boundary.	infrastructure already occurs, including in the direct vicinity of survey observations.		
Degradation of habitat through weeds or pathogens	Minor risk of weeds or pathogens increasing in disturbed area, which may reduce quality of ground foraging habitat. Managed by implementation of CEMP and OEMP.	Minor risk of weeds or pathogens increasing in disturbed area, which may reduce quality of ground foraging habitat. Managed by implementation of CEMP and OEMP.	Construction / Operation	Ongoing for the life of the Project
Degradation of habitat through dust deposition	Minor risk of dust deposition on adjacent vegetation during construction which may reduce foraging suitability.	Minor risk of dust deposition on adjacent vegetation during construction which may reduce foraging suitability.	Construction	Short-term

7.2.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Neoen has implemented a range of measures during the planning and design phase to avoid and minimise impacts to potentially suitable habitat for South-eastern Hooded Robin (and other species). Between the EPBC Referral and EPBC Variation design refinements have resulted in a 48.11% reduction in disturbance to potential South-eastern Hooded Robin habitat, from 85.31 ha to 41.05 ha. A summary of mitigation measures implemented during each stage of the Project is presented Table 7.14.

Table 7.14: Mitigation Hierarchy implemented at all stages of the Project for South-eastern Hooded Robin

Stage	Action	Effectiveness
Pre-construction design		
Site selection	Prioritised placement of infrastructure in existing cleared areas or areas of non-native vegetation.	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use. Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Targeted Bird Surveys (BBUS, MBC, Opportunistic)	Seasonal BBUS surveys for two years (24 months) to assess occurrence and / or distribution of bird species across the site.	High – identified locations within the Project Area of higher risk. No South-eastern Hooded Robin were detected in WF during seven seasonal BBUS surveys (or opportunistically). Confirmation that South-eastern Hooded Robin utilise southern portion of OTL from opportunistic records. Enabled further application of the mitigation hierarchy to minimis impacts to habitat along the OTL by removing the stringing corridor.
Non-conventional stringing methods	Removal of stringing corridor in areas of high value MNES habitat, and native vegetation, through application of non-conventional stringing methods (i.e. helicopter stringing)	High – resulted in reduction of up to 43.79 ha of Disturbance Footprint, including 39.68 ha of native vegetation, of which 7.53 ha was potential Hooded Robin habitat.
Tower height and placement refinement	Investigation into height and selective placement of OTL towers to reduce requirement for ongoing maintenance of vegetation above 3m.	High - resulted in reduction of ongoing impacts to up to 10.52 ha of vegetation which comprised South-eastern Hooded Robin habitat.
Alignment with existing infrastructure	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation.	High – 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totaling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
	The electrical layout has been refined and aligned with existing roads, proposed access tracks and other GNWF infrastructure, and the OTL access tracks have been aligned with existing GSWF OTL access tracks to reduce overall requirements.	Through optimising underground cable and road alignments: • Approximately 5.75 ha of Hooded Robin habitat avoided through this method, representing a 97.3% reduction between the Referred and current design.
Micro siting of infrastructure	Infrastructure in woodland vegetation has been micro sited to areas of lower tree density, and utilizes existing minor access tracks where available	Moderate – reduces number of trees impacted.
Construction		
CEMP	A CEMP will be in place to manage potential direct and indirect impacts to Hooded Robin habitat during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds, prevent increase in population of non-native fauna, maintain habitat features such as hollow logs. A specific Flora and Fauna Management Plan will be in place for the Project to further avoid, minimise and mitigate impacts to Hooded Robin.	High – appropriate implementation of the CEMP will effectively avoid indirect impacts to South-eastern Hooded Robin and habitat.
PCC	Pre-clearance Checks and micro siting in all areas of the Project Area will aim to avoid hollow-bearing trees where technically feasible, and slow-fell where unavoidable to prevent injury to fauna.	Moderate – any fauna will be safely removed by accredited wildlife handler prior to construction.
Rehabilitation MP	A Rehabilitation Management Plan will be in place to ensure effective restoration of any temporarily disturbed areas required during construction. This will include topsoil spreading and management of weeds, as well as monitoring.	High -17.03 ha (41.49%) of disturbed habitat will be rehabilitated, commencing within 3 years of the initial disturbance.

Stage	Action	Effectiveness
Operation		
OEMP	Impacts during Operation are likely to be minor. An OEMP will be in place to manage any minor potential impacts which may result from operation of the wind farm, including management of weeds.	High – appropriate implementation of the OEMP will ensure that Hooded Robin habitat will not be further degraded during operation of the wind farm.
Rehabilitation MP	Actions in a Rehabilitation MP are likely to continue after construction ceases. Ongoing application of the Rehabilitation MP including any monitoring will ensure positive trajectory of restoration and identify any triggers for adaptive management.	High – monitoring will inform adaptive management measures.
Offsetting	Neoen has purchased a 1,300 ha property to the north of GNWF to be utilized as a native vegetation SEB offset site. Additional on ground offsets will be sought to achieve the remainder of the SEB Offset obligations and EPBC Offset obligations, which are likely to comprise additional habitat suitable for South-eastern Hooded Robin.	High – the site provides up to 279.63 ha of habitat suitable for South-eastern Hooded Robin.
Decommissioning		
Reassessment and further surveys	To be developed at time of decommissioning. It is likely to include additional surveys, Significant Impact Assessment (under relevant legislation and guidelines at the time of decommissioning) and approvals, if required.	Follows regulatory process relevant at the time of impact.

7.2.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the South-eastern Hooded Robin, which has been assessed as likely to occur within the Disturbance Footprint and is known to occur within the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the South-eastern Hooded Robin against the significant impact criteria (DotE 2013a) is presented in Table 7.15.

Table 7.15: SIA for South-eastern Hooded Robin, listed as Endangered under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Assessment
Lead to a long-term decrease in the size of a population	No	No	Unlikely. Despite numerous field surveys, and the occurrence of potentially suitable habitat within the WF, the species has not been recorded within the WF, however, impacts are still considered herein based upon potentially suitable habitat. Within the OTL there are several (eight) recent records of the species occurring in the far south of the OTL. An estimated maximum potential impact area of approximately 28.81 ha in the WF (predominantly associated with VA1) and approximately 12.24 ha along the OTL alignment (predominantly associated with VA18) will be disturbed as a result of the Project. The Disturbance Footprint is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. Where the species has been recorded within the Disturbance Footprint, efforts would be made to avoid suitable habitat where this species is likely to be present through micro siting roads, tracks and OTL infrastructure where practicable. It is expected that any individuals potentially impacted during the construction phase could readily disperse into nearby suitable habitat, noting there is approximately 2,795.87 ha of potentially suitable habitat in the broader GNREF. The design of the Project has been refined to avoid habitat to this species where possible. Therefore, taking into consideration the OTL alignment has some capacity to be further micro sited in some areas, the Project is unlikely to lead to a long-term decrease in the size of a population.
Reduce the area of occupancy of the species	No	No	Unlikely. The AOO for the South-eastern Hooded Robin is approximately 30,000 km^2 (16,000–50,000 km^2) / 3,000,000 ha (DCCEEW 2023b). Based on these figures the clearance of 28.81 ha in the WF and 12.24 ha along the OTL alignment (i.e. maximum estimated area of 41.05 ha for WF and OTL combined) of potentially suitable habitat associated with the Project represents 0.15% of the reported AOO of the species. Of note, there is considered to be a total of 2,795.87 ha of potentially suitable habitat in the broader GNREF. Of this, a maximum of 41.05 ha (or 1.61%) is inside of the Disturbance Footprint and impacted by the Project and includes 24.02 ha of Permanent Disturbance and 17.03 ha of Temporary Disturbance (Umwelt 2025b). Additionally, it is considered that extensive suitable, contiguous habitat is also present outside of the mapped GNREF boundary. To date, the species has only been recorded in the far south of the OTL (Umwelt 2025b). The Disturbance Footprint is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. Where the species has been recorded within the Disturbance Footprint, efforts would be made to avoid habitat areas where this species is present and to micro site roads, tracks and OTL infrastructure where practicable. Therefore, impacts as a result of the Project are expected to be largely mitigated for this species, with extensive areas of potential habitat not disturbed by the Project. Thus, the Project is considered unlikely to reduce the AOO for this species.
Fragment an existing population into two or more populations	No	No	Unlikely. Whilst the WF and OTL are considered to be within the EOO for this species, the Disturbance Footprint is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas, meaning the Project is considered unlikely to fragment an existing population into two or more populations. Where the species has been recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and OTL infrastructure where practicable. The design of the Project has been refined to avoid impacts to this species where possible. The Disturbance Footprint for the Project represents a fraction of the overall distribution of the species across much of Australia and does not divide any known population in two. The maximum estimated clearance of approximately 41.05 ha (WF and OTL combined) of potentially suitable habitat within the GNWF in areas that may provide suitable habitat for the species are considered to be small, isolated patches within a much broader species distribution. The clearance of potentially suitable habitat within the Disturbance Footprint is considered unlikely to restrict movement of individuals nor restrict gene flow of this species across the landscape (i.e. the species is considered to be a mobile species, regularly occupying patches larger than 10 ha (DCCEEW 2023b). The Project is considered unlikely to fragment any population of the species whose home range may overlap with the Disturbance Footprint. Therefore, the Project is considered unlikely to cause fragmentation of any population into two or more populations.
Adversely affect habitat critical to the survival of a species	No	No	Unlikely. As above, habitat deemed critical to the survival of the species is documented in the Conservation Advice for the species (DCCEEW 2023b) and includes dry eucalypt and acacia woodlands and shrublands remnants with an open understorey, some grassy areas. Suitable habitat is typically widespread for this species regionally across south-eastern Australia and species records are spread throughout south-eastern South Australia. As above, there is a total of 2,795.87 ha of potentially suitable habitat in the broader GNREF. Of this, a maximum of 41.05 ha or 1.61% occurs is inside the Disturbance Footprint and would impacted by the Project. Impacted areas include both Permanent Disturbance (24.02 ha) and Temporary Disturbance (17.03 ha). Of the potentially suitable habitat, it is noted that not all areas meet the critical habitat criteria, and the estimated impact is considered conservative (Umwelt 2025b). The long history of agricultural grazing within the Disturbance Footprint has reduced the complexity of the ground layer, and few tall native grasses remain due to grazing pressure. Additionally, areas of mallee, especially in VA18 are included in their entirety, though it is likely that only the outer edge of these patches where they intergrade with clearings or open areas may be considered critical habitat (Umwelt 2025b). As such, a significant impact to the species may be considered implausible given mitigation measures and areas of similar habitat occur adjacent to the Disturbance Footprint. Mitigation measures propose to minimise clearance areas where practicable, noting the Disturbance Footprint is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. Additionally, the current Disturbance Footprint has been further refined to reduce the area of clearance required in potentially suitable habitat for the species (Umwelt 2025b). Thus, the Project is considered unlikely to significantly impact habitat considered critical for survival of the species.
Disrupt the breeding cycle of a population	No	No	Unlikely. South-eastern Hooded Robins generally form monogamous pairs and occupy breeding territories during the breeding season (between July to November) and non-breeding season, with pairs often returning to the same site each season (including multiple broods) (DCCEEW 2023b). Nests are situated in a tree fork or crevice, from less than 1 m to 5 m above the ground (DCCEEW 2023b). Umwelt (2025a) notes there is ample suitable breeding habitat in the contiguous adjacent landscape. Additionally, the current Disturbance Footprint has been further refined to reduce the area of clearance required in potentially suitable habitat for the species (Umwelt 2025b), thereby reducing impacts related to nesting and breeding areas. Therefore, the Project is considered unlikely to lead to a long-term decrease in the size of a population.
Modify, destroy, remove and isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	Unlikely. As above, the Project is only expected to impact upon smaller areas of dry eucalypt and acacia woodlands and shrublands, and whilst a total estimated area of approximately 41.05 ha (WF and OTL) of potentially suitable habitat within the GNWF will be impacted, equating to approximately 1.61% of the suitable vegetation mapped in the broader GNREF, or 0.15% of the reported AOO of the species. Of which, a total of approximately 24.02 ha (WF and OTL) is considered the maximum potential Permanent Disturbance of potential Hooded Robin habitat. Mitigation measures will be implemented to reduce impacts to this species. Therefore, the Project is considered unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Significant Impact Criterion	Direct Impact	Indirect Impact	Assessment
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species	No	No	Unlikely. There is no recovery plan in place for this species, however, it is noted that a recovery plan is required (DCCEEW 2025b). Some conservation and recovery actions are included within the Conservation Advice for the species (DCCEEW 2023b). The Project is not expected to substantially interfere with the listed conservation and recovery information currently provided for this species, which largely focuses on reducing land clearance in habitat critical to the survival of the species, restoring remnant woodland, undertaking revegetation, ensuring populations remain connected by avoiding gaps of greater than 100 m, and the promotion of ecological management and connectivity of woodland remnants (DCCEEW 2025b). The Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas, and no gaps in vegetation greater than 100 m are proposed. Where the species has been recorded within the Disturbance Footprint, efforts would be made to avoid suitable habitat areas through micro siting of roads, tracks and OTL infrastructure where practicable. Therefore, impacts as a result of the Project are not expected to interfere with the recovery of the species.
Outcome: No significant residual impacts expected for the South-eastern Hooded Robin.			

7.2.3.1 Acceptability of relevant impacts

Given the comprehensive measures outlined in the project, such as site selection, and habitat avoidance measures, the project demonstrates minimisation of direct impacts on habitat of the South-eastern Hooded Robin and has assessed this MNES as unlikely to be significantly impacted by the Project.

The CEMP will effectively manage any potential indirect impacts, which includes further avoiding habitat features such as hollow trees and logs as part of PCCs, and managing dust, water runoff and noise and vibration impacts.

The on-ground SEB offset site secured for GNWF is likely to provide additional habitat for the species and ensures that the area will improve over time and contribute to the species' recovery in a large, connected area of protected land.

The acceptability of the impact on the South-eastern Hooded Robin is reliant on the effectiveness of these mitigation measures and their alignment with regulatory requirements and conservation goals. By adhering to the guidelines and implementing robust risk controls, the project can demonstrate its commitment to protecting MNES while achieving its development objectives.

7.3 Southern Whiteface (*Aphelocephala leucopsis*) – Vulnerable

This section provides a comprehensive evaluation of the potential impacts on the Southern Whiteface due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Southern Whiteface is considered known to occur within the Disturbance Footprint and Development Envelope (Umwelt 2025b).

7.3.1 Impact Summary

An overview of the potential direct impact to Southern Whiteface by Goyder North Wind Farm is provided in Table 7.16. This is further explained, as well as indirect impacts in Table 7.17.

Table 7.16: Summary of direct impact to Southern Whiteface

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	45.41	12.55	57.96
Habitat quality	A maximum of 28.81 ha of vegetation in the WF contains at least one of the critical habitat criteria for Southern Whiteface, noting that no vegetation is considered undisturbed due to the long history of grazing. Additional habitat may provide some foraging habitat (i.e. shrubland with grassy understory).	A maximum of 9.94 ha of habitat along the OTL contains at least one of the critical habitat criteria for Southern Whiteface, noting that no vegetation is considered undisturbed due to the long history of grazing.	38.75
Individual impacts	Not Assessed	Not Assessed	Not Assessed

Source: Umwelt 2025a.

Direct impacts to potential habitat include an estimated direct impact area of 45.41 ha in the WF and 12.55 ha along the OTL. This includes all habitat which is broadly suitable for the Southern Whiteface but does not indicate the area of critical habitat impacted. Critical habitat for the Southern Whiteface includes undisturbed woodlands and shrublands with an understorey of grasses and / or shrubs, areas with low tree densities and herbaceous understorey litter cover and trees with hollows for nesting. Limiting the habitat to those associations which match at least one of the critical habitat criteria, results in a reduced impact of 29.81 ha in the WF and 9.94 ha along the OTL.

Of the 831,652 ha of potentially suitable mapped habitat in the affected subregions (Table 4.17), 57.96 ha is proposed to be impacted, representing 0.007% of the potentially suitable habitat available in the subregions.

The Project does not cause impact to an isolated fragment of habitat for this species in an otherwise depleted landscape. Given the broad availability of suitable habitat in the surrounding subregions, it is considered unlikely that this Project will prevent dispersion of fragmented populations into the surrounding landscape, nor impact the carrying capacity of the dispersion habitat, such that the species would decline. The area being impacted is largely cleared and void of suitable vegetation and breeding habitat (hollow trees) already.

Indirect impacts may include long term modification to existing occupied areas through weed incursion, altered hydrology and sediment deposition as well as through an increase in regular human disturbance during construction and operation of the wind farm. Some areas of the OTL are currently isolated with a lack of existing roads and track networks. Increased movement of introduced predators may also constitute an indirect impact of the OTL construction in these undeveloped areas, where suitable habitat occurs.

Table 7.17: Potential direct and indirect impacts to Southern Whiteface

Impact Type	Wind Farm	OTL	Phase	Duration
Direct Impacts				
Habitat loss (permanent) (ha)	28.84	5.44	Construction	Long-term / permanent
Habitat loss (Temporary) (ha)	16.57	7.11	Construction	Medium term
Collision Risk	Low risk of collision due to location of known population and flight height typically being less than the lowest WTG height of 20 m.	Low risk of collision with stationary OTL infrastructure.	Operation	Long term / life of Project
Disturbance / Displacement	Likely disturbance during construction in eastern portion of Project Area, around 10 WTGs in, or edging on woodland. Unknown risk of disturbance during	Likely disturbance during construction, including local displacement from areas under active construction.	Construction / Operation	Short-term
Indirect Impacts				
Habitat fragmentation	Impacted habitat occurs on the eastern edge of Project Area. No patches of habitat will be isolated from the broader patch.	OTL corridor will be narrow and easily traversable by Southern Whiteface. No single entire territory is likely to be impacted by the OTL due to the narrow and linear nature of the corridor.	Operation	Permanent
Noise and vibration	Unknown risk of disturbance from noise due to operation of WTGs. Up to 10 WTGs occur in area known to be occupied by Southern Whiteface.	Minor risk of ongoing displacement due to noise impacts from OTL, however existing OTL infrastructure already occurs, including in the direct vicinity of survey observations.	Operation	Ongoing for the life of the Project.
Degradation of habitat through weeds or pathogens	Minor risk of weeds or pathogens increasing in disturbed area, which may reduce quality of ground foraging habitat. Managed by implementation of CEMP and OEMP.	Minor risk of weeds or pathogens increasing in disturbed area, which may reduce quality of ground foraging habitat. Managed by implementation of CEMP and OEMP.	Construction / Operation	Ongoing for the life of the Project
Degradation of habitat through dust deposition	Minor risk of dust deposition on adjacent vegetation during construction which may reduce foraging suitability.	Minor risk of dust deposition on adjacent vegetation during construction which may reduce foraging suitability.	Construction	Short-term

7.3.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Neoen has implemented a range of measures during the planning and design phase to avoid and minimise impacts to potentially suitable habitat for Southern Whiteface (and other species). Between the EPBC Referral and EPBC Variation design refinements have resulted in a 38.87% reduction in disturbance to potential Southern Whiteface habitat, from 94.82 ha to 57.96 ha. A summary of mitigation measures implemented during each stage of the Project is presented in Table 7.16.

Table 7.18: Mitigation Hierarchy implemented at all stages of the Project for Southern Whiteface

Stage	Action	Effectiveness
Pre-construction design		
Site selection	Prioritised placement of infrastructure in existing cleared areas or areas of non-native vegetation.	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use. Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Targeted Bird Surveys (BBUS, MBC, Opportunistic)	Seasonal BBUS surveys for two years (24 months) to assess occurrence and / or distribution of bird species across the site.	High – identified locations of Southern Whiteface populations within the Project Area and confirmed that the species has low risk of collision, with no flight heights observed above 10 m (minimum rotor height 20 m). Low risk of impact across majority of habitat. The closest turbine to the regularly observed population at BBUS site 10 is 882 m. Turbines in woodland area are likely to be in closer proximity, however Southern Whiteface were observed here intermittently.
Non-conventional stringing methods	Removal of stringing corridor in areas of high value MNES habitat through application of non-conventional stringing methods (i.e. helicopter stringing)	High – resulted in reduction of up to 43.79 ha of Disturbance Footprint, including 39.68 ha of native vegetation, of which 8.43 ha was potential Southern Whiteface habitat.
Tower height and placement refinement	Investigation into height and selective placement of OTL towers to reduce requirement for ongoing maintenance of vegetation above 3 m.	High - resulted in reduction of ongoing impacts to up to 10.52 ha of vegetation which comprised potential Southern Whiteface Habitat.
Alignment with existing infrastructure	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation.	High – 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totaling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
	The electrical layout has been refined and aligned with existing roads, proposed access tracks and other GNWF infrastructure, and the OTL access tracks have been aligned with existing GSWF OTL access tracks to reduce overall requirements.	Through optimising underground cable and road alignments: • Approximately 6.56 ha of Southern Whiteface habitat avoided through this method, representing a 97.69% reduction between the Referred and current design.
Micro siting of infrastructure	Infrastructure in woodland vegetation has been micro sited to areas of lower tree density, and utilizes existing minor access tracks where available	Moderate – reduces number of trees impacted.
Construction		
CEMP	A CEMP will be in place to manage potential direct and indirect impacts to Southern Whiteface habitat during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds, prevent increase in population of non-native fauna, maintain habitat features such as hollow logs. A specific Flora and Fauna Management Plan will be in place for the Project to avoid, minimise and mitigate impacts to Southern Whiteface	High – appropriate implementation of the CEMP will effectively avoid indirect impacts to Southern Whiteface and habitat.
PCC	Pre-clearance Checks and micro siting in all areas of the Project Area will aim to avoid hollow-bearing trees where technically feasible, and slow-fell where unavoidable to prevent injury to fauna.	Moderate – any fauna will be safely removed by accredited wildlife handler prior to construction.
Rehabilitation MP	A Rehabilitation Management Plan will be in place to ensure effective restoration of any temporarily disturbed areas required during construction. This will include topsoil spreading and management of weeds, as well as monitoring.	High -23.68 ha (40.86%) of disturbed Southern Whiteface habitat will be rehabilitated, commencing within 3 years of the initial disturbance.

Stage	Action	Effectiveness
Operation		
OEMP	Impacts during Operation are likely to be minor. An OEMP will be in place to manage any minor potential impacts which may result from the operation of the wind farm, including management of weeds.	High – appropriate implementation of the OEMP will ensure that Southern Whiteface habitat will not be further degraded during operation of the wind farm.
Rehabilitation MP	Actions in a Rehabilitation MP are likely to continue after construction ceases. Ongoing application of the Rehabilitation MP including any monitoring will ensure positive trajectory of restoration and identify any triggers for adaptive management.	High – monitoring will inform adaptive management measures.
Offsetting	Neoen has purchased a 1,300 ha property to the north of GNWF to be utilized as a native vegetation SEB offset site. Southern Whiteface were observed in abundance at the SEB Offset site during vegetation surveys. Additional on ground offsets will be sought to achieve the remainder of the SEB Offset obligations and EPBC Offset obligations, which are likely to comprise additional habitat suitable for Southern Whiteface.	High – the site provides an estimated 991.37 ha of habitat suitable for Southern Whiteface.
Decommissioning		
Reassessment and further surveys	To be developed at time of decommissioning. It is likely to include additional surveys, Significant Impact Assessment (under relevant legislation and guidelines at the time of decommissioning) and approvals, if required.	Follows regulatory process relevant at the time of impact.

7.3.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Southern Whiteface, which has been assessed as known to occur within the Disturbance Footprint and Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for Southern Whiteface against the significant impact criteria (DotE 2013a) is presented in Table 7.19.

Table 7.19: SIA for Southern Whiteface, listed as Vulnerable under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Lead to a long-term decrease in the size of an important population	No	No	Unlikely. No important populations of Southern Whiteface are identified in the recent Conservation Advice for the species (DCCEEW 2023a). The species occurs across much of Australia favouring open woodlands and shrublands with grassy or shrub understorey and an intact litter layer. An estimated potential impact to suitable habitat for the species of 45.41 ha in the WF and 12.55 ha along the OTL will be disturbed as a result of the Project, noting much of this disturbance is divided across multiple VAs (16 VAs plus Mallee forest and woodland), and the Disturbance Footprint is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. Within the WF, the species has been previously recorded in Mallee Woodlands associated with fringing Chenopod Shrublands in the very eastern extent of the WF, and within discrete areas along the OTL, particularly in the southern woodlands. Taller shrubland areas may support the breeding requirements of this species at a number of ephemeral drainage lines across the GNWF. The species is known to be present within the GNWF, noting the species has been recorded at several ecological monitoring sites, and opportunistically across the site. The individuals present would be considered part of the continuous population across the majority of Australia, rather than part of any identified important population. However, the Project is not considered likely to lead to a long-term decrease in size of any important population, due to the narrow nature of the Disturbance Footprint, with individuals able to disperse into surrounding habitat. Any disturbance to notable areas of open woodland or tall shrubland is considered small and is not expected to lead to a long-term decrease in size of an important population of a species which is broadly distributed across much of Australia, and which would readily traverse across the Disturbance Footprint.
Reduce the area of occupancy of an important population	No	No	Unlikely. No important populations are defined for the Southern Whiteface in the recent Conservation Advice (DCCEEW 2023a), and the species is broadly distributed as a continuous population across much of Australia south of the tropics. While the GNWF is broadly within the EOO of the species, the AOO of the species is not expected to be reduced by disturbance in any measurable way as a result of the Project since the Disturbance Footprint itself is divided across multiple VAs rather that a single suitable habitat type. Further, the Project is predominantly comprised of narrow roads and tracks which are readily traversed, WTG hardstand areas, and OTL towers which are also readily traversed, rather than large, continuous areas. A total estimated potential impact area of 45.41 ha in the WF and 12.55 ha along the OTL (i.e. a maximum combined total of 57.96 ha for WF and OTL). As the species is confirmed to be present within the WF and OTL, there is a potential that the Project may be considered to incur a small reduction in the AOO of this species through direct impacts such as clearance of suitable habitat, or indirect impacts, however, noting no important populations have been defined for this species. As noted above, the assumed AOO for the species is 70-80,000 km^2 or 7,000,000 ha (based on actual records, so potentially much higher given the EOO covers 4,910,000 km^2 across large parts of Australia which would be rarely surveyed) (DCCEEW 2023a). Based on these figures, the clearance of approximately 57.96 ha for areas across the WF and OTL combined of potentially suitable habitat associated with the Disturbance Footprint represents a marginal reduction of 0.0001% of the reported AOO of the species broadly across Australia. Further, within the Flinders Lofty Block and Murray Darling Depression the species' AOO is estimated to be 440,000 ha and 516,800 ha, representing approximately 0.010% and 0.01% respectively (as calculated within the ALA spatial portal using IBRA shapefile import, 0.02 degree grid) (ALA 2025). This clearance may be considered a marginal reduction of the species' AOO across Australia and within the respective IBRA regions, and therefore such impacts are not considered to be significant.
Fragment an existing important population into two or more populations	No	No	Unlikely. Whilst the Project is considered to be within the EOO of the species, no important populations are defined in the Conservation Advice (DCCEEW 2023a), and the species is mapped as a single continuous population across much of Australia south of the tropics. The Disturbance Footprint for the Project represents a fraction of the overall distribution of the species across much of Australia and across the region and is not considered to divide any known population in two. A total clearance of approximately 57.96 ha for the GNWF of potentially suitable shrub habitat associated with the Disturbance Footprint in areas that may provide suitable habitat for the species will occur as a result of the GNWF. However, any impacts to potentially suitable habitat are considered to be small, and will occur in the form of narrow, readily traversable strips of habitat within a much broader species distribution. Therefore, the Project is considered unlikely to cause fragmentation of any population into two or more populations.
Adversely affect habitat critical to the survival of a species	No	No	Unlikely. Habitat deemed critical to the survival of the species is documented in the Conservation Advice for the species (DCCEEW 2023a), and includes areas of relatively undisturbed open woodland and shrublands with an understorey of grasses of shrubs, habitat with low tree densities and an herbaceous understorey litter cover which provides essential foraging habitat, and living and dead trees with hollows and crevices which are essential for roosting and nesting. An estimated potential impact area of 45.41 ha in the WF, and 12.55 ha along the OTL will be disturbed as a result of the Project. Within the broader GNREF, 3,487.94 ha is mapped in these associations, with impacts representing up to 1.66% of potentially important habitat in GNREF. These calculations include all areas mapped as these associations as potentially suitable habitat; however, it is likely that not all patches constitute critical habitat. For example, many areas mapped as mallee woodland are lacking a grassy component to the understorey or comprise areas of high tree density which are not preferred for foraging. Additionally, given the long history of disturbance from agricultural grazing practices, most areas are lacking an herbaceous understorey. Based on the critical habitat criteria, up to 28.81 ha in the WF and 9.94 ha in the OTL contain at least one feature of the listed critical habitat. However, a significant impact to the species is improbable given the species' extensive distribution across much of southern Australia, and what may be considered a small area of habitat removal compared with the reported AOO (see above) for this species.
Disrupt the breeding cycle of an important population	No	No	Unlikely. As above, no important populations of the species are identified in the recent Conservation Advice for the species, and the species has a very broad distribution across mainland Australia (DCCEEW 2023a). Habitat deemed critical for roosting and nesting includes open woodland and shrubland supporting hollows and crevices. Impacts to Mallee Woodlands associated with fringing Chenopod Shrublands in the eastern extent of the WF and along the OTL, particularly in the southern woodlands, are limited. Habitat identified as potentially suitable for breeding may support occasional hollows required for Southern Whiteface to nest. The design of the Project has been refined to avoid potential nesting habitat where possible. Additionally, it is considered habitat suitable for the species is extensive in the areas directly adjacent to the Disturbance Footprint, both within and adjacent to the WF and OTL. Therefore, the clearance of approximately 57.96 ha across numerous VAs in the GNWF is not expected to disrupt the breeding cycle of an important population.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	Unlikely. As above, the GNWF is only expected to impact upon smaller portions of preferred open woodland or shrubland habitat preferred by the species. The species occurs broadly across much of mainland Australia, and therefore any impacts resulting to preferred habitat due to the Project are unlikely to significantly impact on habitat availability or quality to an extent which would lead to a decline in the overall species.

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species.	No	No	Unlikely. There is no recovery plan in place for this species, however, conservation and recovery actions are included within the Conservation Advice for the species (DCCEEW 2023a), and include habitat loss caused by clearing for agriculture, habitat degradation caused by livestock, and potential impacts of climate change. There are no adopted recovery plans or threat abatement plans nominated for this species. The Project is not expected to interfere with the recovery of the species.
Outcome: No significant residual impacts expected for the Southern Whiteface.			

7.3.3.1 Acceptability of relevant impacts

The Southern Whiteface is known to occur within the Disturbance Footprint and broader Project Area. Survey findings have recorded the species both opportunistically and during targeted surveys on multiple occasions, with a total of 47 observations of up to 263 individuals as of June 2025. The species has been observed in various habitats, including degraded areas of mallee woodlands and shrublands, indicating its adaptability to different environmental conditions. In a regional context, the Southern Whiteface is found across much of mainland Australia south of the tropics, with its distribution being patchy but concentrated in areas that provide suitable habitat. The species is listed as Least Concern and Stable in the Olary Spur subregion, Vulnerable and in Probable Decline in the Broughton subregion, and Near Threatened and in Probable Decline in the Murray Mallee subregion. This indicates that while the species is relatively common in some areas, it faces threats from habitat loss and fragmentation in others.

Given the comprehensive measures outlined, such as site selection and habitat avoidance measures, the project demonstrates minimization of direct impacts on the habitat of the Southern Whiteface and has assessed this MNES as unlikely to be significantly impacted by the Project.

The CEMP will effectively manage any potential indirect impacts, which includes further avoiding habitat features such as hollow trees and logs as part of PCCs, and managing dust, water runoff, and noise and vibration impacts. The on-ground SEB Offset Site secured for GNWF is likely to provide additional habitat for the species, ensuring that the area will improve over time and contribute to the species' recovery in a large, connected area of protected land. The acceptability of the impact on the Southern Whiteface is reliant on the effectiveness of these mitigation measures and their alignment with regulatory requirements and conservation goals. By adhering to the guidelines and implementing robust risk controls, the Project can demonstrate its commitment to protecting MNES while achieving its development objectives.

7.4 Flinders Ranges Worm-lizard (*Aprasia pseudopulchella*) – Vulnerable

This section provides a comprehensive evaluation of the potential impacts on the Flinders Ranges Worm-lizard due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Flinders Ranges Worm-lizard is considered known to occur within the Disturbance Footprint and Development Envelope (Umwelt 2025b).

7.4.1 Impact Summary

An overview of the potential impact to Flinders Ranges Worm-lizard by Goyder North Wind Farm is provided in Table 7.20.

Table 7.20: Summary of impact to Flinders Ranges Worm-lizard

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	150.84	2.26	153.10
Habitat quality	35.35 ha of known habitat where a FRWL record (recent, historical or sign) intersects with a suitable vegetation association and stony surface covering polygon. 115.50 ha of possible habitat, mapped as comprising suitable vegetation with a stony surface covering, but with no intersecting records. Habitat quality varied significantly across the mapped areas. Mapped suitable habitat may not represent contiguous areas of stony surface covering or suitable habitat.	Minimal suitable habitat was available along the OTL, outside of the WF boundary. Where the hills fall away into plains, chenopod shrublands and mallee vegetation do not support a rocky surface covering. One hilly section with rock outcrop (VA19) may support FRWL. 0.07 ha of known habitat and 2.26 ha of possible habitat is mapped on the OTL.	35.41 ha of known habitat (lizards identified in survey quadrats) 117.69 ha of possible habitat (no lizards identified in survey quadrats)
Individual impacts	Estimates of numbers of individuals within the Project Area or Disturbance Footprint not able to be accurately assessed from survey data, as density of rock cover varies significantly across the area.		

Source: Umwelt 2025b

The Disturbance Footprint results in an estimated maximum direct impact area of 150.84 ha in the WF Area, 2.26 ha along the OTL alignment, of which 35.41 ha is considered known habitat and 117.69 ha is considered possible habitat (where no individuals were detected within survey quadrats), with impacts predominantly associated with rocky surface overlay in native grassland (VA11). The number of individuals impacted in this area is unknown, however, given their small size it is assumed the ability to mobilise away from any construction activities is limited.

Indirect impacts may include noise and vibration disturbance, degradation of habitat from weed incursion. Fragmentation of habitat due to the network of roads may also constitute an indirect impact to the species, however, anecdotal evidence suggests that the species may be able to traverse areas of unsuitable habitat such as roads.

A comprehensive list of direct and potential indirect impacts to Flinders Ranges Worm-lizard is presented in Table 7.21.

Table 7.21: Potential direct and indirect impacts to Flinders Ranges Worm-lizard

Impact Type	Wind Farm	OTL	Phase	Duration
Direct Impacts				
Habitat loss (Permanent) (ha)	150.84 (35.34 of known habitat, 115.50 of possible habitat)	2.26 (0.07 ha of known habitat, 2.26 ha of possible habitat)	Construction	Long-term / permanent
Habitat loss (Temporary) (ha)			Construction	Medium to long term
Mortality or displacement	Individuals within DF will be relocated to adjacent areas of suitable habitat by qualified fauna spotter catcher during PCC survey, prior to ground clearing activities.	Individuals within DF will be relocated to adjacent areas of suitable habitat by qualified fauna spotter catcher during PCC survey, prior to ground clearing activities.	Construction	Short-term
Indirect Impacts				
Degradation of habitat or unauthorized clearance of habitat outside of DF	Low risk of unauthorized clearance due to specific controls and management measures outlined in CEMP.	Low risk of unauthorized clearance due to specific controls and management measures outlined in CEMP.	Construction	Short-term
Vehicle Collision Risk	Low risk of collision with vehicles as a result of new roads and increased traffic. Low risk of collision caused by vehicles driving off formed tracks. Specific controls and measures in place in CEMP.	Low risk of collision with vehicles following construction. Suitable habitat is limited along OTL and roads will be infrequently traversed, for maintenance activities only.	Construction / Operation	Long term / life of Project
Pitfall (FRWL getting trapped in trenches, pits and other open excavations).	Specific controls outlined in CEMP to regularly monitor any open pitfalls, with qualified fauna spotter catcher on site during construction (i.e. MV cable trenches).	Specific controls outlined in CEMP to regularly monitor any open pitfalls, with qualified fauna spotter catcher on site during construction (i.e. MV cable trenches).	Construction	Short-term
Degradation of habitat due to dust emissions	Low risk of dust smothering flora and leading to loss of vegetation condition and FRWL habitat suitability. Managed by specific controls in CEMP and associated sub-plans.	Low risk of dust smothering flora and leading to loss of vegetation condition and FRWL habitat suitability. Managed by specific controls in CEMP and associated sub-plans.	Construction	Short-term
Altered grazing regimes (increased grazing, preferential grazing, reduction or loss of grazing, altered grazing times).	Low risk as FRWL are known to occur in grazed environments. Managed through site specific CEMP, OEMP and associated sub-plans potential impact is expected to be short-term in nature and temporary. Furthermore, the Project Owner (Neoen) will not have any direct control over grazing regimes as it is controlled by landowners or managers.	Low risk as minimal habitat occurs along OTL and grazing changes unlikely to be as a result of infrastructure. Furthermore, the Project Owner (Neoen) will not have any direct control over grazing regimes as it is controlled by landowners or managers.	Construction /Operation	Short-term, intermittent, ongoing
Noise and vibration disturbance during construction and operation.	Noise impacts likely to be minor due to the subterranean nature of FRWL ecology. Vibrations may cause short term disturbance to individuals occurring near to blast sites during construction.	Very low risk, restricted to potential short-term vibration disturbance during construction.	Construction	Short term
Introduction of new weeds to the Project Area,	Low risk of introduction or increase in weeds, through use of contaminated construction material, machinery and vehicles, leading to loss of vegetation condition and FRWL habitat suitability. However, risk is low due to specific controls in CEMP, OEMP and sub-plans and the Project Area is subject to high existing weed cover.	Low risk of introduction or increase in weeds. Managed through CEMP, OEMP and sub-plans.	Construction / Operation	Long-term / Ongoing
Fragmentation	Low to moderate risk of division and isolation of FRWL by construction of vehicular access tracks. However, evidence suggests the species may be able to traverse areas equivalent to road width (Section 4.4.2.1).	Low risk, and little FRWL habitat occurs on OTL, and the species is thought to be able to traverse minor roads.	Construction / Operation	Long-term / Ongoing
Chemical spills causing degradation of FRWL habitat.	Low risk of chemical spills (e.g. fuel/diesel) causing degradation of FRWL habitat. Manageable through specific controls outlined in CEMP, OEMP and sub plans.	Low risk, managed by CEMP, OEMP and sub plans.	Construction	Short-term, isolated
Shadow flicker	Unlikely to impact FRWL due sub-terranean nature of their ecology and behaviour, as well being active at night when shadow-flicker does not occur.	No risk as shadow flicker is associated with WTGs not present on OTL.	Operation	Long-term, Ongoing

7.4.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Neoen has implemented a range of measures during the planning and design phase to avoid and minimise impacts to potentially suitable habitat for Flinders Ranges Worm-lizard. Between the EPBC Referral and EPBC Variation design refinements have resulted in a 66.94% reduction in disturbance to potential FRWL habitat, from 463.08 ha to 153.10 ha (35.41 ha known habitat and 117.69 ha possible habitat), due to a combination of increased survey effort allowing for a refinement of habitat assessed as known or likely and impact reduction to this habitat through detailed design. A summary of mitigation measures implemented during each stage of the Project is presented in Table 7.22.

Table 7.22: Mitigation Hierarchy implemented at all stages of the Project for Flinders Ranges Worm-lizard

Avoidance / Mitigation Measures	Description	Effectiveness
Pre-construction design		
Site selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Alignment with existing infrastructure	Infrastructure components have maximised potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation which comprises potential FRWL habitat.	High – 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totaling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
	The electrical layout has been refined and aligned with existing roads, proposed access tracks and other GNWF infrastructure, and the OTL access tracks have been aligned with existing GSWF OTL access tracks to reduce overall requirements.	Through optimising underground cable and road alignments: • Approximately 28.43 ha of FRWL habitat avoided through this method, representing a 74.02% reduction between the Referred and current design.
FRWL Surveys	Targeted survey of 9,300 to 12,400 rocks within DF, DE and Project Area to determine the extent of the population and guide final placement of infrastructure. The surveys enhance understanding of the distribution, patchiness, and habitat use across the landscape and provide habitat mapping within which to focus PCC efforts prior to construction. Additionally, surveys contribute to an overall better understanding of the Project Area context.	Moderate - determined areas of suitable habitat (rocky surface covering) and approximate density of FRWL within suitable habitat. Allows for informed decision making and allowance of adequate time to plan and undertake PCC during construction.
Construction		
Construction Environmental Management Plan	Comprehensive document with multiple associated sub-plans which aim to avoid or minimise indirect impacts from construction such as dust emissions, erosion, altered hydrology and general site matters. Includes measures for spatial data system to minimise the chance of unauthorised or incorrect clearance areas.	Indirect impacts effectively avoided.
Pre-clearance Check	Any FRWL identified during general ecology PCC will be relocated outside of the DF prior to clearance.	Effectively avoids impacts to individual FRWL.
Operation		
Operational Environmental Management Plan	Management measures enforced to ensure no unforeseen direct or indirect impacts occur to PBTL during the operational phase of the GNWF.	Ensures that direct impacts to PBTL during operational works are avoided and indirect impacts are minimised.
On-ground Offset	Neoen has purchased a 1,300-ha property to the north of GNWF to be utilized as a native vegetation SEB offset site. Additional on ground offsets will be sought to achieve the remainder of the SEB Offset obligations and EPBC Offset obligations, which are likely to comprise additional habitat suitable for FRWL.	High – Rocky surface layer has not been mapped at the SEB site, however it was noted to occur in most grassland and Lomandra grassland areas, as well as some locations within or nearby to mallee woodland.
Decommissioning		
Reassessment and further surveys	To be developed at time of decommissioning. It is likely to include targeted PBTL surveys, Significant Impact Assessment (under relevant legislation and guidelines at the time of decommissioning) and approvals, if required.	Follows regulatory process relevant at the time of impact.

7.4.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Flinders Ranges Worm-lizard, which has been assessed as known to occur within the Disturbance Footprint and likely to occur within the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Flinders Ranges Worm-lizard against the significant impact criteria (DotE 2013a) is presented in Table 7.23.

No significant impacts are expected for this species in accordance with the significant impact criteria (DotE 2013a).

Table 7.23: SIA for the Flinders Ranges Worm-lizard, listed as Vulnerable under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Lead to a long-term decrease in the size of an important population.	No	No	Unlikely. No important populations have been defined for the Flinders Ranges-worm Lizard (DEWHA 2008a). The area surrounding Burra appears to be one of several strongholds for the Flinders Ranges Worm-lizard, where there are numerous, recent and historical records of the species occurring (DEW 2025a; ALA 2025), many of which are likely associated with research efforts surrounding the Pygmy Blue-tongue Lizard which often occurs in sympatry with the species (Pelgrim et al. 2014; Hutchinson and Edwards 2000 cited in DEH 2008c). The species is considered to be reasonably common, but knowledge regarding the species ecology and home range is considered to be limited due to their cryptic nature and small size (Chapple et al. 2019; DEH 2008c), as such, it is likely they are more abundant / widespread than records suggest. Regardless, due to their physically very small size, it is expected their home range would be extremely localised, resulting in the inability of individuals to migrate away from ground disturbance. An estimated potential maximum impact area of 150.84 ha in the WF and 2.26 ha along the OTL alignment may occur as a result of the Project (35.41 ha of known habitat and 117.69 ha of possible habitat) with impacts predominantly associated with VA11. The Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas, so implications as a result of the Project may mean a number of individuals may be impacted by the Disturbance Footprint, however, most individuals would be expected to remain unimpacted within the Project Area. As the Flinders Ranges Worm-lizard is an entirely ground dwelling species with very particular substrate requirements and a very small, assumed home range, and noting the species can be difficult to survey, it is not possible to completely mitigate impacts to every individual. A recent study by Woinarski et al. (2023) suggests that the Flinders Ranges Worm-lizard population is now considered stable, and the species no longer meets eligibility criteria for a threatened listing, noting recovery efforts for have been successful in part due to reservation and curbing the rate of habitat loss within its limited range. Whilst it is expected that some individual Flinders Ranges Worm-lizards may be impacted by the Project, based on the recent targeted survey undertaken by Umwelt (2025h), it is difficult to determine the size of the entire localised population. However, any localised impacts are considered unlikely to lead to a long-term decrease in the size of any population (important or otherwise).
Reduce the area of occupancy of an important population.	No	No	Unlikely. As above, no important populations are defined for the Flinders Ranges Worm-lizard (DEWHA 2008a). A range of vegetation associations are expected to meet the habitat requirements of the Flinders Ranges Worm-lizard. Umwelt (2025b; 2025h) have mapped a total of 3,152.81 ha of potentially suitable habitat in the GNWF Project Area, of which a maximum of 153.10 ha (or 4.86%) is inside the GNWF Project Disturbance Footprint and potentially impacted by the Project. The AOO for the Flinders Ranges Worm-Lizard is approximately 196 km^2 or 19,600 ha (Chappel et al. 2017). Based on these figures the clearance of 150.84 ha in the WF and 2.26 ha along the OTL alignment (i.e. maximum estimated area of 153.10 ha for WF plus OTL) of potentially suitable habitat associated with the Project represents 0.78% respectively of the reported AOO of the species. As the Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas, implications as a result of the Project may mean a number of individuals may be impacted by the Disturbance Footprint, however, most individuals would be expected to remain unimpacted within the GNWF Project Area. Due to the nature of the Disturbance Footprint, and the extensive potential surrounding habitat, the species may be able to disperse into the surrounding habitat. Thus, whilst impacts as a result of the Project cannot be specifically defined based upon local population estimates, important populations are not defined, and it is considered unlikely that the Project will reduce the AOO of an important population.
Fragment an existing population into two or more populations.	No	No	Unlikely. There are numerous, recent and historical records of the species occurring in the area surrounding Burra, including within the WF and northern aspects of the OTL (DEW 2025a; ALA 2025). Whilst the species' home range is expected to be highly localised, the Project is unlikely to fragment an existing population into two or more populations, principally due to the nature of the Project, with the Disturbance Footprint predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. In a study undertaken of 11 sites burnt in the 2003 bushfires in the Stromlo Forest area in the Australian Capital Territory, Wong et al. (2011) suggests that *A. parapulchella* is able to move across the landscape and occupy new areas to some extent, with some individuals found to be approximately 30 m from possible source populations. It may be suggested that *A. pseudopulchella* may also exhibit a similar range of dispersal, noting this is likely the current known maximum range of dispersal for an *Aprasia* sp. Therefore, whilst populations may be temporarily fragmented during construction works, following the rehabilitation of Temporary Disturbance Footprint, the species may be reasonably expected to be able to cross any remaining permanent roads/tracks (i.e. Batter and drainage design was incorporated into the permanent road widths' 3D civil modelling. Based on this modelling the road width is required to vary across the site depending on topographical requirements. For the purposes of this assessment the typical permanent road width is assumed to be nominally 11 m)
Adversely affect habitat critical to the survival of a species.	No	No	Unlikely. The species' Conservation Advice does not list any habitat as critical to the survival of the species. As above, whilst an estimated maximum area of 150.84 ha in the WF and 2.26 ha along the OTL alignment of habitat suitable to the Flinders Ranges Worm-lizard will be impacted as a result of the Project, with a maximum of 153.10 ha (or 4.86% of broader GNWF Project Area) the impacts are unlikely to adversely affect that habitat to the extent that it is critical to the survival of the species. The Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas, so whilst some individuals may be impacted, the majority of potentially suitable habitat within the GNWF is expected to remain unaffected. Thus, implications as a result of the Project are unlikely to adversely affect habitat critical to the survival of the species.
Disrupt the breeding cycle of an important population.	No	No	Unlikely. As above, no important populations are defined for the Flinders Ranges Worm-lizard (DEWHA 2008a). Reproduction cycles of the Flinders Ranges Worm-lizard are understood to be highly seasonal, with females producing two eggs per clutch (Hutchinson cited in ALA 2025). As above, the home range for the Flinders Ranges Worm-lizard it is assumed to be highly localised, principally due to the species being a very small, entirely ground-dwelling/burrowing reptile, with limited capacity to disperse. Whilst the Disturbance Footprint will impact approximately 4.86% (maximum) of the mapped potentially suitable habitat for this species within the GNWF Project Area, the Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. Where the species has been recorded within the Disturbance Footprint, efforts would be made to avoid areas/rocky habitat where this species is present and to micro site roads, tracks and OTL infrastructure where practicable. Therefore, taking into consideration the Disturbance Footprint has some capacity to be micro sited in some areas, the Project may potentially impact upon the breeding of some individuals, however, the Project is unlikely to disrupt the breeding cycle of a population (important or otherwise).
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	No	No	Unlikely. A total of 3,152.81 ha of potentially suitable habitat for the Flinders Ranges Worm-lizard has been mapped within the GNWF Project Area, with a maximum of 153.10 ha (or 4.86%) within the Disturbance Footprint (predominantly associated with VA11) including known and possible habitat (Umwelt 2025b). As described above, the Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. In addition, the species' AOO is understood to extend well beyond the GNWF Project Area. Thus, impacts as a result of the Project are considered unlikely to modify, destroy, remove or isolate or decrease the availability of quality of habitat to the extent that the species as a whole is likely to decline.

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Result in an invasive species that is harmful to a vulnerable species becoming established in the vulnerable species' habitat.	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline.	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species.	No	No	Unlikely. As described previously, is noted that a recent study by Woinarski et al. (2023) suggests that the Flinders Ranges Worm-lizard population is now considered stable, and the species no longer meets eligibility criteria for a threatened listing. Additionally, no important populations are defined for the Flinders Ranges Worm-lizard (DEWHA 2008a). The Disturbance Footprint associated with the Project intersects with potentially suitable habitat for the Flinders Ranges Worm-lizard across the WF and small areas of the OTL, resulting in an estimated potential impact area of 150.84 ha in the WF and 2.26 ha along the OTL alignment (with impacts predominantly associated with VA11), which includes 35.41 ha of known habitat and 117.69 ha of possible habitat where the species has not yet been identified. This may be a relatively conservative estimate as the species is typically limited by the presence of a rocky layer within its suitable habitat. Whilst the species' home range is expected to be highly localised, the Project is unlikely to fragment an existing population into two or more populations, principally due to the nature of the Project, with the Disturbance Footprint predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. In a study undertaken of 11 sites burnt in the 2003 bushfires in the Stromlo Forest area in the Australian Capital Territory, Wong et al. (2011) suggests that A. parapulchella is able to move across the landscape and occupy new areas to some extent, with some individuals found to be approximately 30 m from possible source populations. It may be suggested that A. pseudopulchella may also exhibit a similar range of dispersal, noting this is likely the current known maximum range of dispersal for an Aprasia sp. As such, it may be expected that the species would remain able to disperse across any roads of tracks, noting the batter and drainage design was incorporated into the permanent road width's 3D civil modelling. Based on this modelling the road width is required to vary across the site depending on the topographical requirements. For the purposes of this assessment the final permanent road width is assumed to be nominally 11 m. Existing threats include trampling, browsing and grazing pressures, with no current management in place to assist with the recovery of the species in these areas. Additional controls such as threat abatement, and erosion and sediment controls are defined within the CEMP. Therefore, it is considered unlikely that the Project would interfere substantially with the recovery of the species.
Outcome: No significant residual impacts expected for the Flinders Ranges Worm-lizard.			

7.4.3.1 Acceptability of relevant impacts

The FRWL is known to occur within the Disturbance Footprint and the Development Envelope and is considered to occur in the broader Project Area. A single FRWL was detected opportunistically under a large flat rock, which was flipped during targeted INTG surveys in spring 2024, and there are large areas of potentially suitable habitat containing rocky surface covering and / or woody debris within the Project Area. Historical BDBSA records occur within the Search Area, with 56 observations reported between 1965 and 2023. Additional targeted field surveys were conducted for the GNWF Project in April 2025 in which an estimated 9,300 to 12,400 suitable rocks were upturned, to search for FRWL. A total of five live FRWL were observed during the survey period, and an additional 20 shed skins.

The Disturbance Footprint results in an estimated maximum direct impact area of 153.10 ha of potential habitat in the WF Area and 2.26 ha along the OTL alignment, with impacts predominantly associated with rocky surface overlay in native grassland (VA11). Of these areas, 35.41 ha is considered known habitat and 117.69 ha is considered possible habitat (where no lizards were identified in any survey quadrat). Based on the intensive targeted surveys undertaken for the species, it is known that there is not full occupancy within these areas, and only some areas are utilised. The number of individuals impacted in this area is therefore unknown, however, given their small size it is assumed the ability to mobilise away from any construction activities is limited.

Given the comprehensive measures undertaken by the Project to minimise impacts, such as site selection and habitat avoidance measures, the Project has assessed that this MNES as unlikely to be significantly impacted by the Project.

The CEMP will effectively manage any potential indirect impacts, which includes further avoiding habitat features such as stony habitats through micro siting, relocation of individuals identified during pre-clearance checks, and managing dust and water runoff to avoid indirect impacts. Whilst the species is not considered to be significantly impacts, and no EPBC offset is proposed, the on-ground SEB Offset Site secured for GNWF is likely to provide areas of suitable habitat for the species, with management activities enabling the area to improve over time and contribute to the species' recovery in a large, connected area of protected land. By adhering to the guidelines and implementing robust risk controls, the Project can demonstrate its commitment to protecting MNES while achieving its development objectives.

A Recovery Plan is not required for the FRWL, with the SPRAT profile citing there is no adopted or made Recovery Plan for this species, nor has a threat abatement plan been identified as being relevant for this species (DCCEEW 2025b). A recent study by Woinarski et al. (2023) suggests that the Flinders Ranges Worm-lizard population is now considered stable, and the species no longer meets eligibility criteria for a threatened listing. The Approved Conservation Advice for FRWL lists several threats to the FRWL, including those summarised in Table 7.24.

Table 7.24: FRWL specific threatening processes and assessment of GNWF

Threatening Process	How has Neoen addressed the threat?
Clearance of habitat	• Engaged NV accredited consultants to undertake extensive surveying and mapping of vegetation associations that contain features suitable to the FRWL across the GNWF Project Area, such as stony or clay soils with a stony surface, resulting in known and likely habitats within the GNWF. • Detailed in-field assessments to ensure targeted application of the mitigation hierarchy to mimimise impacts to the FRWL. • Relocation of any individuals observed within the Disturbance Footprint during construction clearance activities.
Urbanisation	• Avoidance of urbanisation due to the provision of continued land use and land management activities that are complimentary to the operation of the wind farm (e.g. continued pastoral and cropping land uses).

7.5 Blue-winged Parrot (*Neophema chrysostoma*) – Vulnerable

This section provides a comprehensive evaluation of the potential impacts on the Blue-winged Parrot due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Blue-winged Parrot is considered to possibly to occur within the Disturbance Footprint and Development Envelope (Umwelt 2025b).

7.5.1 Impact Summary

An overview of the potential impact to Blue-winged Parrot by Goyder North Wind Farm is provided in Table 7.25.

Table 7.25: Summary of impact to Blue-winged Parrot

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	430.95	40.91	471.86
Habitat quality	The WF is on the edge of the known foraging range of the Blue-winged Parrot and is unlikely to represent ideal habitat. Native grasslands (339.04 ha), crops (26.07 ha) and exotic grassland (16.77 ha) have been factored into the area of impacted habitat, however many of these areas occur on steep hill slopes and are unlikely to be favourable.	Limited habitat occurs along the OTL, however arid chenopod shrublands may provide some marginal foraging habitat during the winter migration period. Cropped (2.78 ha) and exotic grasslands (0.96 ha) are also included in these calculations.	As noted for WF and OTL.
Individual impacts	No historical records and not observed in the Project Area.		

Source: Umwelt 2025b

The Disturbance Footprint associated with the Project intersects with potentially suitable foraging only habitat for the Blue-winged Parrot across the GNWF Project Area, resulting in an estimated potential direct impact area of 430.95 ha in the WF, and 40.91 ha along the OTL alignment.

Within the affected subregions of Olary Spur and Broughton, it is listed as Rare and in Probable Decline. Further to the south, within the Murray Mallee region it is considered Rare, but Stable. Of the 1,620,063 ha of potentially suitable habitat in the affected subregions, 471.86 ha occurs within the Disturbance Footprint, representing 0.03% of the potentially suitable habitat available in the subregions. The area of potential habitat in the Project Area includes areas of exotic grassland and cropped areas, which are not included in the NVIS mapping. Thus, as Blue-winged Parrots are known to utilise these modified areas for foraging, the actual area of available habitat is likely to be significantly higher than indicated in NVIS mapping.

7.5.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Although not targeted to the species, Neoen has implemented a range of measures during the planning and design phase to avoid and minimise impacts to native vegetation, which has resulted in a reduction of impacts to potential Blue-winged Parrot habitat. Between the EPBC Referral and EPBC Variation design refinements have resulted in a 14.83% reduction in disturbance to potential Blue-winged Parrot habitat, from 554.04 ha to 471.86 ha. A summary of mitigation measures implemented during each stage of the Project is presented in Table 7.26.

Table 7.26: Mitigation Hierarchy implemented at all stages of the Project for Blue-winged Parrot

Stage	Action	Effectiveness
Pre-construction design		
Site selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Targeted Bird Surveys (BBUS, MBC, Opportunistic)	Seasonal BBUS surveys for two years (24 months) to assess occurrence and / or distribution of bird species across the site.	High – identified locations within the Project Area of higher risk. No Blue-winged Parrots have been recorded in the WF or OTL.
Non-conventional stringing methods	Removal of stringing corridor in areas of high value MNES habitat through application of non-conventional stringing methods (i.e. helicopter stringing)	High – resulted in reduction of up to 43.79 ha of Disturbance Footprint, including 39.68 ha of native vegetation, of which 33.07 ha was potential Blue-winged Parrot habitat.
Alignment with existing infrastructure	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation.	High – 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totaling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
	The electrical layout has been refined and aligned with existing roads, proposed access tracks and other GNWF infrastructure, and the OTL access tracks have been aligned with existing GSWF OTL access tracks to reduce overall requirements.	Through optimising underground cable and road alignments: • Approximately 78.86 ha of potential Blue-winged Parrot foraging habitat avoided through this method, representing an 80.46% reduction between the Referred and current design.
Construction		
CEMP	A CEMP will be in place to manage potential direct and indirect impacts to all habitat during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds, prevent increase in population of non-native fauna, maintain habitat features such as hollow logs.	High – appropriate implementation of the CEMP will effectively avoid indirect impacts to habitat.
Rehabilitation MP	A Rehabilitation Management Plan will be in place to ensure effective restoration of any temporarily disturbed areas required during construction. This will include topsoil spreading and management of weeds, as well as monitoring.	High -203.22 ha (43.07%) of disturbed habitat will be rehabilitated, commencing within 3 years of the initial disturbance.
Operation		
OEMP	Impacts during Operation are likely to be minor. An OEMP will be in place to manage any minor potential impacts which may result from the operation of the wind farm, including management of weeds.	High – appropriate implementation of the OEMP will ensure that habitat will not be further degraded during operation of the wind farm.
Rehabilitation MP	Actions in a Rehabilitation MP are likely to continue after construction ceases. Ongoing application of the Rehabilitation MP including any monitoring will ensure positive trajectory of restoration and identify any triggers for adaptive management.	High – monitoring will inform adaptive management measures.
Offsetting	Neoen has purchased a 1,300 ha property to the north of GNWF to be utilized as a native vegetation SEB offset site. Additional on ground offsets will be sought to achieve the remainder of the SEB Offset obligations and EPBC Offset obligations, which are likely to comprise additional foraging habitat suitable for Blue-winged Parrot. An unconfirmed record of Blue-winged Parrot was reported at the site in May 2025.	High – Foraging habitats are wide and varied and the site may provides up to 565.69 ha of habitat suitable for Blue-winged Parrot.
Decommissioning		
Reassessment and further surveys	To be developed at time of decommissioning. It is likely to include additional surveys, Significant Impact Assessment (under relevant legislation and guidelines at the time of decommissioning) and approvals, if required.	Follows regulatory process relevant at the time of impact.

7.5.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Blue-winged Parrot, which has been assessed as a possible occurrence within the Disturbance Footprint and Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation, and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for Blue-winged Parrot against the significant impact criteria (DotE 2013a) is presented in Table 7.27.

Table 7.27: SIA for Blue-winged Parrot, listed as Vulnerable under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Lead to a long-term decrease in the size of an important population	No	No	Unlikely. No 'important populations' are defined in the conservation advice for the Blue-winged Parrot. The Blue-winged Parrot prefers open grassy woodlands for breeding and is predominantly found in the south-eastern portions of Australia where it breeds, occasionally extending into arid and semi-arid Australia during non-breeding periods. As such, no important populations of the species are considered to occur within the WF or OTL. Whilst there are two records (2001, 2003) of two individual Blue-winged Parrots in relative proximity to the Project, both records are associated with Conservation Parks; Red Banks Conservation Park and Caroona Creek Conservation Park, both of which are more than 5 km beyond the GNWF boundary (DEW 2025a). Additionally, despite numerous ecological surveys within the GNWF, the species has not been recorded (Umwelt 2025b). Therefore, the Project is considered unlikely to lead to a long-term decrease in the size of an important population.
Reduce the area of occupancy of an important population	No	No	Unlikely. The GNWF is unlikely to support a specific important population of this species, noting the species does not breed in inland South Australia. The species estimated EOO is approximately 170,000 km^2 (range 155,000-190,000 km^2, stable trend), with the species AOO estimated to be approximately 11,000 km^2 / 1,100,000 (range 9,000-19,000 km^2) (DCCEEW 2023c). The Disturbance Footprint associated with the Project intersects with potentially suitable foraging only habitat for the Blue-winged Parrot across the WF and OTL, resulting in an estimated maximum potential impact area of 430.95 ha in the WF and 40.91 ha along the OTL (i.e. a maximum estimated area of 471.86 ha for WF plus OTL). Based on these figures the clearance of 471.86 ha of potentially suitable foraging habitat associated with the Project represents 0.04% of the reported AOO for the species. Of note, there is considered to be a total of 18,580.55 ha of potentially suitable foraging habitat in the broader GNREF. Of this, a maximum of 471.86 ha (or 2.54%) is inside of the GNWF Disturbance Footprint and impacted by the Project (this includes 268.65 ha of Permanent Disturbance and 203.22 ha of Temporary Disturbance (Umwelt 2025b). However, as above, despite numerous ecological surveys within the GNWF, the species has not been recorded within the WF or OTL (Umwelt 2025b). Therefore, since the species is not known to occur within the GNWF, has not previously been recorded within 5 km of the Project, and does not breed in the area, the Project is considered unlikely to reduce the AOO of an important population.
Fragment an existing population into two or more populations.	No	No	Unlikely. As above, the WF and OTL are unlikely to support a specific important population of this species. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid suitable habitat areas through micro siting roads, tracks and OTL infrastructure where practicable. Once constructed, the species will be able to continue to move freely above and around the GNWF, therefore, the Project is considered unlikely to inhibit movement nor restrict gene flow of this highly mobile species across the landscape. Thus, impacts as a result of the Project are considered unlikely to fragment and existing important population into two or more populations, noting no specific important populations are documented for the species in proximity to the GNWF, and the species has not been recorded within 5 km of the GNWF.
Adversely affect habitat critical to the survival of a species	No	No	Unlikely. The WF and OTL are unlikely to support any particular population of note, with the species breeding in south-eastern mainland Australia and on Tasmania, and sometimes in coastal south-eastern South Australia (i.e. not inland South Australia) (DCCEEW 2023c). A total of approximately 18,580.55 ha of potentially suitable habitat in the broader GNREF has been mapped, of which a maximum of approximately 471.86 ha (WF and OTL) is within the Disturbance Footprint. This equates to a conservative maximum area of 2.54% of potentially suitable foraging vegetation mapped within the GNREF. However, Umwelt (2025) note much of this disturbance is divided across multiple VAs (11 VAs, including chenopod shrubland, and Mallee forest and woodland areas), and what is considered to be potentially suitable foraging habitat is unlikely to be considered preferred habitat for this species (Umwelt 2025b). There are no preferred wetland areas within the Project Area, with the closest potentially suitable foraging areas including Red Banks CP and Caroona Creek CP, however, these are not within notable proximity to the WF or OTL (i.e. greater than 5 km from the GNWF). Additionally, the Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. The maximum potentially suitable habitat associated with the Project represents 0.04% of the reported AOO for the species. As such, the Project is considered unlikely to significantly impact habitat considered critical for survival of the species.
Disrupt the breeding cycle of an important population	No	No	Unlikely. The Blue-winged Parrot breeds in localised areas restricted south-eastern mainland Australia and on Tasmania, and sometimes in coastal south-eastern South Australia (i.e. not inland South Australia) (DCCEEW 2023c). The WF and OTL are unlikely to support an important population of this species, nor any breeding activity. The Blue-winged Parrot has been conservatively considered to be a possible sporadic visitor to the area, and as above, has only been recorded in relative proximity to the GNWF on two occasions previously; at Red Banks CP and Caroona CP, both over 5 km from the GNWF boundary (DEW 2025a). As the WF and OTL are outside of the species breeding areas (i.e. breeding does not occur in inland South Australia) (DCCEEW 2023c), the Project is considered unlikely to disrupt the breeding cycle of an important population.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	Unlikely. As above, a total of approximately 18,580.55 ha of potentially suitable foraging habitat in the GNREF has been mapped, of which a maximum estimated area of 471.86 ha (WF and OTL) is within the Disturbance Footprint equating to a conservative maximum area of 2.54% of potentially suitable vegetation mapped within the GNREF. However, Umwelt (2025b) note much of this disturbance is divided across multiple VAs (11 VAs, including chenopod shrubland, and Mallee forest and woodland areas), and potentially suitable foraging habitat is unlikely to be considered preferred habitat for this species. Within the area surrounding the Disturbance Footprint, native vegetation forms a contiguous patch within the landscape, providing abundant habitat for potentially sporadic visitation of the Blue-winged Parrot. As such, impacts as a result of the Project are considered unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in an invasive species that is harmful to a vulnerable species becoming established in the vulnerable species' habitat	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Introduce disease that may cause the species to decline.	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species.	No	No	Unlikely. There is no recovery plan in place for this species, however, it is noted that a recovery plan is required (DCCEEW 2025b). Some conservation and recovery actions are included within the Conservation Advice for the species (DCCEEW 2023c). The Project will not substantially interfere with the listed conservation and recovery information provided for this species, which largely focuses on habitat loss, degradation, fragmentation and removal, climate change, predation from invasive species, invasive weeds, firewood collection and competition with Noisy Miners (Manorina melanocephala) (DCCEEW 2025b). The Disturbance Footprint itself is predominantly comprised of narrow linear alignments or a number of small disturbance areas arising from roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas of disturbance. Therefore, impacts as a result of the Project are not expected to interfere with the recovery of the species.
Outcome: No significant residual impacts expected for the Blue-winged Parrot.			

7.5.3.1 Acceptability of relevant impacts

Blue-winged Parrot is not known to occur in the Project Area, and is considered as a conservative precautionary measure only. Given the comprehensive measures outlined in the project, such as site selection, and habitat avoidance measures, the project demonstrates minimisation of direct impacts on habitat on all MNES and has assessed this Blue-winged Parrot as unlikely to be significantly impacted by the Project.

The CEMP will effectively manage any potential indirect impacts, which includes further avoiding habitat features such as hollow trees and logs as part of PCCs, and managing dust, water runoff and noise and vibration impacts.

The on-ground SEB offset site secured for GNWF is likely to provide additional habitat for the species, and ensures that the area will improve over time and contribute to the species' recovery in a large, connected area of protected land.

By adhering to the guidelines and implementing robust risk controls, the project can demonstrate its commitment to protecting MNES while achieving its development objectives.

7.6 Diamond Firetail (*Stagonopleura guttata*) – Vulnerable

This section provides a comprehensive evaluation of the potential impacts on the Diamond Firetail due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Diamond Firetail is considered to possibly to occur within the Disturbance Footprint and Development Envelope (Umwelt 2025b), in relation to the OTL only. It is considered unlikely to occur in the WF Disturbance Footprint or Development Envelope.

7.6.1 Impact Summary

An overview of the potential impact to Diamond Firetail by Goyder North Wind Farm is provided in Table 7.28.

Table 7.28: Summary of impact to Diamond Firetail

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	23.53	7.89	31.42
Habitat quality	Diamond Firetail have not been observed in the Project Area despite extensive survey effort, and it is considered unlikely that they occur in the WF. Available habitat is limited as the understorey is highly degraded, with low herbaceous component in any open woodland areas which would otherwise be considered suitable. The habitat impacted is a conservative overestimate of potential habitat.	Diamond Firetail has not been recorded within the OTL Project Area, however it was detected enroute to site within the Search Area. Some potentially suitable habitat may occur, however the understorey is typically degraded and lacking a herbaceous component. Habitat is considered low quality.	As noted for WF and OTL
Individual impacts	No individuals have been detected and no populations are thought to occur in the WF.	No individuals have been detected and no populations are thought to occur in the OTL, though they may occur in low numbers in the surrounding region.	As noted for WF and OTL

Source: Umwelt 2025b

The species has been recorded opportunistically outside of the Project Area, near the southern end of the OTL, and sparse historical records also occur. The Disturbance Footprint associated with the Project may impact upon potentially suitable habitat for the Diamond Firetail across the Project Area, resulting in an estimated maximum potential impact area of 23.53 ha in the WF and 7.89 ha along the OTL. Of the 347,531 ha of potentially suitable habitat in the affected subregions, 31.42 ha occurs within the Disturbance Footprint, representing 0.009% of the potentially suitable habitat available in the subregions.

Indirect impacts to may include long term modification to existing occupied areas through weed incursion, altered hydrology and sediment deposition, as well as through an increase in regular human disturbance during operation of the wind farm. Some areas of OTL are currently isolated with a lack of existing road and track networks. Increased movement of introduced predators may also constitute an indirect impact of the OTL construction in these undeveloped areas, where suitable habitat occurs.

A summary of potential direct and indirect impacts to Diamond Firetail are presented in Table 7.29.

Table 7.29: Potential direct and indirect impacts to Diamond Firetail

Impact Type	Wind Farm	OTL	Phase	Duration
Direct Impacts				
Habitat loss (permanent) (ha)	14.44	3.47	Construction	Long-term / permanent
Habitat loss (Temporary) (ha)	9.09	4.42	Construction	Medium term
Collision Risk	Not known to occur in WF. Low risk of collision regardless, due to location of known population and flight height typically being less than the lowest WTG height of 20m.	Low risk of collision with stationary OTL infrastructure.	Operation	Long term / life of Project
Disturbance / Displacement	Low risk of disturbance during construction due to location of known populations occurring outside of the WF boundary.	Possible disturbance during construction, including local displacement from areas under active construction, if present.	Construction / Operation	Short-term
Indirect Impacts				
Habitat fragmentation	Habitat in WF not known to support a population of Diamond Firetail.	OTL corridor will be narrow and easily traversable by Diamond Firetail. No single entire territory of a Diamond Firetail is likely to be impacted by the OTL due to the narrow and linear nature of the corridor.	Operation	Permanent
Noise and vibration	Low risk of disturbance due to operation of WTGs due to location of known populations occurring outside of the WF boundary.	Minor risk of displacement due to noise impacts from OTL, however existing OTL infrastructure already occurs.	Operation	Ongoing for the life of the Project.
Degradation of habitat through weeds or pathogens	Minor risk of weeds or pathogens increasing in disturbed area, which may reduce quality of ground foraging habitat. Managed by implementation of CEMP and OEMP.	Minor risk of weeds or pathogens increasing in disturbed area, which may reduce quality of ground foraging habitat. Managed by implementation of CEMP and OEMP.	Construction / Operation	Ongoing for the life of the Project
Degradation of habitat through dust deposition	Minor risk of dust deposition on adjacent vegetation during construction which may reduce foraging suitability.	Minor risk of dust deposition on adjacent vegetation during construction which may reduce foraging suitability.	Construction	Short-term

7.6.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Neoen has implemented a range of measures during the planning and design phase to avoid and minimise impacts to native vegetation, which has resulted in a reduction of impacts to potential Diamond Firetail habitat. Between the EPBC Referral and EPBC Variation design refinements have resulted in a 53.30% reduction in disturbance to potential Diamond Firetail habitat, from 67.28 ha to 31.42 ha. A summary of mitigation measures implemented during each stage of the Project is presented in Table 7.28.

Table 7.30: Mitigation Hierarchy implemented at all stages of the Project for Diamond Firetail

Stage	Action	Effectiveness
Pre-construction design		
Site selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Targeted Bird Surveys (BBUS, MBC, Opportunistic)	Seasonal BBUS surveys for two years (24 months) to assess occurrence and / or distribution of bird species across the site.	High – identified locations within the Project Area of higher risk. No Diamond Firetail were detected in WF during seven seasonal BBUS surveys (or opportunistically). No observations in OTL, though historical records and observation in Search Area in southern portion of OTL.
Non-conventional stringing methods	Removal of stringing corridor in areas of high value MNES habitat through application of non-conventional stringing methods (i.e. helicopter stringing)	High – resulted in reduction of up to 43.79 ha of Disturbance Footprint, including 39.68 ha of native vegetation, of which 5.51 ha was potential Blue-winged Parrot habitat.
Tower height and placement refinement	Investigation into height and selective placement of OTL towers to reduce requirement for ongoing maintenance of vegetation above 3 m.	High - resulted in a reduction of ongoing impacts up to 10.52 ha of vegetation which comprised potential Diamond Firetail habitat.
Alignment with existing infrastructure	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation.	High – 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totaling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
	The electrical layout has been refined and aligned with existing roads, proposed access tracks and other GNWF infrastructure, and the OTL access tracks have been aligned with existing GSWF OTL access tracks to reduce overall requirements.	Through optimising underground cable and road alignments: Approximately 5.20 ha of potential Diamond Firetail habitat avoided through this method, representing an 97.11% reduction between the Referred and current design.
Micro siting of infrastructure	Infrastructure in woodland vegetation has been micro sited to areas of lower tree density, and utilizes existing minor access tracks where available.	Moderate – reduces number of trees impacted.
Construction		
CEMP	A CEMP will be in place to manage potential direct and indirect impacts to Diamond Firetail habitat during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds, prevent increase in population of non-native fauna, maintain habitat features such as hollow logs. A specific Flora and Fauna Management Plan will be in place for the Project to further avoid, minimise and mitigate impacts to Diamond Firetail.	High – appropriate implementation of the CEMP will effectively avoid indirect impacts to Diamond Firetail and habitat.
PCC	Pre-clearance Checks and micro siting in all areas of the Project Area will aim to avoid hollow-bearing trees where technically feasible, and slow-fell where unavoidable to prevent injury to fauna.	Moderate – any fauna will be safely removed by accredited wildlife handler prior to construction.
Rehabilitation MP	A Rehabilitation Management Plan will be in place to ensure effective restoration of any temporarily disturbed areas required during construction. This will include topsoil spreading and management of weeds, as well as monitoring.	High -13.51 ha (43.00%) of disturbed habitat will be rehabilitated, commencing within 3 years of the initial disturbance.
Operation		
OEMP	Impacts during Operation are likely to be minor. An OEMP will be in place to manage any minor potential impacts which may result from operation of the wind farm, including management of weeds.	High – appropriate implementation of the OEMP will ensure that Diamond Firetail habitat will not be further degraded during operation of the wind farm.
Rehabilitation MP	Actions in a Rehabilitation MP are likely to continue after construction ceases. Ongoing application of the Rehabilitation MP including any monitoring will ensure positive trajectory of restoration and identify any triggers for adaptive management.	High – monitoring will inform adaptive management measures.
Offsetting	Neoen has purchased a 1,300 ha property to the north of GNWF to be utilized as a native vegetation SEB offset site. Additional on ground offsets will be sought to achieve the remainder of the SEB Offset obligations and EPBC Offset obligations, which are likely to comprise additional habitat suitable for Diamond Firetail.	High – the site provides up to 155.26 ha of habitat suitable for Diamond Firetail.

Stage	Action	Effectiveness
Decommissioning		
Reassessment and further surveys	To be developed at time of decommissioning. It is likely to include additional surveys, Significant Impact Assessment (under relevant legislation and guidelines at the time of decommissioning) and approvals, if required.	Follows regulatory process relevant at the time of impact.

7.6.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Diamond Firetail, which has been assessed as a possible occurrence within the Disturbance Footprint and the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation, and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Diamond Firetail against the significant impact criteria (DotE 2013a) is presented in Table 7.31.

Table 7.31: SIA for Diamond Firetail, listed as Vulnerable under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Lead to a long-term decrease in the size of an important population of a species	No	No	Unlikely. There are no important populations defined for the species (DCCEEW 2024e; DCCEEW 2023e). Within South Australia, populations of this species are known to occur between the Mount Lofty Ranges and Southern Flinders Ranges, with the WF and OTL occurring on the eastern fringe of the species preferred typical distribution for that subpopulation (DCCEEW 2023e; DEW 2025a). The species has been previously recorded in the nearby Goyder South (Stage 2) Project Area (cited in EBS 2025b), and recently outside of the GNWF but within the search area during the MBC targeted surveys along Black Peake Road in association with Eucalyptus porosa open grassy woodland (VA1). It is noted there are also 11 BDBSA records (historical and recent records ranging between 1987 and 2017) within or near to the GNWF (BDBSA records cited in Umwelt 2025b). It is considered that potentially suitable habitat occurs within the Disturbance Footprint within the WF and OTL. Several vegetation associations within the GNWF broadly match the habitat description for this species, however, based upon on-ground field surveys, it is considered most areas mapped as mallee woodland are unlikely to provide preferred habitat for this species (due to a high tree density and chenopod / sclerophyll dominated shrub understorey) (Umwelt 2025b). However, the edges of woodland (VA18) which adjoin grassland (VA11a/b) or chenopod shrubland (VA12) with a grassy understorey are considered likely habitat (including foraging habitat) (Umwelt 2025b). Thus, although there is potentially suitable habitat within the WF and OTL, due to a marked absence of records of the species within those areas, and noting there are no important populations defined for the species, the Project is considered unlikely to lead to a long-term reduction in the size of any population of this species.
Reduce the area of occupancy of an important population	No	No	Unlikely. No important populations are defined for this species, and the species has a broad range across large areas of south-eastern Australia. Within South Australia, known populations of Diamond Firetail occur between the Mount Lofty Ranges and Southern Flinders Ranges, with the WF and OTL occurring on the eastern fringe of the species preferred typical distribution for that subpopulation (DCCEEW 2023e; DEW 2025a). The species has a large EOO (estimated at 1,500,000 km^2) and a moderate AOO (estimated at 25,000 km^2 / 2,500,000 ha) (DCCEEW 2023e). The Disturbance Footprint associated with the Project may impact upon potentially suitable habitat for the Diamond Firetail across the WF and OTL, resulting in an estimated maximum potential Disturbance Footprint of 23.53 ha in the WF and 7.89 ha along the OTL alignment, (i.e. a total estimated area of 31.42 ha across the GNWF). A total of 1,599.40 ha of potentially suitable habitat has been mapped in the broader GNREF (Umwelt 2025b), of which a maximum potential area of 31.42 ha (or 1.96%) is inside the Disturbance Footprint and potentially impacted by the GNWF. However, based on these figures, potentially suitable habitat associated with the Project represents <0.001% respectively of the Diamond Firetails reported AOO. Therefore, whilst some potentially suitable habitat may be impacted by the Project, the Project is considered unlikely to reduce the AOO of an important population.
Fragment an existing important population into two or more populations	No	No	Unlikely. As above, the WF and OTL occur on the eastern fringe of the species preferred typical distribution for that subpopulation (DCCEEW 2023e; DEW 2025a). Whilst the species has been recorded within the separate but nearby Goyder South (Stage 2) Project Area (near to the OTL discussed herein), and more recently outside of the GNWF but within the search area during the MBC targeted surveys along Black Peake Road, any impacts to potentially suitable habitat are considered to be small, isolated patches only within a much broader species distribution. The Disturbance Footprint is comprised of narrow linear strips and relatively small patches, rather than a large contiguous patch of clearance, so the species will be able to readily move across any clearance which may occur within their existing home range. This is considered unlikely to restrict movement of individuals nor restrict gene flow of this species across the landscape. Therefore, the GNWF is considered unlikely to cause fragmentation of any population into two or more populations.
Adversely affect habitat critical to the survival of a species	No	No	Possible but unlikely. As above, the WF and OTL occur on the eastern fringe of the species preferred typical distribution for that subpopulation (DCCEEW 2023e; DEW 2025a). Habitat deemed critical to the survival of the species is outlined in the Conservation Advice (DCCEEW 2023e) and includes open wooded areas of Eucalypt, acacia or casuarina woodland, or other lightly timbered habitats, and areas with low tree densities but with good grass cover, minimal litter cover and few large logs. Within the WF, several vegetation associations broadly match the description for this species, however, based upon on ground field surveys most areas that have been mapped as mallee woodland were observed to contain a high tree density and chenopod / sclerophyll dominated shrub understorey, which lacks the preferred structure and grassy and herbaceous component required by the species for foraging (Umwelt 2025b). Umwelt note the edges of woodland (VA18) which adjoin grassland (VA11a/b) or chenopod shrubland (VA12) with a grassy understorey are likely to provide the most suitable habitat (Umwelt 2025b). VA1 and VA8 (avoided in design) are also likely to provide more open grassy foraging habitat. The Disturbance Footprint associated with the Project may impact upon potentially suitable habitat for the Diamond Firetail across the GNWF, resulting in an estimated maximum potential impact area of 23.53 ha in the WF, and 7.89 ha along the OTL alignment (i.e. a total estimated area of 31.42 ha for the WF and OTL combined), representing <0.001% of the Diamond Firetail reported AOO. Permanent Disturbance of potential habitat equates to a maximum disturbance of approximately 14.44 ha of impact within the WF, and 3.47 ha within the OTL, equivalent 1.96% within the broader GNREF (approximately 1,599.40 ha). Whilst it is noted an area of approximately 3.45 ha within the Disturbance Footprint includes elements which contain features listed as critical habitat (Umwelt 2025b), disturbance to this area is not considered to impact the species, noting the species has not been recorded during field surveys within this area. Mitigation measures propose to minimise clearance areas where practicable, noting the Disturbance Footprint is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas, and infrastructure is intended to be micro sited where possible to avoid important habitat where possible. Thus, the Project is considered unlikely to significantly impact habitat considered critical for survival of the species.
Disrupt the breeding cycle of an important population	No	No	Unlikely. As above, there are no defined important populations for the Diamond Firetail (DCCEEW 2024e; 2023e), and there are limited records of the species occurring near to the GNWF (Umwelt 2025b; DEW 2025a). Whilst it is considered there is some potentially suitable habitat within the WF and OTL, impacts as a result of the Project are considered unlikely to disrupt the breeding cycle of an important population as the species, if present, could readily traverse the narrow and / or patchy Disturbance Footprint.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	Unlikely. There are several vegetation associations within the GNWF that broadly match the habitat description for this species, however, based upon on-ground field surveys most areas that have been mapped as mallee woodland were observed to contain a high tree density and chenopod / sclerophyll dominated shrub understorey, and are unlikely to provide preferred habitat for this species (Umwelt 2025b). Therefore, given a lack of preferred habitat, a limited number of records of the species within and adjacent to the GNWF, and abundance of similar habitat surrounding the Disturbance Footprint, impacts from the Project are considered unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Result in an invasive species that is harmful to a vulnerable species becoming established in the vulnerable species' habitat.	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline.	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species.	No	No	Unlikely. There is no recovery plan in place for the Diamond Firetail, though it is noted that one is required (DCCEEW 2025b). Recovery actions outlined within the Conservation Advice (DCCEEW 2023e) include protection of areas with open woody vegetation (of 200 ha or greater), and restoring habitats which support open forests, woodlands, mallee and grassland, particularly with access to water. The Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. The Disturbance Footprint is comprised of narrow linear strips and relatively small patches, rather than a large contiguous patch of clearance, so the species will be able to readily move across any clearance which may occur within their existing home range. The design of the GNWF has been refined to avoid areas to habitat for this species, where possible. Should the species be recorded within the Disturbance Footprint, efforts would be made to suitable avoid habitat areas through micro siting of roads, tracks and OTL infrastructure where practicable. Therefore, impacts as a result of the Project are not expected to interfere with the recovery of the species.
Outcome: No significant residual impacts expected for the Diamond Firetail			

7.6.3.1 Acceptability of relevant impacts

Diamond Firetail is now known to occur in the Project Area, and is considered as a conservative precautionary measure only. Given the comprehensive measures outlined in the project, such as site selection, and habitat avoidance measures, the project demonstrates minimisation of direct impacts on habitat on all MNES and has assessed the Diamond Firetail as unlikely to be significantly impacted by the Project.

The CEMP will effectively manage any potential indirect impacts, which includes further avoiding habitat features such as hollow trees and logs as part of PCCs, and managing dust, water runoff and noise and vibration impacts.

The on-ground SEB offset site secured for GNWF is likely to provide additional habitat for the species and ensures that the area will improve over time and contribute to the species' recovery in a large, connected area of protected land.

By adhering to the guidelines and implementing robust risk controls, the project can demonstrate its commitment to protecting MNES while achieving its development objectives.

7.7 Fork-tailed Swift (*Apus pacificus*) – Migratory Marine

This section provides a comprehensive evaluation of the potential impacts on the Fork-tailed Swift due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Fork-tailed Swift is known to occur within the general airspace above the Project Area including the Disturbance Footprint and Development Envelope, however, it is unlikely to specifically utilise terrestrial habitat in the Project Area (Umwelt 2025b).

7.7.1 Impact Summary

An overview of the potential impact to Fork-tailed Swift by Goyder North Wind Farm is provided in Table 7.32.

Table 7.32: Summary of impact to Fork-tailed Swift

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	NA – The species is entirely aerial and therefore vegetation clearance is unlikely to constitute impact to habitat for this species. The area of habitat impacted is related to the airspace around a maximum of 99 WTGs.	NA – The species is entirely aerial and therefore vegetation clearance is unlikely to constitute impact to habitat for this species.	As noted for WF and OTL

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat quality	Habitat in the Project Area relates only to the aerial habitat. As there are few historical records and only one observation at the WF despite extensive survey effort, aerial habitats over the Project Area are unlikely to be considered important foraging areas for the species.	Habitat in the Project Area relates only to the aerial habitat. As there are few historical records and no observations in the OTL portion of the Project Area, habitats over the Project Area are unlikely to be considered important foraging areas for the species.	As noted for WF and OTL
Individual impacts	One individual Fork-tailed Swift has been detected during one seasonal BBUS survey (summer 2024). No other individuals have been detected. Fork-tailed Swift are migratory and known to utilise the rotor-swept area. Individual direct impacts (i.e. through bird-strike) are possible, however	No individuals have been detected, and important populations are thought to utilise the OTL, though they may occur in low numbers in the surrounding region. The OTL infrastructure is not expected to impact Fork-tailed Swift.	As noted for WF and OTL

Source: Umwelt 2025b

Given the aerial nature of this species, impacts to vegetation are unlikely to constitute direct impact. Direct impacts to the species include risk of mortality through collision with WTG rotor blades and possible displacement or avoidance behaviours. An assessment of risk for the species is presented in

An evaluation of the collision risk for Fork-tailed Swift is presented in Table 7.33.

Table 7.33: Collision Risk Assessment for Fork-tailed Swift at GNWF

Attribute	Result
Species	Fork-tailed Swift (*Apus pacificus*)
EPBC Listing Status	Migratory Marine
State Listing Status (SA)	Not listed
Records at GNWF	Single observation of one individual in summer 2024. Scattered (4) individual historical records reported within 5 km of Project Area.
Season and Duration of Risk	Summer (December to March)
Likelihood of portion of population encountering wind farm (Minimal / low/ medium / high)	Low – few records occur within 5 km of the Project Area, and all are of individuals, not flocks of multiple individuals.
Estimated portion of Australian population with potential to encounter GNWF (<2% / 2-1-% / 11-50% / 50-100%)	<2%. An ecologically significant proportion of a population (individuals) is 1000 individuals (1% of the population) at an international scale, and 100 individuals (0.1% of the population) at a national scale.
Likelihood of species behaviour posing collision risk if / when encounters with GNWF occur (low / medium / high)	High – single observation of the species was within the rotor strike range, and it is known to occupy aerial spaces between 1 and 300 m (DCCEEW 2025b).

Attribute	Result
Overall likely level of impact on Australian population of species (Negligible / Low/ Medium / High)	Negligible
Notes	Although the species is known to occupy the rotor swept area, based on the low likelihood of occurrence, small portion of known population likely to utilise the area and limited seasonal impact window, the likely level of impact to this species is considered negligible.

7.7.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Neoen has implemented a range of measures during the planning and design phase to avoid and minimise impacts to native vegetation. The wind farm proposes to construct a maximum of 99 turbines. A summary of Mitigation measures implemented for the Project relevant to the Fork-tailed Swift is presented in Table 7.34.

Table 7.34: Mitigation Hierarchy implemeted and proposed at each stage of Project Development.

Stage	Action	Effectiveness
Pre-construction design		
Site selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use. Prioritised placement of infrastructure in existing cleared areas or areas of non-native vegetation. The Project Area is sited away from potential migratory bird habitat (such as large lakes, lagoons and the coast)	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The nearest significant water body is Porter Lagoon, situated 22 km south of the nearest WTG. Followed by Hiles Lagoon which is situated approximately 35 km to the northernmost WTG. At its nearest, the Project Area is located 84 km east of the nearest coastal location (Fisherman Bay, Port Broughton).
Targeted Bird Surveys (BBUS, MBC, Opportunistic)	Seasonal BBUS surveys for two years (24 months) to assess occurrence and / or distribution of bird species across the site.	High – identified locations within the Project Area of higher risk. One Fork-tailed Swift was detected in WF during one of seven seasonal BBUS surveys. No opportunistic observations and no observations along OTL.
Collision Risk Assessment	A bird (and bat) collision risk assessment will be undertaken for the Project Area following the completion of 24 months of BBUS surveys (est. July / August 2025).	High – results of bird and bat collision risk assessment will inform risk and potential requirement for Bird (and Bat) Adaptive Management Plan.

Stage	Action	Effectiveness
Construction		
CEMP	Impacts during construction will be minor, however CEMP will be in place to manage any direct and potential indirect impacts. Management actions will be adaptive to ensure that chance finds of MNES will trigger a review of management actions. A Bird Adaptive Management Plan (BAMP) will be implemented if deemed necessary for the Project by DCCEEW, which will address specific actions related to Fork-tailed Swift (and other species).	High – comprehensive plans avoid potential impacts on fauna as a result of construction activities.
Operation		
OEMP	An OEMP will be in place to address any site-specific findings identified during construction.	Moderate – Ongoing monitoring and reporting will ensure continued protection of species. Appropriate implementation of the OEMP will effectively inform if the WF is having an impact to birds from collision with WTGs and result in adaptive management (if required) to minimize these incidents.
Decommissioning		
Reassessment and further surveys	To be developed at time of decommissioning. It is likely to include additional surveys, Significant Impact Assessment (under relevant legislation and guidelines at the time of decommissioning) and approvals, if required.	High - Ensures any new or existing populations are identified and protected during decommissioning activities.

7.7.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Fork-tailed Swift, which has been assessed as known to occur within the Disturbance Footprint within the WF and likely to occur within the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation, and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Fork-tailed Swift against the significant impact criteria (DotE 2013a) is presented in Table 7.35.

Table 7.35: SIA for the Fork-tailed Swift, listed as Migratory (Marine) under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrology cycles), destroy or isolate an area of important habitat for a migratory species	No	No	Unlikely. Given the aerial nature of this species, impacts to vegetation are unlikely to constitute direct impact, rather impacts are potentially restricted to air-strike from WTGs during operational phase. Despite extensive survey effort, a single individual has been recorded within the GNWF; during the summer 2024 BBUS, flying between 1 m to 300 m over the WF (Umwelt 2025b). In addition, there are limited records of the species occurring to the north-east of the northern Mount Lofty Ranges, with most records associated with coastal, aquatic or metropolitan areas (DEW 2025a). Impacts as a result of the Project are unlikely to substantially modify, destroy or isolate an area of important habitat for this species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	No	No	Unlikely. This species is considered to be almost exclusively aerial during the species' migratory time in Australia, and thus the potential for invasive species to affect the Fork-tailed swift are limited. Additionally, a number of introduced flora species have been recorded across the GNWF, including weed species declared under the LSA Act and WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species that may pose a risk to this species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Seriously disrupt the lifecycle (breeding, foraging, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	No	No	Unlikely. The Fork-tailed Swift is a non-breeding visitor to Australia and is almost exclusively aerial. In South Australia the species is present from October–May but is most common from December–March (DCCEEW 2025b). As above, despite extensive survey effort, only one individual has been recorded within the GNWF; during the summer 2024 BBUS, flying between 1 m to 300 m over the WF (Umwelt 2025b). Additionally, there are limited records of the species occurring to the north-east of the northern Mount Lofty Ranges, with most records associated with coastal, aquatic or metropolitan areas (DEW 2025a), so it is unlikely an ecologically significant proportion of the population occurs in or around the GNWF.
Outcome: No significant residual impacts expected for the Fork-tailed Swift.			

7.7.3.1 Acceptability of relevant impacts

The Fork-tailed Swift is known to occur in the Project Area based upon a single record during the suite of BBUSs and is considered as a conservative precautionary measure only. Given the comprehensive measures outlined in the Project, such as site selection, and habitat avoidance measures, the Project demonstrates minimisation of potential direct impacts on habitat on all MNES and has assessed the Fork-tailed Swift as unlikely to be significantly impacted by the Project.

The CEMP will effectively manage any potential indirect impacts, which includes managing dust, water runoff and noise and vibration impacts.

The on-ground SEB offset site secured for GNWF is likely to provide nearby aerial habitat for the species, though noting the species is considered an infrequent visitor to the region.

By adhering to the guidelines and implementing robust risk controls, the Project can demonstrate its commitment to protecting MNES while achieving its development objectives.

7.8 Spiller's Wattle (*Acacia spilleriana*) – Endangered

This section provides a comprehensive evaluation of the potential impacts on the Spiller's Wattle due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Spiller's Wattle is considered unlikely to occur within the Disturbance Footprint, but possible to occur in the Development Envelope (Umwelt 2025b). Specific measures are in place to ensure that known individuals are not impacted by the Project, as outlined below.

7.8.1 Impact Summary

Known individuals of Spiller's Wattle have been avoided by the Disturbance Footprint, Development Envelope and current Project Area. Given that the species has not been detected elsewhere in the Project Area during extensive surveys, direct impacts are considered unlikely. Considering there are no known individuals, indirect impacts such as weed incursion, erosion, sediment deposition or altered hydrology are unlikely to affect any populations or individuals of the species.

An overview of the potential impact to Spiller's Wattle by Goyder North Wind Farm is provided in Table 7.36.

Table 7.36: Summary of impact to Spiller's Wattle

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Direct impact			
Habitat impacted (ha)	None detected. Seven known individuals planted along Gum Hill Road within Project Area.	None detected.	None detected.
Habitat quality	VA7 contains the Wirrabra subspecies, however this is not within the Disturbance Footprint or Development Envelope. Vegetation Associations which provide likely habitat in the WF includes VA4 and VA7, however the species has not been detected here. Other possible associated habitats include VA1, VA2 and VA3, totalling 26.39 ha of impact, however over 60% (on average) of these areas have been searched in detail with no specimens found.	Vegetation Associations which provide likely habitat in the OTL include VA14 and VA19, however the species has not been detected here. Other possible associated habitats include VA18, however over 81% (on average) of these areas have been searched in detail with no specimens found.	As noted for WF and OTL.
Individual Impact	0. No individuals known to occur in Disturbance Footprint.	0. No individuals known to occur in Disturbance Footprint.	None detected.
Indirect impact			
Degradation of vegetation through introduction or spread of weeds or pathogens	Minor risk of weeds or pathogens increasing in disturbed area. Managed by implementation of CEMP and OEMP.	No Spiller's Wattle known on OTL. Any potential for weed or pathogen impacts will be managed by implementation of CEMP and OEMP.	As noted for WF and OTL.
Reduced vegetation health through dust deposition	Minor risk of increased dust deposition on vegetation during construction and operation caused by increased traffic past known location of planted individuals. Avoided through redesign of the Development Envelope and Project Area to avoid Gum Hil Road for site access.	No Spiller's Wattle known on OTL. Any potential for dust deposition on vegetation will be managed by implementation of CEMP and OEMP.	As noted for WF and OTL.

Source: Umwelt 2025b.

7.8.2 Mitigation Measures Implemented and Proposed to Avoid and Minimise Impacts

Neoen has avoided impacts to known specimens of *Acacia spilleriana* along Gum Hill Road during the design refinement for the Project, effectively removing this access option to avoid impacts to seven known planted individuals in the road reserve.

Although the risk is low, Neoen also commit to undertaking on-ground PCC's the Disturbance Footprint prior to construction. In the unlikely event that a new individual or population is detected in the Disturbance Footprint, Development Envelope or Project Area, Neoen commits to avoid any impacts through micro siting. therefore, no direct impacts will occur.

Indirect impacts such as weed incursion, change in hydrology, increased dust deposition are unlikely to impact the identified individuals along Gum Hill Road, as the access option has been removed, and traffic controls will be in place to ensure no or minimal increased traffic along this portion of the road.

A full list of avoidance, minimisation and mitigation measures relevant to *Acacia spilleriana* at all stages of development are presented in Table 7.37.

Table 7.37: Mitigation measures implemented at all stages of the Project for Spiller's Wattle

Stage	Action	Effectiveness
Pre-construction design		
Site Selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Field Surveys (broad, BAM, targeted)	Conducted extensive targeted field surveys within the Project Area, Development Envelope and Disturbance Footprint to identify new populations and verify existing records.	High – ensures accurate data collection and high confidence in survey result.
Alignment with existing infrastructure and cleared areas	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation. This includes aligning OTL access tracks with existing GSWF OTL access tracks to reduce overall requirements.	High – 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totalling ~82.95 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
Micro siting	Removed portion of Gum Hill Road from proposed access options to avoided all known populations / individuals of the species within the Project Area.	High - Directly prevents any disturbance to the species.
Construction		
PCC	Conduct pre-clearance checks in suitable habitats outside high confidence survey areas by qualified ecologists for any proposed infrastructure updates due to micro siting. Commitment to micro siting to reduce impact on flora/fauna/cultural heritage sites. If species are found, micro siting will not occur in that location, and additional management actions will be implemented to avoid indirect impacts.	High- given the extent of previous survey work, it is considered highly unlikely that any threatened flora species occur and therefore the risk is low.
CEMP	Implement the CEMP along with a site-specific flora and fauna management plan. Management Plans will include detailed instruction to avoid casual use of the road where existing population is currently known. CEMP will be in place to manage potential direct and indirect impacts to native vegetation during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds.	High – comprehensive plans avoid potential impacts on flora as a result of construction activities.
	Include species information in site inductions and display educational materials such as identification fact sheets in common areas and work sites.	High – raises awareness and ensures all workers (i.e. not just environmental staff) are informed about species protection.
	Establish a stop-work procedure for any chance finds of species during construction.	High - Immediate action minimizes potential harm to discovered species.
	Controls in place to prevent use of Gum Hill Road west of the intersection with Lines Road, where individuals are known to occur.	High – avoid potential for indirect impacts such as dust accumulation at site of known population.
Operation		
OEMP	Implement the OEMP to address any site-specific findings during construction. If no additional populations are detected, limit actions to reporting and recording any chance finds in the Project Area.	High - Ongoing monitoring and reporting ensure continued protection of species.
Decommissioning		
Re-assessment and further surveys	Conduct updated survey works in all areas proposed to be disturbed during the decommissioning phase. Address findings at the time of decommissioning. State and National approvals will be sought at the time, as required.	High - Ensures any new or existing populations are identified and protected during decommissioning activities.

7.8.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on Spiller's Wattle, which has been assessed as known to occur within Project Area, but unlikely to occur within the Disturbance Footprint and Development Envelope, based on specific design measures taken to avoid known planted individuals of the species. (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for Spiller's Wattle against the significant impact criteria (DotE 2013a) is presented in .

Table 7.38: SIA for Spiller's Wattle, listed as Endangered under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Assessment
Lead to a long-term decrease in the size of a population	No	No	Unlikely. Most records of Spillers Wattle occur outside of the GNWF, principally to the south-west of Burra, or north-west of Spalding (DEW 2025a). Whilst Spiller's Wattle has been recorded within the GNWF, all individual specimens have been isolated to roadside areas adjacent to Gum Hill Road (the proposed access option) and White Hill Road, where the species has been planted. It is noted most populations of this species are reported to consist of one or two plants (State Herbarium of South Australia as cited in DEWHA 2009b). Recent records of the species have been excluded from the current Project Area. Should the species be recorded within the Disturbance Footprint during pre-clearance micro-siting surveys, procedures would be implemented to avoid impacts wherever practicable, noting that Neoen commits that micro-siting will not increase impacts to any MNES. Therefore, it is unlikely impacts as a result of the Project would lead to a long-term decrease in the size of a population.
Reduce the area of occupancy of the species	No	No	Unlikely. As above, records for Spiller's Wattle within the GNWF are currently known from isolated roadside areas adjacent to Gum Hill Road and White Hill Road (Umwelt 2025b). The Disturbance Footprint does not intersect with areas where the species has been recently recorded. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would reduce the AOO of the species.
Fragment an existing population into two or more populations	No	No	Unlikely. As above, records for Spiller's Wattle within the GNWF are currently known from isolated roadside areas adjacent to Gum Hill Road and White Hill Road (Umwelt 2025b). The Disturbance Footprint does not intersect with areas where the Spiller's Wattle has been recorded. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would fragment an existing population into two or more populations.
Adversely affect habitat critical to the survival of a species	No	No	Unlikely. As above, records for Spiller's Wattle within the GNWF are currently known from isolated roadside areas adjacent to Gum Hill Road and White Hill Road, however, these individual specimens are avoided by the current Disturbance Footprint and Project Area (Umwelt 2025b). Whilst some minor vegetation trimming may be required for access to the Project, this is not expected to adversely affect habitat critical to the survival of the species
Disrupt the breeding cycle of a population	No	No	Unlikely. There are no known population estimates for this species, however, it is currently understood that most populations of this species are reported to consist of one or two plants (State Herbarium of South Australia as cited in DEWHA 2009b; DCCEEW 2025b). DCCEEW cites a list of locations where the species has been most recently recorded, however, there is no data on trends in populations, and it is understood that there are likely smaller populations of the species that could be considered subpopulations with little opportunity for genetic exchange (DCCEEW 2025b). The current Disturbance Footprint does not traverse any areas of identified Spiller's Wattle specimens (Umwelt 2025b). Reproduction of Spiller's Wattle, where present, would not be disrupted by construction and operation of the Project, noting the Disturbance Footprint does not intersect any areas of identified Spiller's Wattle specimens. Additionally, should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and infrastructure where practicable. Thus, it is unlikely impacts as a result of the Project would disrupt the breeding cycle of a population.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	Unlikely. As above, individual specimens of Spiller's Wattle are currently known from isolated roadside areas adjacent to Gum Hill Road and White Hill Road. The Disturbance Footprint does not intersect with any known locations of Spiller's Wattle. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and infrastructure where practicable. Control measures would be implemented to mitigate against potential dust suppression, and implementation of erosion and sediment control where required. Thus, it is unlikely impacts as a result of the Project would modify, destroy, remove, isolate or decrease the availability of quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species	No	No	Unlikely. The Project does not interfere with any recovery actions for this species, as outlined by DEWHA (2009b), noting the main threats to the species include habitat loss, habitat fragmentation, damage from roadwork, and weed invasion and grazing. The Disturbance Footprint, Development Envelope and Project Area do not intersect with areas where the Spiller's Wattle has been recorded. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and infrastructure where practicable. The Project is not expected to substantially interfere with the recovery of the species.
Outcome: No significant residual impacts expected for the Spiller's Wattle.			

7.8.3.1 Acceptability of relevant impacts

The species is known to occur in the Project Area but is not within the proposed Disturbance Footprint or Development Envelope. No impacts to Spiller's Wattle are expected to occur as a result of the Project. Mitigation measures will be implemented to ensure that any chance discoveries of this species are documented and appropriately managed, ensuring no impact to individuals or populations. Additionally, given the location of the known individuals on an existing access road, potential indirect impacts of increased traffic on these roads as a result of the wind farm will be addressed in a project specific CEMP.

7.9 Peep Hill Hop-bush (*Dodonaea subglandulifera*) – Endangered

This section provides a comprehensive evaluation of the potential impacts on the Peep Hill Hop-bush due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Peep-Hill Hop-bush is considered unlikely to occur within the Disturbance Footprint and Development Envelope and is assessed as conservative measure (Umwelt 2025b).

7.9.1 Impact Summary

Given that the species has not been detected in the Project Area during extensive surveys, direct impacts are considered unlikely. Considering there are no known individuals, indirect impacts such as weed incursion, erosion, sediment deposition or altered hydrology are unlikely to affect any populations or individuals of the species. An overview of the potential impact to the Peep Hill Hop-bush by Goyder North Wind Farm is provided in Table 7.39.

Table 7.39: Summary of impact to Peep Hill Hop-bush

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	None detected	None detected	None detected
Habitat quality	N/A – there is no known habitat or listed important habitat present within the GNWF Project Area.	N/A – there is no known habitat or listed important habitat present within the GNWF Project Area.	As noted for WF and OTL.
Individual impacts	None, as the species has not been recorded, nor expected to occur within the Project Area, based on extensive surveys.	None, as the species has not been recorded, nor expected to occur within the Project Area, based on extensive surveys.	As noted for WF and OTL.

Source: Umwelt 2025a

7.9.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Extensive surveys have not detected the species within the Project Area. Although the risk is low, Neoen also commit to undertaking on-ground pre-clearance checks in any minor remaining areas of the Disturbance Footprint which have not been verified on ground. In the unlikely event that a new individual or population is detected in the Disturbance Footprint, Neoen commits to avoid any impacts through micro siting. therefore, no direct or indirect impacts are expected to occur.

A full list of avoidance, minimisation and mitigation measures relevant to *Dodonaea subglandulifera* at all stages of development are presented in Table 7.40.

Table 7.40: Mitigation Hierarchy implemented at all stages of the Project for Peep Hill Hop-bush

Stage	Action	Effectiveness
Pre-construction design		
Site Selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Field Surveys (broad, BAM, targeted)	Conducted extensive targeted field surveys within the Project Area, Development Envelope and Disturbance Footprint to identify new populations and verify existing records.	High – ensures accurate data collection and high confidence in survey result.
Alignment with existing infrastructure and cleared areas	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation. This includes aligning OTL access tracks with existing GSWF OTL access tracks to reduce overall requirements.	High – 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totaling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
Construction		
PCC	Conduct pre-clearance checks in suitable habitats outside high confidence survey areas by qualified ecologists for any proposed infrastructure updates due to micro siting. Commitment to micro siting to reduce impact on flora/fauna/cultural heritage sites. If species are found, micro siting will not occur in that location, and additional management actions will be implemented to avoid indirect impacts.	High- given the extent of previous survey work, it is considered highly unlikely that any threatened flora species occur and therefore the risk is low.
CEMP	Implement the CEMP along with a site-specific flora and fauna management plan. Management Plans will include detailed instruction to avoid casual use of the road where existing population is currently known. CEMP will be in place to manage potential direct and indirect impacts to native vegetation during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds.	High – comprehensive plans avoid potential impacts on flora as a result of construction activities.
	Include species information in site inductions and display educational materials such as identification fact sheets in common areas and work sites.	High – raises awareness and ensures all workers (i.e. not just environmental staff) are informed about species protection.
	Establish a stop-work procedure for any chance finds of species during construction.	High - Immediate action minimizes potential harm to discovered species.
Operation		
OEMP	Implement the OEMP to address any site-specific findings during construction. If no additional populations are detected, limit actions to reporting and recording any chance finds in the Project Area.	High - Ongoing monitoring and reporting ensure continued protection of species.
Decommissioning		
Re-assessment and further surveys	Conduct updated survey works in all areas proposed to be disturbed during the decommissioning phase. Address findings at the time of decommissioning. State and National approvals will be sought at the time, as required.	High - Ensures any new or existing populations are identified and protected during decommissioning activities.

7.9.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Peep Hill Hop-bush, which has been assessed as unlikely to occur within the Disturbance Footprint but may possibly occur within the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation, and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Peep Hill Hop-bush against the significant impact criteria (DotE 2013a) is presented in Table 7.41.

Table 7.41: SIA for the Peep Hill Hop-bush, listed as Endangered under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Assessment
Lead to a long-term decrease in the size of a population	No	No	Unlikely. Despite numerous surveys, including a targeted species survey, there are currently no records for individual specimens or populations within the GNWF (WF or OTL) (Umwelt 2025b; DEW 2025a). The closest known records for the species include a small number of records approximately 3 km to the south of the OTL, and another small number of historical records (1932) near Peterborough approximately 60 km north of the WF, however the latter population is presumed extinct (DEW 2025a; Moritz and Bickerton 2010), No important sub-populations are considered to occur exist within the WF or OTL (Moritz and Bickerton 2010). There is, however, potentially suitable habitat within the OTL, with several records of the species occurring approximately 3 km south of the OTL (DEW 2025a). Should the species be recorded within the Disturbance Footprint during pre-clearance micro-siting surveys, procedures would be implemented to avoid impacts wherever practicable, noting that Neoen commits that micro-siting will not increase impacts to any MNES. Therefore, it is unlikely the Project would lead to a long-term decrease in the size of a population.
Reduce the area of occupancy of the species	No	No	Unlikely. As above, there are currently no records of individual specimens or populations within the GNWF (WF or OTL), despite numerous ecological surveys and a targeted species survey. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to realign/micro site roads, tracks and infrastructure where practicable. Therefore, it is unlikely the Project would significantly reduce the AOO of the species.
Fragment an existing population into two or more populations	No	No	Unlikely. As above, despite numerous ecological surveys within the GNWF (WF and OTL), the species has not been recorded. Should specimens and/or a population be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to realign/micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would fragment an existing population into two or more populations, should the species occur within the GNWF at all.
Adversely affect habitat critical to the survival of a species	No	No	Unlikely. It is considered that all currently occupied and potential habitat is critical to the species survival (Moritz and Bickerton 2010). The Peep Hill Hop-bush is known to be found in a range of habitats, preferencing environments that consist of plains with sand to loamy soils over sheet limestone, and low hills with loamy soils over shale or slate (Moritz and Bickerton 2010). However, despite species-specific targeted surveys in potentially suitable habitat, the species has not been recorded. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to realign/micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would adversely affect habitat critical to the survival of the species.
Disrupt the breeding cycle of a population	No	No	Unlikely. The Peep Hill Hop-bush is dioecious; with male and female flowers occurring on different plants, with flowering occurring between February and August. Reproduction of the Peep Hill Hop-bush, where present, would not be expected to be disrupted by the construction and operation of the Project. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to realign/micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would disrupt the breeding cycle of a population.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	Unlikely. As above, despite numerous ecological surveys, the species has not been recorded within the GNWF (WF or OTL) (Umwelt 2025b). Thus, it is unlikely impacts as a result of the Project would modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species (if present) is likely to decline, let alone the species as a whole.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species	No	No	Unlikely. The Project will not substantially interfere with the listed threat abatement and recovery information provided for this species, which largely focuses on direct threats such as herbivore grazing, road management activities, environmental weeds, mining and declining genetic availability and indirect threats such as lack of formal protection, inappropriate disturbance regimes and small isolated populations (Moritz and Bickerton 2010).
Outcome: No significant residual impacts expected for the Peep Hill Hop-bush.			

7.9.3.1 Acceptability of relevant impacts

The species is not known to occur in the Project Area despite extensive survey effort. No impacts to this species are expected to occur as a result of the Project, considering the current Disturbance Footprint. Mitigation measures will be implemented to ensure that any chance discoveries of this species are documented and appropriately managed, ensuring no impact to individuals or populations.

7.10 Hairy-pod Wattle (*Acacia glandulicarpa*) – Vulnerable

This section provides a comprehensive evaluation of the potential impacts on the Hairy-pod Wattle due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Hairy-pod Wattle is considered unlikely to occur within the Disturbance Footprint but considered a possible occurrence in the Development Envelope and is assessed as a conservative measure (Umwelt 2025b).

7.10.1 Impact Summary

Given that the species has not been detected in the Project Area during extensive surveys, direct impacts are considered unlikely. Considering there are no known individuals, indirect impacts such as weed incursion, erosion, sediment deposition or altered hydrology are unlikely to affect any populations or individuals of the species. An overview of the potential impact to Hairy-pod Wattle by Goyder North Wind Farm is provided in Table 7.42.

Table 7.42: Summary of impact to Hairy-pod Wattle

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	None detected	None detected	None detected
Habitat quality	N/A – there is no important habitat present within the GNWF Project Area.	N/A – there is no important habitat present within the GNWF Project Area.	N/A - as noted for WF and OTL.
Individual impacts	None, as the species has not been recorded, nor expected to occur within the Project Area, based on extensive surveys.	None, as the species has not been recorded, nor expected to occur within the Project Area, based on extensive surveys.	Nil

Source: Umwelt 2025a

7.10.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Extensive surveys have not detected the species within the Project Area. Although the risk is low, Neoen also commit to undertaking on-ground pre-clearance surveys in any minor remaining areas of the Disturbance Footprint which have not been verified on ground. In the unlikely event that a new individual or population is detected in the Disturbance Footprint, Neoen commits to avoid any impacts through micro siting. therefore, no direct impacts are expected to occur.

A full list of avoidance, minimisation and mitigation measures relevant *to Dodonaea subglandulifera* at all stages of development are presented in Table 7.43.

Table 7.43: Mitigation Hierarchy implemented at all stages of the Project for Hairy-pod Wattle

Stage	Action	Effectiveness
Pre-construction design		
Site Selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Field Surveys (broad, BAM, targeted)	Conducted extensive targeted field surveys within the Project Area, Development Envelope and Disturbance Footprint to identify new populations and verify existing records.	High – ensures accurate data collection and high confidence in survey result.
Alignment with existing infrastructure and cleared areas	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation. This includes aligning OTL access tracks with existing GSWF OTL access tracks to reduce overall requirements.	High - 18 ha of avoided clearance of threatened species habitat and NV disturbance, through optimising underground cable and road alignments, to also reduce habitat fragmentation.
Construction		
PCC	Conduct pre-clearance checks in suitable habitats outside high confidence survey areas by qualified ecologists for any proposed infrastructure updates due to micro siting. Commitment to micro siting to reduce impact on flora/fauna/cultural heritage sites. If species are found, micro siting will not occur in that location, and additional management actions will be implemented to avoid indirect impacts.	High- given the extent of previous survey work, it is considered highly unlikely that any threatened flora species occur and therefore the risk is low.
CEMP	Implement the CEMP along with a site-specific flora and fauna management plan. Management Plans will include detailed instruction to avoid casual use of the road where existing population is currently known. CEMP will be in place to manage potential direct and indirect impacts to native vegetation during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds.	High – comprehensive plans avoid potential impacts on flora as a result of construction activities.
	Include species information in site inductions and display educational materials such as identification fact sheets in common areas and work sites.	High – raises awareness and ensures all workers (i.e. not just environmental staff) are informed about species protection.
	Establish a stop-work procedure for any chance finds of species during construction.	High - Immediate action minimizes potential harm to discovered species.
Operation		
OEMP	Implement the OEMP to address any site-specific findings identified during construction.	High - Ongoing monitoring and reporting ensure continued protection of species.
Decommissioning		
Re-assessment and further surveys	Conduct updated survey works in all areas proposed to be disturbed during the decommissioning phase. Address findings at the time of decommissioning. State and National approvals will be sought at the time, as required.	High - Ensures any new or existing populations are identified and protected during decommissioning activities.

7.10.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Hairy-pod Wattle, which has been assessed as unlikely to occur within the Disturbance Footprint but may possibly occur within the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation, and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Hairy-pod Wattle against the significant impact criteria (DotE 2013a) is presented in Table 7.44.

Table 7.44: SIA for the Hairy-pod Wattle, listed as Vulnerable under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Lead to a long-term decrease in the size of an important population	No	No	Unlikely. No important populations have been defined in the Conservation Advice for this species as it is considered that insufficient information is available to be able to describe, with spatial information, important populations of this species (DAWE 2021b). Rather, all populations of this species should be considered important (DAWE 2021b). As such, any newly discovered populations of the species may be considered as important populations. Despite numerous vegetation surveys undertaken across GNWF (WF and OTL) the species has not been recorded (Umwelt 2025b). It is considered that small suitable pockets of potentially suitable habitat and associated vegetation occur along areas within the OTL. However, the species is considered unlikely to occur within the Disturbance Footprint WF and OTL, given the absence of records despite survey effort. Therefore, it is considered unlikely that any population exists within the Disturbance Footprint. Therefore, the Project is unlikely to lead to a long-term decrease in the size of an important population within the GNWF.
Reduce the area of occupancy of an important population	No	No	Unlikely. As above, no important populations have been defined for this species, and there is no defined AOO described for this species (DAWE 2021b). The species has not been recorded within the WF and is considered a potential occurrence within the OTL but outside of the current Disturbance Footprint (Umwelt 2025b). It is considered unlikely that an important population of the species exists within the Project Area. Thus, impacts as a result of the Project are unlikely to reduce the AOO of an important population. Protocols will be in place as part of a CEMP and Flora and Fauna Management Plan to ensure that any chance finds of threatened species are reported, investigated and avoided.
Fragment an existing important population into two or more populations	No	No	Unlikely. As above, despite numerous vegetation surveys undertaken within the WF and across the OTL the species has not been recorded (Umwelt 2025b). It is considered that small potentially suitable pockets of habitat and associated vegetation occur along areas within the OTL but outside of the current Disturbance Footprint. However, with micro siting it is expected individuals would be avoided. Therefore, it is unlikely the Project will fragment an existing important population into two or more populations.
Adversely affect habitat critical to the survival of a species	No	No	Unlikely. As above, the species has not been previously recorded within the GNWF (WF or OTL) (Umwelt 2025b). It is considered unlikely that impacts as a result of the Project would adversely affect habitat critical to the survival of the species, should the species occur at all.
Disrupt the breeding cycle of an important population	No	No	Unlikely. As the species has not been detected within the GNWF (WF or OTL) (Umwelt 2025b) it is considered impacts as a result of the Project would not disrupt the breeding cycle of an important population, should a population exist. Therefore, impacts as a result of the Project are unlikely to disrupt the breeding cycle of the species.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	Unlikely. As above, despite numerous vegetation surveys undertaken across GNWF (WF and OTL) the species has not been recorded (Umwelt 2025b). It is considered that small suitable pockets of potentially suitable habitat and associated vegetation occur along areas within the OTL but outside of the current Disturbance Footprint. However, with micro siting it is expected individuals would be avoided. Therefore, the Project is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, should it occur at all.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species.	No	No	Unlikely. As above, as the species has not been detected within the Disturbance Footprint, or broader GNWF (WF or OTL) (Umwelt 2025b). It is considered impacts as a result of the Project would not interfere substantially with the recovery of the species, should it occur within small pockets of potentially suitable habitat within the OTL outside of the Disturbance Footprint (i.e. within pockets of Low Open Shrubland). Therefore, impacts as a result of the Project are unlikely to interfere substantially with the recovery of the species.
Outcome: No significant residual impacts expected for the Hairy-pod Wattle.			

7.10.3.1 Acceptability of relevant impacts

The species is not known to occur in the Project Area despite extensive survey effort. No impacts to Hairy-pod Wattle are expected to occur as a result of the Project, considering the current Disturbance Footprint. Mitigation measures will be implemented to ensure that any chance discoveries of this species are documented and appropriately managed, ensuring no impact to individuals or populations.

7.11 Slender Bell-fruit (*Codonocarpus pyramidalis*) – Vulnerable

This section provides a comprehensive evaluation of the potential impacts on the Slender Bell-fruit due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Slender Bell-fruit is considered unlikely to occur within the Disturbance Footprint and Development Envelope and is assessed as a conservative measure (Umwelt 2025b).

7.11.1 Impact Summary

Given the current lack of known individuals, direct impacts on the species within the Disturbance Footprint are highly unlikely. Indirect impacts, such as habitat quality reduction through weed incursion, erosion, sediment deposition, or altered hydrology, are also deemed unlikely, considering the absence of known individuals.

An overview of the potential impact to the Slender Bell-fruit by Goyder North Wind Farm is provided in Table 7.45.

Table 7.45: Summary of impact to Slender Bell-fruit

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	None detected	None detected	None detected
Habitat quality	N/A – there is no important habitat present within the GNWF Project Area.	N/A – there is no important habitat present within the GNWF Project Area.	N/A - as noted for WF and OTL.
Individual impacts	None, as the species has not been recorded, nor expected to occur within the Project Area, based on extensive surveys.	None, as the species has not been recorded, nor expected to occur within the Project Area, based on extensive surveys.	Nil

Source: Umwelt 2025a

7.11.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Extensive surveys have not detected the species within the Project Area. Although the risk is low, Neoen also commit to undertaking on-ground pre-clearance surveys in any minor remaining areas of the Disturbance Footprint which have not been verified on ground. In the unlikely event that a new individual or population is detected in the Disturbance Footprint, Neoen commits to avoid any impacts through micro siting. Therefore, no direct impacts are expected to occur.

A full list of avoidance, minimisation and mitigation measures relevant to Slender Bell-fruit at all stages of development are presented in Table 7.46.

Table 7.46: Mitigation Hierarchy implemented at all stages of the Project for Slender Bell-fruit

Stage	Action	Effectiveness
Pre-construction design		
Site Selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Field Surveys (broad, BAM, targeted)	Conducted extensive targeted field surveys within the Project Area, Development Envelope and Disturbance Footprint to identify new populations and verify existing records.	High – ensures accurate data collection and high confidence in survey result.
Alignment with existing infrastructure and cleared areas	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation. This includes aligning OTL access tracks with existing GSWF OTL access tracks to reduce overall requirements.	High – 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totaling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
Construction		
PCC	Conduct pre-clearance checks in suitable habitats outside high confidence survey areas by qualified ecologists for any proposed infrastructure updates due to micro siting. Commitment to micro siting to reduce impact on flora/fauna/cultural heritage sites. If species are found, micro siting will not occur in that location, and additional management actions will be implemented to avoid indirect impacts.	High- given the extent of previous survey work, it is considered highly unlikely that any threatened flora species occur and therefore the risk is low.
CEMP	Implement the CEMP along with a site-specific flora and fauna management plan. Management Plans will include detailed instruction to avoid casual use of the road where existing population is currently known. CEMP will be in place to manage potential direct and indirect impacts to native vegetation during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds.	High – comprehensive plans avoid potential impacts on flora as a result of construction activities.
	Include species information in site inductions and display educational materials such as identification fact sheets in common areas and work sites.	High – raises awareness and ensures all workers (i.e. not just environmental staff) are informed about species protection.
	Establish a stop-work procedure for any chance finds of species during construction.	High - Immediate action minimizes potential harm to discovered species.
Operation		
OEMP	Implement the OEMP to address any site-specific findings during construction. If no additional populations are detected, limit actions to reporting and recording any chance finds in the Project Area.	High - Ongoing monitoring and reporting ensure continued protection of species.
Decommissioning		
Re-assessment and further surveys	Conduct updated survey works in all areas proposed to be disturbed during the decommissioning phase. Address findings at the time of decommissioning. State and National approvals will be sought at the time, as required.	High - Ensures any new or existing populations are identified and protected during decommissioning activities.

7.11.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Slender Bell-fruit, which has been assessed as unlikely to occur within the Disturbance Footprint and Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation, and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Slender Bell-fruit against the significant impact criteria (DotE 2013a) is presented in Table 7.47.

Table 7.47: SIA for the Slender Bell-fruit, listed as Vulnerable under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Lead to a long-term decrease in the size of an important population of a species	No	No	Unlikely. No important populations have been defined for this species (DEWHA 2008b). Despite numerous ecological surveys, the species has not been previously recorded within the GNWF (WF or OTL). It is considered unlikely that the species would occur within the WF, based upon very limited potentially suitable habitat (Umwelt 2025b). As such, it is considered unlikely that an important population of the species exists within the Project Area. Should the species be recorded within the Disturbance Footprint during pre-clearance micro-siting surveys, procedures would be implemented to avoid impacts wherever practicable, noting that Neoen commits that micro-siting will not increase impacts to any MNES. Therefore, it is unlikely impacts as a result of the Project would lead to a long-term decrease in the size of an important population, if found to occur within the OTL.
Reduce the area of occupancy of an important population	No	No	Unlikely. As above, the species has not been recorded within the WF, and thus no impacts to the species' AOO are expected to occur within the Disturbance Footprint within the WF. Whilst the species has not been previously recorded within the OTL, potentially suitable habitat may occur outside of the current Disturbance Footprint. Should the species be detected within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is considered unlikely that impacts as a result of the Project would reduce the AOO of an important population of the species, should the species occur at all within the OTL.
Fragment an existing important population into two or more populations	No	No	Unlikely. Although no important populations have been defined for this species (DEWHA 2008b), due the species' small size and limited range of populations and individuals, and the apparent contraction of the species' distribution, the species' SPRAT profile suggests all known populations may be important for the survival and protection of the species (DCCEEW 2025b). Currently, the exact population size is not known or estimated (DCCEEW 2025b). As above, despite previous vegetation surveys, the species has not been recorded within the GNWF (WF or OTL), thus it is considered unlikely impacts as a result of the Project would fragment and existing population into two or more populations.
Adversely affect habitat critical to the survival of a species	No	No	Unlikely. As above, the species is considered unlikely to occur within the WF based upon limited potentially suitable habitat, and thus no impacts to the species' AOO are expected to occur within the WF. Despite previous vegetation surveys, the species has not been recorded within the OTL, however, it is acknowledged that potentially suitable habitat may occur on the OTL. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would adversely affect habitat critical to the survival of the species.
Disrupt the breeding cycle of an important population	No	No	Unlikely. The Slender Bell-fruit is a monoecious plant, with female flowers borne on branches below the male flower, with flowering occurring between May and October (DCCEEW 2024e). Despite previous vegetation surveys, the species has not been recorded within the WF or OTL. Reproduction of the Slender Bell-fruit, where present, would not be expected to be disrupted by the construction and operation of the OTL. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would disrupt the breeding cycle of a population.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	Unlikely. As above, there are no known records of the species occurring within the WF or within the Disturbance Footprint of the OTL. Should the species be detected within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and infrastructure where practicable. If infrastructure was proposed close to a known population, further mitigation strategies would be implemented as outlined in the CEMP and OEMP to prevent indirect impacts to the species such as dust deposition or water runoff. It is unlikely impacts as a result of the Project would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. Therefore, it is unlikely that impacts as a result of the Project would modify or decrease the availability or quality of habitat to the extent that a local population (if present) is likely to decline, let alone the species as a whole.
Result in an invasive species that is harmful to a vulnerable species becoming established in the vulnerable species' habitat	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline.	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species.	No	No	Unlikely. The Project is not expected to substantially interfere with the listed threat abatement and recovery information provided for this species, which largely focuses on the need for further research into the monitoring, assessment and surveying of existing populations and their propagation requirements, identifying populations of high conservation priority, developing a management plan for the control of feral rabbits and goats, and the exclusion of livestock grazing on areas of occurrence (DCCEEW 2025b).
Outcome: No significant residual impacts expected for the Slender Bell-fruit.			

7.11.3.1 Acceptability of relevant impacts

The species is not known to occur in the Project Area despite extensive survey effort. No impacts to Slender Bell-fruit are expected to occur as a result of the Project, considering the current Disturbance Footprint. Mitigation measures will be implemented to ensure that any chance discoveries of this species are documented and appropriately managed, ensuring no impact to individuals or populations.

7.12 Trailing Hop-bush (*Dodonaea procumbens*) – Vulnerable

This section provides a comprehensive evaluation of the potential impacts on the Trailing Hop-bush due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Trailing Hop-bush is considered unlikely to occur within the Disturbance Footprint and known to occur in the Development Envelope (exclusively within Mokota Conservation Park which is fenced and protected from grazing) and is assessed as a conservative measure (Umwelt 2025b).

7.12.1 Impact Summary

The species has not been recorded within the Disturbance Footprint of the Project Area. Extensive surveys have not detected any individuals outside of Mokota Conservation Park, resulting in the risk of direct impacts within the Disturbance Footprint being low. Neoen have modified the Development Envelope to exclude Mokota CP, thus it will not be impacted directly by the Project and measures will be put in place to prevent and mimimise indirect impacts.

Indirect impacts, such as weed incursion, altered hydrology, and dust deposition from nearby road infrastructure, may affect existing known populations. However, these impacts are also considered unlikely with targeted management actions outlined in a CEMP and OEMP.

An overview of the potential impact to the Trailing Hop-bush by Goyder North Wind Farm is provided in Table 7.48.

Table 7.48: Summary of impact to Trailing Hop-bush

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Direct impact			
Habitat impacted (ha)	Population in Mokota Conservation Park outside of Disturbance Footprint	None detected	None detected
Habitat quality	Known individuals occur within Mokota Conservation Park. They occur within designated exclusion fences, within 23 m	No individuals or populations are known to occur. Habitat along the	As noted for WF and OTL.

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
	of the edge of a proposed southern access road. Habitat is native grassland interspersed with Lomandra and is in fair to moderate condition. Weed cover and grazing by overabundant native herbivores are evident and remaining individual plants are heavily grazed.	OTL is not preferred for the species.	
Individual impacts	N/A none detected	N/A none detected	N/A none detected
Indirect impact			
Degradation of vegetation through introduction or spread of weeds or pathogens	Minor risk of weeds or pathogens increasing in disturbed area. Managed by implementation of CEMP and OEMP.	No Trailing Hop-bush known on OTL. Any potential for weed or pathogen impacts will be managed by implementation of CEMP and OEMP.	As noted for WF and OTL.
Reduced vegetation health through dust deposition	Minor risk of increased dust deposition on vegetation during construction and operation caused by increased traffic past known location of individuals.	No Trailing Hop-bush known on OTL. Any potential for dust deposition on vegetation will be managed by implementation of CEMP and OEMP.	As noted for WF and OTL.

7.12.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Extensive surveys have not detected the species within the Project Area outside of the existing known population at Mokota Conservation Park. Although the risk is low, Neoen also commit to undertaking on-ground pre-clearance surveys in any minor remaining areas of the Disturbance Footprint which have not been verified on ground. In the unlikely event that a new individual or population is detected in the Disturbance Footprint, Neoen commits to avoid any impacts through micro siting. therefore, no direct impacts are expected to occur.

A full list of avoidance, minimisation and mitigation measures relevant to Trailing Hop-bush at all stages of development are presented in Table 7.49.

Table 7.49: Mitigation Hierarchy implemented at all stages of the Project for Trailing Hop-bush

Stage	Action	Effectiveness
Pre-construction design		
Site Selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Field Surveys (broad, BAM, targeted)	Conducted extensive targeted field surveys within the Project Area, Development Envelope and Disturbance Footprint to identify new populations and verify existing records.	High – ensures accurate data collection and high confidence in survey result.
Alignment with existing infrastructure and cleared areas	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation. This includes aligning OTL access tracks with existing GSWF OTL access tracks to reduce overall requirements.	High – 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totaling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
Micro siting	Aligned southern access road (Gum Hill Road) to avoid all known populations / individuals of the species within the Project Area.	High - Directly prevents any direct disturbance to the species.
Construction		
PCC	Conduct pre-clearance checks in suitable habitats outside high confidence survey areas by qualified ecologists for any proposed infrastructure updates due to micro siting. Commitment to micro siting to reduce impact on flora/fauna/cultural heritage sites. If species are found, micro siting will not occur in that location, and additional management actions will be implemented to avoid indirect impacts.	High- given the extent of previous survey work, it is considered highly unlikely that any threatened flora species occur and therefore the risk is low.
CEMP	Implement the CEMP along with a site-specific flora and fauna management plan. Management Plans will include detailed instruction to avoid casual use of the road where existing population is currently known. CEMP will be in place to manage potential direct and indirect impacts to native vegetation during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds.	High – comprehensive plans avoid potential impacts on flora as a result of construction activities.
	Include species information in site inductions and display educational materials such as identification fact sheets in common areas and work sites.	High – raises awareness and ensures all workers (i.e. not just environmental staff) are informed about species protection.
	Establish a stop-work procedure for any chance finds of species during construction.	High - Immediate action minimizes potential harm to discovered species.
	Controls in place to implement dust suppression measures or reduced speed zones within 100 m of any known individuals / populations (and within Mokota Conservation Park).	High – avoid potential for indirect impacts such as dust accumulation at site of known population.
	Controls in place to install ecological no-go zones around known individuals in Development Envelope prior to construction commencing.	High – physical barrier prevents misinterpretation of any spatial data.
Operation		
OEMP	Implement the OEMP to address any site-specific findings during construction. If no additional populations are detected, limit actions to reporting and recording any chance finds in the Project Area.	High - Ongoing monitoring and reporting ensure continued protection of species.
Offsetting	Neoen are exploring ways they might be able to enhance the values or contribute to the future preservation of Mokota Conservation Park including, where a known population of Trailing Hop-bush occurs. This is an above and beyond measure proposed by Neoen, as no impact is expected, and thus no offset is required.	No offset required.
Decommissioning		
Re-assessment and further surveys	Conduct updated survey works in all areas proposed to be disturbed during the decommissioning phase. Address findings at the time of decommissioning. State and National approvals will be sought at the time, as required.	High - Ensures any new or existing populations are identified and protected during decommissioning activities.

7.12.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Trailing Hop-bush, which has been assessed as a possible occurrence within the Disturbance Footprint and Development Envelope, but is known within the broader Project Area where it occurs exclusively within Mokota Conservation Park, where it is fenced and protected from grazing (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Trailing Hop-bush against the significant impact criteria (DotE 2013a) is presented in Table 7.50.

Table 7.50: SIA for the Trailing Hop-bush, listed as Vulnerable under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Lead to a long-term decrease in the size of an important population	No	No	Unlikely. There are currently thought to be approximately 50-55 known populations of the Trailing Hop-bush across its range, however, accurate location and population data is only known for about 25 of those populations (Carter 2010). 'Important populations' include those where locations are precisely known and have recent abundance information (Carter 2010). A known population relevant to the GNWF exists within Mokota Conservation Park, however, it is outside of the Disturbance Footprint, and the Development Envelope boundary has been modified to avoid this protected area. No individuals or populations are known to occur within the Disturbance Footprint of the OTL, and habitat along the OTL is considered not preferred for the species. Should the species be recorded within the Disturbance Footprint during pre-clearance micro-siting surveys, procedures would be implemented to avoid impacts wherever practicable, noting that Neoen commits that micro-siting will not increase impacts to any MNES. Therefore, it is unlikely the Project would lead to a long-term decrease in the size of an important population, should an important population occur outside of the Mokota CP, but within the WF or OTL.
Reduce the area of occupancy of an important population	No	No	Unlikely. As above, no impacts to the species' AOO are expected to occur as a result of the Project within the GNWF (WF and OTL), noting the Disturbance Footprint and Development Envelope do not intersect with the recorded occurrence of the species in the area, which is currently only known from the Mokota CP (within a fenced area protected from herbivore grazing). Therefore, it is unlikely the Project will reduce the AOO of the species with the GNWF.
Fragment an existing important population into two or more populations	No	No	Unlikely. As above, despite numerous surveys within GNWF (WF and OTL) no individual specimens have been recorded within the GNWF, with the exception of the known population within the Mokota Conservation Park. This population is outside of the current Disturbance Footprint and Development Envelope. The Project is not expected to result in fragmentation of an existing important population into two or more populations in these areas. Should specimens and/or a population be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to realign/micro site roads, tracks and OTL infrastructure where practicable. Regardless, minor access tracks and OTL footings are not expected to completely partition a population in two, as gene flow will still be possible.
Adversely affect habitat critical to the survival of a species	No	No	Unlikely. As above, suitable habitat for the species within the GNWF principally occurs within the Mokota Conservation Park, outside of the Project's Disturbance Footprint and Development Envelope, and furthermore, within a fenced area protected from grazing herbivores. Despite extensive surveys, the species has not been detected within the current Disturbance Footprint, although it is noted that it is a small plant which is often heavily grazed, and may be difficult to detect in these areas, should it occur (Umwelt 2025b). However, impacts as a result of the Project within the GNWF (outside of the Mokota CP) are unlikely to adversely affect habitat critical to survival of the species. Should specimens and/or a population be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to realign/micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would adversely affect habitat critical to the survival of the species.
Disrupt the breeding cycle of an important population	No	No	Unlikely. The Trailing Hop-bush may be dioecious; with male and female flowers occurring on different plants, or polygamodioecious (i.e. having bisexual and male flowers on some plants; or bisexual and female flowers on others), giving rise a semi-complex reproductive breeding cycle. Tiny, solitary or paired flowers appear in spring and summer. Reproduction of the Trailing Hop-bush, where present / and/or within the Mokota Conservation Park, would not be expected to be disrupted by the construction and operation of the Project. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where the species is present and to realign/micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would disrupt the breeding cycle of a population.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	Unlikely. As above, despite extensive surveys within the GNWF, the species is only known from records within the Mokota Conservation Park, outside the Project's Development Envelope and Disturbance Footprint. Any potential indirect impacts from dust deposition or water runoff will be addressed within the CEMP and OEMP. Thus, it is unlikely impacts as a result of the Project would modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species (if present) is likely to decline, let alone the species as a whole.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species.	No	No	Unlikely. The Project is not expected to substantially interfere with the listed threat abatement information provided for this species, which largely focuses on the disturbance/destruction of habitat and individual plants, weed invasion, heavy grazing/browsing by native and introduced herbivores and altered fire regimes (DCCEEW 2025b). The design of the Project has been refined and does not impact any known individuals of the species. Therefore, impacts as a result of the Project are unlikely to interfere substantially with the recovery of the species. Recovery of the known population in Mokota CP is not expected to be impacted by the Project due to the implementation of avoidance buffers surrounding construction and operation of the Project.
Outcome: No significant residual impacts expected for the Trailing Hop-bush.			

7.12.3.1 Acceptability of relevant impacts

The species is known to occur in the Project Area, however no known individuals occur within the Development Envelope or Disturbance Footprint. No direct impacts to Trailing Hop-bush are expected as a result of the Project. Indirect impacts such as dust accumulation impacting vegetation health or unauthorised clearance in areas near to the approved Disturbance Footprint will be managed in a Project specific CEMP and OEMP. Management measures will be implemented to ensure that chance discoveries of this species will be documented and appropriately managed, ensuring no impact to individuals or populations. As a result, no impacts to this species are expected to occur as a result of the Project.

7.13 Silver Daisy-bush (*Olearia pannosa* subsp. *pannosa*) – Vulnerable

This section provides a comprehensive evaluation of the potential impacts on the Silver Daisy-bush due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Silver Daisy-bush is considered unlikely to occur within the Disturbance Footprint and is considered to possibly occur in the Development Envelope, and is assessed as a conservative measure (Umwelt 2025b).

7.13.1 Impact Summary

Given the current lack of known individuals, direct impacts on the species within the Disturbance Footprint are highly unlikely. Even if the Disturbance Footprint were to shift from its current position, the chance of affecting undetected individuals or populations remains low. Indirect impacts, such as habitat quality reduction through weed incursion, erosion, sediment deposition, or altered hydrology, are also deemed unlikely, considering the absence of known individuals. An overview of the potential impact to Silver Daisy-bush by Goyder North Wind Farm is provided in Table 7.51.

Table 7.51: Summary of impact to Silver Daisy-bush

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	None detected	None detected	None detected
Habitat quality	N/A – there is no important habitat present within the GNWF Project Area.	N/A – there is no important habitat present within the GNWF Project Area.	N/A - as noted for WF and OTL.
Individual impacts	None, as the species has not been recorded, nor expected to occur within the Project Area, based on extensive surveys.	None, as the species has not been recorded, nor expected to occur within the Project Area, based on extensive surveys.	Nil

Source: Umwelt 2025b

7.13.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Extensive surveys have not detected the species within the Project Area. Although the risk is low, Neoen also commit to undertaking on-ground pre-clearance surveys in any minor remaining areas of the Disturbance Footprint which have not been verified on ground. In the unlikely event that a new individual or population is detected in the Disturbance Footprint, Neoen commits to avoid any impacts through micro siting. therefore, no direct impacts are expected to occur.

A full list of avoidance, minimisation and mitigation measures relevant to Silver Daisy-bush at all stages of development are presented in Table 7.52.

Table 7.52: Mitigation Hierarchy implemented at all stages of the Project for Silver Daisy-bush

Stage	Action	Effectiveness
Pre-construction design		
Site Selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Field Surveys (broad, BAM, targeted)	Conducted extensive targeted field surveys within the Project Area, Development Envelope and Disturbance Footprint to identify new populations and verify existing records.	High – ensures accurate data collection and high confidence in survey result.
Alignment with existing infrastructure and cleared areas	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation. This includes aligning OTL access tracks with existing GSWF OTL access tracks to reduce overall requirements.	High – 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totalling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
Construction		
PCC	Conduct pre-clearance checks in suitable habitats outside high confidence survey areas by qualified ecologists for any proposed infrastructure updates due to micro siting. Commitment to micro siting to reduce impact on flora/fauna/cultural heritage sites. If species are found, micro siting will not occur in that location, and additional management actions will be implemented to avoid indirect impacts.	High- given the extent of previous survey work, it is considered highly unlikely that any threatened flora species occur and therefore the risk is low.
CEMP	Implement the CEMP along with a site-specific flora and fauna management plan. CEMP will be in place to manage potential direct and indirect impacts to native vegetation during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds.	High – comprehensive plans avoid potential impacts on flora as a result of construction activities.
	Include species information in site inductions and display educational materials such as identification fact sheets in common areas and work sites.	High – raises awareness and ensures all workers (i.e. not just environmental staff) are informed about species protection.
	Establish a stop-work procedure for any chance finds of species during construction.	High - Immediate action minimizes potential harm to discovered species.
Operation		
OEMP	Implement the OEMP to address any site-specific findings during construction. If no additional populations are detected, limit actions to reporting and recording any chance finds in the Project Area.	High - Ongoing monitoring and reporting ensure continued protection of species.
Decommissioning		
Re-assessment and further surveys	Conduct updated survey works in all areas proposed to be disturbed during the decommissioning phase. Address findings at the time of decommissioning. State and National approvals will be sought at the time, as required.	High - Ensures any new or existing populations are identified and protected during decommissioning activities.
Operation	Implement the Operational Environmental Management Plan (OEMP) to address any site-specific findings during construction. If no additional populations are detected, limit actions to reporting and recording any chance finds in the Project Area.	High - Ongoing monitoring and reporting ensure continued protection of species.
Decommissioning	Conduct updated survey works in all areas proposed to be disturbed during the decommissioning phase. Address findings at the time of decommissioning. State and National approvals will be sought at the time, as required.	High - Ensures any new or existing populations are identified and protected during decommissioning activities.

7.13.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Silver Daisy-bush, which has been assessed as unlikely to occur within the Disturbance Footprint but may possibly occur within the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation, and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Silver Daisy-bush against the significant impact criteria (DotE 2013a) is presented in Table 7.53.

Table 7.53: SIA for the Silver Daisy-bush, listed as Vulnerable under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Lead to a long-term decrease in the size of an important population	No	No	Unlikely. No important populations have been defined for the Silver Daisy-bush (DotE 2013b; DCCEEW 2025b). Despite numerous surveys, including targeted surveys, the species has not been previously recorded within the GNWF (WF or OTL) (Umwelt 2025b; DEW 2025a), and thus the species is considered unlikely to occur within the Disturbance Footprint of the GNWF. However, it is noted that potentially suitable habitat occurs across the GNWF, and although it has not been detected during field surveys, the species may occur in parts of the Development Envelope that have not been surveyed to date. Should the species be recorded within the Disturbance Footprint during pre-clearance micro-siting surveys, procedures would be implemented to avoid impacts wherever practicable, noting that Neoen commits that micro-siting will not increase impacts to any MNES. Therefore, it is unlikely impacts as a result of the Project would lead to a long-term decrease in the size of an important population.
Reduce the area of occupancy of an important population	No	No	Unlikely. No important populations have been defined for this species (DotE 2013b; DCCEEW 2025b). Despite extensive vegetation surveys, the species has not been previously recorded within the GNWF (WF or OTL) (Umwelt 2025b; DEW 2025a). Potentially suitable habitat is considered to occur within unsurveyed areas of the GNWF outside of the Disturbance Footprint. Should the species be detected within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and OTL infrastructure where practicable. Therefore, should the species occur within the GNWF, it is unlikely impacts as a result of the Project would reduce the AOO of the species.
Fragment an existing important population into two or more populations	No	No	Unlikely. As above, there are no defined important populations for the Silver Daisy-bush, and the exact population size is not known or estimated (DotE 2013b; DCCEEW 2024b). Despite extensive vegetation surveys the species has not been previously recorded within the GNWF (WF or the OTL) (Umwelt 2025b; DEW 2025a). Should the species be detected within the Disturbance Footprint, efforts would be made to avoid the species and to micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would fragment an existing important population into two or more populations, should a population occur at all.
Adversely affect habitat critical to the survival of a species	No	No	No critical habitat is defined in the literature for the Silver Daisy-bush (DotE 2013b; DCCEEW 2025b). The species is considered to have a wide distribution across several regions within South Australia. Despite previous vegetation surveys, the species has not been recorded within the GNWF (WF or OTL) (Umwelt 2025b; DEW 2025a). Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would adversely affect habitat critical to the survival of the species.
Disrupt the breeding cycle of an important population	No	No	No defined important populations are defined for this species, and there are no current population estimates (DotE 2013b; DCCEEW 2025b). Despite previous vegetation surveys, the species has not been recorded within the GNWF (WF or OTL) (Umwelt 2025b; DEW 2025a). Reproduction of the Silver Daisy-bush, should the species be present, would not be expected to be disrupted by the construction and operation of the WF or OTL. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would disrupt the breeding cycle of a population, should a population occur at all.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	As above, there are no known records of the species occurring within the GNWF (WF or OTL) (Umwelt 2025b; DEW 2025a). Therefore, it is unlikely impacts as a result of the Project would modify or decrease the availability or quality of habitat to the extent that the species (if present) is likely to decline, let alone the species as a whole.
Result in an invasive species that is harmful to a vulnerable species becoming established in the vulnerable species' habitat	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; EBS 2024aUmwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline.	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species.	No	No	The Project will not substantially interfere with the listed threat abatement and recovery information provided for this species, which largely focuses on the need for further research into the monitoring, assessment and surveying of existing populations and their propagation requirements, identifying populations of high conservation priority, developing a management plan for the control of feral rabbits and goats, and the exclusion of livestock grazing on areas of occurrence (DCCEEW 2025b).
Outcome: No significant residual impacts expected for the Silver Daisy-bush.			

7.13.3.1 Acceptability of relevant impacts

The species is not known to occur in the Project Area despite extensive survey effort. No impacts to Silver Daisy-bush are expected to occur as a result of the Project, considering the current Disturbance Footprint. Mitigation measures will be implemented to ensure that any chance discoveries of this species are documented and appropriately managed, ensuring no impact to individuals or populations.

7.14 Superb Groundsel (*Senecio megaglossus*) – Vulnerable

This section provides a comprehensive evaluation of the potential impacts on the Superb Groundsel due to the proposed Project, considering their presence within the Project Area, the regional context of the species, the scale of potential impacts, and the mitigation measures implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The Superb Groundsel is considered unlikely to occur within the Disturbance Footprint and may possibly occur in the Development Envelope, and is assessed as a conservative measure (Umwelt 2025b).

7.14.1 Impact Summary

Given the current lack of known individuals, direct impacts on the species within the Disturbance Footprint are highly unlikely. Even if the Disturbance Footprint were to shift from its current position, the chance of affecting undetected individuals or populations remains low. Indirect impacts, such as habitat quality reduction through weed incursion, erosion, sediment deposition, or altered hydrology, are also deemed unlikely, considering the absence of known individuals.

An overview of the potential direct impact to Superb Groundsel by Goyder North Wind Farm is provided in Table 7.54.

Table 7.54: Summary of impact to Superb Groundsel

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	Nil. The species has not been detected within the WF, so no habitat present.	Nil. The species has not been detected within the OTL, so no habitat present.	None detected
Habitat quality	N/A – there is no important habitat present within the GNWF Project Area.	N/A – there is no important habitat present within the GNWF Project Area.	N/A - as noted for WF and OTL.
Individual impacts	None, as the species has not been recorded, nor expected to occur within the Project Area, based on extensive surveys.	None, as the species has not been recorded, nor expected to occur within the Project Area, based on extensive surveys.	Nil

Source: Umwelt 2025a

7.14.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Extensive surveys have not detected the species within the Project Area. Although the risk is low, Neoen also commit to undertaking on-ground pre-clearance surveys in any minor remaining areas of the Disturbance Footprint which have not been verified on ground. In the unlikely event that a new individual or population is detected in the Disturbance Footprint, Neoen commits to avoid any impacts through micro siting. therefore, no direct impacts are expected to occur.

A full list of avoidance, minimisation and mitigation measures relevant to Superb Groundsel at all stages of development are presented in Table 7.55.

Table 7.55: Mitigation Hierarchy implemented at all stages of the Project for Superb Groundsel

Stage	Action	Effectiveness
Pre-construction design		
Site Selection	GNWF location was selected as a world class wind resource, located on agricultural land which has previously been cleared and has a long history of agricultural use.	Located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Field Surveys (broad, BAM, targeted)	Conducted extensive targeted field surveys within the Project Area, Development Envelope and Disturbance Footprint to identify new populations and verify existing records.	High – ensures accurate data collection and high confidence in survey result.
Alignment with existing infrastructure and cleared areas	Infrastructure components have maximized potential to be aligned with existing cleared areas (i.e. roads and tracks), cropped areas and exotic pasture, resulting in a reduced overall impact on native vegetation. This includes aligning OTL access tracks with existing GSWF OTL access tracks to reduce overall requirements.	High - 18 ha of avoided clearance of threatened species habitat and NV disturbance, through optimising underground cable and road alignments, to also reduce habitat fragmentation.
Construction		
PCC	Conduct pre-clearance checks in suitable habitats outside high confidence survey areas by qualified ecologists for any proposed infrastructure updates due to micro siting. Commitment to micro siting to reduce impact on flora/fauna/cultural heritage sites. If species are found, micro siting will not occur in that location, and additional management actions will be implemented to avoid indirect impacts.	High- given the extent of previous survey work, it is considered highly unlikely that any threatened flora species occur and therefore the risk is low.
CEMP	Implement the CEMP along with a site-specific flora and fauna management plan. Management Plans will include detailed instruction to avoid casual use of the road where existing population is currently known. CEMP will be in place to manage potential direct and indirect impacts to native vegetation during construction. This would include actions to reduce construction related disturbance, prevent unapproved clearance of vegetation, prevent degradation of habitat through dust deposition and water runoff, prevent introduction or spread of weeds.	High – comprehensive plans avoid potential impacts on flora as a result of construction activities.
	Include species information in site inductions and display educational materials such as identification fact sheets in common areas and work sites.	High – raises awareness and ensures all workers (i.e. not just environmental staff) are informed about species protection.
	Establish a stop-work procedure for any chance finds of species during construction.	High - Immediate action minimizes potential harm to discovered species.
Operation		
OEMP	Implement the OEMP to address any site-specific findings during construction. If no additional populations are detected, limit actions to reporting and recording any chance finds in the Project Area.	High - Ongoing monitoring and reporting ensure continued protection of species.
Decommissioning		
Re-assessment and further surveys	Conduct updated survey works in all areas proposed to be disturbed during the decommissioning phase. Address findings at the time of decommissioning. State and National approvals will be sought at the time, as required.	High - Ensures any new or existing populations are identified and protected during decommissioning activities.

7.14.3 Significant impact assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Superb Groundsel, which has been assessed as unlikely to occur within the Disturbance Footprint but may possibly occur within the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation, and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Superb Groundsel against the significant impact criteria (DotE 2013a) is presented in Table 7.56.

Table 7.56: SIA for the Superb Groundsel, listed as Vulnerable under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Comments
Lead to a long-term decrease in the size of an important population	No	No	Unlikely. No important populations have been defined for the Superb Groundsel (DEWHA 2008e; DCCEEW 2025b). Despite recent vegetation surveys there are no recent records of the species occurring within the GNWF (WF or OTL), inclusive of recent targeted searches in locations of historical BDBSA records (Umwelt 2025b). Potentially suitable habitat is considered to possibly occur in the unsurveyed areas outside of the Disturbance Footprint within the WF and OTL. However, it is considered unlikely that the GNWF supports an important population of the species, or any population at all. Should the species be recorded within the Disturbance Footprint during pre-clearance micro-siting surveys, procedures would be implemented to avoid impacts wherever practicable, noting that Neoen commits that micro-siting will not increase impacts to any MNES. Therefore, it is unlikely that impacts as a result of the Project would lead to a long-term decrease in the size of an important population.
Reduce the AOO of an important population	No	No	Unlikely. As above, no important populations have been described for this species (DEWHA 2008e; DCCEEW 2025b). The species is considered unlikely to be present within the Disturbance Footprint based upon extensive survey work and a marked absence of records (Umwelt 2025b; DEW 2025a). Should the species be detected within the GNWF it is unlikely any impacts as a result of the Project would reduce the AOO of an important population.
Fragment an existing important population into two or more populations	No	No	Unlikely. As above, no important populations have been described for this species (DEWHA 2008e; DCCEEW 2025b). The species is considered unlikely to occur within the WF and OTL Disturbance Footprint. Should the species be detected within the GNWF, it is unlikely any impacts as a result of the Project would fragment an existing important population into two or more populations.
Adversely affect habitat critical to the survival of a species	No	No	Unlikely. Suitable habitat may be present within the WF and OTL, however, despite numerous recent surveys there are no recent records of the species occurring within the GNWF (Umwelt 2025b). Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and infrastructure where practicable. Therefore, it is considered unlikely that impacts as a result of the Project would adversely affect habitat critical to the survival of the species, should the species be present.
Disrupt the breeding cycle of an important population	No	No	Unlikely. There are no known population estimates for this species, and there are no defined important populations (DEWHA 2008e; DCCEEW 2025b). Despite numerous recent surveys there are no recent records of the species occurring within the GNWF (Umwelt 2025b). Reproduction of the Superb Groundsel, should the species be present, would not be expected to be disrupted by the construction and operation of the Project. Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would disrupt the breeding cycle of an important population, should a population occur.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No	Unlikely. As above, there are no recent records of the species occurring within the GNWF (Umwelt 2025b). Should the species be recorded within the Disturbance Footprint, efforts would be made to avoid areas where this species is present and to micro site roads, tracks and infrastructure where practicable, thus it is unlikely impacts as a result of the Project would modify, destroy, remove, isolate or decrease the availability of quality of habitat to the extent that the species is likely to decline. Therefore, it is considered unlikely that impacts as a result of the Project would modify or decrease the availability or quality of habitat to the extent that the species (if present) is likely to decline, let alone the species as a whole.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; EBS 2024a; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Introduce disease that may cause the species to decline	No	No	Unlikely. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline.
Interfere with the recovery of the species.	No	No	Unlikely. The Project is not expected to substantially interfere with the listed threat abatement and recovery information provided for this species, which largely focuses on the need for further research into the monitoring, assessment and surveying of existing populations and their propagation requirements, identifying populations of high conservation priority, developing a management plan for the control of feral rabbits and goats, and the exclusion of livestock grazing on areas of occurrence (DEWHA 2008e; DCCEEW 2025b).
Outcome: No significant residual impacts expected for the Superb Groundsel.			

7.14.3.1 Acceptability of relevant impacts

The species is not known to occur in the Project Area despite extensive survey effort. No impacts to this Superb Groundsel are expected to occur as a result of the Project, considering the current Disturbance Footprint. Mitigation measures will be implemented to ensure that any chance discoveries of this species are documented and appropriately managed, ensuring no impact to individuals or populations.

7.15 Iron-grass Natural Temperate Grassland of South Australia – Critically Endangered

This section provides a comprehensive evaluation of the impacts on the Iron-grass Natural Temperate Grassland of South Australia due to the proposed Project, considering the TECs presence within the Project Area, the regional context of the TEC, the scale of potential impacts, and the mitigation measures to be implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (DotE 2013a), with a brief discussion of the acceptability of residual impacts.

The INTG TEC is known to occur within the Disturbance Footprint and Development Envelope (Umwelt 2025b).

7.15.1 Impact Summary

An overview of the potential direct impact to the INTG TEC by Goyder North Wind Farm is provided in Table 7.57.

Table 7.57: Summary of direct impact to Iron-grass Natural Temperate Grassland of South Australia

Habitat impacted (ha)	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Condition Class A	No direct impacts	No direct impacts	No direct impacts
Condition Class B	6.14	No direct impacts	6.14
Condition Class C	1.07	1.37	2.44

Source: Umwelt 2025b

The Disturbance Footprint (i.e. direct impact) associated with the Project is approximately 8.59 ha of Lomandra Grassland (all condition classes) representing approximately 0.44% of the total area of INTG mapped in the broader GNWF Project Area (1,931.24 ha). This includes 6.14 ha of Class B INTG (the TEC), of which 2.43 ha is permanently impacted, and 3.72 ha will be temporarily impacted and subject to rehabilitation measures following construction. A further 2.44 ha of impact is proposed to Class C INTG (not the TEC), including 1.14 ha of permanent impact and 1.30 ha of temporary impact.

Temporary impacts are proposed where clearance is required during construction to allow for access of heavy machinery, installation of infrastructure such as underground electrical cables, or temporary laydown or stockpile areas to enable construction. This results in a temporary area of impact around all roads and infrastructure, effectively acting as a buffer to the final infrastructure footprint. Within all areas of temporary clearance, and within any areas within 200 m of any INTG patch, Neoen is committed to

prioritising topsoil reestablishment, with redistribution and scarification of exposed areas to have occurred within 2 years of the ground disturbance to enable natural regeneration to commence, with the aim to restoring these areas to their former state.

Management actions detailed in a site-specific CEMP, OEMP and INTG MP, along with associated sub-plans, will mitigate any potential indirect impacts that may arise during construction or operation of the wind farm, including increased likelihood of weed introduction / spread due to increased traffic during construction and presence of disturbed soil, altered hydrology and / or erosion caused by changes to landform for infrastructure, increased dust deposition on adjacent INTG, or changes to current grazing regime (as a direct result of the wind farm) which may alter the composition of adjacent grassland. Regardless of mitigation measures proposed, the majority of potential indirect impacts to INTG are expected to only occur within the temporary impact area which will be rehabilitated following construction. Despite the temporary nature of impacts in these areas, Neoen is seeking approval for disturbance to these areas and is offsetting them in full (as per permanently disturbed areas), in accordance with both state and national legislation. Therefore, the indirect impacts are considered to be conservatively addressed here.

A summary of all direct and potential indirect impacts associated with the project are presented in Table 7.58.

Table 7.58: Direct and Indirect impacts to INTG as a result of the GNWF Project

Impact Type	Wind Farm	OTL	Phase	Duration
Direct Impacts				
Habitat loss (permanent) (ha)	2.43	0.00	Construction	Long-term / permanent
Habitat loss (temporary) (ha)	3.72	0.00	Construction	Short to medium-term
Indirect Impacts				
Unauthorised clearance of INTG outside of DF	Low risk of unauthorized clearance due to specific controls and management measures outlined in CEMP and INTG MP.	No INTG TEC on OTL. Low risk of unauthorized clearance of Class C INTG due to specific controls and management measures outlined in CEMP and INTG MP.	Construction	Short-term
Degradation of habitat due to dust	Minor risk of habitat degradation due to dust smothering flora and leading to loss of vegetation condition. Managed by specific controls in CEMP and INTG MP.	No INTG TEC on OTL. Low risk of degradation of Class C INTG due to specific controls and management measures outlined in CEMP and INTG MP.	Construction	Short-term
Loss of topsoil and subsequent erosion and / or sedimentation from run-off which may lead to degradation of vegetation within TEC	Low risk of impact to TEC through specific controls outlined in INTG MP, CEMP, OEMP and associated sub-plans Onsite management and regular external auditing procedures will ensure that efficacy of controls is maintained or improved where necessary.	No INTG TEC on OTL.	Construction	Short-term
Altered hydrology from diverted surface water runoff resulting in erosion, sediment deposition and changed water runoff and infiltration, leading to long-term degradation of vegetation within the TEC	Low risk of impact to TEC through changed surface water flows and altered hydrology, as discussed in Section 5.2.7. Likelihood of indirect impact significantly reduced through optimised design based on expert studies, including avoiding creeks, utilizing natural land contours to minimize earthworks and flow impacts, and having detailed drainage design to finalise the placement of roadside drainage and culverts where necessary. Indirect impacts during construction and operation are avoidable through specific controls are outlined in INTG MP, CEMP, and OEMP and associated sub-plans. Onsite management and regular external auditing procedures will ensure that efficacy of controls is maintained or improved where necessary.	No INTG TEC on OTL.	Construction / Operation	Long-term
Altered grazing regimes (increased grazing, preferential grazing, reduction or loss of grazing, altered grazing times).	As discussed in Section 5.2.1, predicting changes in land use, whether positive or negative, resulting from the construction of the wind farm is inherently complex and largely beyond the direct control of Neoen. While Neoen does not manage grazing regimes—these remain the responsibility of individual landowners or managers—every effort has been made to minimise potential impacts. This includes aligning wind farm infrastructure with existing farm tracks (which are already preferred livestock movement corridors) and implementing a suite of management plans such as the site-specific CEMP, OEMP and INTG MP. The CEMP outlines landholder responsibilities, including reporting any notable changes in land use or grazing that may be attributed to the project, such as adjustments to fencing or watering points. Additionally, the INTG MP includes a monitoring program designed to track the condition of INTG both within rehabilitated areas and at paired reference sites. While this monitoring may not directly attribute changes to specific causes, it provides a mechanism for detecting measurable shifts in condition and includes triggers for further investigation and adaptive management responses. Furthermore, as the wind farm is distributed across a large area, encompassing multiple landholders and land managers, the risk of a significant change to the grazing regime across the entire Project Area is reduced.	No INTG TEC on OTL. Low risk of degradation of Class C INTG due to specific controls and management measures outlined in CEMP and INTG MP.	Construction /Operation	Short-term / long-term / ongoing
Introduction of new weeds to the Project Area,	Low risk or introduction or increase in weeds, through use of contaminated construction material, machinery and vehicles, leading to loss of vegetation	No INTG TEC on OTL.	Construction / Operation	Long-term / Ongoing

Impact Type	Wind Farm	OTL	Phase	Duration
	condition due to specific controls in CEMP, OEMP and INTG MP. The Project Area is already subject to high existing weed cover in all locations due to a long history of use for agriculture. Specific monitoring for weeds is outlined in the INTG MP where it relates to rehabilitation of temporarily cleared areas.	Low risk of degradation of Class C INTG due to specific controls and management measures outlined in CEMP and INTG MP.		
Fragmentation	Low risk of ecologically significant fragmentation due to the narrow corridor widths which continue to allow genetic dispersal of plant material via wind or water flow. Where infrastructure intersects patches of INTG, it predominantly follows existing roads where any minor edge effects already occur. One patch will be fragmented by a road (patch 32, 447 m).	No INTG TEC on OTL. Low risk of degradation of Class C INTG due to specific controls and management measures outlined in CEMP and INTG MP.	Construction / Operation	Long-term / Ongoing
Chemical spills causing degradation INTG.	Low risk of occurrence and impact and manageable through specific controls outlined in CEMP, OEMP and PBTL MP.	No INTG TEC on OTL. Low risk of degradation of Class C INTG due to specific controls and management measures outlined in CEMP and INTG MP.	Construction	Short-term, isolated
Stockpiling of equipment and materials causing degradation	Low risk of rubbish and waste materials causing degradation to the grassland due to specific management measures outlined in CEMP, OEMP and INTG MP.	No INTG TEC on OTL.	Construction	Short-term

7.15.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

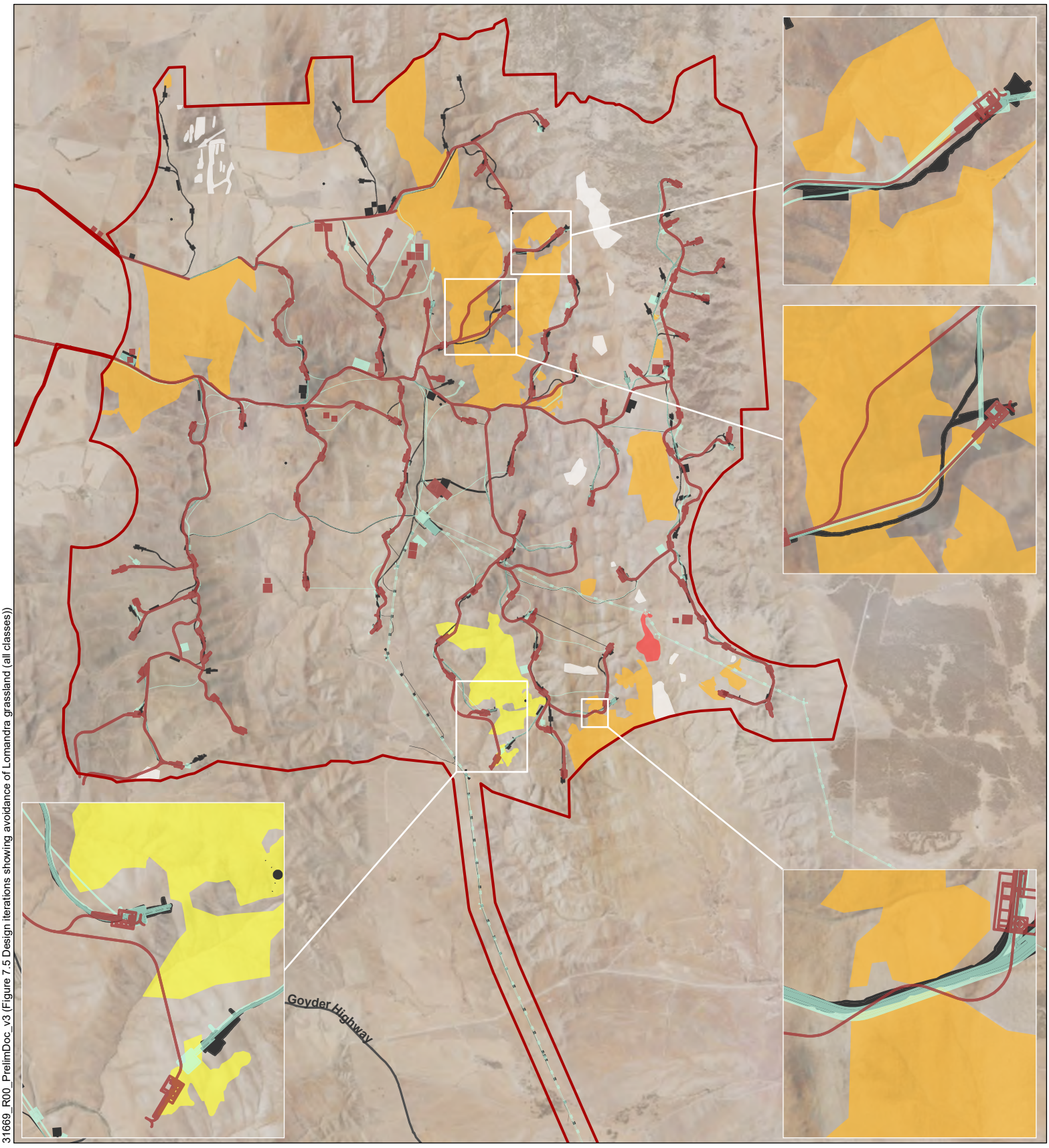
Neoen has implemented a range of measures during the planning and design phase to avoid and minimise impacts to INTG. Between the EPBC Referral and EPBC Variation design refinements have resulted in a 71.05% reduction in disturbance to INTG (all classes), from 29.64 ha to 8.58 ha, based on a combination of design refinements and survey effort to refine mapping (indicated in Figure 7.5). A summary of mitigation measures implemented during each stage of the Project is presented Table 7.59.

Table 7.59: Mitigation Hierarchy implemented at all stages of the Project for INTG TEC

Avoidance / Mitigation Measure	Description	Effectiveness
Pre-construction / design		
Site selection	Original site selection was based on: • the world-class wind resource • proximity to major transport routes and existing grid infrastructure • location on the edge of Goyder's Line in marginal agricultural cropping land which had historically been cleared and utilized for grazing • the rural location with low population density, reducing visual and noise impacts.	High – the Project Area is located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Vegetation surveys	Multiple surveys have been conducted at various points in the Project design and development stage, including: • Early broad mapping of the site vegetation, condition and quality. • Detailed vegetation surveys using BAM to refine mapping and confirm condition, suitable for Native Vegetation Clearance Data Report under SA Legislation. • Targeted INTG TEC surveys within Disturbance Footprint and Development Envelope to refine mapping and measure against condition class criteria, to inform further micro siting and management. This approach ensured that all INTG was mapped and avoided as much as practicable in the first instance, with the precautionary principle applied to indicate that all Lomandra Grasslands could constitute the TEC.	High - determined areas of higher quality Lomandra Grassland and enabled early avoidance, with provision of ecological constraints mapping and risk analysis (EBS Ecology 2023b; EBS Ecology 2023c), which resulted in a reduction of impact to INTG (all condition classes) from 41 to 16 WTGs and careful placement of roads and cables to avoid fragmenting areas of INTG. From this revised and reduced turbine layout, a civil design of the likely road locations and hardstand extents was developed, by adopting 'exclusion areas' where possible for identified high quality (likely INTG) areas. This methodology effectively avoided impacts to the INTG TEC by ensuring the design avoided these areas as much as possible. Subsequent targeted INTG surveys in spring 2024, ensured that all areas of INTG proposed to be impacted have been surveyed in detail, resulting in accurate condition class assessment. This resulted in more refined avoidance once classification against the INTG TEC Condition Class Criteria had been undertaken.
Alignment with existing infrastructure	The Project Area has been sited to align wherever practicable with existing cleared areas including roads, infrastructure and cropped land. If roads or electrical cables are required to cross large patches of Lomandra Grassland to access WTGs, they have been placed in the narrowest (i.e. least impact) area. In some cases, alternative access track routes appear available, however, constraints associated with electrical cabling and distance from the substation and BESS, mean that alternative routes are not technically feasible unless access tracks and cables are constructed separately. As cables have been designed to align within temporary clearance areas of existing access tracks, to minimise clearance, the overall impact on native vegetation, as well as fragmentation, is reduced in these instances. Multiple design iterations showing avoidance and minimization to INTG as specified above is displayed in Figure 7.5.	High – Neoen has investigated design measures to minimize impacts in unavoidable locations. A total of 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totalling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
	Aligning electrical layout with temporary footprint associated with existing roads and proposed access tracks.	High- approximately 3.75 ha of INTG habitat (all classes) avoided through this method. No INTG is currently proposed to be impacted by electrical cabling, representing a 100% reduction between Referred and current design. Note: not directly comparable due to the maturity of the design.
	Utilising existing access track infrastructure for GSWF OTL to reduce access track requirements for GNWF OTL.	Moderate – 0.88 ha of INTG (Class C) avoided using this method, representing a 78.59% reduction in impact to INTG between Referred and current design. Currently 0.24 ha of impact to Class C INTG unable to be avoided for OTL access.
Non-conventional stringing methods	Removal of stringing corridor in areas of high value MNES habitat through application of non-conventional stringing methods (i.e. helicopter stringing).	High - Approximately 3.02 ha of INTG (Class C) avoided through this method. No INTG proposed to be impacted by cable stringing.
Construction		
Construction Environmental Management Plan	A comprehensive document with multiple associated sub-plans which aim to avoid or minimise indirect impacts from construction such as through dust emissions, erosion, altered hydrology and general site matters. Includes measures for spatial data system to minimise the chance of unauthorised or incorrect clearance areas. Specific measures outlined below.	High - Indirect impacts effectively avoided.
	INTG TEC outside of the approved clearance area (all condition classes) to be clearly defined as an ecologically sensitive area of detailed maps and spatial data applications supplied to construction contractors.	High – direct impacts minimized, indirect impacts effectively avoided.
	During construction, implement weed hygiene practices including vehicle checks and washdowns as required on vehicles or plant entering the construction site.	High – indirect impacts effectively avoided.
	During construction, undertake monthly weed surveillance monitoring targeting WoNS and Declared weed species, with follow up controls required for identified weed outbreaks. Weed control	High – indirect impacts effectively avoided.

Avoidance / Mitigation Measure	Description	Effectiveness
INTG Management Plan	Specific document intended as a sub-plan of CEMP which details procedures to further avoid as well as minimize direct impacts and mitigate potential indirect impacts to INTG. Including but not limited to: • Maximum speed limit of 40 km per hr on all access tracks, with additional dust suppression measures or reduced speed limit (25 km per hr) on access tracks within 200 m of INTG. • Clearly delineate avoidance areas and ecological no-go zones. • Unexpected finds procedure (i.e. stop work). • Detailed site specific inductions for all staff and contractors related to INTG TEC, its legislative significance, potential impacts and management measures. • Detailed fact sheets at designated locations throughout operations and maintenance facilities and site offices. • Toolbox meetings with INTG highlighted. • Weed control in accordance with minimum disturbance techniques. • Site compound and laydowns sited >200 m from INTG where possible. If unavoidable, extra controls in place to mange indirect impacts.	High - direct impacts minimised. Indirect impacts effectively avoided.
Pre-clearance Checks (PCC)	PCC in all areas of Project Area which contain INTG, with the aim to identify locations in which micro siting may effectively reduce impacts.	Moderate - Allows for micro siting to further minimise impacts and ensures any unexpected finds are reported and managed.
Micro siting infrastructure	Pre-construction micro siting surveys: Prior to commencing construction work (such as, but not limited to, clearing and grubbing and excavation) within Class B and Class C INTG TEC, the head construction contractor will work with specialist advisors (i.e. ecologists) to undertake a micro siting process to micro site (relocate) infrastructure to avoid and/or minimise impacts to Class B and Class C INTG TEC, where possible. No construction works will commence until approval has been provided in accordance with a dedicated the Permitting System.	No net increase in impact to INTG. Micro siting will only be considered if it reduces impact on MNES.
Rehabilitation	In areas of disturbed INTG (any class) or in areas within 200 m of an INTG patch, re-establishment of cleared topsoil will be prioritised, with redistribution and scarification throughout exposed areas to occur within two years after ground disturbance to enable natural regeneration to commence. Areas of temporary disturbance are included in state and federal approvals to ensure that any offsets are above and beyond what is required to achieve a net environmental gain for the TEC.	High – 5.02 ha (58.51%) of disturbed INTG will be rehabilitated following construction.
Operation		
Operational Environmental Management Plan	Management measures enforced to ensure no unforeseen direct or indirect impacts occur to INTG during the operational phase of the GNWF. Includes weed management, speed limits and rehabilitation monitoring.	Ensures direct impacts to INTG during operational works are avoided and indirect impacts are minimised through appropriate management measures.
EPBC Offset	EPBC Offset provides net gain for INTG in the region. Aim to rehabilitate and improve existing areas of INTG and implement formal protections to secure and improve in perpetuity.	Provides measurable conservation gain for INTG.
Monitoring	Areas of temporary clearance will be monitored annually to assess trajectory of rehabilitation and to identify if any triggers for further action (adaptive management) are identified.	High – ensures that rehabilitation of 5.02 ha of temporary impact to INTG (all classes) is on positive trajectory to return to original condition (or better).
Decommissioning		
Reassessment and further surveys	To be developed at time of decommissioning. Likely to include targeted INTG surveys, Significant Impact Assessment (under relevant legislation and guidelines at the time of decommissioning) and approvals, if required.	Follows regulatory process relevant at the time of impact.

Figure 7.5: Design iterations showing avoidance of INTG (all classes)



GNWF

Design iteration

- 27/02/24
- 30/04/24 (referral)
- 20/08/25 (current)

INTG Condition

- Class A
- Class B
- Class C
- Unsurveyed

31669_R00_PrelimDoc_v3 (Figure 7.5 Design iterations showing avoidance of Lomandra grassland (all classes))

umwelt

Data Source: Umwelt (2025), ESRI (2025), DEW (2022), DIT (2022) Neoen (2025)
Date Exported: 30/09/2025 3:14 PM
Created by: sophie.haswell

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GDA2020 MGA Zone 54

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7.15.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Iron-grass Natural Temperate Grassland of South Australia, which has been assessed as known to occur within the Disturbance Footprint and within the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Iron-grass Natural Temperate Grassland of South Australia against the significant impact criteria for Critically Endangered TECs (DotE 2013a) is presented in Table 7.60..

Table 7.60: SIA for INTG TEC, listed as Critically Endangered under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Assessment
Reduce the extent of an ecological community	Yes	No	Likely. Large areas of Iron-grass (Lomandra sp.) have been recorded across the WF, particularly within the central and eastern extent of the WF, and small portions within the OTL. A total area of approximately 1,931.24 ha of Lomandra Grassland (VA6) has been mapped within the GNWF. However, the Disturbance Footprint associated with the Project intersects with only a small portion of this. Approximately 6.14 ha of Class B INTG has been mapped within the Disturbance Footprint, comprised of approximately 2.43 ha of Permanent Disturbance, and 3.72 ha of Temporary Disturbance (Umwelt 2025b). Areas of Temporary Disturbance will be actively regenerated and monitored following clearance required for construction, as detailed in the INTG MP (Umwelt 2025m). Impacts to the INTG TEC as a result of the Disturbance Footprint represents approximately 0.41% of mapped INTG TEC within GNWF, equates to 0.12% of the estimated TEC (~5,000 ha), in the region. Impacts to 8.59 ha of all Classes of INTG, equates to up to 0.02% of the Lomandra Grassland (~50,000 ha) (all condition classes) in the region (Umwelt 2025b). The INTG TEC is known to extend beyond the GNWF Project Area, and thus the proportion of disturbance associated with the Disturbance Footprint is considered to represent a smaller portion of the TEC in the region. Regardless, impacts as a result of the Project result in a reduced EOO of the TEC, however, these areas may be considered to be relatively small compared with the total area mapped within the GNWF (i.e. 0.41%), (i.e. 0.12% of the entire mapped TEC and up to 0.02% of the Lomandra Grassland (all condition classes) mapped in the region.
Fragment or increase fragmentation of an ecological community	Yes	No	Possible. Some fragmentation of the TEC is expected as a result of the Project, principally due to the clearing of vegetation for roads/tracks and WTG siting associated with construction and operation access to the WTGs, and potentially in areas associated with the OTL. Design of the Project has been refined to reduce impacts to the INTG TEC (i.e. Class A and Class B INTG, and provide concessions for lower classified grassland areas), where possible, with the Development Envelope providing allowance for micro siting of infrastructure and further avoidance of the TEC where practicable. Approximately 3.72 ha is considered Temporary Disturbance, which would be actively rehabilitated following construction, initially through topsoil spreading and subsequently, by monitoring to identify triggers for adaptive management. The remaining 2.43 ha is considered Permanent Disturbance. It is possible that impacts as a result of the Project may be considered to fragment or increase fragmentation of an ecological community, however, the TEC is not considered to be fragmented to an extent that genetic flow within or across the TEC would be impacted.
Adversely affect habitat critical to the survival of an ecological community	Yes	No	Possible. As above, approximately 2.43 ha of Permanent Disturbance and 3.72 ha of Temporary Disturbance will occur within the GNWF Project Area, representing approximately 0.41% of the total area of INTG mapped within the GNWF. Whilst the impacts are relatively localised and principally due to the clearing of vegetation for roads/tracks and WTG siting associated with construction and operation access to the WTGs, impacts may be considered to adversely affect habitat critical to the survival of the ecological community, in that approximately 6.14 ha will be disturbed. All areas that meet Condition Class A or Class B criteria are considered habitat critical for the survival of the ecological community (Turner 2012). It is further noted from the conservation advice that from an ecological perspective, remnants of lower condition (Condition Class C) may also be habitat critical to survival of the ecological community, if they adjoin, buffer or connect high integrity remnants, provide habitat critical for functionally important or threatened species, expand the potential habitat available to some species, or have good potential for restoration (Turner 2012). Therefore, it is possible that impacts as a result of the Project may adversely affect habitat critical to the survival of the TEC.
Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels or substantial alteration of surface water drainage patterns	No	No	Unlikely. The Project is not expected to impact abiotic factors, nor impact groundwater levels or substantially alter surface water drainage patterns. Relevant mitigation measures will be included within the CEMP and OEMP, including erosion and sediment controls associated with roads and infrastructure. The Project is not expected to modify or destroy abiotic factors necessary for the TEC survival.
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species	No	No	Unlikely. The Project is not expected to cause a substantial change in the species composition of an occurrence of an ecological community, outside of the clearance of the community within the TEC which has already been noted. Whilst the Project has been designed to reduce impacts to the TEC where possible, it is noted the Pygmy Blue-tongue Lizard (PBTL) is known to occur in association with Lomandra Grasslands (Hutchinson et al. 1994; Souter et al. 2007; Delean et al. 2013 cited in DCCEEW 2023d), and it is anticipated a number individual PBTLs may be impacted upon, principally due to the clearing of vegetation/habitat for roads/tracks and WTG siting associated with construction and operation access to the WTGs within the WF. No INTG Class A or Class B will be impacted within the OTL. The Disturbance Footprint includes approximately 2.43 ha of Permanent Disturbance and 3.72 ha of Temporary Disturbance within the Project Area, representing approximately 0.41% of the total area of INTG mapped in GNWF. Design of the Project has been refined to reduce impacts to the TEC where possible, and further design optimisations may occur, with the Development Envelope providing allowance for micro siting of infrastructure to avoid the TEC where practicable. However, outside of the total Disturbance Footprint of approximately 6.14 ha (of which 3.72 ha is considered Temporary Disturbance), impacts are not expected to cause a decline or loss of a functionally important species in the remainder of the TEC. This includes consideration to the INTG TEC itself, as well as to key listed species such as PBTLs or FRWLs, as mitigation strategies such as micro siting of infrastructure, and allowance for construction buffers in the overall impact assessment (i.e. the areas of Temporary Disturbance described here) are expected to alleviate impacts on remaining INTG TEC.

Significant Impact Criterion	Direct Impact	Indirect Impact	Assessment
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: • Assisting invasive species, that are harmful to the listed ecological community to become established, or • Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit growth of species in the ecological community	No	No	Unlikely. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; EBS 2024a; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline. Therefore, the Project is not expected to cause a substantial reduction in the quality or integrity of an occurrence of an ecological community due to establishment of invasive species that are harmful to the TEC, or due to the mobilisation of fertilisers, herbicides or other chemicals or pollutants which have the potential to kill or inhibit growth of species in the TEC.
Interfere with the recovery of an ecological community.	No	No	Whilst the Project is expected to impact some areas of the INTG TEC, principally due to the clearance of vegetation, impacts as a result of the Project (i.e. 2.43 ha of Permanent Disturbance and 3.72 ha of Temporary Disturbance, representing 0.41% of the mapped INTG within the GNWF) are not expected to be such that they interfere with the recovery of the TEC as a whole. Large portions of the GNWF are currently used for stock grazing, and thus the TEC within this location is unlikely to be on a recovery trajectory with the existing grazing pressures. It is noted the TEC extends beyond the GNREF Project Area and thus the disturbance associated with the GNWF is considered to represent only a portion of the overall TEC in the broader surrounding area and region. As above, approximately 3.72 ha of disturbance is considered Temporary Disturbance, which would be rehabilitated (within 2 years from the time of ground disturbance) once the Project was constructed.
Outcome: Significant residual impacts possible (due to triggering three criterion).			

7.15.3.1 Acceptability of relevant impacts

The National Recovery Plan for INTG TEC lists infrastructure and developments including industrial and urban development, mining and energy infrastructures as a threatening process. The associated risk table and threat abatement options from the Recovery Plan are summarised in Table 7.61 below.

Table 7.61: INTG specific threatening processes and assessment of GNWF

Threatening Process	Associated issues and activities	Risk to ecological community	Threat abatement options	How has Neoen addressed the threat?
5. Infrastructure and developments including industrial and urban development, mining & energy infrastructures	• Housing development including re-zoning and subdivision. • Infrastructure upgrades including for roads and water supplies. • Energy supply infrastructure. • Mining exploration and extraction. • **Wind farm developments** • **New transmission lines** • Road development and borrow pits • **Installation of underground pipes/cables** • Compaction by vehicles	• **Clearance of INTG remnants.** • Loss of remnants due to clearance permitted for fire risk management around existing infrastructure. • **Encroachment of upgraded roads into INTG remnants on roadsides.** • Clearance of INTG remnants for approved mining activity and associated infrastructure development. • **Introduction of weeds on machinery associated with construction and operation.** • **Smothering of remnants by road aggregate.** • **Decline in condition of remnants.**	• Improve spatial definition of INTG remnants to inform development assessments and applications to clear native vegetation.	• Engaged NV accredited consultants to undertake extensive mapping of Lomandra grassland across the GNREF Project Area (~20,000 ha), including condition class assessment of up to 1,931.24 ha of INTG, within area identified in National Recovery Plan as 'targeted survey area'. • Detailed in-field assessments have enabled targeted application of mitigation hierarchy to minimize impacts to INTG wherever possible.
			• Increase awareness of planning authorities, developers and development assessors about INTG and its significance.	• Engaged NV accredited consultants to advise ecological constraints pertaining to the Project Area, in which INTG was identified early in the design phase and subsequently considered as a priority for avoidance in the design refinement process. • The residual impacts to INTG are considered 'unavoidable' due to the nature of the wind farm requiring access roads between WTG which in some instances require widening of existing roads to support construction, or establishment of new roads to provide access. In unavoidable locations, these impacts have been sited to minimize impacts, such as selecting narrow points to cross patches, as far as practicable, considering topographical constraints.
			• Train environmental consultants (and others) in recognition of and condition assessment of INTG.	• Environmental consultants utilized survey methodology outlined in conservation documentation including the National Recovery Plan (Turner 2012) and EPBC Act Policy Statement 3.7 (DEWR 2007).
			• Adopt and enforce weed hygiene strategies during construction and operation phases of infrastructure developments.	Dedicated management plans will address general and specific management actions and monitoring in relation to the INTG including: • INTG Management Plan • Construction Environmental Management Plan • Operational Environmental Management Plan • Flora and Fauna Management Plan • Rehabilitation Management Plan
			• Promote suitable site management practices for development sites.	As above, dedicated management plans will be in place for the life of the Project, leveraging knowledge and experience of key experts in the region. Additionally, any residual impact will be compensated by way of an on-ground EPBC offset to specifically address INTG impacts, as well as more generally at a SEB site which contains INTG TEC, placing remnant patches of INTG under valuable conservation protection. Additionally, as part of the EPBC Offset Strategy, the proponent proposes to address impacts on a more regional scale through connecting with and investigating potential for making monetary contributions which add value and capacity to existing programs in the region, such as those run by the NYLB.

7.16 Mallee Bird Community of the Murray Darling Depression Bioregion – Endangered

This section provides a comprehensive evaluation of the potential impacts on the Mallee Bird Community of the Murray Darling Depression Bioregion (MBC TEC) due to the proposed Project, considering the TECs presence within the Project Area, the regional context of the TEC, the scale of potential impacts, and the mitigation measures to be implemented. Based on these findings, an assessment is made against the EPBC Act Significant Impact Guidelines (Dot 2013a), with a brief discussion of the acceptability of residual impacts.

The MBC TEC is known to occur within the Disturbance Footprint and Development Envelope at the southern end of the OTL (Umwelt 2025b).

7.16.1 Impact Summary

Targeted surveys and desktop assessment found that all mallee vegetation intersecting with the OTL within the MDD Bioregion is considered MBC TEC. Up to 0.76 ha along the OTL is proposed to be directly impacted in the Disturbance Footprint. Impacts are restricted to narrow corridors of mallee vegetation, where stringing or access is required to cross fence lines or roads (Bundey Church Road and Sutherlands Road), and minor widening of an existing farm access track. Direct impacts are likely to be further reduced on-ground during construction through micro siting works.

An overview of the potential impact to Mallee Bird Community by Goyder North Wind Farm is provided in Table 7.62.

Table 7.62: Summary of direct impact to MBC

	Disturbance Footprint Wind Farm (WF) (ha)	Disturbance Footprint Overhead Transmission Line (OTL) (ha)	Disturbance Footprint Total (ha)
Habitat impacted (ha)	Does not occur	0.76	0.76
Habitat quality	N/A	Class A MBC (the highest class) based on species present. However, all vegetation within the Project Area has been subjected to ongoing livestock grazing and historical clearance / thinning and use for firewood. All areas of proposed impact to MBC are in narrow sections of mallee which are already degraded by historical clearance and proximity to existing cleared areas. Generally, the understorey comprises a mix of chenopod shrubs and sparse grasses.	As noted for the OTL.

Source: Umwelt 2025b

Indirect impacts may include disturbance to bird activity during construction, and potential degradation of surrounding Mallee vegetation due to weed incursion or dust deposition. However, a comprehensive CEMP and associated sub plans and an OEMP will effectively avoid these potential indirect impacts.

An overview of the potential direct and indirect impact to Mallee Bird Community by Goyder North Wind Farm is provided in Table 7.63.

Table 7.63: Direct and Indirect impacts to MBC as a result of the GNWF Project

Impact Type	Wind Farm	OTL	Phase	Duration
Direct Impacts				
Habitat loss (permanent) (ha)	0.00	0.44	Construction	Long-term / permanent
Habitat loss (temporary) (ha)	0.00	0.32	Construction	Short to medium-term
indirect impacts				
Unauthorised clearance of MBC outside of DF	MBC TEC does not occur in WF.	Low risk of unauthorized clearance due to specific controls and management measures outlined in CEMP.	Construction	Short-term
Degradation of habitat due to dust	MBC TEC does not occur in WF.	Low risk of habitat degradation due to dust smothering flora and leading to loss of vegetation condition. Managed by specific controls in CEMP.	Construction	Short-term
Noise and vibration disturbance during construction and operation.	MBC TEC does not occur in WF.	Potential disturbance to MBC associated birds near construction areas. Noise from transmission lines during operation is likely to be minimal, as existing powerline infrastructure already occurs in close proximity.	Construction	Short term during construction
Introduction of new weeds to the Project Area,	MBC TEC does not occur in WF.	Low risk or introduction or increase in weeds, through use of contaminated construction material, machinery and vehicles, leading to loss of vegetation condition. Specific controls in CEMP, OEMP, and the Project Area is already subjected to existing weed cover and vehicle traffic on farm tracks.	Construction / Operation	Long-term / Ongoing
Fragmentation	MBC TEC does not occur in WF.	Low risk of division, as all impacted patches are already within mallee fragments, and being crossed in narrow points with existing road infrastructure. Construction area is narrow and linear and will not prevent movement of birds between patches.	Construction / Operation	Long-term / Ongoing

7.16.2 Mitigation Hierarchy Implemented and Proposed to Avoid and Minimise Impacts

Neoen has implemented a range of measures during the planning and design phase to avoid and minimise impacts to MBC TEC. Between the EPBC Referral and EPBC Variation design refinements have resulted in a 67.10% reduction in disturbance to MBC TEC, from 2.31 ha to 0.76 ha. A summary of mitigation measures implemented during each stage of the Project is presented Table 7.64.

Table 7.64: Mitigation Hierarchy implemented at all stages of the Project for MBC TEC

Avoidance / Mitigation Measure	Description	Effectiveness
Pre-construction / design		
Site selection	Original site selection was based on: • the world-class wind resource • proximity to major transport routes and existing grid infrastructure • location on the edge of Goyder's Line in marginal agricultural cropping land which had historically been cleared and utilized for grazing • the rural location with low population density, reducing visual and noise impacts.	High – the Project Area is located on agricultural land which has previously been cleared and has a long history of agricultural use. Intact native vegetation is minimal, and many areas of native grasslands are likely to be derived. The site is degraded from historic use, including presence of weeds, feral animals (and livestock), erosion and fragmentation.
Desktop Assessment, ecological surveys (vegetation and targeted Mallee Bird Community) and ecological constraints / risk mapping	Multiple surveys have been conducted at various points in the Project design and development stage, including: • Early broad mapping of the site vegetation, condition and quality. • Detailed vegetation surveys using BAM to refine mapping and confirm condition, suitable for Native Vegetation Clearance Data Report under SA Legislation. • Targeted MBC ecological community surveys. This approach ensured that all potential MBC was mapped and avoided as much as practicable in the first instance.	High – mapped areas of high value vegetation and determined that mallee vegetation occurring within the MDD portion of the Project Area comprised A Class (high quality) MBC habitat based on the number of dependent and associated bird species present. Vegetation surveys indicated that the habitat quality in the DF was low due to the fragmented and often linear nature of patches. However, all mallee vegetation was considered high-value and informed iterative design process to avoid impacts to this TEC.
Alignment with existing infrastructure	The Project Area has been sited to align wherever practicable with existing cleared areas including roads, infrastructure and cropped land.	High – Neoen has investigated design measures to minimize impacts in unavoidable locations. A total of 65.16 ha of the Disturbance Footprint aligns with existing infrastructure or cleared areas with a further 17.73 ha occurring in exotic grassland, with limited value for MNES, totalling ~82.94 ha (46.25 ha permanent, 36.71 ha temporary). Approximately ~15.45%) of the total impact area occurs in non-native vegetation, including: • 28.85 ha in cropped land • 36.31 ha aligned with existing cleared areas • 17.73 ha in exotic vegetation • 0.05 ha in amenity (i.e. planted) vegetation such as gardens or wind breaks.
Iterative design process	A desktop assessment (EBS Ecology 2023a) and risk assessment (EBS Ecology 2023c) was undertaken to assess a number of OTL options early in the design process. An alternate OTL was assessed via desktop and submitted for consideration with the initial referral, due to uncertainties with securing land for an OTL route with various landholders. The OTL alternate route proposed impacts of up to 31 ha of MBC TEC through a combination of clearance required for the corridor and vegetation maintenance.	High – the least impact option was selected and OTL Alternate removed from the scope of works.
Tower height and placement refinement	Investigation into height and selective placement of OTL towers to reduce requirement for ongoing maintenance of vegetation above 3 m.	High - resulted in a reduction of ongoing impacts to up to 10.52 ha of mallee vegetation, of which some (within MDD) comprised MBC TEC.
Micro siting of OTL infrastructure and alignment	Infrastructure in woodland vegetation has been micro sited to areas of lower tree density, and utilizes existing minor access tracks where available Specifically, micro siting of the alignment was prioritized in areas of MBC TEC in the early stage of development.	High– effectively avoided any high impact clearance in areas of MBC TEC. Comparisons are not available with early designs as these were not progressed.
Non-conventional stringing methods	Removal of stringing corridor in areas of high value MNES habitat and MBC TEC through application of non-conventional stringing methods (i.e. helicopter stringing).	High - Approximately 4.64 ha of MBC avoided through this method (all areas).
Construction		
Construction Environmental Management Plan	A comprehensive document with multiple associated sub-plans which aim to avoid or minimise indirect impacts from construction such as through dust emissions, erosion, altered hydrology and general site matters. Includes measures for spatial data system to minimise the chance of unauthorised or incorrect clearance areas. Specific measures outlined below.	High - Indirect impacts effectively avoided.
	MBC TEC outside of the approved clearance area (all condition classes) to be clearly defined as an ecologically sensitive area of detailed maps and spatial data applications supplied to construction contractors.	High – direct impacts minimized, indirect impacts effectively avoided.
	During construction, implement weed hygiene practices including vehicle checks and washdowns as required on vehicles or plant entering the construction site.	High – indirect impacts effectively avoided.
	During construction, undertake monthly weed surveillance monitoring targeting WoNS and Declared weed species, with follow up controls required for identified weed outbreaks.	High – indirect impacts effectively avoided.
	Areas of TEC will be provided as spatial data and clearly marked on Site Office maps. Start-up meetings will address MBC TEC when work is required to be undertaken within the vicinity of mapped MBC TEC.	High – enables effective application of mitigation measures by construction contractors.
Pre-clearance Checks (PCC)	Pre-clearance Checks and micro siting in all areas of the Project Area will aim to avoid hollow-bearing trees where technically feasible, and slow-fell where unavoidable to prevent injury to fauna.	Moderate – any fauna will be safely removed by accredited wildlife handler prior to construction.

Avoidance / Mitigation Measure	Description	Effectiveness
Micro siting infrastructure	Pre-construction micro siting surveys: Prior to commencing construction work (such as, but not limited to, clearing and grubbing and excavation) in proximity to MBC TEC. The head construction contractor will work with specialist advisors (i.e. ecologists) to undertake a micro siting process to micro site (relocate) infrastructure to avoid and/or minimise impacts to MBC TEC, where possible. No construction works will commence until approval has been provided in accordance with a dedicated the Permitting System.	High – any additional MBC TEC likely to be avoided. No net increase in impact to MBC TEC. Micro siting will only be considered if it reduces impact on MNES.
Rehabilitation	Rehabilitation of temporarily disturbed areas will include topsoil redistribution and weed control. Topsoil redistribution will occur as soon as reasonably practicable. Areas of temporary disturbance are included in state and federal approvals to ensure that any offsets are above and beyond what is required to achieve a net environmental gain for the TEC.	Moderate – 0.32 ha (42.11%) of disturbed MBC TEC will be rehabilitated following construction.
Operation		
Operational Environmental Management Plan	Management measures enforced to ensure no unforeseen direct or indirect impacts occur to MBC TEC during the operational phase of the GNWF. Includes weed management, speed limits and rehabilitation monitoring.	Ensures direct impacts to MBC during operational works are avoided and indirect impacts are minimised through appropriate management measures.
Decommissioning		
Reassessment and further surveys	To be developed at time of decommissioning (if relevant). Likely to include targeted MBC surveys, Significant Impact Assessment (under relevant legislation and guidelines at the time of decommissioning) and approvals, if required.	Follows regulatory process relevant at the time of impact.

7.16.3 Significant Impact Assessment

An SIA was undertaken to assess the significance of potential residual impacts of GNWF on the Mallee Bird Community of the Murray-Darling Depression Bioregion TEC, which has been assessed as known to occur within the Disturbance Footprint and known to occur within the Development Envelope (Umwelt 2025b; Lathwida 2025). The SIA draws upon an extensive catalogue of information available at the time of preparation, and has taken into consideration all expected disturbance activities (i.e. both Temporary Disturbance and Permanent Disturbance) associated with the Project, as outlined previously. The SIA for the Mallee Bird Community of the Murray-Darling Depression Bioregion against the significant impact criteria for Endangered TECs (DotE 2013a) is presented in Table 7.65.

Table 7.65: SIA for MBC TEC, listed as Endangered under the EPBC Act

Significant Impact Criterion	Direct Impact	Indirect Impact	Assessment
Reduce the extent of an ecological community	No	No	Unlikely. An alignment of approximately 9.5 km of the southern extent of the OTL intersects with the MBC mallee vegetation, mapped as VA18. A total of approximately 108.85 ha of potential MBC (MDD bioregion, Block C) has been mapped within the OTL. More broadly across the region, an estimated 645 ha of vegetation mapped as 'mallee woodland' occurs nearby and adjacent to the OTL. The Disturbance Footprint within the MDD portion of the OTL is approximately 0.76 ha, of which 0.44 ha is Permanent Disturbance and 0.32 ha is Temporary Disturbance (Umwelt 2025b). The clearance of 0.76 ha represents approximately 0.64% of the MBC within the OTL and approximately 0.11 % of the mapped 'mallee woodland' within 1 km of the Disturbance Footprint (Umwelt 2025b). Aerial imagery shows potential MBC to be widespread to the north and southeast of the OTL within the MDD. Impacts as a result of the Disturbance Footprint associated with the OTL will require the clearance of approximately 0.76 ha within the MBC, which may be considered to reduce the overall area of the TEC, but not the EOO of the ecological community. The community is considered more widespread locally and regionally, with up to 108.85 ha occurring within OTL and substantially larger areas occurring either adjacent to, or near, the OTL. Whilst this clearance may reduce the overall area of an ecological community, precautionary measures have been implemented during the design process to avoid areas where the TEC occurs as far as possible. The clearance of 0.76 ha, represents approximately 0.64% of the MBC within the OTL, and approximately 0.11% of the mapped 'mallee woodland' in the region, which may be considered to be conservative in terms of the reduction of the ecological community, and which does not reflect a significant reduction in the EOO of the TEC overall.
Fragment or increase fragmentation of an ecological community	No	No	Unlikely. A total of approximately 0.76 ha of clearance will be required for the Project during construction, of which 0.44 ha is Permanent Disturbance and 0.32 ha is Temporary Disturbance (Umwelt 2025b), with the latter area to be rehabilitated at the completion of construction. The design of the Project has been refined so that the Disturbance Footprint has avoided areas of MBC where practicable. What may be considered small pockets of MBC will be impacted within the southern portion of the OLT, primarily through widening of existing tracks. However, this is not expected to fragment the MBC to the extent that listed MBC avian species are precluded from moving between patches of MBC as they occur within the OTL.
Adversely affect habitat critical to the survival of an ecological community	No	No	Unlikely. As above, whilst approximately 0.76 ha of MBC habitat will be impacted upon, principally due to the clearance of vegetation, impacts are not expected to adversely affect habitat critical to the survival of the ecological community. Approximately 0.44 ha of the proposed impact is Permanent Disturbance and 0.32 ha is Temporary Disturbance (Umwelt 2025b), with the latter area to be rehabilitated at the completion of construction. Any individuals from the listed MBC species potentially impacted during the construction phase would be expected to disperse into the surrounding adjacent mallee. Impacts to the Disturbance Footprint associated with OTL would not be expected to adversely affect habitat critical to the broader TEC within and surrounding the OTL.
Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels or substantial alteration of surface water drainage patterns	No	No	Unlikely. The Project is not expected to impact abiotic factors, nor impact groundwater levels or substantially alter surface water drainage patterns. Relevant mitigation measures will be included within the CEMP and OEMP, including erosion and sediment controls associated with roads and infrastructure. The Project is not expected to modify or destroy abiotic factors necessary for the TEC survival. Where practicable, infrastructure associated with the OTL has been sited to avoid difficult terrain. Access tracks have been designed to have a width of 6 m, with the final width of the Disturbance Footprint dictated by the slope across each track. Where possible, existing tracks, including public roads, farmers tracks, or access tracks installed as part of the Goyder South transmission line have been utilised to minimise the requirement for new access tracks. Non-conventional line stringing will be utilised to further reduce impacts to the environment and in sensitive locations, with additional infrastructure such as brake and winch pads, and helicopter pads (Umwelt 2025b). The Project is not expected to modify or destroy abiotic (non-living) factors such as water, nutrients or soil, nor impact groundwater levels or substantially alter surface water drainage patterns
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species	No	No	Unlikely. The Project is not expected to cause a substantial change in the species composition of an occurrence of an ecological community. The Project has been designed to reduce impacts to the TEC where possible, however, it is noted some individual bird species associated with the MBC may be temporarily impacted upon/displaced, principally due to the clearance of vegetation for roads/tracks and OTL siting associated with construction, operation and access to the OTL. Individuals that may be locally impacted would be expected to disperse into the adjacent mallee/MBC during construction activities, and return at the completion of construction activities. Additionally, of the 0.76 ha impacted by the Project, approximately 0.32 ha will be rehabilitated on completion of construction. The Project has been designed to reduce impacts to the MBC where possible, with the Development Envelope providing allowance for micro siting of infrastructure to avoid the TEC where practicable. However, these impacts are not expected to cause a decline or loss of functionally important species to either the MBC or bird species associated with the MBC.
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: • Assisting invasive species, that are harmful to the listed ecological community to become established, or • Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit growth of species in the ecological community	No	No	Unlikely. A network of existing roads and fence lines already occur within the area mapped as potential MBC within the OTL and therefore the area required for the stringing corridor and other associated clearance is unlikely to increase accessibility of invasive species into this already disturbed area. A total of 106 introduced flora species have been recorded across the GNWF, including 14 Declared Weeds (state listed weed species regulated under the LSA Act, and two WoNS (Umwelt 2025b). Invasive fauna species such as house mouse, European Rabbit, European Brown Hare, cats, foxes, deer, goat, and a number of introduced bird species already persist within the landscape (ALA 2025; Umwelt 2025b), thus is it considered unlikely the Project would contribute to the establishment of further pest/invasive species. There are a number of existing roads and tracks within the GNWF Project Area, and with the implementation of the proposed mitigation strategies, the Project is not expected to result in an increase in abundance of invasive species. Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new invasive species as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline. The Project Area is on the boundary of the low-moderate risk Phytophthora area based on annual rainfall measurements (DIT 2022). However, there are no records of Phytophthora within the GNWF, noting most of the WF and the whole of the OTL are within the low threat area (DIT 2022; DEW 2025a). Invasive species and disease management measures would include weed controls during and post construction, waste management, as well as vehicle hygiene practices, so establishment of new weed species or diseases as a result of the Project are considered unlikely. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this threatened species or the species habitat or may cause the species as a whole to decline. A CEMP and OEMP will address mitigation measures to prevent indirect impacts such as weed incursion, erosion and potential altered hydrology, and potential impacts associated with any chemicals used during construction phase. The Project is not expected to cause a substantial reduction in the quality or integrity of an occurrence of an ecological community due to

Significant Impact Criterion	Direct Impact	Indirect Impact	Assessment
			establishment of invasive species that are harmful to the TEC, or due to the mobilisation of fertilisers, herbicides or other chemicals or pollutants which have the potential to kill or inhibit growth of species in the MBC.
Interfere with the recovery of an ecological community.	No	No	Unlikely. The Project is expected to impact approximately 0.76 ha of vegetation within the MBC, principally due to the clearance activities for roads/tracks and OTL siting associated with construction, operation and access to the OTL. However, impacts are not expected to be such that they interfere with the recovery of the TEC, noting that approximately 0.44 ha is Permanent Disturbance and 0.32 ha is Temporary Clearance that will be rehabilitated on completion of construction activities. The Disturbance Footprint is spread across an alignment of approximately 9.5 km within the MBC, and the community is more widespread locally and regionally, with up to 108.85 ha occurring within OTL and substantially larger areas occurring either adjacent to or near the OTL. Exiting impacts such as grazing and minor clearing for firewood result in the recovery of the TEC in the impacted locations being questionable regardless.
Outcome: No significant residual impacts expected for the Mallee Bird Community of the Murray Darling Depression Bioregion.			

7.16.3.1 Acceptability of relevant impacts

An alignment of approximately 9.5 km of the Mallee Bird Community of the Murray Darling Depression Bioregion TEC occurs along the southernmost portion of the OTL. Whilst the Project will impact up to a maximum of 0.76 ha (0.44 ha of Permanent Disturbance and 0.32 ha of Temporary Disturbance) of this TEC, this impact is considered unlikely to result in significant impacts to the TEC nor interfere with the recovery of the TEC.

A Recovery Plan is not required for the MBC of the MDDB TEC, with the SPRAT profile citing priority actions set out in the Approved Conservation Advice are sufficient to prevent extinction and guide recovery (DCCEEW 2025b). The Approved Conservation Advice lists a number of key threatening processes that may be relevant to the TEC, including those summarised in Table 7.66.

Table 7.66: MBC of the BDDB TEC specific threatening processes and assessment of GNWF

Threatening Process	How has Neoen addressed the threat?
Land clearance	• Engaged NV accredited consultants to undertake extensive surveying and mapping of Mallee and Mallee bird specialists across the GNWF Project Area, particularly in relation to the OTL alignment, to determine if and where the Mallee habitats meet the TEC listing criteria. • Detailed in-field assessments to ensure targeted application of the mitigation hierarchy to mimimise impacts to the MBC TEC. • Removal of 'stringing corridor' from the design of the Project, and implementation of helicopter stringing in sensitive environmental locations, to further avoid potential impacts to the MBC TEC.
Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases	• Development of infrastructure for energy generation that is part of the broader project drivers, including: ○ Australia's commitment to reducing greenhouse gas emissions to below 43% of the 2005 levels by 2030, with plans to achieve net zero emissions by 2050 (DCCEEW 2024d). ○ South Australia's goal to achieve 100% net renewables by 2027 (Government of SA 2024).

7.17 Summary of Significant Impact Assessments for all MNES

MNES raised in the PMST and assessed as known to occur, likely to occur, or as possibly occurring within the GNWF were subjected to a significant impact assessment in accordance with the significant impact guidelines 1.1 (DotE 2013a), inclusive of those MNES which were previously considered to possibly occur within the OTL-Alternative transmission line which has since been excluded from the Project design.

All impacts to MNES were considered direct impacts to habitat, with the exception of a single area of approximately 0.20 ha to the south of WTG 017 which is considered an indirect impact (specifically only to PBTL, should the species occur within that discrete area).

Results of the Project's potential interactions with MNES are summarised below in Table 7.67.

Table 7.67: Summary of the SIA for MNES considered relevant to the Project

Ecological MNES	EPBC Act[1]	SIA Outcome	
		WF	OTL
Threatened Ecological Community			
Iron-grass Natural Temperate Grassland of South Australia	CE	Significant residual impacts likely	No significant residual impacts
Mallee Bird Community of the Murray Darling Depression Bioregion	EN	N/A[2]	No significant residual impacts
Threatened flora species			
Acacia spilleriana (Spiller's Wattle)	EN	No significant residual impacts	
Dodonaea subglandulifera (Peep Hill Hop-bush)	EN	No significant residual impacts	
Acacia glandulicarpa (Hairy-pod Wattle)	VU	No significant residual impacts	
Codonocarpus pyramidalis (Slender Bell-fruit, Camel Poison)	VU	No significant residual impacts	
Dodonaea procumbens (Trailing Hop-bush)	VU	No significant residual impacts	
Olearia pannosa subsp. *pannosa* (Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush)	VU	No significant residual impacts	
Senecio megaglossus (Superb Groundsel)	VU	No significant residual impacts	
Threatened fauna species			
Tiliqua adelaidensis (Pygmy Blue-tongue Lizard, Adelaide Blue-tongue Lizard)	EN	Significant residual impacts likely	No significant residual impacts[3]
Melanodryas cucullata cucullata (South-eastern Hooded Robin, Hooded Robin (south-eastern))	EN	No significant residual impacts	
Aphelocephala leucopsis (Southern Whiteface)	VU	No significant residual impacts	
Aprasia pseudopulchella (Flinders Ranges Worm-lizard)	VU	No significant residual impacts	
Neophema chrysostoma (Blue-winged Parrot)	VU	No significant residual impacts	
Stagonopleura guttata (Diamond Firetail)	VU	No significant residual impacts	
Apus pacificus (Fork-tailed Swift)	MM	No significant residual impacts	

[1] EPBC Act Status: Critically Endangered (CE); Endangered (EN), Vulnerable (VU); Migratory Marine (MM).

[2] N/A denotes this TEC or species is considered unlikely to occur in this area.

[3] Where the OTL occurs outside of the overlapping WF Disturbance Footprint.

8 IMPACTS TO NON-ECOLOGICAL MNES

The potential impact of the Project to non-ecological MNES was undertaken in accordance with the Commonwealth's Significant Impact Guidelines 1.1 (DotE 2013a) and is presented in Table 8.1. A separate detailed assessment of the National heritage place; the Australian Cornish Mining Sites: Burra was undertaken by Biosis (2024), and while no significant impacts were triggered for this MNES, recommendations from that report resulted in several WTGs being removed from the Project layout, thereby reducing potential visual impacts on National Heritage values. As such, no non-ecological MNES will be impacted as a result of the Project.

Table 8.1: SIA for Other MNES listed under the EPBC Act

MNES	Direct Impact	Indirect Impact	Assessment
World heritage properties	No	No	**No significant impact.** No World Heritage Properties were identified within the PMST report generated on 21 August 2025 (Appendix A of Att03_GNWF SIA). A review of the World Heritage Properties was undertaken using Australia's World Heritage List (DCCEEW 2025e). It found the nearest World Heritage Site to the Project is the Willandra Lakes Region in NSW, located approximately 325 km to the east of the GNWF Project Area. Due to the distance between the proposed Project and the nearest World Heritage Place, it is considered that there is no potential impact to this MNES. It is noted that the Regional Council of Goyder has a prospective World Heritage Listing within proximity to the GNWF, with the Australian Cornish Mining sites at Burra and Moonta now on the World Heritage Tentative List. Neoen have engaged closely with Council and relevant heritage bodies, and after having reduced the number of WTGs which are included in the GNWF in the most visually impacting areas to this site, it was agreed that possible impacts to the World Heritage Bid location were acceptable (against relevant criteria).
National heritage places	No	No	**No significant impact.** One National Heritage Place was identified during the PMST report generated on 21 August 2025; the Australian Cornish Mining Sites: Burra (Appendix A of Att3_GNWF_SIA, DCCEEW 2025f). Whilst the National Heritage Place site is located in the vicinity of the 'feature area' (the WF and/or OTL), the Project is not located within the National Heritage Listed (NHL) town of Burra, nor will the Project be undertaken within the National Heritage curtilage. The Biosis (2024) Heritage Impact Assessment (HIA) report found that there will be no direct physical impact to the NHL values for the Australian Cornish Mining Sites (Burra) but that there will be an indirect impact on the NHL values, in that there will be a moderate indirect visual impact. Biosis (2024) subsequently provided advice on ways to minimise visual impacts as much as possible on Burra, and as a result of the advice, several WTGs have been removed from the Project layout, which has reduced the potential for visual impacts on the National Heritage values. The HIA determined that the altering of the distant views to the north-east from the decommissioned Burra copper mine site as a result of the proposed project would not

MNES	Direct Impact	Indirect Impact	Assessment
			impact on the understanding of the then-revolutionary mining technology, noting the views from Burra are not specifically cited in the NHL criteria, thus the GNWF would not have a significant impact as defined by the EPBC Act. Neoen are currently investigating the preferred access route to the Barrier Highway to ensure there will be no impact to Heritage Values during the transport of turbines to site utilising existing roads during the Project's construction phase. However, the trees are not identified in the NHL values or the state heritage listing, and there is no reference to cultural plantings or landscape in the listing of the Burra Railway Station Complex (Biosis 2024). While there may be a small visual change in this one location within the whole town (if the tree is removed), it will not impact the understanding or value of the site at either level (Biosis 2024). Further, as the views from Burra are not specifically cited in the NHL criteria, the proposed Goyder North project will not have a significant impact in accordance with criteria set out under EPBC Act. The Biosis (2024) assessment determined that the proposed project will not have a substantive impact on the National Heritage values of the Australian Cornish Mining Sites (Burra). Neoen proposes a minimum setback distance of 3,000 m of WTGs from any National Heritage Areas, to reduce the visual impact on the amenity of the heritage area. Additionally, an exclusion of 100 m is applied to all other infrastructure across the Project Area. This minimum setback has been exceeded, with the final proposed location of the nearest WTG approximately 4 km from the National Heritage area.
Wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)	No	No	**No significant impact.** One Wetland of International Importance (Ramsar Wetland) was identified within the PMST report generated on 21 August 2025; the Coorong, and Lakes Alexandrina and Albert Wetland (Appendix A of Att03_GNWF SIA). The GNWF is approximately 150-200 km in proximity of this Ramsar Wetland (notably the very northwest portion of the Ramsar site 'proximity polygon' (DCCEEW 2025g). The Burra Creek connects to the Murray River near Morgan, however, any potential localised impacts as a result of the Project will be mitigated through the CEMP/OEMP and associated erosion and sediment control measures. Should localised impacts occur it would be expected these would remain within the GNWF Project Area. As a result of the distance between the OTL and the Ramsar wetlands, no impacts to this MNES are predicted related to the Project.
Commonwealth marine areas	No	No	**No significant impact.** No Commonwealth Marine Areas were identified within the PMST report generated on 21 August 2025 (Appendix A of Att03_GNWF_SIA). The nearest Commonwealth Marine Area to the Project is the Murray Marine Park (South-east Network), located approximately 195 km to the south southwest of the GNWF Project Area (inclusive of the OTL) adjacent the Coorong and Lower Lakes (Parks Australia 2025). The Project does not interact with the marine environment in any way and there is considered to be no potential for impacts to this MNES.

MNES	Direct Impact	Indirect Impact	Assessment
The Great Barrier Reef Marine Park	No	No	**No significant impact.** The closest point of the Great Barrier Reef Marine Park is located over 1,600 km north-east of the GNWF (Parks Australia 2025). As a result of the distance between the Project and the Great Barrier Reef Marine Park, it is considered there is no potential impact to this MNES.
Nuclear actions (including uranium mining)	No	No	**No significant impact.** There are no known radiological characteristics associated with the Project that trigger EPBC criteria.
A water resource, in relation to coal seam gas development and large coal mining development	No	No	**No significant impact.** The Project is not directly or indirectly associated with a coal seam gas development or large coal mining development.

9 OFFSETS FOR RESIDUAL IMPACTS

9.1 Summary of Residual Impacts

4. Proposed avoidance, management and mitigation measures

k) Discussion of the likely residual impacts to each relevant threatened species and ecological community after proposed avoidance and/or mitigation measures are taken into account.

This section outlines the potential or likely residual impacts to each relevant threatened species and ecological community after proposed avoidance and/or mitigation measures are taken into account.

Based on the occurrence of MNES within the Project Area, combined with the proposed mitigation measures, the Project is likely to have a residual impact on one TEC and up to four threatened fauna species. There are no direct or indirect residual impacts to threatened flora species.

Table 9.1: Summary of direct and indirect residual impacts

MNES	Residual Direct Impact	Residual Indirect Impact	Significant Impact?
Iron grass Natural Temperate Grassland of South Australia Threatened Ecological Community	6.14 ha of Class B INTG	0.00	Yes
Pygmy Blue-tongue Lizard	368.10 ha of habitat Estimated 206 PBTL (range 192 to 274)	0.20 ha estimated in shadow flicker zone	Yes

9.2 Offset Requirements

5. Proposed offsets

a) The preliminary documentation must include an assessment of the likelihood of residual impacts occurring, after avoidance, mitigation and management measures have been applied. This includes direct impacts such as habitat clearing and indirect impacts such as degradation of retained habitat. Should there be any residual significant impacts on MNES after the avoidance, mitigation and management measures have been applied, provide details of an offset package proposed to be implemented to compensate for the residual impacts of the proposed action.

b) An offset package must include:

i. details of the offset package (this may be in the form of an offset strategy and offset management plan) including how, when and where the offsets will be delivered and managed.

ii. details of how the offset(s) will compensate for the significant residual impacts.

iii. a description of how the offset(s) will ensure the protection, conservation and management of protected matters for the duration of the impact (i.e. should impacts be in perpetuity, the offsets must also be delivered in perpetuity).

iv. a description of how the offset(s) is/are consistent with relevant Commonwealth policies and guidance documents on offsets under the EPBC Act.

v. the anticipated cost (financial and other) of delivery of the offsets(s).

This section addresses the requirement(s) for offsetting residual impacts to MNES due to impacts associated with the development and operation of the Project.

As impacts to INTG TEC and PBTL cannot be fully avoided or mitigated, INTG and PBTL offsets are proposed to compensate for all significant residual impacts. At this stage, a broad strategy for addressing the required offsets is proposed as negotiations regarding securing offset land parcels are finalised; the EPBC 2024/09929 Goyder North Wind Farm EPBC Offset Strategy (Umwelt 2025n, Att14_GNWF EPBC Offset Strategy). Final Offset Management Plans will be provided to DCCEEW once available for final approval.

A summary of the proposed approach for INTG and PBTL offsets is provided in the sections below. For full details, refer to Att14_GNWF EPBC Offset Strategy (Umwelt 2025n).

9.2.1 Protection Mechanism for EPBC Offsets

Neoen propose to execute Heritage Agreement(s), in accordance with the South Australian *Native Vegetation Act 1991* (NV Act), over the INTG and/ or PBTL TEC Offset Area(s), which will provide protection in perpetuity. The Native Vegetation Branch within the SA Department for Environment and Water (DEW) manages the implementation of Heritage Agreements.

A Heritage Agreement is a conservation area on private land, which is subject to the NV Act, established by agreement (or contract) between a landowner and the (SA) Minister for Climate, Environment and Water. Agreements are ongoing or perpetual and are binding on future landowners. Even if the property is sold or ownership is transferred, the conservation status of the land under agreement will continue. Native plants and animals within the specified Heritage Agreement area must be protected from the time the agreement is made. It will be the responsibility of the landowner to conduct weed and feral animal control and they must abide by relevant legislation such as the *Landscape South Australia Act 2019*. If an activity could adversely impact native flora and fauna in a Heritage Agreement area, then the Minister for Climate, Environment and Water will need to grant approval before it can be performed. In addition to this, the planting of vegetation, regardless of whether it is native or exotic, requires Ministerial approval. The Minister for Climate, Environment and Water is likely to grant approval if an activity is to provide a net benefit for the conservation of the area.

A Heritage Agreement will not preclude livestock (such as sheep) grazing from occurring within an Offset Area, as for both INTG and PBTL, managed grazing is known to be beneficial to improve condition of the habitat in a landscape where natural processes are diminished. However, it is likely that implementation of Offset Management Plan(s), which includes specific grazing management measures such as limiting livestock to sheep and excluding cattle, as well as limiting grazing rates and timeframes, will be a condition of approval / execution of the Heritage Agreement. Best practice management measures will be incorporated into the management plan, based on the available literature and consultation with relevant stakeholders with expertise in the region.

9.3 PBTL Offset Strategy

The PBTL Offset Strategy is provided here as Att14_GNWF EPBC Offset Strategy and includes details regarding the broad strategy for achieving the PBTL offset requirements. An Offset Management Plan would be developed once the offset locations have been finalised and secured by Neoen. Costs associated with achieving the offset will be presented in the Offset Management Plan once the offset parcel(s) and final offset proposal has been confirmed, and thus, specific management requirements are known.

9.3.1 Statement of Expected Outcomes

The expected outcomes for the PBTL Offset(s) are:

- Formal protection of the PBTL Offset Area for the duration of the action. However, protection is likely to be in perpetuity if the PBTL Offset Area is protected via a Heritage Agreement.
- Management of the PBTL Offset Area in accordance with a site specific PBTL Offset Management Plan (PBTL OMP), for the duration of the action in order to:
    - create, maintain and improve (where possible) the condition/quality of the PBTL Offset Area (with the start quality yet to be determined); and
    - increase the PBTL population(s) within the PBTL Offset Area (where possible).
- Monitor habitat condition and PBTL population numbers within the PBTL Offset Area

9.3.2 Description of the Offset

PBTL Offsets can be difficult to achieve due to a genuine scarcity of available potential on ground offset sites. Achieving a nature-positive gain at any given site is difficult because PBTL typically occurs on already degraded land used for agriculture, which does not substantially benefit from formal protections. In the case of land that appears suitable but does not contain an existing population of PBTL, the challenge lies in the unknown reasons for its absence and thus potential presence of pressures which may render it unsuitable for achieving a nature-positive gain.

The PBTL Offset Strategy proposes options which together present a viable pathway to securing an offset for the PBTL, with a focus on habitat restoration, land management, and population monitoring to support the species' conservation. Neoen is also exploring opportunities to incentivise GNWF involved landholders to enhance the carrying capacity of existing PBTL habitat on their properties, however this is likely to be in addition to the abovementioned options and whether or not this could contribute to a portion of the EPBC Offset for residual impacts would need to be determined with DCCEEW.

The final selected option for PBTL offsets is likely to include a combination of options to achieve the best outcome and final EPBC Offset for PBTL. The PBTL Offset Strategy is summarised in the following sections.

9.3.2.1 Protection and Improvement of Known and Likely Habitat

The primary option under consideration for the PBTL Offset Strategy focuses on the protection and improvement of existing known and likely habitats for the PBTL, in alignment with the Environmental Offsets Policy under the EPBC Act (DSEWPaC 2012a). This approach involves purchasing parcels of land or establishing agreements with landholders to secure portions of land under Heritage Agreement. By doing so, the aim would be to improve existing habitat for the protected matter through proactive land management and habitat enhancements, with a gain expected to be achieved immediately, through protection, and in the longer term, via management.

Management actions under this approach will depend on the conditions present at the site, however, are likely to include grazing management to improve grassland conditions, habitat improvement such as the installation of artificial burrows, and PBTL translocation if areas are found to have low current density of PBTL. These measures seek to expand the available suitable habitat for PBTL and increase the carrying capacity of such areas. Other actions may include introduced predator control measures.

Land secured for the Offset may include parcels with minor portions which have historically been used for cropping where a focus on grassland restoration would occur, pending agreement with DCCEEW and the PBTL Recovery Team. The aim would be to improve connectivity between existing populations, increase the area of potential habitat available to PBTL and improve understanding of habitat restoration techniques for this MNES, in order to establish a net environmental gain.

Several strong options are currently under further investigation, within GNWF and the immediately surrounding land parcels, in areas known to contain or be directly connected to known PBTL populations. Together these parcels would seek to increase the area under active management and increase the protected area of this known populations. By securing and managing this land, Neoen can enhance the habitat quality and ensure the species' long-term survival. The approach aims to:

- Improve existing land management practices which currently pose a potential threat to the survival of the species (agriculture).
- Create a larger network of protected areas that support the PBTL species thereby contributing to the overall conservation efforts and biodiversity of the region.
- Improve the carrying capacity of a portion of the GNWF Project Area which is not subject to direct or indirect impacts from the proposed project, thereby, improving outcomes for the local population.

Other parcels of land under consideration do not occur directly within the vicinity of the Project Area, and thus, would not protect the population impacted by the Project, except in the case of translocation. However, the aims would otherwise be like the abovementioned, such as improving existing land management, formal protection of an area to be managed for the species benefit, and improvement of the carrying capacity of the local population (whether existing or introduced).

One area under consideration includes a property which has been purchased for the purpose of establishing a Significant Environmental Benefit (SEB) Area (required to offset impacts to native vegetation in accordance with the SA Native Vegetation Act 1991) located to the north of GNWF at Mount Bryan East (Figure 3.5). Further surveys are underway to confirm the presence of PBTL at the site(s) and its suitability

for inclusion in the EPBC Offset package. Use of parts of the SEB Area for the PBTL Offset, if found to be suitable, will overlap with common activities such as feral animal control and weed control undertaken across the entire SEB Area. However, PBTL specific management actions, including the installation of artificial burrows, would only be undertaken within the PBTL Offset. As such, the PBTL Offset would be considered to be in addition to the SEB Area.

9.3.2.2 Research Component (10%)

As part of the EPBC Offset plan for the PBTL, a dedicated research component will be established, forming nominally 10% of the overall offset in accordance with the EPBC Offset Policy, but potentially up to 20 to 30% of the overall offset. The final research contribution will be determined as definition increases around the offset opportunities and will be determined in consultation with DCCEEW and the PBTL Recovery Team.

This research initiative will be conducted in partnership with Flinders University, focusing on the relocation success of PBTL. The research aims to gather scientifically robust data to investigate the viability of the relocation as a mitigation method to reduce impacts to PBTL. Possible research questions include the survivorship of relocated individuals, their behaviour following relocation (such as dispersal patterns), the impact on local genetics, and the influence of relocation methods (e.g., soft or hard release). A separate, detailed research plan will be developed to guide this component, ensuring transparency, effectiveness, and alignment with best practice offset principles.

Additional research may be introduced, in consultation with DCCEEW and the PBTL Recovery Team to research potential methods for and time to success of establishing suitable habitat for PBTL on land which has been historically cropped and is therefore currently unsuitable for PBTL to occupy. This option would only be developed if a parcel or parcels of land secured for the SEB or EPBC PBTL Offset contained minor areas historically cropped land, and the restoration of which, would improve connectivity of existing populations. Neoen understands that restoration of cropped areas into potentially suitable habitat, presents a high-risk option for an offset, however, views the idea as a significant opportunity to further research into the species, with the outcome to guide potential future net gain of PBTL habitat.

Neoen will also explore the potential for a portion of the research component to support or enhance outcomes of existing programs focused on PBTL conservation in the region, such as those managed by the NYLB if this meets the satisfaction of DCCEEW and the PBTL Recovery Team.

Whilst not part of the GNWF Offset Strategy, Neoen is also investigating the opportunity to accommodate an existing research project, currently underway at Goyder South Wind Farm, to include a Before After Impact Control element to the study of indirect impacts such as shadow flicker, noise, and vibration on PBTL populations.

9.3.3 Assessment of the Proposed PBTL Offset Against the EPBC Offset Policy

The proposed Offset for the Project will be developed and implemented in accordance with the EPBC Environmental Offsets Policy (DSEWPaC 2012) and the associated Offsets Assessment Guide.

The Environmental Offsets Policy provides overarching principles that are to be applied in determining the suitability of offsets. These, together with further guidance provided by the DCCEEW, have been considered in the development of the Offset Strategy for the Project, as described in Table 9.2.

Table 9.2: Offset Principles outlined within the EPBC Offsets Policy and comments on how the proposed PBTL Offset is consistent with them

Offset Principle	Comments on How the Proposed Offset is Consistent with the Offset Principle
Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action.	The EPBC Offsets Assessment Guide has been used to calculate an estimate of the direct offset area required for the maximum disturbance that may occur under the proposed layout, in order to compensate for any adverse impacts to PBTL and provide a measurable conservation gain. The implementation of the PBTL Offset Area is expected to achieve an overall conservation outcome that as a minimum maintains a population of PBTLs within the PBTL Offset Area. A PBTL OMP will be specifically developed to ensure the effective management of the PBTL Offset Area, ensuring its continued suitability as habitat for PBTLs. Installation of artificial PBTL burrows together with active management of the PBTL Offset Area, will ensure that the quality of habitat within the PBTL Offset Area will be maintained.
Suitable offsets must be built around direct offsets but may include other compensatory measures.	The PBTL Offset is most likely to be a direct, on-ground offset. Where possible, the PBTL Offset will address key priority actions for PBTL outlined in the PBTL Recovery Plan (Duffy et al. 2012) by assisting in improving the long-term viability of PBTLs in the PBTL Offset Area. In particular, the PBTL Offset will contribute to the following specific objectives from the PBTL Recovery Plan: • Protect existing PBTL populations and habitat. • Maintain, enhance and increase the area and quality of suitable habitat for PBTL at known populations. • Monitor populations to evaluate the effectiveness of management and detect trends which may require a management response. The PBTL Offset will address key priority actions outlined for the PBTL in the approved *Conservation Advice for* Tiliqua adelaidensis *(pygmy blue-tongue lizard)* (DCCEEW 2023d) as well as the *Threat abatement plan for predation by feral cats 2024* (DCCEEW 2024c). Tenure The current land tenure of the proposed PBTL Offset Area is expected to be freehold. It is also expected to remain to be freehold into the future. The Project Owner (Neoen) will enter into a legal agreement with the land manager (property owner) to manage the proposed PBTL Offset Area. Additionally, nominally 10% (and potentially up to 20-30%) of the Offset may be in the form of a Research into the effectiveness of relocation as a mitigation strategy for PBTL. Per the Offset Policy criteria, the research would be conducted by Flinders University, and focus on key ecological questions around PBTL relocation, survivorship, dispersal and genetics, as well as inform best practice translocation methodology for the species. An additional portion of this compensatory offset may include supplementing funding to existing programs, such as those currently being managed by the NYLB, to increase the reach, effectiveness and duration of those regional programs.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter.	The proposed PBTL Offset is considered to be in proportion to the level of statutory protection that applies to PBTL, as the Offsets Assessment Guide was used to calculate an estimate of the direct offset area required for the maximum disturbance that may occur under the proposed layout (368.10 ha).
Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter.	A number of different considerations outlined in the EPBC Offsets Policy have been taken into account and entered into the Offset Assessment Guide (where appropriate), including: • level of statutory protection to PBTL (Endangered) • specific attributes of PBTL habitat being impacted by the infrastructure footprint = 368.10 ha with a quality score of 6 (scale 0-10) • quality or importance of the PBTL habitat being impacted with regard to PBTL ongoing viability (6 out of 10) • permanent or temporary nature of the residual impacts (operational life of the GNWF Project is expected to be approximately 25-30 years. • level of threat (risk of loss) that the proposed offset site is under (which is considered to be a low to moderate risk of loss without offset measures in place) • time it will take the proposed offset (PBTL Offset Area) to yield a conservation gain for PBTLs (time until ecological benefit of up to 10 years) • risk of conservation gain not being realised (which is considered to be a low 2% as confidence in result is considered to be 90%). Therefore, the proposed direct offset (PBTL Offset Area) is considered to be proportionate to the size and scale of the residual impacts on PBTLs arising from the action.
Suitable offsets must effectively account for and manage the risks of the offset not succeeding.	The proposed PBTL Offset Area will be implemented and managed in accordance with a PBTL OMP, which includes a monitoring program which will identify potential risks (such as a decrease in PBTL population(s) and/or PBTL habitat condition), as well as associated contingency measures for the successful management of the proposed PBTL Offset Area. The PBTL OMP will involve an adaptive management approach where monitoring will measure progress and allow for timely identification of any changes required to management measures (for example the grazing regime), which will help to ensure that the PBTL Offset Area is successful. Up to 90 % of the proposed PBTL Offset is proposed as a direct offset (i.e., the on-ground PBTL Offset Area), which is considered by the EPBC Offsets Policy to present a lower risk than compensatory measures, as they are more likely to result in a conservation gain. Furthermore, the proposed PBTL Offset is proposed to be implemented as soon as possible after commencement of the action, which is also considered to reduce the risk profile of the offset through providing a conservation gain at an earlier point in time.
Suitable offsets must be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs.	The GNWF Project is required to achieve a SEB in accordance with the SA *Native Vegetation Act 1991*, for clearance of native vegetation. Neoen has purchased land at Mount Bryan East for the required SEB. One of the options for the potential PBTL Offset includes the use of this land, if a population of PBTL is determined to currently or have historically occurred there. However, PBTL specific management actions, including the installation of artificial burrows, will only be undertaken within the PBTL Offset. As such, the PBTL Offset is in addition to the SEB offset. No other environmental schemes or programs, for example stewardship funding from a program are currently applicable to the land parcel(s) proposed to be used for the PBTL Offset. Where compensatory measures are proposed, such as contributions to existing programs (including research programs), the additional funding would aim to expand the timing and / or scope of existing programs and thus be additional to what is already being proposed by that program. Therefore, the EPBC Offset will be additional to what is already required and/or determined by SA law or planning regulations (other offset requirements).

Offset Principle	Comments on How the Proposed Offset is Consistent with the Offset Principle
Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable.	Implementation of the proposed PBTL Offset Area is considered to be a highly efficient, effective, timely, transparent, scientifically robust and reasonable offset for the following reasons: • The time until ecological benefit is 10 years, as while the PBTL Offset Area is proposed to be implemented as soon as possible after upon commencement of the action and the legal agreement will immediately secure the future management of the PBTL Offset Area, for the conservation of PBTLs, it may take up to 10 years for ecological benefit to be achieved. • The risk of loss (with offset) is only 0 % as the PBTL Offset Area is proposed to be protected in perpetuity via execution of a Heritage Agreement; and the PBTL Offset Area will be actively managed in accordance with the PBTL OMP. • Monitoring of the PBTL Offset Area, in accordance with the PBTL OMP, will provide scientifically robust data which will be used to identify any changes required to management measures (for example the grazing regime). • Monitoring reports will be provided to the Department and may also be uploaded to the GNWF Project's website for public viewing (desensitised) if appropriate.
Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	The PBTL OMP, including the PBTL Offset Area Monitoring Program, will clearly outline the following: • the management responsibilities between the Project Owner and the land manager, as well as an ecological consultancy; • the ecological indicators to be monitored and a proposed monitoring methodology to audit the implementation of the management actions and identify any changes to management actions that might be required; and • the reporting responsibilities, which include submission of a monitoring report to the Department. All environmental reporting and records will be available for auditing by the Department if required.

Source: Adapted from the EPBC Offsets Policy (DSEWPaC 2012).

9.4 INTG Offset Strategy

The INTG Offset Strategy is provided here as Att14_GNWF EPBC Offset Strategy and includes details regarding the broad strategy for achieving the INTG offset requirements. An Offset Management Plan would be developed once the offset locations have been finalised and secured by Neoen. Costs associated with achieving the offset will be presented in the Offset Management Plan once the offset parcel(s) and final offset proposal has been confirmed, and thus, specific management requirements are known.

9.4.1 Statement of Expected Outcomes

The expected outcomes for the INTG Offset are:

- Formal protection of the INTG Offset Area for the duration of the action. However, protection is likely to be in perpetuity as the INTG Offset Area is proposed to be protected via a Heritage Agreement.
- Management of the INTG TEC Offset Area in accordance with the INTG Offset Management Plan (INTG OMP) for the duration of the action to maintain and increase (where possible) the condition/quality of the INTG Offset Area (with the start quality yet to be determined).

9.4.2 Description of the Offset

Neoen propose to use an existing patch or patches of Class C INTG at GNWF to establish and implement a direct offset in the form of an on-ground INTG Offset Area, protected in perpetuity via a Heritage Agreement, to offset residual significant impacts and achieve a measurable conservation gain for INTG TEC. There are six patches of Class C INTG within the GNWF Project Area which are being considered for the proposed INTG Offset, having been determined the most suitable to achieve a conservation gain. If a patch (or patches) of INTG within the Project Area cannot be used for the INTG Offset, or these patches do not contain enough INTG for the entire INTG Offset, Neoen will investigate the potential to use a patch or patches of INTG located within the surrounding region, or other patches identified within the GNWF Project Area.

Neoen is pursuing opportunities to contribute to the INTG Offset as an additional compensatory measure through financial contributions to already established local or regional programs aimed at enhancing the health and resilience of INTG. This approach would likely form part of a compensatory measure, nominally 10% of the overall INTG Offset obligation rather than a direct offset. The percentage contribution would be formalised following determination of the on-ground site and purported management costs.

Note that INTG Offset to fulfill EPBC offset obligations will be in addition to Lomandra grassland offset obligations required under SEB obligations, and also in addition to Neoen's proposed rehabilitation of temporarily cleared area for which offsets will also be accounted for.

Further details of the options under consideration are presented in Att14_GNWF EPBC Offset Strategy, Section 4.2 (Umwelt 2025n).

9.4.3 Assessment of the Proposed INTG Offset Against the EPBC Offset Policy

This INTG EPBC Offset Strategy has been prepared in accordance with the EPBC Offsets Policy (DSEWPaC 2012). A review of the proposed INTG TEC Offset against the eight overarching Offset Principles has been undertaken and is presented in Table 9.3.

Table 9.3: Offset Principles outlined within the EPBC Offsets Policy and comments on how the proposed INTG Offset is consistent with them

Offset Principle	Comments on how the Proposed INTG Offset is Consistent with the Offset Principle
Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action.	The EPBC Offsets Assessment Guide has been used to calculate an estimate of the direct offset area required for the maximum disturbance that may occur under the proposed layout, in order to compensate for any adverse impacts to INTG and provide a measurable conservation gain. The calculation will be reviewed and updated as the proposed Offset is determined. Implementation of the INTG Offset Area is expected to achieve an overall conservation outcome that improves the condition of INTG within the INTG Offset Area. An INTG OMP will be specifically developed to ensure the effective management of the INTG Offset Area. Active management of the INTG Offset Area, in accordance with the INTG OMP will ensure that the quality of INTG within the Offset Area will improve upon current conditions.
Suitable offsets must be built around direct offsets but may include other compensatory measures.	The proposed INTG offset has a significant on ground component, with a maximum of 10% (or otherwise negotiated) compensatory component in the form of research or funding of existing programs, to achieve ecological gains at a more regional scale, outside of the direct offset area. The total amount (i.e. 90-100%) of the required INTG Offset will be achieved via the establishment and implementation of a direct offset in the form of an on-ground INTG Offset Area. The INTG Offset will address key priority actions for INTG outlined in the INTG TEC Recovery Plan (Turner 2012). In particular, the proposed INTG Offset contributes to the following specific objectives of the INTG TEC Recovery Plan (Turner 2012): • To maintain or improve the condition of remnant INTG. • To increase the area of INTG secured and managed for conservation. • No threat abatement plan has been identified as relevant for INTG. **Tenure** Neoen propose to execute a Heritage Agreement, in accordance with the South Australian *Native Vegetation Act 1991*, over the INTG Offset Area, which will provide protection in perpetuity. Neoen will enter into a legal agreement with the landowners to manage the proposed INTG Offset Area for the duration of the GNWF Project's operation.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter.	The proposed offset is considered to be in proportion to the level of statutory protection that applies to INTG, as the Offsets Assessment Guide was used to calculate an estimate of the direct offset area required for the maximum disturbance that may occur under the proposed infrastructure layout (6.14 ha).
Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter.	A number of different considerations outlined in the EPBC Offsets Policy have been taken into account and entered into the Offset Assessment Guide (where appropriate), including: • Level of statutory protection to INTG (Critically Endangered). • Specific attributes of INTG being impacted by the Disturbance Footprint: 6.14 ha of Class B INTG with a quality score of 6 (out of 10). • Quality or importance of the INTG being impacted with regard to INTG ongoing viability (6 out of 10). • Permanent or temporary nature of the residual impacts (operational life of the GNWF Project is expected to be approximately 25-30 years. • Level of threat (risk of loss) that the proposed offset site is under (which is considered to be a low to moderate risk of loss without offset measures in place). • Time it will take the proposed offset (INTG Offset Area) to yield a conservation gain for INTG (time until ecological benefit of up to 10 years). • Risk of conservation gain not being realised (which is considered to be a low 2% as confidence in result is considered to be 90%). Therefore, the proposed direct offset (INTG Offset Area) is considered to be proportionate to the size and scale of the residual impacts on INTG arising from the action.
Suitable offsets must effectively account for and manage the risks of the offset not succeeding.	The proposed INTG Offset Area will be implemented and managed in accordance with an INTG OMP (Section 2.5.7), which includes a monitoring program which will identify potential risks (such as a decrease in INTG condition), as well as associated contingency measures for the successful management of the proposed INTG Offset Area. The INTG OMP will involve an adaptive management approach where monitoring will measure progress and allow for timely identification of any changes required to management measures (for example the grazing regime), which will help to ensure that the INTG Offset Area is successful. Up to100% of the proposed INTG Offset is a direct offset (i.e. the on-ground INTG Offset Area), which is considered by the EPBC Offsets Policy to present a lower risk than compensatory measures, as it is more likely to result in a conservation gain. Furthermore, the proposed INTG Offset is proposed to be finalised with a legally binding agreement in place with the landowner prior to construction commencing and established and implemented as soon as possible after the commencement of the action, which is also considered to reduce the risk profile of the offset through providing a conservation gain at an earlier point in time.
Suitable offsets must be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs.	No other environmental schemes or programs, for example stewardship funding from a program such as Stronger Country or Caring for our Country are currently applicable to the land parcel(s) proposed to be used for the proposed direct INTG Offset. Therefore, the INTG Offset will be additional to what is already required and/or determined by SA law or planning regulations (other offset requirements).
Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable.	Implementation of the proposed INTG Offset Area is considered to be a highly efficient, effective, timely, transparent, scientifically robust and reasonable offset for the following reasons: • Although ecological benefit will commence when the INTG Offset Area is proposed to be implemented (as soon as possible after the commencement of the action), time until ecological benefit has been conservatively nominated as 10 years, as it may take up to 10 years for ecological benefit associated with management actions to be achieved. • The risk of loss (with offset) is only 0% as the INTG Offset Area is proposed to be protected in perpetuity via execution of a Heritage Agreement; and the INTG Offset Area will be actively managed in accordance with the INTG OMP. • Monitoring the INTG Offset Area, in accordance with the INTG OMP, will provide scientifically robust data which will be used to identify any changes required to management measures (for example the grazing regime). • Monitoring reports will be provided to DCCEEW and may also be uploaded to the GNWF Project's website for public viewing (desensitised) if appropriate.

Offset Principle	Comments on how the Proposed INTG Offset is Consistent with the Offset Principle
Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	The INTG OMP will include a monitoring program, which clearly outlines the following: • The management responsibilities between Neoen and the landowners, as well as an ecological consultancy. • The ecological indicators to be monitored and a proposed monitoring methodology to audit the implementation of the management actions and identify any changes to management actions that might be required. • The reporting responsibilities, which include submission of a monitoring report to DCCEEW. All environmental reporting and records will be available for auditing by DCCEEW if required.

9.5 Offset Management Plan(s)

The expected outcomes for the INTG EPBC Offset, will be achieved via implementation of specific management aspects and associated management actions documented in the respective PBTL and INTG OMPs, which will focus on:

For PBTL:

- Management of grazing regime, in accordance with the Best Practice Management Guidelines (Schofield 2006), and expert advice.
- Installation of artificial PBTL burrows to increase carrying capacity of Offset Area.
- Site rehabilitation and/or revegetation (if appropriate).
- Weed and pest animal control.

For INTG:

- Management of livestock and grazing regime based on best practice methods in consultation with experts
- Weed control of perennial grass, herbaceous and woody weeds (dependent on site selected)
- Pest/exotic animal control (i.e. pest herbivores such as rabbits and goats)
- Fire prevention activities
- Revegetation to increase native species diversity, where appropriate.

More specific detail on these management aspects will be provided in the OMPs and best practice management actions based on the most current knowledge, will be developed in consultation with relevant experts.

The OMPs will include a monitoring program, typically of a 10-year duration, depending on outcomes, to determine if the expected outcomes are being achieved or progressing to being achieved. To ensure the expected outcomes are being achieved, an adaptive management approach will be adopted. This approach requires regular monitoring and review of the Plan, allowing for review and corrective action of management strategies and monitoring program if required. This also allows for extension of the monitoring program if Offset outcomes have not been achieved.

A collaborative monitoring and reporting approach involving the Land Manager, Project Owner (Neoen) and a suitably qualified and experienced ecological consultancy will be implemented as outlined below, to enable an adaptive management approach. The approach will include:

- Activity record sheet and grazing record sheet: to be completed by land manager and provided to the Project Owner on an agreed timeframe.
- Effective monitoring program to be implemented by Project Owner and carried out by an independent, suitably qualified and experienced ecological consultancy, to audit the implementation of the management actions and quantify and assess changes brought about by the management actions.

A detailed monitoring methodology, including description of ecological indicators and desired / undesired trends will be included in the relevant OMPs.

9.6 EPBC Offset Risk Assessment

The EPBC Offset Strategy has identified and considered any risks that may prevent achievement of the expected environmental outcomes for the INTG and PBTL Offset. The risk assessment:

- identifies events and threats that will, may, or are likely to impact the achievement of the expected environmental outcomes
- assesses threat levels both before (initial risk rating) and after (residual risk rating) risk mitigation strategies are applied
- identifies appropriate risk mitigation strategies, with trigger criteria for corrective actions should risks eventuate.

In summary, the risks identified in Section 4.11 of the EPBC Offset Strategy (Umwelt 2025n) include:

- Climate change: prolonged unfavourable weather conditions resulting in reduced INTG condition or PBTL habitat quality.
- Sale of property: landowner sells property containing the Offset, resulting in a loss of knowledge and threatening the achievement of environmental outcomes.
- Inadequate implementation of the OMP(s): either through provision of insufficient resources (time or money) or insufficient knowledge or experience to undertake the proposed management actions effectively.
- Decrease in the condition of the Offset(s): observed during monitoring, with unknown causes and therefore uncertain adaptive management approach.
- Significant decrease in PBTL population (at PBTL Offset): beyond natural fluctuations with unknown cause.

Mitigation strategies and corrective actions are presented for each identified risk which aim to prevent the occurrence or reduce the uncertainty of the risk, including legally binding arrangements and strong monitoring, to enable early detection of risk event.

10 SOCIAL AND ECONOMIC MATTERS

This section addresses the following section from the RFI:

7. Social and Economic Matters

a) Consideration of economic and social matters must include details of any public consultation activities undertaken, and the outcomes.

b) Details of any consultation with indigenous stakeholders including:

i. Provide evidence of Native Title and land tenure holders

ii. Give further evidence of effective engagement with First Nations people and communities with regards to the interim engaging with first nations people and communities on assessments and approvals under EPBC Act (interim guidance).

c) Any monitoring programs to monitor ongoing changes to economic and social characteristics potentially affected by the proposed action

d) Projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies.

e) Employment opportunities expected to be generated by the project at each phase of the proposed action.

f) benefits to the local and wider community as a result of the proposed action.

10.1 Public Consultation

10.1.1 Community Engagement Activity

Neoen is a long-term owner-operator within the Mid North Regional Council of Goyder area and has formed long-term partnerships with communities through previous associated Projects in the region, namely Goyder South Wind Farm. Engagement has been targeted at different stakeholder groups and has/will continue to be undertaken in accordance with Neoen's Community Engagement Plan (see Att04_Community Engagement Plan).

Initial engagement for Goyder North Wind Farm occurred throughout 2022 and 2023, whereby consultation was undertaken primarily as an aide to the engagement for the Goyder South Wind Farm Project which entered construction in 2022. GNREF was earmarked as a future stage of development at all Goyder South Wind Farm events and community days. Following the first phase of community engagement on the Project, Neoen took the time to gather the feedback and adjust the design of its second phase of community engagement.

Intensive engagement occurred across 2023 and 2024, where community consultation was conceptualised as involving three stakeholder groups being immediate neighbours, the wider community and business community.

All neighbours within 6 km of a proposed turbine location were contacted via a flyer and phone (where possible). The majority were engaged in a face-to-face meeting with the Project Manager. The Project, its timeline, potential impacts and the Neighbour Benefit Scheme were all introduced, and any concerns noted. No high or medium concerns were identified by the neighbours, yet visual impact, impact on heritage places and accommodation were noted as a low level of concern.

Regarding community-wide consultation, a locally based Community Liaison Officer (CLO) has been working in the Goyder communities since 2018, connecting community members and landholders with the Project Manager throughout development and construction of Neoen's projects. A Community Office was established in Burra in 2019 to support community and stakeholder engagement for Goyder South. The office continues to be a local base for engagement of stakeholders for Goyder North Wind Farm. The Community Office is generally staffed 2-3 days per week to enable community members to drop in and ask questions. A community open day was held in October 2023 prior to the submission of the Development Application. This was advertised via the Council Facebook page, local media outlet and flyers around the town. The main concerns identified by the community were visual impact and impact on heritage places. An additional Goyder North specific community open day was held in March 2025 around the time of the Native Vegetation Clearance Application submission so that the Project team was able to answer any questions from the community on environmental impacts. The main concerns from the community remained centred around visual impact, though impact to PBTLs was also raised as a general concern.

Businesses are regularly consulted as the Goyder South Project continues its construction phase and Neoen team members frequent their premises. No concerns have been identified by local businesses.

Neoen and specialist teams are consulting with key State Agencies and local advisory boards to understand their expectations in relation to the provision of information as part of approval processes including the Department for Environment and Water (DEW) Native Vegetation Council and Heritage SA, additionally the Department for Energy and Mining (DEM) and both the NYLB and the MRLB. Neoen acknowledges that the State Heritage Agency does not have any formal role in the planning assessment process for this application as the Project does not trigger a referral. Nevertheless, as a courtesy, Neoen have kept the Department informed of the Project and the approach taken to relevant State Heritage Places which has been to avoid impacts as much as possible.

In order to record, manage and track our interactions with different community stakeholder groups over time we establish a project-specific Stakeholder Register during the Feasibility stage. Neoen uses a stakeholder engagement software tool called Simply Stakeholders which provides detailed records of our interactions with stakeholders. It links to surveys and registers on the project website and project staff's Outlook email service to facilitate the automate data capture. The Stakeholder Register has varying levels of access, for example during construction and operation it will be accessible to key staff with stakeholder communication responsibilities.

10.1.2 Summary of Concerns and Responses

Some residents expressed concerns around the impact to visual amenity of the area. Neoen has deliberately setback turbines from ridgelines that were closer to the town to reduce this impact. The planning system policy indicates that a 2.9 km setback from the Burra Township boundary is appropriate, however, following discussions, Neoen increased the setback from the town centre from an initial 4 km to almost 6 km to minimise any visual impacts. Neoen have completed extensive visual impact studies (see Att05_Visual Impact Assessment) and have removed further turbines from specific viewpoints. While Neoen acknowledge that there is a residual visual impact, the aim has been to balance the perceived

negative impacts with positive impacts from the Neighbour Benefit Scheme and the Community Benefit Fund.

Some residents and the Regional Council of Goyder expressed concerns over the impact to existing National Heritage places and the Council's prospective World Heritage bid. Neoen has engaged closely and consistently with the Council and relevant heritage bodies on this topic including through the engagement of expert heritage advisors (both representing Neoen and the Council independently) (see Att07_Heritage Impact Assessment). After reducing the quantity of turbines in the most visual areas it was agreed that the possible impact to heritage places and the world heritage bid was acceptable (or not considered significant, as assessed against criterion in Section 8, Table 8.1).

10.1.3 Summary of Perceived Benefits

While many of the conversations with neighbours and the wider community focused on the concerns with the proposed wind farm, there was also considerable positivity within the range of views expressed. Across neighbours, community and local business, these included employment opportunities, the Community Benefit Fund and the Neighbour Benefit Scheme. Additionally, key topics of support from the wider community included:

- Support for sustainable, clean energy generation for future generations;
- Reduction of greenhouse gases to help mitigate climate chance and its impacts;
- The potential for lower energy bills over time as renewable energy becomes more prominent in the grid;
- Opportunity for substantial and on-going positive economic development;
- Local employment and business opportunities (generating more customers and cash flow);
- Local educational and training opportunities such as school engagement or partnerships with training programs in renewable energy or trades;
- Funds for community groups (improving financial viability and program delivery);
- Investment in local projects and infrastructure; and
- Attracting more people and families to the area (supporting schools and local businesses).

Additionally, renewable energy projects provide local landholders with the opportunity to diversify their income, supporting the financial sustainability of local farms. This is especially prominent in light of the prolonged drought conditions currently impacting agricultural productivity in South Australia.

10.1.4 Complaints Management Process

Neoen has developed a comprehensive complaint management process in accordance with Australian/New Zealand Standard Guidelines and recommendations from the Australian Energy Infrastructure Commissioner (AEIC) publications, documented in the Community Engagement Plan. As mentioned, Neoen is also a recent signatory to the CEC Best Practice Charter.

Community members can raise inquiries, concerns, or complaints verbally (in person or by phone) or in writing (via email or the project website). Contact details for submitting complaints and an outline of this process are made publicly available on the project's website and during community consultations before and during construction.

While inquiries and concerns are addressed and logged in the stakeholder register, formal complaints follow a structured procedure:

1. Receive and register:
    - Once received we collect a standardised information, including the complainant's name, address, a unique reference number, and details of the complaint (date, time, and conditions). This information is recorded in the project's Complaints Register.
2. Acknowledgment:
    - Acknowledgment includes a summary of the complaint, the investigation approach, and the estimated resolution timeframe. If required, it also includes the opportunity to clarify issues relating to the complaint or a request for further information.
    - Non-urgent complaints are acknowledged within three business days and urgent complaints within 24 hours.
3. Investigation and Response:
    - The Project Manager is responsible for ensuring all complaints are investigated and all reasonable attempts at resolution are made. Accurate records of the investigation are maintained including meetings, discussions and activities.
    - After investigating the complaint, Neoen communicates the findings and proposed resolution to the complainant.
4. Closing the complaint:
    - If the complaint is resolved, it is formally closed with written confirmation issued to the complainant. If the complainant is dissatisfied, a review by a senior manager ensures the process has been properly followed.
    - If the issue remains unresolved, Neoen refers the complainant to the local council and/or the AEIC for third-party support. The contact details for these resources are visible on all of our websites.
5. Recording and registering the complaint:
    - When a complaint is closed, the Complaints Register is updated with details of the investigation process, proposed resolution, its acceptance and implementation, the complainant's satisfaction, and the reason for closure.

The broader GNREF includes some 30 different landholders, some of which were also involved in the Goyder South Project. They have all indicated their support for involvement in the project and the positive impact of the project on the community. The vast majority of the land required for GNWF has been secured through option to lease or option to grant easement contracts with the landholders. A summary of land tenure information relevant to the Project is provided in Att16_Land Tenure.

10.2 Indigenous Stakeholder Consultation

The relevant Traditional Owners for the Goyder area are the Ngadjuri Nation and the First People of the River Murray & Mallee Region (FPRMMR#2), whose traditional lands include the proposed Project land and who also have a native title determination/application over parts of this land.

Neoen has worked with the Ngadjuri Nation Aboriginal Corporation (NNAC) for close to a decade, including through the Hornsdale and Goyder South projects. NNAC's input was instrumental in infrastructure placement for Goyder South, helping shape the current layout under construction, and this collaborative relationship has continued through the development of GNWF. Engagement has focused on two key areas:

1. Avoidance and preservation of cultural heritage values, and
2. Delivery of broad benefit-sharing, including commitments to Aboriginal training and employment.

Neoen has maintained regular dialogue, including regular on-country all day workshops with NNAC to share project updates, discuss project design, discuss project offsets and NNAC's potential involvement, develop the Cultural Heritage Management Plan (CHMP), develop appropriate benefit sharing options and ensure culturally informed decision-making. An initial ethnographic site survey conducted in 2024 shaped the preliminary layout of GNWF infrastructure, identifying culturally sensitive areas to avoid or minimise impacts, recognising the broader cultural significance of the region, and guiding Neoen in respecting key topographic features. Exclusion zones have been established, and findings have informed design refinements to ensure no ground disturbance in these areas. NNAC were also engaged to conduct site surveys prior to geotechnical investigations in January and February 2025 to ensure protection of cultural heritage. A physical archaeological survey governed by an agreed Heritage Survey Framework is scheduled for September and October 2025 to further support design finalisation and construction planning. Neoen are also exploring opportunities with NNAC for potential land ownership and capacity building in land management for ecological restoration and conservation purposes, based on ambitions expressed by the community to have more opportunity to access country. These options are being explored with a third party accredited provider in land restoration and management.

In addition, Neoen has also been holding regular on-country workshops throughout 2025 with the Board representing FPRMMR#2, the Mid-Murray & Mallee Aboriginal Corporation (MMAC), whose native title claim overlaps part of the OTL route and Bundey Substation. A physical ethnographic survey was completed in late 2024 to inform preliminary layout and design, and the workshops has been focused on sharing project information, supporting cultural heritage protection including through development of a CHMP, and exploring benefit-sharing opportunities. Findings from the ethnographic survey found the potential for heritage impacts to be low risk. A physical archaeological survey, governed by an Aboriginal

Heritage Protection Agreement, is being scheduled in September 2025 to support design finalisation and construction planning.

Further, under the guidance of AGD-AAR Neoen are seeking authorisation from the Minister for Aboriginal Affairs under section 21 and section 23 of the *Aboriginal Heritage Act 1988* (SA) (AHA). Community consultation initiated by AGD-AAR is being undertaken in September 2025 with approval anticipated in early 2025.

As part of the on-country workshops held regularly by Neoen with NNAC and MMAC, CHMPs are being developed in close collaboration with the respective corporations, Native Title consent is being obtained in the case of NNAC and benefit-sharing outcomes are being agreed. Objectives from this consultation aims to see agreed protocols for appropriate management of Aboriginal heritage, including discovery protocols, in accordance with best practice and the preference for the respective parties. Broad management actions will be incorporated into the CEMP, and a separate CHMP (sub-plan) will be developed for the Project Area prior to construction commencing, which will outline a site discovery procedure that aligns with AGD-AAR's Aboriginal Heritage Discovery Protocols and Heritage Impact Procedures.

Regarding benefit-sharing, Neoen has committed to (and is in the process of delivering) ambitious benefit sharing programs with Ngadjuri Nation for Goyder South, though details are confidential and can only be disclosed with Ngadjuri Nation's consent. Benefit-sharing agreements pertaining to Goyder North are still being developed but will be of proportionate scale relative to the overlapping project area, in the case of MMAC.

As with Goyder South, Neoen is also committed to introducing (and fulfilling) best-practice First Nations participation targets for employment and supply chain in accordance with Neoen's Indigenous Participation Plan.

DCCEEW provides a guideline, *Interim Engaging with First Nations People and Communities on Assessments and Approvals under the EPBC Act* (DCCEEW 2023f), for proponents on best practice engagement. Table 10.1 outlines how Neoen has adopted this guidance for its engagement with Ngadjuri and First Peoples of the River Murray and Mallee Region.

Table 10.1: How Neoen has addressed the interim guidance for engaging with First Nations People and Communities and Assessments and Approvals under the EPBC Act.

Method	Description	How has this been addressed by Neoen
Ensuring cultural safety	Value experiences, perspectives and cultures of First Nations people and communities and consider a range of engagement options.	Neoen have a full-time First Nations Engagement Advisor who plays a central role in guiding respectful, culturally informed interactions and ensure that First Nations voices are embedded in decision-making processes. Meetings to date have been held in culturally safe locations, with flexibility to accommodate community preferences. This approach honours the significance of place, protocol, and relationships with Traditional Owners.

Method	Description	How has this been addressed by Neoen
Building and maintaining trust	Acting with integrity to and engaging with First Nations peoples and communities in a way that is respectful, ethical, honest and fair and that supports informed decision making including in situations where there may be differences of opinion, challenge or dispute.	Neoen has maintained transparent and open communication with First Nations representatives, shared draft documents for input, and ensured follow-up feedback is provided. Formal agreements (e.g. Heritage Survey Agreements and Aboriginal Heritage Protection Agreements) have been and continue to be negotiated collaboratively and respectively.
Engaging early and often	Engagement should be commenced as early in the project planning phase as possible, and to be initiated by, and funded by the proponent. Proponents should allow time for First Nations peoples and communities to decide if they wish to become involved in a proposal. The time and location of meetings, along with any special measures required, should be on the advice and at the discretion of First Nations peoples and communities	Neoen commenced early engagement with both the NNAC and MMAC prior to formal referrals or approval submissions, with initial contact and relationship-building occurring in the feasibility phase. Time and venue of meetings has been coordinated in consultation with each respective Board, and Neoen has covered all reasonable costs of participation.
Negotiating suitable timeframes	Timeframes imposed by the EPBC Act may not reflect the cultural obligations, community dynamics or decision-making process of Frist Nations peoples and communities. Thus proponents should respect that time may be needed in providing input or reaching a consensus, and should contact the department if additional time for engagement beyond the statutory timeframes is required.	Neoen has built in flexibility to engagement schedules to allow time for community discussions and internal decision-making. Where needed, Neoen has accommodated delays or extensions to align with cultural priorities or community availability.
Negotiating suitable submission formats	Submission formats may not reflect the needs or technological availability of First Nations people sand communities and thus may wish to provide comments in oral form, which should be facilitated and may require interpreters. Proponents should contact the department of it is indicated that submission may include sensitive information that should not be made available to the public.	Neoen has accepted feedback in oral form where preferred, documented discussions appropriately with consent, and ensured that any culturally sensitive information is handled in a confidential and respectful manner, including the exclusion of such details from publicly accessible documents where necessary.

10.3 Monitoring Programs for Economic and Social Characteristics

To ensure that the predicted social and economic outcomes of the project are realised, and to identify and address any emerging or unintended impacts, Neoen will implement a structured monitoring program throughout the life of the project. This program is intended to provide transparency, support adaptive management, and maintain positive relationships with stakeholders and the wider community.

Key objectives of the monitoring programs include:

- Assessing whether expected benefits (e.g. employment, local business engagement) are being delivered;
- Identifying any adverse social or economic impacts that may arise during construction or operations;
- Ensuring accountability in the delivery of commitments such as the Community Benefit Fund or Neighbour Benefit Scheme; and
- Providing a feedback loop to support continuous improvement in community engagement and project management.

Key monitoring indicators include:

- The number and proportion of local and regional workers employed during construction and operations, including First Nations participation
- The number and value of contracts awarded to local businesses and suppliers, including Frist Nations businesses and suppliers;
- Participation in training, upskilling, or education initiatives linked to the project;
- Changes in local population trends, housing demand, or service pressure (if applicable);
- Distribution and impact of Community Benefit Fund grants and Neighbour Benefit Scheme;
- Community sentiment and perceptions, tracked through regular surveys or engagement forums;
- Landholder satisfaction for those hosting project infrastructure; and
- Feedback from local councils, community groups, and Traditional Owner organisations.

Monitoring methods include:

- Regular check-ins and feedback from host and neighbouring landowners during pre-construction and construction, and into operations.
- Regular check-ins with the Regional Council of Goyder which inform community attitude towards the project throughout different stages of development, construction and operation.
- Periodic check-ins with local residents, businesses, and stakeholders.
- On-going data collection and reporting from Neoen's contractors including key statistics such as Local Employment rates and rates of First Nations Employment in line with the targets set out for the project.
- Collaboration with community reference groups.
- Evaluation reports from grant recipients and benefit scheme administrators.
- Regular reviews of complaints, enquiries, and feedback received through engagement channels.

Where monitoring identifies underperformance or emerging concerns, Neoen will implement adaptive management processes and work with affected stakeholders to adjust its strategies. This may include refining local employment targets, modifying engagement approaches, increasing transparency of benefit distribution, or responding to community feedback through targeted initiatives.

The monitoring program will be reviewed periodically to ensure it remains relevant and effective throughout the life of the Project.

10.3.1 Outcomes of On-going Monitoring at Goyder South

During the construction of Goyder South, Neoen's team implemented a range of proactive and collaborative measures to minimise impacts and maximise benefits for the local community. Collectively, these measures demonstrate how adaptive management can respond to community concerns, support local economies, and strengthen positive social outcomes throughout the life of a project. Some examples of collaboration with the community to drive better social and economic outcomes are provided below.

- Early consultation with nearby neighbours identified four council roads at risk of disruption from dust and heavy traffic. In direct response, these roads were designated as "no-go" zones for all construction vehicles, including those used for daily commuting to and from the worksite, thereby protecting local amenity and safety.
- Accommodation planning was tailored to the region's tourism patterns, with contractors instructed to avoid booking rooms during peak tourism periods for non-essential work, ensuring that beds remained available for visitors during key events such as the Clare Valley Gourmet Weekend, which is critical for local businesses.
- Close engagement with local schools resulted in a review of bus timetables to avoid conflicts with construction traffic, as well as the relocation of a bus stop from a busy intersection to a safer location, improving student safety.
- Regular coordination with the local supermarket ensured that shift and work hours were aligned with store operations, enabling the business to meet the needs of the workforce while capitalising on increased demand.
- Detailed accommodation availability data and a local job seeker database were provided to contractors, actively encouraging local employment and reducing the need for external labour.

10.4 Cost-Benefit Analysis

The following provides a summary of a range of both potential costs and benefits and consideration of the scale of these matters. There are a number of costs and benefits that are relevant at a State-level, described in Table 10.2.

Table 10.2: Summary of potential short- and long-term costs and benefits at a regional level

Regional or State Impact Timeframes	Costs	Benefits
Short-term (3 to 5 years)	• Impact of construction traffic on State and regional roads. • Energy is required upfront for raw material extraction, manufacturing, transport, installation, and commissioning of turbines, with this embodied energy typically recovered within six months of operation (Pimentel et al. 2024).	• Placing downward pressure on electricity prices in South Australia. • Supporting a transition to clean energy generation. • Advanced knowledge on the impacts and survivorship of Endangered Pygmy Blue-tongue Lizard in relation to Wind Farm Developments, and how to best support their co-occurrence with clean energy development in a wind resource hotspot in South Australia. • After the short energy payback period, turbines generate net-positive, zero-emission electricity for the remainder of their 20–30 year lifespan, delivering high energy yield for minimal ongoing input and maximising the project's environmental and economic returns. • The opportunity for local employment and training, with the Project providing jobs for trades, machine operators, and support roles, as well as apprentices. • Increased demand for goods and services from local suppliers, boosting regional businesses. • Workforce upskilling in specialised renewable energy construction techniques.
Long-term (30 years)	• Change to visual character of landscape.	• Protection and ecological enhancement of proposed native vegetation offset areas, previously used for agricultural purposes, with significant gains in habitat quality for a range of species expected in the short and longer term. • Futureproofing rural communities of the Mid-North against climate change. • Providing dual source of income to landowners over an extended area. • As above, turbines generate net-positive, zero-emission electricity for the remainder of their lifespan.

Table 10.3 summarises the potential short- and long-term costs and benefits a more localised scale, such as local townships (Burra, Eudunda, Hallett, Clare, Jamestown), and landowners.

Table 10.3: Summary of potential short- and long-term costs and benefits at a localised level

Localised impact timeframes	Costs	Benefits
Short-term (3 to 5 years)	• Construction traffic in the region • Pressure on local accommodation • Pressure on local road infrastructure • Localised noise and dust impacts • Loss of native vegetation • Potential for spike in property rental prices*	• Increased local economic activity • Increased demand for local services • Increased demand for local accommodation • Increased demand for local employment • Development of skills for local workers • Community benefit scheme (community based projects)
Long-term (30 years)	• Visual change to already modified landscape may affect tourism or local identity • Potential for change (positive or negative) in property prices • Potential for change in land use as some agricultural activities may need to be adapted around infrastructure	• Provision of on-ground SEB near Caroona Creek CP, and along Dares Hill Tourist Drive • Host landowner payments (supporting rural land uses and drought proofing) • Neighbour benefit payments • Community Benefit Scheme (community based projects) • Potential use of site for school programs or renewable energy tourism • On-going local jobs for maintenance, monitoring, and operational roles • Established access tracks associated with the wind farm enable a quicker and more effective response to fire incidents

* Neoen are aware of the pressures that large infrastructure projects can put on local accommodation and so are working with the local Goyder Regional Council to develop an accommodation camp to relieve some of this pressure. Neoen also note that filling empty rental properties, both within the township and located more rurally, can provide a significant economic benefit to those not directly involved with the project, hence contributing to the short-term economic stability of those in the area.

Neoen have been working with the local community for an extended period of time, initiated by development of the Goyder South Wind Farm Stage 1A and 1B. As a result of this project Neoen has commenced a number of initiatives to avoid, manage or mitigate the short-term costs, which will be extended for the life of the GNWF project, including:

- Numerous management plans to address risks associated with construction (including traffic, public safety, noise, dust, habitat and cultural heritage).
- Agreements with Council and the Stage Road Agency on road infrastructure up-grades, maintenance, and post construction rehabilitation.
- A commitment to undertaking local on-ground SEB and Offsets (for State Based Native Vegetation Assessment and EPBC).
- Early planning for accommodation and working with Council to support more accommodation options for workers.
- Monitoring of impacts and commitment to mitigation for matters such as Electromagnetic Interference (EMI), Flora and Fauna and Noise.

In response to pressure on local housing and tourism accommodation availability experienced during Goyder South construction phase, Neoen have been proactively collaborating with the local Council to assist them in achieving their longer term aspirations for expanding tourism accommodation in the future in developing an accommodation camp on the outskirts of Burra. This option will still enable flow on benefits for local businesses during the construction phase without overwhelming housing supply and negatively impacting on local tourism and other industries. It also means capital expenditure to establish long term infrastructure that will benefit the community long term, can be shared.

Neoen, in accordance with their Sustainability Framework, have committed to a number of local, project specific initiatives to support and enhance the potential benefits of the Project for the local community. These have been initiated for GSWF and will be carried through to GNWF, including:

- Establishing a working relationship with Council to plan and manage both short and long term local economic benefits (services, accommodation, employment, training).
- The appointment of a procurement officer for the GNWF project and the same procurement team will address all supplier engagements for the construction and operational phase of the Project.
- An Expression of Interest (EOI) form provided on the Project's website (https://goyderenergy.com.au/workwithus/) which has been available since the early stages of the Project's development. Incoming EOIs and queries are being registered.
- The Project information, tender packages, prequalification requirements and registration details will be published on the Goyder website and the Contractor web site; and
- The establishment of an internal target for 5% of the total labour hours to be undertaken by apprentices, cadets and/or trainees and through other workforce training, and
- The establishment of a commitment (through the Capacity Investment Scheme) of 5% of total Balance of Plant (BoP) labour hours to be undertaken by Aboriginal and Torres Strait Islander peoples.

A CSIRO study (Hall et al. 2012) cited by the Clean Energy Council, indicated important factors such as income from locating wind farms on properties, less subdivision of land, community benefits from community funding and increased local business. Anecdotally, this impact has been observed in Jamestown which is the nearest support centre for the Hornsdale Wind Farm and located approximately 65 km to the north-east of Burra. Both Jamestown and Burra are relatively remote and are located in regions with relatively low population density. The local economic activity associated with significant infrastructure construction represents an important opportunity to up-grade local business and service offerings (including food, accommodation, and social activities). Following construction, these investments and up-grades subsequently offer an opportunity to transition to a stronger tourism-based economy.

The Regional Council of Goyder have developed a series of strategies intended to maximise local opportunities to take advantage of this economic stimulus including supporting local business access to contracts, sourcing accommodation and, in the longer term, a strategic focus on developing tourism opportunities.

The key longer-term impact for the local area relates to the on-going visual impact of the project. This aspect has been assessed by the State Commission Assessment Panel (SCAP), whose findings that the setbacks incorporated into the layout will minimise direct visual impacts validated the granting of Planning Consent. However, it is acknowledged that the project, as with other forms of infrastructure, will have an on-going visual presence, which for some people, will be perceived as a negative impact.

10.5 Employment Opportunities

The Project is expected to deliver significant employment benefits to the region, particularly during the construction phase. At peak construction, the Project will support approximately 500 full-time equivalent (FTE) positions across a range of roles including civil works, electrical and mechanical installation, logistics, and site management. While Neoen will not directly employ the construction workforce, it will require the appointed Engineering, Procurement and Construction (EPC) contractor to prioritise the engagement of local contractors, suppliers, and workforce where feasible. This approach is intended to maximise regional economic benefits and build local capability in the renewable energy sector.

To formalise its commitment to local participation, Neoen has set a number of employment and procurement targets for the construction phase. These include:

- A target of 50% of Balance of Plant (BoP) work hours to be undertaken by workers from the local region or state;
- A target of at least 5% of total work hours to be allocated to training positions, learning works, and apprenticeships;
- A target of 30% of the BoP supply contract spend with businesses based in the region or state (>$200 million for a 600 MW wind farm); and
- A broader Australian and New Zealand supply chain target of 50% of BoP and 5% of wind turbine supply and installation contract value.

In addition to these targets, Neoen has committed to delivering tangible outcomes for First Nations communities, including:

- A target of at least 5% of BoP work hours to be undertaken by First Nations people; and
- At least $1.35 million in procurement spend with First Nations-owned businesses.

During operations, the project will create approximately 20 full-time roles, responsible for site operations, maintenance, and asset management. These roles will be ongoing over the life of the project and may be supported by local service providers engaged for routine and specialist maintenance activities.

Neoen is committed to working collaboratively with the EPC contractor, local councils, industry bodies, and First Nations Boards and employment service providers to meet these targets and ensure the project delivers long-term, inclusive benefits to the region.

10.6 Community Benefits

Benefit-sharing with the local community is integral to Neoen's approach to community engagement. To ensure both short and long-term benefits flow through to the community as a result of the establishment and operation of the Project, Neoen will establish a Community Benefit Sharing Program (CBSP).

The CBSP will be designed to deliver benefits to key stakeholders in the community in a way that aims to meet their needs and aspirations. Specifically, Neoen's objectives are to:

- Deliver significant and meaningful improvements to the community surrounding the GNREF
- Ensure a wide range of different stakeholder groups benefit from GNREF
- Empower the community to shape the design and implementation of the different initiatives
- Build support for renewable energy in the Goyder Region.

The majority of initiative will be delivered during the construction and operation phase. In alignment with Neoen's organisational vision, it is important that the benefit be a true benefit and be tailored to meet each distinct communities' need. From an industry best practice standpoint, several principals are seen as being helpful guides in developing or assessing a benefit sharing strategy. These being outlined in Table 10.4.

Table 10.4: Benefit sharing principles

Principle	Description
Appropriate	• Benefit sharing is tailored to local circumstances, culture and need, helping to address (not create or reinforce) patterns of conflict or inequality. It makes sense and is appropriate in the local context. • The local community provides guidance on how benefit sharing can create a positive, lasting and meaningful impact for their local community. We work with the local community to develop specific benefit sharing strategies that respond to their unique local context and need
Flexible	• Benefit sharing is an aspect of project development that will greatly benefit from being open to community involvement, influence and negotiation. Having the flexibility to respond to local context will ensure benefit sharing has been best and biggest local impact. • The lifecycle of renewable energy developments is significant (25 years or more), a lot can change in a community during that period of time. Therefore, it is important to build in flexibility so that benefit sharing can evolve as the community needs do.
Transparent	• The benefit sharing strategy is transparently available to the community and provides a clear and understandable rationale for the various programs and who is eligible to participate. • Benefits are freely given for the sake of sharing the proceeds of the project and building relationships. Benefit sharing must not come with conditions of silence or consent.
Integrated	• Benefit sharing seeks to integrate the project owner/operators as valuable community members by building links and relationships into the community. • The benefit sharing approach is integrated with Neoen's broader approach to community engagement and project development.
Mutually Beneficial	• The approach is designed to bring mutual benefit to local communities and the project.

Principle	Description
Proportionate	• The benefits are perceived as being proportionate to the scale of the project and the level of change or disturbance experienced by local people. Given community members living closest to projects experience greater impacts, they should receive a proportionate benefit.
Strategic	• Create a positive legacy in the local community. Look to bring ongoing and lasting value to the local area. Integrate benefit sharing opportunities with broader strategies by building local partnerships.
Accountable	• Systems and processes are deployed to ensure the credibility and reputation of the benefit sharing program. • Benefit sharing is managed in a transparent and accountable way that involves local stakeholders.

10.6.1 Scope of the CBSP

The CBSP does not include:

- Required activities under our permit conditions such as for visual screening
- Host landowner payments
- The value of local jobs and investment

10.6.2 Benefit-Sharing Mechanisms

Neoen have several mechanisms to enable benefits to be shared in a meaningful and equitable way. Community input will be sought into these options (and any other local ideas) at the community information sessions held in the lead up to planning permit submission and via the community feedback survey.

The final program is likely be a mix of benefit-sharing mechanisms from the following list:

- Near Neighbour payments or similar
- Community Benefit Fund
- Investment to address specific local issue – e.g. poor mobile coverage, electricity blackouts

10.6.3 Community Response and Ideas

The negotiable options are analysed in the following sections in regards to:

- Identified need in the community
- Summary of mechanism
- Scope for community to shape this initiative

10.6.3.1 Neighbour Benefit Scheme

As those in closest proximity to the project (but who are not involved as host landowners) Neoen acknowledge that near neighbours are a special stakeholder group, who will be particularly impacted during the construction and operations phase.

Neoen commit to ensuring that all near neighbours have the opportunity to meet with one of the project team face-to-face before the first public community information session. Compliance related activities such as vegetative screening will be rolled out in accordance with the permit. There will be no voiding of the ability for a neighbour to make a complaint or claim compliance activities such as tree-planting should they take up the proposed agreement.

Neoen will implement a Neighbour Benefit Scheme, similar to that carried out for Goyder South, providing near neighbours with an annual payment throughout the operations phase of the project.

Summary of mechanism

The strategy for neighbours is to firstly sign neighbour deeds and then to sign up for neighbour payments once construction commences or is completed. The neighbour benefit scheme is based on the number of turbines within 6 km of the neighbour's dwellings. The nearer the turbines are, the higher the amount. Neoen have adopted a minimum payment of $1,000 annually regardless of the number of turbines, with a cap of $5,000 annually.

The neighbour benefit scheme is applicable to dwelling outside of townships in rural zoned areas. For example, Burra residents are not included, as the town will benefit significantly from the Community Benefit Fund.

10.6.3.2 Community Benefit Fund

Summary of mechanism

Neoen will commit $70,000 per 100MW of wind generation and $12,000 per 100MW of battery infrastructure constructed per year to the Community Benefit Fund to be administered and distributed in a similar method to that agreed for Goyder South Wind Farm. The Goyder South Community Benefit Fund is comprised of three funding allocations:

1. Community Benefit Fund (annual): an open and competitive grants process to sponsor smaller initiatives, run in partnership with Community Enterprise Foundation, the philanthropic arm of Bendigo and Adelaide Bank;
2. Major Projects Fund (every three years): funding for multi-year projects to support long term development in the region; and
3. Future Fund (annual): investment into a trust to fund the benefit-sharing program beyond the project's lifetime.

The first round of grant funding for Goyder South's annual Community Benefit Fund was recently carried out and funded projects were required to align with at least one of our community growth focus areas developed in collaboration with the community:

1. Environmental sustainability – participation, development and uptake of new technologies
2. Health and wellbeing – contributing to improved health and wellbeing outcomes
3. Strong connected communities – community participation, involvement and connection
4. Sport and recreation – increasing participation in sport and recreational activities
5. Arts and culture – fostering creativity and connection in the community through art and culture
6. Skills, education and training – addressing local skills development and educational opportunities

As this program is in its infancy, Neoen will continue to assess the success of the program structure and determine whether a similar delivery model should be implemented for Goyder North.

Scope for community to shape this initiative

The community is being consulted through workshops with key stakeholders to help shape the deployment of this initiative. For the Goyder South Community Benefit Fund, workshops were held with both Council representatives and community members from various local areas to identify the issues and values most important to them. A Local Advisory Committee has been established with constituents from various towns and areas, along with representatives from Neoen and the Regional Council of Goyder. The Committee plays a critical role in ensuring that grants are allocated in line with the priorities, values and needs of the local community.

As implementation of the Goyder South CBSP progresses, Neoen will continue to gather feedback on the benefit-sharing processes and refine the model as needed to ensure it remains responsive and effective.

11 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

This section addresses the following section from the RFI:

> **8. Ecologically sustainable development**
>
> Provide a description of the proposed action in relation to the following principles of ecologically sustainable development, as defined in the EPBC Act:
>
> a) Provide a discussion of the long-term and short-term economic, environmental, social and equitable considerations.
>
> b) Consider the principles of inter-generational equity which states that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
>
> c) Consider the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.
>
> d) Consider improved valuation, pricing and incentive mechanisms should be promoted.

Section 3A of the EPBC Act defines the principles of ESD as:

a. decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.

b. if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

c. Inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

d. the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.

e. improved valuation, pricing and incentive mechanisms should be promoted.

11.1 Considerations

Key considerations of ESD are outlined below.

- Economic considerations: both short-term and long-term economic impacts should be evaluated. Sustainable development aims to create economic opportunities without depleting natural resources or causing environmental harm. This includes considering the economic benefits of conservation and the costs of environmental degradation.
- Environmental considerations: the environmental impacts of development activities must be assessed and managed. This includes protecting ecosystems, reducing pollution, and conserving natural resources. Long-term environmental health is essential for sustainable development.

- Social considerations: the social impacts of development should be considered, including the effects on communities, health, and well-being. Sustainable development seeks to improve quality of life and ensure that benefits are distributed equitably.
- Equitable considerations: equity is a key component of sustainable development. This involves ensuring that all people, including marginalized and vulnerable groups, have access to the benefits of development and are not disproportionately affected by its negative impacts.

By integrating these principles and considerations, the EPBC Act aims to promote development that is sustainable, equitable, and beneficial for both current and future generations. These principles are outlined in Table 11.1 with an overview of activities associated with the Goyder North Wind Farm Project, and how they accord to the principles.

Neoen have a company-wide "Sustainability Framework" that guides every aspect of its business and its projects. The Framework aims to go beyond the obvious and include more ambitious and wide-ranging initiatives. In this context the Goyder North Project has ESD hard-wired into every aspect including the overall approach to minimising impacts, stakeholders and community, the attitude and approach to the design and the overall outcome: delivering renewable electricity, sustainably and on a large scale.

The Goals referenced in Table 11.1 relate to the 17 United Nation's Sustainable Development Goals (UN 2015).

Table 11.1: Overview of Project activities and how they align with ESD principles

Principles of ESD	Activity	How it accords with the principle of ESD	How it furthers or advances the ESD principle.
Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations (the "integration principle").	Corporate Approach	Neoen "Sustainability Framework: Spreading our wings" provides a guide to project definition and development.	Identifies approach and practices to be incorporated into projects and sets targets where relevant.
	Corporate Approach	Working Ethically- (16 Peach Justice and Strong Institutions) promoting an ethical and respectful approach to doing business.	100% employee commitment to Neoen's Code of Conduct and Anti-Corruption Code.
	Corporate Approach	Integrating Recycling – (12 Responsible Consumption and Production) commitment to including decommissioning and progressing recycling in all projects.	All projects to include a decommissioning plan and allocate funding. Recycling commitment included in project contracts.
	Corporate Approach	Economic Development – (8 Decent work and economic growth) – work with communities to support local and regional economic growth.	Engage with local businesses and employment networks to prioritise local suppliers and jobseekers where possible.
	Project Approach	Decommissioning has been included in project planning and the Development Application.	Project Development Approval includes requirement for decommissioning. Condition 14 and 15 require the preparation of decommissioning plans.
	Project Design	The final layout was informed by a suite of specialist reports and assessments based on impact modelling.	Enabled decision making based on a balanced assessment of impact, risk and efficiency considerations.
	Project Design	Project layout was developed subject to a set of setbacks and buffers imposed by Neoen to avoid and minimise impacts.	Impacts to numerous places and natural resources have been avoided by applying the setbacks and buffers.
If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (the	Corporate	Corporate Reducing Emissions – (12 Responsible Consumption and Production) assess the company's own emissions and environmental impacts and prepare detailed action plans to be avoided or offset.	Progressively reduce the company's global carbon footprint and 100% offset company travel emissions
	Corporate	Local Initiative - each project will select one "above and beyond" Biodiversity initiative (15 Life On Land).	On-ground SEB delivery of 1,300 ha to be protected in perpetuity. Additional offsets proposed to meet all offsetting requirements through on ground initiatives.
	Project Approach	Focused on the delivery of affordable, reliable, and clean energy.	Supports the further substitution of clean energy.
	Project Management	Commitment to responsible project construction to protect habitat and cultural heritage.	Training and monitoring of activities have been included in relevant CEMPs to protect habitat and cultural heritage.

Principles of ESD	Activity	How it accords with the principle of ESD	How it furthers or advances the ESD principle.
'precautionary principle').			
The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations (the 'intergenerational principle').	Corporate	Delivering Clean energy to reduce emissions – (13 Climate Action).	Promoting access to affordable and clean energy
	Corporate	Consulting & Engaging – (17 Partnerships for the Goals) conduct community engagement, even if not mandated.	Enable community input and participation to better inform project decision making.
	Corporate	Benefit-sharing – (17 Partnerships for the Goals) the benefits of transition are shared with local communities.	The benefits of clean energy generation are shared with local communities in a manner that works for them.
	Project Approach	Seeking to develop a project of scale and productivity to drive sustainable change.	Early, honest and up-front engagement with a significant number of landowners to enable a development of scale.
	Project Approach	Engagement that enables landowner, stakeholder, community and neighbour consultation to support better informed decisions to avoid impact.	Extensive community and stakeholder engagement undertaken and summarised in Section 10.1.1.
	Project Initiative	Identify opportunities to share project benefits and engage effectively with relevant indigenous stakeholders.	Engagement with the Ngadjuri Nation to identify meaningful employment, training and benefit sharing opportunities.
	Project Initiative	Acknowledging any short- or long-term negative impacts on neighbours.	Provision of a Neighbour Benefit Scheme for the operational life of the project.
	Project Initiative	Support local communities and the process of economic transition.	Provision of a Community Benefit Scheme of approximately $444,000 (indexed with CPI)
	Project Initiative	On-ground SEB delivery and opportunity for establishing a wider network of conservation areas, including areas which are accessible to future generations.	Protection of an area of significant and unique ecological value which will be protected for the enjoyment of current and future generations.
The conservation of biological diversity and ecological integrity should be a fundamental consideration in	Corporate	Protecting Biodiversity – (15 Life on Land) undertake detailed environmental impact assessments.	Conduct environmental impact assessments by expert ecologists and offset any unavoidable impact in accordance with local and national requirements.
	Project Approach	Sought to design a project that avoids impacts to the greatest degree possible.	The approach included involving many landowners, providing alternative options and the ability to exclude sensitive areas from impact.

Principles of ESD	Activity	How it accords with the principle of ESD	How it furthers or advances the ESD principle.
decision-making (the 'biodiversity principle').	Project Approach	Work with local landowners and regional landscape boards to provide on-ground SEB and EPBC offsets where possible, and to maximise efficacy in the regional context.	Extend the area of local rehabilitation and restoration.
	Project Design	Establishment of ecological protection and exclusion zones.	Setbacks and avoidance areas around Tiliqua Nature Reserve, Mimbara Conservation Park, Mokota Conservation Park,
	Project Design	Seek flexibility in detailed design to avoid impacts during the detailed design phase.	Have an approved 200 m micro siting allowance (Development Envelope) for detailed design to enable further avoidance of impact as the project progresses.
	Project Management	Commitment to the assessment of the ongoing impact on the natural environment (incorporated into a set of comprehensive Construction and Environmental Management Plans, Sub-Plans and Operational Management Plans).	Environmental risk assessments are required to be incorporated into project planning, management and execution.
	Project Management	Knowledge sharing of ecological data to educate and incentivize landholders to assist in sustainable grazing and land management practices.	Benefits important ecological species and communities at a larger scale that what would be possible for a single proponent.
Improved valuation, pricing and incentive mechanisms should be promoted (the 'valuation principle').	Corporate	Delivering Clean energy to reduce emissions – (7 Affordable and Clean Energy).	Promoting access to affordable and clean energy
	Project Outcome	Landowners that host infrastructure access an additional source of income.	Greater income diversity provides support for rural and agricultural activities and their process of adaptation.
	Project Approach	Providing access to affordable, reliable and clean energy using hybrid technology at scale.	As a large-scale project that is utilising the exceptional renewable resources of the area, the project will deliver competitively priced energy to the market.

11.1.1 Long-term and Short-term Considerations

The GNWF is expected to achieve both positive economic and nature positive outcomes.

Although a formal economic or social impact assessment has not been required under the South Australian Planning process (since the Project was performance assessed against the Planning and Design Code), the Project is expected to deliver substantial short- and long-term benefits alongside some temporary construction-related impacts. During the ~24-36-month construction period (depending on the eventual project construction staging which may extend the period by approximately 1-2 years), short-term impacts such as increased traffic and noise may occur, but these have been considered alongside the broader positive outcomes that are likely to occur throughout construction such as local business revenue and training and employment opportunities. The Project will play a significant role in supporting South Australia's transition to 100% renewable energy and the decarbonisation of the steel industry, while also generating employment opportunities throughout both construction and operations. These benefits will extend beyond the local area, contributing to regional economic growth and resilience of South Australia's energy system. Environmental, social, economic, and equitable considerations are further addressed in Table 11.2.

Table 11.2: Economic, environmental, social and equitable considerations

Consideration	Short-term (Construction ~24-36 months depending on project staging)	Long-term (Operation 25-30 years)
Environmental	• Clearance of 453.87 ha of native vegetation, including 229.26 ha of temporary clearance. • Increased dust during construction period. • Increased noise during construction period.	• Permanent clearance (at least until decommissioning) of up to 307.56 ha of native vegetation. • Significant contribution towards the SA Government goal of 100% net renewable electricity generation by 2027 and, and net zero emissions by 2050. • Decarbonisation of Australia's electrical supply, and electrification of industrial processes and industries. • Minor change in visual character along the Barrier Highway. • Significant contribution to protecting natural environments in perpetuity within South Australia, as a result of Neoen's commitment to securing high quality on ground offsets which outweigh the impact. • Diversified income for landowners, supporting climate change adaptation and reduction in reliance on intensive farming techniques.

Consideration	Short-term (Construction ~24-36 months depending on project staging)	Long-term (Operation 25-30 years)
Social	Increased Burra population from construction workforce which may: • Increase pressure on housing and accommodation availability • Increase pressure on health and emergency services. • Strain on infrastructure and local services (e.g. roads)	• Creation of ~20 FTE jobs associated with the GNWF and additional support / sub-contractor roles. • Increase in available accommodation for tourism longer term (in alignment with Goyder Regional Council's long-term aspirations) through development of an accommodation camp. • Community investment projects. • Changes in land use which may affect local identity or tourism appeal. • Social cohesion or division in the local community.
Economic	• Creation of ~600 FTE jobs (construction) • Local business revenue increased through demand for accommodation, food and fuel. • Landowner compensation which supports spending in the local community. • Supply chain activity through sourcing of local materials during construction.	• Creation of ~20 FTE jobs (operations) • Community investment supporting upgraded infrastructure such as roads, emergency services, schools etc. • Tax revenue contributions to local and state governments. • Ongoing landowner compensation, supporting diversified income and climate change adaptation. • Tourism and branding opportunities for sustainable land use tourism.
Equitable	• Training and employment opportunities for First Nations people with a focus on Traditional Owners • Procurement policies to support equitable employment opportunities.	• Training, employment and on-going cultural and environmental care of Country by Traditional Owners, supported through lasting partnerships, resources, and shared benefits over the life of the wind farm. • Community Benefit Scheme to ensure benefits are shared amongst all community members.

11.2 Intergenerational Equity

The principle of intergenerational equity emphasises that the present generation should ensure the health, diversity, and productivity of the environment for the benefit of future generations. The Project addresses this principle through various corporate and project initiatives:

- Delivering clean energy: the commitment to providing clean energy helps reduce emissions and promotes access to affordable and clean energy, which benefits both current and future generations. The project supports the transition to 100% renewable energy, in line with the goals of the South Australian Government Climate Change Action Plan 2021 – 2025, namely Goal 1 - Clean Energy Transformation.
- Consulting and engaging: conducting community engagement, even if not mandated, enables community input and participation, leading to better-informed project decision-making that considers long-term impacts and has better potential to meet the goals of the local community and region.

- Benefit-sharing: sharing the benefits of clean energy generation with local communities ensures that the positive impacts of the transition are distributed in a manner that works that works locally, as well as supporting sustainable development that has broader regional and global benefits.
- Stewardship: identifying opportunities to share project benefits and engage effectively with relevant First Nations stakeholders and acknowledging any short- or long-term negative impacts on neighbours, supports the process of economic transition and provides meaningful employment, training, and benefit-sharing opportunities.
- On-ground SEB delivery: permanent loss of 307.56 ha of fair to moderate quality native vegetation will be offset in accordance with State and Federal government requirements to ensure no net loss of biodiversity. Helps to establish a wider network of conservation areas, including areas accessible to future generations, and protect significant and unique ecological values for the enjoyment of current and future generations.

These initiatives collectively contribute to maintaining or enhancing the environment's health, diversity, and productivity for the benefit of future generations, aligning with the principle of intergenerational equity.

11.3 Conservation of Biological Diversity

The principle of conservation of biological diversity environmental impacts of development activities must be assessed and managed. This includes minimising harm, protecting ecosystems and contributing to a body of knowledge. Long-term environmental health is essential for sustainable development.

The project has integrated conservation of biological diversity into key decision-making criteria from early stages. Key examples include identifying the requirement for the project as part of the Climate Change Action Plan to reduce the impacts of climate change (including on biological diversity which is expected to be negatively impacted by the effects of climate change), and as a key factor in site selection, described below.

- Site selection: the Project location was selected based on the quality of the wind resource available, impacts to landholders and uses, site topography, minimising impacts to high value native vegetation, minimisation of impacts to MNES, and the efficiency and effectiveness of access to water and existing power transmission infrastructure (Section 2.3.1).
- Knowledge building and sharing: extensive survey work has been undertaken for the Project which has advanced knowledge of key ecological matters in the Project Area including, but not limited to PBTL, INTG, FRWL, MBC, bird populations, vegetation health and extent. Neoen has been and will continue to work with experts and regional stakeholders, including landholders to build and share this knowledge to get the best outcomes for these species and ecological communities.
- Minimising harm: a range of technical investigations were undertaken to inform infrastructure locations (Section 1.5). Location of infrastructure on the land parcels has considered factors including avoiding and minimising disturbance of higher quality native vegetation and habitat including for MNES, specifically INTG and PBTL; avoidance of sites of cultural significance; distance to sensitive receptor; and distance to water and power infrastructure. Potential impacts to biological

diversity and ecological integrity have been identified with mitigation measures proposed to reduce impacts, preserve biological diversity and encourage ecological integrity surrounding the direct Disturbance Footprint (Section 6).

- Protection: Neoen has a strong commitment to securing high value on-ground offsets for which the environmental benefit outweighs the impact of the development, for a net positive outcome on the environment (Section 6.3.2 and Section 9). Neoen is exploring options with Traditional Owners to be part of the ongoing management and protection of offset areas.

11.4 Improved Valuation, Pricing and Incentive Mechanisms

This principle relates to government policy development to encourage ecologically sustainable development. The Project will comply with all relevant government requirements and policies including the offset requirements under the *Native Vegetation Act 1991* (SA) and EPBC Act which set out the valuation for biodiversity. The costs associated with site rehabilitation, impact mitigation, management and maintenance activities have been incorporated into the overall Project costs.

Additionally, the Project addresses the principle of improved valuation, pricing, and incentive mechanisms through:

- Delivering clean energy: the project aims to provide access to affordable, reliable, and clean energy. By utilising the area's exceptional renewable resources, the project delivers competitively priced energy to the market, benefiting both consumers and the environment.
- Landowner income: The project provides landowners who host infrastructure with an additional source of income. This diversification of income supports rural and agricultural activities, helping them adapt and thrive economically, particularly in light of the prolonged drought conditions currently impacting agricultural productivity in South Australia.

12 NEOEN ENVIRONMENTAL RECORD

This section addresses the following from the RFI:

9. Environmental record of person(s) proposing to take the action

a) details of the person proposing to take the action

b) For an action for which a person has applied for a permit, the details of the person making the application.

c) If the person proposing to take the action is a corporation, details of the corporation's environmental policy and planning framework must also be included.

d) Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the proponent.

As stated in the EPBC Referral, Neoen is a leading independent producer of renewable energy, and has a strong environmental record grounded in sustainability and corporate social responsibility in all countries in which it operates. The company is committed to producing competitive renewable electricity sustainably and on a large scale. Neoen's sustainability framework includes rigorous environmental, social, and governance (ESG) criteria, which guide their operations and project development. They prioritize health, safety, and environmental (HSE) standards, ensuring that all projects minimize their ecological footprint and contribute positively to local communities.

In Australia, Neoen has been instrumental in advancing the energy transition with several high-profile projects in its portfolio. Notable examples include the Hornsdale Power Reserve in South Australia (EPBC 2012/6573), the world's first big battery, which has significantly enhanced grid stability and saved consumers over $150 million in its first two years of operation. Another flagship initiative by Neoen in South Australia, is the Goyder South Hybrid Renewable Energy Facility (1A: 2021/8958; 1B: 2021/8957; OTL and Substation: 2021/8959), which combines wind, solar and battery storage to create the largest renewable energy project in SA to date. The first stage includes 412 MW of wind generation and has been design with a strong focus on environmental sustainability. To mitigate environmental impacts, Neoen has implemented a native vegetation offset strategy which includes transferring ownership of 1,000 ha at Worlds End Gorge to the South Australian government to be developed into a new national park. The park also contributes to the EPBC offset for endangered Pygmy Blue-tongue Lizard, with a successful translocation program implemented to provide safe haven for the lizards.

Both projects highlight Neoen's commitment to minimising environmental impacts through innovative strategies and community engagement. The Goyder South Project involved extensive consultation with local stakeholders, including Traditional Owners and the Regional Council of Goyder to ensure that the project supports both environmental conservation and community interests.

Neoen's projects are often approved by the Commonwealth, reflecting their adherence to stringent environmental standards. For instance, the Thunderbolt wind farm in New South Wales received approval from the NSW Independent Planning Commission despite initial opposition, demonstrating Neoen's ability to navigate complex regulatory landscapes and community concerns. These projects exemplify Neoen's commitment to sustainable development and their role in driving Australia's renewable energy future.

A key differentiator of Neoen's is that it is an end-to-end developer who takes a long-term approach, bringing projects from development, through construction and into operations, ensuring high-quality projects that are well-integrated and make a contribution to the community across their lifetime. As such, there is a focus on building meaningful, long-term partnerships with local communities.

Elements of the broader GRZ Project, specifically for the Goyder South Hybrid Renewable Energy Facility, was referred in four discrete packages as listed below.

Past or present EPBC approvals relating to GRZ include:

- Goyder South Hybrid Renewable Energy Facility - Wind Farm 1B, 5 km south Burra (Goyder Wind Farm 1B Pty Ltd) (2021/8957). Approved with conditions 13 July 2022.
- Goyder South Hybrid Renewable Energy Facility - Wind Farm 1A, 10 km south Burra (Goyder Wind Farm 1 Pty Ltd) (2021/8958). Approved with conditions 5 July 2022.
- Goyder South Hybrid Renewable Energy Facility - OTL and Substation, Worlds End (Goyder Wind Farm Common Asset Pty Ltd) (2021/8959). Approved with conditions 28 July 2022. Variation approved 19 December 2022.
- Goyder South Hybrid Renewable Energy Facility - Battery, 5 km north Robertstown (2021/8960). Referral decision: Not a controlled action, 1 October 2021.

Neoen can confirm the EPBC approval conditions of the EPBC Referral for the above projects have been met, or are in progress, to the satisfaction of DCCEEW, and Neoen remains committed to ensuring ongoing compliance, including in relation to conditions that are currently under variation or review.

Refer to Att15_Neoen Sustainability Framework for more information.

12.1 Past or Present Legal Proceedings

To the best of Neoen's knowledge there are no relevant past or present proceedings under Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against Neoen or any of its subsidiaries.

13 OTHER APPROVALS AND CONDITIONS

As part of the wholistic approvals process for the GNWF, Neoen have sought other relevant statutory approvals (in parallel with the Project's assessment under the EPBC Act), as outlined below:

13.1 State Planning Consent

The Project received Planning Consent under the *Planning, Development and Infrastructure Act 2016* (SA) (Application ID: 23036148), following an assessment by the State Planning Department (Plan SA) and a panel hearing where the final decision was made by the State Commission Assessment Panel in October 2024.

This approval considered a range of matters including visual amenity, noise, traffic, and limited environmental impacts. Neoen intends to transition this consent to a Renewable Energy Infrastructure License under the *Hydrogen and Renewable Energy Act 2023* (SA), administered by the Department for Energy and Mining, prior to the commencement of construction.

Refer to Att17_Planning Consent Decision Notification Form for more information.

13.2 State Native Vegetation Clearance Approval

Approval under the *Native Vegetation Act 1991* (SA) is currently under assessment by the Native Vegetation Council, with the application addressing the potential impacts of the project on native flora and fauna. Neoen are undergoing a process of securing on-ground offsets as part of the Native Vegetation Clearance Approval process, separate to the offsetting process being undertaken in relation to the EPBC Referral. Approval is expected to be received in late Q3 2025.

13.3 Aboriginal Heritage Conditions

In parallel, an application has been submitted to the Aboriginal Affairs and Reconciliation (AAR) division of the Department of the Premier and Cabinet for Authorisation under Sections 21 and 23 of the *Aboriginal Heritage Act 1988* (SA). This process will determine the likelihood of impact to Aboriginal heritage as a result of ground-disturbing activities, and if granted will permit works to proceed subject to conditions that manage and mitigate those impacts. Authorisation is expected to be received in early Q1 2026.

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15 DEFINITIONS AND ABBREVIATIONS

15.1 Definition of Acronyms

Acronym	Expansion
AEIC	Australian Energy Infrastructure Commissioner
ALA	Atlas of Living Australia
AOO	Area of occupancy
AUD	Australian Dollars
BAM	Bushland assessment method
BBUS	Bird and bat utilisation survey(s)
BDBSA	Biological Databases of South Australia
BESS	Battery energy storage systems
BoP	Balance of Plant
CBS	Community Benefit Scheme
CBSP	Community Benefit Sharing Program
CEC	Clean Energy Council
CEMP	Construction environmental management plan
CITES	Convention on International Trade in Endangered Species
CP	Conservation Park
DAWE	Department of Agriculture, Water and the Environment (2020-2022; now DCCEEW)
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DE	Development Envelope
DEW	Department of Environment and Water
DEWHA	Department of the Environment Water, Heritage and the Arts (2007-1010; now DCCEEW)
DF	Disturbance Footprint
DIT	Department of Infrastructure and Transport (SA)
DotE	Department of the Environment (2013-2016; now DCCEEW)
DotEE	Department of the Environment and Energy (2016-2019; now DCCEEW)
DPIE	Department of Planning and Environment (NSW; now DPHI)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (2010 to 2013; now DCCEEW)
EBS	EBS Ecology (now Umwelt)
EMI	Electromagnetic Interference
EOI	Expression of Interest
EOO	Extent of occurrence
EPA	Environment Protection Authority (SA)
EPBC	Environment Protection and Biodiversity Conservation

Acronym	Expansion
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
EPC	Engineering Procurement and Construction (contractor)
ESD	Ecologically Sustainable Development
FLB	Flinders Lofty Block
FPRMMR#2	First People of the River Murray & Mallee Region.
FRWL	Flinders Ranges Worm-lizard
FTE	Full time equivalent
GNWF	Goyder North Wind Farm
GNREF	Goyder North Renewable Energy Facility
GRC	Goyder Regional Council
GRZ	Goyder Renewable Zone
GSHREP	Goyder South Hybrid Renewables Energy Project
GSWF	Goyder South Wind Farm
IBRA	Interim Biogeographical Regionalisation of Australia
HIA	Heritage Impact Assessment
INTG	Iron-grass Natural Temperate Grassland
LSA Act	*Landscape South Australia Act 2019* (South Australia)
MBC	Mallee Bird Community
MDD	Murray Darling Depression
MMAC	Mid-Murray & Mallee Aboriginal Corporation
MNES	Matters of National Environmental Significance
MP	Management Plan
MRLB	Murraylands and Riverland Landscape Board
Neoen	Neoen (Australia) Pty Ltd
NHL	National Heritage Listed
NNAC	Ngadjuri Nation Aboriginal Corporation
NP	National Park
NPW Act	*National Parks and Wildlife Act 1972* (South Australia)
NSW	New South Wales
NV Act	*Native Vegetation Act 1991* (South Australia)
NVC	Native Vegetation Council
NYLB	Northern and Yorke Landscape Board
OAG	Offset Assessment Guide
OEMP	Operational environmental management plan
OTL	Overhead transmission line
PBTL	Pygmy Blue-tongue Lizard
PCC	Pre-clearance Check

Acronym	Expansion
PDI Act	*Planning, Development and Infrastructure Act 2016* (South Australia)
PEC	Project EnergyConnect
pers. comms.	personal communications
PMST	Protected Matters Search Tool
PPA	Power Purchase Agreement
rpm	Revolutions per minute
RFI	Request for information
SA	South Australia(n)
SCAP	State Commission Assessment Panel
SEB	Significant Environmental Benefit
SIA	Significant impact assessment
sp.	species (singular)
spp.	species (plural)
ssp.	subspecies
STAM	Scattered tree assessment method
TEC	Threatened ecological community
Umwelt	Umwelt (Australia Pty Ltd)
VA	Vegetation Association
WF	Wind Farm
WoNS	Weeds of National Significance
WTG	Wind turbine generator

15.2 Definition of Terms

Term	Expansion
Action	The Action includes both construction and operation of the proposed Project, and any change from existing activities which are required to undertake these tasks safely and effectively.
Area of Occupancy (AOO)	The area within its 'extent of occurrence' (see below) which is occupied by a taxon, excluding cases of vagrancy. The measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may contain unsuitable or unoccupied habitats. In some cases (e.g. irreplaceable colonial nesting sites, crucial feeding sites for migratory taxa) the area of occupancy is the smallest area essential at any stage to the survival of existing populations of a taxon.
Declared weed	A plant that is regulated under the *Landscape South Australia Act 2019* (LSA Act) due to its threat to primary industry, the natural environment and public safety.
Department	The Australian Government agency responsible for administering the EPBC Act.
Development Envelope (DE)	A 'buffered' version of the Disturbance Footprint that represents the maximum spatial extent in which the Disturbance Footprint will occur within.
Disturbance Footprint (DF)	The area in which all Project infrastructure is constructed and operated, inclusive of construction buffers.
Extent of Occurrence (EOO)	The area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon or community, excluding cases of vagrancy. This measure may exclude discontinuities or disjunctions within the overall distributions of taxa (e.g. large areas of obviously unsuitable habitat).
Minister	The Australian Government Minister administering the EPBC Act including any delegate thereof.
Operation	All activities that occur after the components of the final wind turbine generator are installed and the usage of the transmission line and substation for the purposes of transforming and/or redistributing electric current.
Project	The Goyder North Wind Farm Project, inclusive of wind turbine generators (WTG), overhead power transmission lines (OTL), expansion of existing Bundey substation, on-site battery energy storage solution (BESS), access tracks and temporary facilities and infrastructure to enable construction. The Project is part of the larger Goyder North Renewable Energy Facility (GNREF) and was previously Referred (October 2024) as Goyder North Renewable Energy Facility Stage 1.
Project Area	The area which includes all Project components within the GNWF Project, including WF and OTL.
Project elements	Distinct functional elements of the GNWF Project including WF, OTL and Site Access.
Search Area	5 km buffer around GNREF applied to all database searches and desktop study.
Significant impact(s)	Impacts which are important, notable, or of consequence, having regard to their context or intensity, and assessed within the framework of the Matters of National Environmental Significance – Significant Impact Guidelines 1.1, Commonwealth of Australia 2013.

15.3 Units of Measure

Abbreviation	Expansion of Unit
a	year (annum)
dB	decibel
g	gram
GL	gigalitre
h	hour
ha	hectare
km	kilometre
km^2	square kilometre
kV	kilovolt
L	litre
µm	micrometre
m	metre
mAHD	metres relative to Australian Height Datum
mbgl	metres below ground level
mbrp	metres below reference point
mg	milligram
ML	Megalitre
mm	millimetre
Mm^3	cubic megametre
mS	millisieverts
µS	micro siemens
Mt	million tonnes
Mtpa	million tonnes per annum
MV	Medium voltage
MWh	Megawatt-hour
MW	megawatt
m^2	square metre
m^3	cubic metre
s	second
t	tonne
tonnes per annum	tpa
y	year
%	percent
<	less than
>	more than
≤	Less than or equal to
≥	More than or equal to

NEOEN

APPENDICES

APPENDIX A.
DCCEEW RFI DETAILS

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
1. Description of the Action	1a	a) State the purpose of the proposed action.	Addressed in referral documentation	Section 2.1	Purpose of the Proposed Action
	1b	b) A summary of all components of the proposed action	Addressed in referral documentation	Section 2.2	Components of the Action
	1c	c) A description of the activities associated with the potential development throughout its entire lifecycle.	Further information required.	Section 2.3	Overview of activities including indicative timeframes.
				Section 5.1	Overview direct impacts including indicative timeframes.
				Section 5.2	Overview indirect impacts including indicative timeframes.
	1d	d) Provide details of any interdependent developments or proposals outside of the proposed action area.	Further information required.	Section 2.5	No associated interdependent developments currently proposed.
	1e	e) Plans or maps to delineate the position of all activities and components of the proposed action (including retained vegetation).	Addressed in referral documentation	Section 1.6	Maps of Proposed Action Area
				Section 2.4	Maps of Proposed Activities, inclusive of Project layout, WTG layout, Development Envelope and Disturbance Footprint showing Permanent and Temporary Disturbance, and other Project components.
				Section 3.3.7	Vegetation mapped within the GNWF Project Area (three figures)
	1f	f) An indicative layout plan for the proposed action area, including the location and type of land use, key infrastructure, revegetation areas, open space and conservation areas.	Addressed in referral documentation	Section 2.4	Maps of Proposed Activities, inclusive of Project layout, WTG layout, planning and development code overlays, Development Envelope and Disturbance Footprint showing Permanent and Temporary Disturbance (revegetation areas), and conservation areas (Burra National Heritage Area, conservation parks, and heritage agreements).
	1g	g) The location, boundaries and size (in hectares) of the disturbance footprint and any adjoining areas which may be indirectly impacted by the proposed action. The disturbance area should be clearly identified. Information should outline the proposed construction activities associated with each activity (pre-construction, construction, and operation).	Further information required.	Section 2.2 Section 3.2	Location of Project Area, size (in ha) of Disturbance Footprint
				Section 7.1.2.2 and Section 7.1.2.4	WTGs facilitated shadow flicker modelling, including indirect impacts to adjoining areas / conservation areas and heritage agreements.
				Section 2.3	Overview of each activity including indicative timeframes.
	1h	h) A description of the construction and operational activities of the proposed action, including <u>but not limited to</u>:	Further information required.	Section 2.3	Description of construction and operational activities.
	1h	i. relevant pre-construction activities	Further information required.	Section 2.3.3.1	Overview of pre-construction activities
				Section 6.2.1	Pre-construction activities as they are described in the CEMP.
	1h	ii. anticipated timing and duration (including start and completion dates) for both construction and operational components	Further information required.	Section 2.3.3.2	Construction activities and indicative timeframes.
				Section 2.3.3.3	Operation and maintenance activities and indicative timeframes.
	1h	ii. construction activities of the action.	Further information required.	Section 2.3.3.2	Construction activities and indicative timeframes.
	1h	iii. anticipated maintenance works, including predicted frequency.	Further information required.	Section 2.3.3.3	Operation and maintenance activities and indicative timeframes.
				Table 6.3	Project specific sub-plans to be developed for environmental management during construction and operation, inclusive of reference to maintenance activities and scheduling.
	1h	iv. information about the maximum amount of people present on the proposed action area at any one time,		Section 2.3.3.5	Personnel details, inclusive of seasonal variations (maximum workforce during construction and ongoing permanent staff)

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
		including seasonal variations and accommodation requirements.	Further information required.	Section 10.4	Cost-benefit analysis, inclusive of accommodation requirements associated with the Project.
				Section 10.5	Employment opportunities, including during construction and operation.
	1i	i) The preliminary documentation must propose the action without any optional components. This includes the final proposed overhead transmission line (OTL) route and access roads.	Further information required.	Section 2.2	Components of the Action
				Section 2.2.3	Overhead Transmission Line
				Section 2.2.6	Access roads
				Section 1.2	Removal of the previously proposed Overhead Transmission Line Alternative (OTL-Alt) from the Project Design.
2. Description of the environment and matters of national environmental significance	2a	a) The preliminary documentation must provide a general description of the environment of the development site, as well as the surrounding areas that may be impacted by the proposed action both in the short and long term.	Addressed in referral documentation	Section 3.2	General description of the Project Area, updated to incorporate findings from a number of targeted ecological surveys.
				Section 5	Project impacts
				Section 5.4	Cumulative impact assessment
				Section 7.1.2.4	Tiliqua Nature Reserve
	2b	b) A description of any protected matters that are, or have the potential to be, in the proposed action area and surrounds. From the information provided to date, the department considers that the protected matters that may be significantly impacted by the proposed action include, but are not limited to:	Further information required.	Section 4	Overview and description of protected matters relevant to the Project Area.
		<u>Birds</u> South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) – Endangered	Further information required.	Section 4.2	Description of MNES
		Blue-winged Parrot (*Neophema chrysostoma*) – Vulnerable		Section 4.5	Description of MNES
		Southern Whiteface (*Aphelocephala leucopsis*) – Vulnerable		Section 4.3	Description of MNES
		Diamond Firetail (*Stagonopleura guttata*) – Vulnerable		Section 4.6	Description of MNES
		<u>Reptiles</u> Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*) – Endangered	Further information required.	Section 4.1	Description of MNES
		Flinders Ranges Worm-lizard (*Aprasia pseudopulchella*) – Vulnerable		Section 4.4	Description of MNES
		<u>Plants</u> Peep Hill Hop-bush (*Dodonaea subglandulifera*) – Endangered	Further information required.	Section 4.9	Description of MNES
		Spiller's Wattle (*Acacia spilleriana*) – Endangered		Section 4.8	Description of MNES
		Slender Bell-fruit (*Codonocarpus pyramidalis*) – Vulnerable		Section 4.11	Description of MNES
		Silver Daisy-bush (*Olearia pannosa* subsp. *pannosa*) – Vulnerable		Section 4.13	Description of MNES
		Hairy-pod Wattle (*Acacia glandulicarpa*) – Vulnerable		Section 4.10	Description of MNES
		Superb Groundsel (*Senecio megaglossus*) – Vulnerable		Section 4.14	Description of MNES
		Trailing Hop-bush (*Dodonaea procumbens*) – Vulnerable		Section 4.12	Description of MNES
		TECs Iron-grass Natural Temperate Grassland of South Australia – Critically Endangered	Further information required.	Section 4.15	Description of MNES

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
		Mallee Bird Community of the Murray Darling Depression Bioregion – Endangered		Section 4.16	Description of MNES
	2c	c) For relevant threatened species and ecological communities that are, or have the potential to be present within the proposed action area and surrounds, provide a minimum of:			
		i. information on their abundance, distribution, ecology and habitat preferences. Provide this in both a regional and local context.	Further information required.	Section 4	Refer to each subsection of the relevant MNES.
		ii. quantification of their extent of habitat within the proposed action area and surrounding areas, including field mapping of identified known and/or potential habitat and records.	Further information required.	Section 4	Refer to each subsection of the relevant MNES. Includes relevant figures.
		iii. assessment of their quality, importance, and ecological function (i.e., for foraging, breeding, roosting or dispersal) of known or potential habitat within the proposed action area and surrounding areas.	Further information required.	Section 4	Refer to each subsection of the relevant MNES.
		iv. assessment of the presence of population(s) of relevant species within the proposed action area with the number of individuals present, and the size of these populations including historical records within the proposed action area and surrounding areas	Further information required.	Section 4	Refer to each subsection of the relevant MNES.
		v. justification on how populations of threatened species and ecological communities are considered stable in a regional context.	Further information required.	Section 4 Section 5.4	Refer to each subsection of the relevant MNES. Cumulative impact assessment
		vi. assessment detailing capacity for threatened species to disperse into surrounding suitable habitat and the ability of this suitable habitat to support displaced species. With evidence of: • natural ability of the bird and reptile species to successfully disperse into surrounding habitat, • success rates of their dispersion, • considerations on the timing of dispersion (e.g. breeding and non-breeding season), • the ecological quality of dispersion habitat, • carrying capacity of dispersion habitat.	Further information required.	Section 3.3.7.4 Section 4	Refer to each subsection of the relevant MNES.
		vii. an assessment of the adequacy of all surveys undertaken (including survey effort and timing), in particular the extent to which these surveys were appropriate to the relevant threatened species and ecological communities. Surveys should consider the proposal's impact in the context of national, regional, district and site importance to establish the most effective survey technique(s). Justify where variation exists outside of departmental guidelines.	Further information required.	Section 2.3.2 Section 3.1.2	Planning and Technical Investigations Field surveys
		viii. information about the methods, data and scientific literature used to identify and assess the environmental values within the proposed action area and surrounds, including survey data and historical records. Survey data relating to the proposed action must be provided for the relevant listed species and be as recent as possible.	Further information required.	Section 3.1 Section 3.1.1 Section 3.1.2	Ecological studies Desktop assessments Field surveys

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
		ix. Details of environmental conditions that could drive survey results, e.g. weather, food availability, habitat condition.	Further information required.	Section 3.1.2	Field surveys
				Section 3.1.3.2	Limitation of field surveys
				Section 4 (sub-sections for each MNES)	Occurrence in Project Area, inclusive of survey findings which describe survey weather conditions and other conditions of note, for each MNES.
	2d	d) For the **Flinders Ranges Worm-lizard (FRWL)**, confirm the likely presence and abundance of the species within the disturbance footprint and development envelope and adjacent areas subject to direct and indirect impacts by providing the results of targeted field surveys. Provide robust justifications of any conclusions in relation to the absence of the species.	Further information required.	Section 3.1.2.6	Targeted FRWL surveys
				Section 4.4	Description of FRWL including ecology, habitat, distribution and abundance, key threatening processes, occurrence in Project Area, and regional context.
	2e	e) For the **Pygmy Blue-tongue Lizard (PBTL)**, provide the following information, supported by fine scale maps: • the exact location of all burrows with PBTL's to be impacted within the disturbance footprint, • the exact location of all burrows with PBTL's within the development envelope, • how many vacant burrows are to be impacted within the disturbance footprint, • how many vacant burrows are to be impacted within the development envelope, • the area searched during targeted field surveys to date, • additional targeted surveys within the extent of the development envelope and all areas of suitable habitat proposed to be impacted to determine the exact number of individuals that could be impacted by the proposed action	Further information required.	Section 4.1.6	PBTL occurrence in Project Area, including detailed information from recent targeted surveys.
	2f	f) For the bird species listed at **2(b)**, the referral documentation states the proponent has committed to undertaking seasonal bird and bat utilisation surveys for 24-months to fulfil the guidance within the department's *Onshore Wind Farm Guidance Best practice approaches when seeking approval under Australia's national environment law*. Provide the outcomes from the surveys or a justification on why the recommended survey effort as stated in the department's guidance above has not been met.	Further information required.	Section 3.1.2.7	Bird and bat utilisation surveys.
				Section 5.1.6	Collision risks, including bird and bat impacts.
	2g	g) For the **Iron-grass Natural Temperate Grassland of South Australia (Iron-grass) TEC**, the referral documentation states no targeted surveys were undertaken to assess the condition class of each patch of potential Iron-grass TEC due to poor seasonal conditions at the time of field surveys and that a BAM methodology was used rather than the criteria listed in the recovery plan. The department requests:			
		i. Complete and comprehensive Iron-grass TEC field targeted surveys within the proposed action area in accordance with the Iron-grass TEC Recovery Plan's survey methods to determine: • The presence and location of the TEC, • The extent and nature of the TEC,	Further information required.	Section 3.1.2.3	Targeted Iron-grass Natural Temperate Grassland Surveys
				Section 4.15.6	INTG occurrence in Project Area

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
		• The condition class of the TEC.			
		ii. Provide fine scale mapping showing exact locations of the TEC to be directly impacted.	Further information required.	Table 4.47 and Table 4.51	Occurrence of INTG within the GNWF Project Area and Local context of INTG patches impacted by the Disturbance Footprint (including images)
				Figure 4.39 and Figure 7.5	INTG and site survey locations, and design iterations showing avoidance of INTG (all classes).
	2h	h) For the **Mallee Bird Community of the Murray Darling Depression Bioregion (MBC) TEC**, the referral documentation states 2.13 ha (OTL-Primary) or 30.66 ha (OTL-Alt) of Class A TEC will be cleared. It is unclear whether the patch of the TEC within the Bundey substation extension has been considered as part of the OTL calculations. The department requests:	Further information required.	Section 4.16	All impacts to MBC TEC have been considered, including those areas occurring at the Bundey Substation. The current remaining impact to MBC TEC is 0.76 ha. The remaining impacts include crossing several small roadside strips of vegetation, required to access the existing Bundey Substation and several fringing impacts to vegetation where OTL changes direction (for brake and winch sites).
				N/A for OTL-Alt	The OTL-Alternate has been removed from consideration, and further adoption of the mitigation hierarchy reduced impacts for OTL-Primary (now OTL).
		i. Fine scale mapping showing each patch of the MBC TEC to be impacted and a measurement of the impacted area in hectares, including the patch at Bundey substation.	Further information required.	Section 4.16.6, Figure 4.43. Section 7.16.1, Table 7.62.	Distribution of TEC within Project Area shown in figure. Impacts discussed.
		ii. Exact boundaries of the stringing corridor, inner maintenance zone (IMZ), outer maintenance zone (OMZ), permanent and temporary within the disturbance footprint.	Further information required.	N/A	No longer applicable. Non-conventional stringing methods have been applied, in addition to tower height and placement adjustments to remove any need for ongoing maintenance zone.
		iii. If the OTL-Alt is selected as the proposed transmission line route, confirm the condition category of the MBC TEC.	Further information required.	N/A	No longer applicable. OTL-Alternate Route has been removed from consideration.
		iv. Outline the impact to vegetation and mallee bird species associated with the TEC within the maintenance zones.	Further information required.	N/A	No longer applicable. Design optimized to remove need for maintenance zones.
	2i	i) The referral documentation states field surveys have not extensively covered the development envelope and there are some 'at risk' locations if the disturbance footprint is altered for the following species: • Hairy-pod Wattle • Slender Bell fruit • Peep-hill Hop-bush • Silver Daisy-bush • Superb Groundsel Considering the micro siting process that has been proposed within the referral documentation, the department requests complete field targeted surveys for the threatened species mentioned above to confirm whether any individuals of each species occur within the development envelope	Further information required.	N/A for OTL-Alt	No longer applicable. OTL-Alternate Route has been removed from consideration. This area was not surveyed prior to the referral, and thus a number of these species were associated with limited on ground ecological surveys at the time of the referral. Any 'at risk' locations previously associated with the OTL-Alt are now considered not applicable.
				Section 3.1.2.2	Targeted Threatened Flora Surveys
				Section 4.8 to Section 4.14	Matters of National Environmental Significance within relevant sections for each species.
	2j	j) The referral documentation describes a known population of **Trailing Hop-Bush** occurs within the development envelope. The department requests these individuals be shown on a map at a fine scale to show the geographic relationship to the disturbance footprint. If the OTL-Alt route is selected, undertake targeted vegetation surveys within the development envelope to determine presence of the species.	Further information required.	Figure 4.30 Figure 4.31 Figure 4.32	Targeted surveys were undertaken along the entire length of the OTL-Alternate in spring 2024. No EPBC listed threatened species were detected in the Disturbance Footprint or Development Envelope. This Alternate OTL option has subsequently been removed from the Project Design.
	2k	k) The referral documentation describes a known population of **Spiller's Wattle** occurring within the development envelope. The department requests:			

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
		i. The exact location of the Spiller's Wattle individuals shown on a map at a fine scale and show the distance to the disturbance footprint.	Further information required.	Figure 4.21	Spiller's Wattle possible habitat and records within 5 km.
		ii. If the OTL-Alt route is selected, undertake targeted vegetation surveys within the development envelope to determine presence of the species.	Further information required.	N/A	No longer applicable. OTL-Alternate Route has been removed from consideration. Targeted surveys were undertaken along the entire length of the OTL-Alternate in spring 2024. None of the listed threatened species were detected in the Disturbance Footprint or Development Envelope. One *Acacia spilleriana* was detected in a creek bed outside of any Development Envelope.
3. Relevant impacts **The department has identified the following impacts as particularly relevant to the proposed action, which include, but are not limited to:** **• vegetation clearance including the loss, degradation, and fragmentation of known or suitable habitat of EPBC Act threatened species and ecological communities,** **• changed land use and grazing regime,** **• bird strike with wind turbines,** **• increased noise, dust, invasive species and pathogens in the proposed action area from construction and operational activities,** **• increased human and vehicles activity within the proposed action area from construction and operational activities,** **• noise, vibration, and shadow flicker from the operation of the wind farm and associated infrastructure,** **• inappropriate fire regimes,** **• altered hydrology affecting soil and water quality,** **• erosion and sedimentation. Consideration of impacts must not be confined to the immediate areas surrounding the proposed action but must also consider the potential of the proposed action to impact on adjacent areas that are likely to contain protected matters. It is recommended a risk-based approach be taken to analyse the impacts to protected matters and include relevant specific mitigations (in section 4 below) that demonstrate a reduction in the risk. All discussions and conclusions drawn regarding the assessment of direct or indirect impacts from the proposed action should include a full justification based on the best available information. The discussion of impacts must incorporate relevant conservation advice, recovery plans and/or threat abatement plans, if applicable.**	3a	Describe and assess the likely short-term and long-term impacts (direct, indirect, facilitated, and cumulative) that may occur as a result of all components and project phases of the proposed action to the MNES listed at **2(b)**. This must also include impacts to suitable habitat for species that may not be present or recorded in the specific area.	Further information required.	Section 5.1 Section 5.2 Section 5.3 Section 5.4	Direct impacts Indirect impacts Facilitated impacts Cumulative impact assessment
	3b	b) The direct and indirect loss, disturbance or degradation of habitat from the proposed action. This must include the quality of habitat and total area in hectares, the number of relevant species impacted, and the area of potential habitat for the species likely to be impacted. The loss of vegetation and habitat even when considered temporary must be further described and relevant evidence furnished regarding direct and indirect impacts to MNES.	Further information required.	Section 5.1.1 and Table 5.2: Direct vegetation clearance impacts associated with the Project	Direct impacts Direct vegetation clearance impacts associated with the Project
				Section 5.2	Indirect impacts. No indirect loss, disturbance or degradation of habitat is expected to occur as a result of the proposed action, outside of the Disturbance Footprint or elsewhere. Mitigation strategies outlined in the CEMP address this criterion.
	3c	c) Discussion of the risk of introduction of weeds and pathogens during construction and operation activities as relevant to MNES.	Further information required.	Section 3.3.7.5	Introduced flora
				Table 3.14	Declared weeds and WoNS detected in the Project Area during field surveys.
				Section 4	Documented within Key Threatening Processes for a number of MNES.
				Section 5.1 Section 5.1.4	Direct impacts Weeds and plant pathogens.
				Section 5.2.3	Degradation of habitat through weeds or pathogens.
				Table 6.3	Project specific sub-plans for environmental management during construction and operation.
	3d	d) An analysis on whether any impacts are likely to be unknown, unpredictable or irreversible or sub-lethal (i.e., reversible over time) and what confidence is placed on the predictions or relevant impacts.	Further information required.	Section 5	Project impacts, including numerous sub-sections for assessed potential direct and indirect impacts.
				Section 5.1.2	Noise and vibration.
				Section 5.1.6	Collision risks for aerial species (birds and bats).
				Section 5.2.9	Potential impact of shadow flicker.
				Section 5.4	Cumulative impact assessment.
				Section 7	Assessment of impacts on Matters of National Environmental Significance (addressed in individual subsections for MNES).
	3e	e) Analyse, discuss and determine, using the department's Significant Impact Guidelines 1.1, whether the proposed action will likely have significant impacts on relevant threatened species and ecological communities.	Further information required.	Section 7	Assessment of impacts on Matters of National Environmental Significance.
	3f	f) Any technical data and other information used or needed to make a detailed assessment of the relevant impacts.	Further information required.	Section 1.5	Associated Documents and Attachments.
				Section 2.3.2	Planning and Technical Investigations.
				Section 3.1.1	Ecological studies – desktop assessments.

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
		Provide copies of any surveys or ecological reports referenced in the preliminary documentation and ensure that the surveys and any other technical data information used is clearly referenced.		Section 3.1.2	Ecological studies – field surveys.
	3g	g) A local and regional scale analysis of likely impacts. This should include an assessment of connectivity, and potential short-term and long-term **cumulative impacts** of the proposed action in the context of regional development within the broader region. The analysis of cumulative impacts must specifically address the long-term viability of the Pygmy Blue-tongue Lizard and Iron-grass TEC if the proposed action was to proceed. This must consider all relevant past, present and reasonably foreseeable activities within the mid-north region of South Australia.	Further information required.	Section 5.4	Cumulative impact assessment
				Section 5.4.1.3	Potential cumulative impacts on PBTL.
				Section 5.4.1.1	Potential cumulative impacts on INTG TEC.
	3h	h) Analysis of the acceptability of the relevant impacts. This analysis must have regard to applicable statutory documents for all relevant protected matters and project specific risk controls with greater reliance on scientific evidence in analysing impacts.	Further information required.	Section 7	Addressed for each MNES in the subsection at the conclusion of each SIA.
	3i	i) Specifically, for the **PBTL**:			
		i. a comprehensive analysis of the impacts of sound, vibration and shadow flicker on PBTL's within the proposed action area,	Further information required.	Section 7.1.2.1	Impact of noise (sound) and vibration on PBTLs.
				Section 7.1.2.2	Impact of shadow flicker from WTGs on PBTL.
				Section 7.1.6	Significant impact assessment in accordance with Significant impact assessment guidelines 1.1.
		ii. the direct and indirect impacts to the function and viability of Tiliqua Nature Reserve,	Further information required.	Section 7.1.2.4	Tiliqua Nature Reserve
		iii. the direct and indirect impacts of the proposed action on the spiders that build the burrows which the PBTL occupy.	Further information required.	Section 7.1.2.3	Impact of development on spider burrows
	3j	j) A consideration of bird and bat impacts by the wind farm industry and relevant best practices.	Further information required.	Section 3.1.2.7	Bird and bat utilization surveys
				Section 5.1 and Table 5.1	Direct impacts
				Table 5.2: Direct vegetation clearance impacts associated with the Project	Direct impacts to MNES habitat
				Section 5.1.6	Collision risk, including bird and bat impacts
				Section 5.1.6.1	Goyder North Wind Farm BUS summary
				Section 5.2	Indirect impacts
				Section 5.4.1	Cumulative impacts to MNES relevant to GNWF.
				Section 7	Assessment of impacts on Matters of National Environmental Significance – refer to avian species within.
				Section 6.3.4	Adaptive management
4. Proposed avoidance, management, and mitigation measures **The preliminary documentation must provide information**	4a	The department acknowledges the draft Iron-grass TEC and PBTL management plans presented in the referral documentation and considers that they will need to be updated considering this request for further information and			

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
on specific measures proposed to avoid, mitigate and manage impacts to the relevant protected matters from the proposed action. Avoidance and mitigation measures are the primary methods of eliminating and reducing significant impacts on MNES and must be thoroughly investigated and supported by evidence to demonstrate their likely success. Specific measures identified for each impact pathway should be presented in a detailed management plan for the protected matter likely to be impacted by the proposed action including the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing for each environmental issue. **Include relevant management plans that will be developed or implemented prior to commencement of the action e.g., Pest and Weed Management Plan, Bird and Bat Management Plan.** **To assist you in how to prepare management plans in accordance with the EPBC Act requirements, please see the department's Environmental Management Plan Guidelines at: Environmental Management Plan Guidelines - DCCEEW.** **Documentation should clearly set out the measures for each environmental issue and protected matter likely to be impacted by the proposed action (e.g., in the form of a schedule).**		could be improved by including the information outlined below:			
		i. Provide a detailed description of proposed avoidance, management and mitigation measures for species and ecological communities that may be subject to a significant impact.	Further information required.	Section 6	Consideration of the mitigation hierarchy.
				Section 6.2.1	CEMP
				Section 6.2.2	PBTL management plan
				Section 6.2.3	INTG management plan
				Section 7	Assessment of impacts on Matters of National Environmental Significance – individual species sections.
		ii. The discussion must incorporate conservation advice, recovery plans and threat abatement plans, where relevant.	Further information required.	Section 1.4	Relevant Policies and Publications.
				Section 4	Matters of National Environmental Significance.
				Section 7	Assessment of impacts on Matters of National Environmental Significance.
		iii. Commitments and statements within the management plans should avoid the use of ambiguous terminology such as 'where possible', 'as required', 'to the greatest extent possible'. If it is necessary to include ambiguous terminology, it must be explained and examples given.	Further information required.	Throughout this document and associated management plans (i.e. INTG MP, PBTL MP, CEMP) x	A concerted effort has been made by Neoen to ensure consistent wording has been applied to reflect Neoen's commitments to avoidance and mitigation measures referenced herein and within the associated management plans for the GNWF Project (i.e. INTG MP, PBTL MP, CEMP) and to avoid ambiguous terminology.
		iv. Consider all content in the department's Environmental management plan guidelines.	Further information required.	Section 6.2.1 and Table 6.3	CEMP Project specific sub-plans for environmental management during construction and operation.
		v. Consistent use of terminology.	Further information required.	Section 1	Introduction, outlining key project areas and relevant, consistent terminology.
				Section 2.2	Components of the Action, outlining Project definitions and key elements.
				Section 15	Definitions and abbreviations.
	4b	b) For the **PBTL**, a comprehensive discussion of how all reasonable measures have been taken to avoid impacts to the PBTL, including the selection of the site and layout of access tracks and wind turbine generators.	Further information required.	Section 3.1.2.5	Targeted Pygmy Blue-tongue Lizard Surveys.
				Section 6	Consideration of the mitigation hierarchy, including history of site selection, avoidance of habitat relevant to MNES though design and micro siting.
				Section 6.1.3	Micro siting and Neoen's proposed approach, inclusive of PBTL specific avoidance measures.
				Section 6.2.2	PBTL management plan.
				Section 7.1	Pygmy Blue-tongue Lizard assessment.
				Section 7.1.3 and Table 7.9	Mitigation hierarchy implemented and proposed to avoid impacts to PBTL at all stages of the Project.
	4c	c) The description at (a) must address all project phases (pre-construction, construction, operation/maintenance and decommission) of the proposed action.	Further information required.	Section 2.3	Activities associated with the Action, including planning, design development, pre-construction, construction, operation and maintenance, and decommissioning.
				Section 5.1 and Table 5.1	Direct impacts and indicative timeframes.
				Section 5.2 and Table 5.4	Indirect impacts and indicative timeframes.
				Section 6.1.1.2	Construction exclusion zones and buffers.
				Section 7.1.3 and Table 7.9	Mitigation hierarchy implemented and proposed to avoid impacts to PBTL at all stages of the Project, including PBTL pre-clearance surveys and actions.
				Section 7.1.4 and Section 7.1.5	Relocation and/or translocation as a tool for mitigating impacts to individual PBTLs.
	4d			Section 5.4.2	Mitigation strategies specific to cumulative impacts of renewable energy facilities.

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
		d) An assessment of the predicted effectiveness of the avoidance and mitigation measures for each threatened species and ecological community. This includes the scale and intensity of impacts of the proposed action and the on-ground benefits to be gained through each of these measures. Measures must be assessed and justified for their effectiveness in the context of this proposal and under varying conditions e.g., weather, change of operations, bushfire.	Further information required.	Section 6	Consideration of mitigation hierarchy.
				Section 7	Assessment of impacts on Matters of National Environmental Significance, inclusive of avoidance and mitigation measures for each threatened species and ecological community (as per relevant subheadings).
	4e	e) State the environmental and conservation objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing for each environmental issue.	Further information required.	Outlined in Section 6.2 and Section 6.3 Detailed information is provided in project specific management plans, i.e.: Att11_GNWF_CEMP Att12_GNWF_INTG MP Att13_GNWF_PBTL MP	Summary of minimisation of impacts, including overview of environmental and conservation objectives, performance criteria, monitoring, reporting, corrective actions, and responsibilities. Also rehabilitation goals, targets, triggers and management actions relating to INTG.
	4f	f) Details of pre-clearance, clearance and construction procedures, including pre-clearance surveys, to ensure that MNES are adequately detected and managed to minimise impacts (e.g., the translocation management protocols for specific species).	Further information required.	Section 2.3 (inclusive of subsections).	Design development, inclusive of an overview of pre-construction and micro siting, construction, operational and maintenance activities, and decommissioning.
				Section 6	Consideration of mitigation hierarchy, inclusive of methods to manage and minimize impacts such as micro siting, pre-clearance surveys, PBTL specific avoidance measures, and other ways to manage and minimize impacts including implementation of the CEMP, PBTL management plan, and INTG management plan.
				Section 7	Assessment of impact on Matters of National Environmental Significance, inclusive of subsections such as mitigation hierarchy implemented and proposed to avoid and minimize impacts for each MNES.
	4g	g) Include a description of any rehabilitation or revegetation of temporarily disturbed areas. This should also address management, methodology, timing, duration and effort of rehabilitation works. Details of proposed revegetation activities should address Specific, Measurable, Achievable, Relevant and Timebound (SMART) commitments that deliver like-for-like vegetation and EPBC habitat outcomes.	Further information required.	Section 2.2, and Table 2.1	Components of the Action, inclusive of components of the Project that are considered Temporary Disturbance and will be rehabilitated at the conclusion of the construction activity.
				Table 2.4	Operation and maintenance activities, inclusive of rehabilitation works for Temporary Disturbance areas.
				Section 5, Table 5.1 and Table 5.2.	Project impacts, inclusive of the total area of defined Temporary Disturbance, as well as the phase and duration of the impact.
				Section 6 and Section 6.2	Consideration of the mitigation hierarchy, and minimization of impacts, including reference to the CEMP, OEMP, and Rehabilitation Management Plan (post construction), Decommissioning and Rehabilitation Management Plan, and Flora and Fauna Management Plan, which each encompass considerations and commitments to like-for-like vegetation and EPBC habitat outcomes, or better.
				Section 6.3.1.1	Outlines specific rehabilitation measures with address the SMART requirements for MNES, as detailed in Att12_GNWF_INTG MP.
				Section 7	Assessment of impacts on Matters of National Environmental Significance, inclusive of subsections such as mitigation hierarchy implemented and proposed to avoid and minimize impacts, which outline specific Permanent Disturbance and Temporary Disturbance to habitat for specific MNES.
	4h	h) Include maps that illustrate the location of any proposed construction exclusion zones or buffer zones, and details on how these areas will be excluded, or protected.	Further information required.	Section 2.2	Components of the Action, inclusive of Project definitions and key elements addressing buffers such as implementation of the Development Envelope (i.e. buffer zone) to allow for micro siting

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
				Figure 4.30	Exclusion fence approximately 23 m north of edge of the Disturbance Footprint
				Figure 4.31	Exclusion fence (large) and individual barriers further north (~270 m) of the Disturbance Footprint.
				Figure 5.1	Temporary Disturbance and Permanent Disturbance associated with the Project, inclusive of the buffer zones (i.e. the Development Envelope) for micro siting.
				Section 6	Consideration of the mitigation hierarchy, inclusive of areas that have been avoided and excluded from the Project during ongoing design iterations and refinement, and how these areas will be protected.
				Section 6.1.1.2 and Figure 6.1	Construction exclusion zones and buffers, including exclusion of Mokota CP and Tiliqua Nature Reserve.
	4i	i) Details of the vegetation or habitat to be retained must include the location and quantification of the total area, presence of protected matters, protection measures such as fencing and road underpasses, management measures and their suitability with respect to any protected matters present and any conservation arrangements.	Further information required.	Section 5	Overview of Temporary Disturbance and Permanent Disturbance, outlining approximately 17,166.40 ha within the Project Area to be retained and unimpacted by clearance activities associated with the Project.
				Section 5.1	Clearance and Disturbance of Vegetation.
				Figure 4.30	Exclusion fence approximately 23 m north of edge of the Disturbance Footprint
				Figure 4.31	Exclusion fence (large) and individual barriers further north (~270 m) of the Disturbance Footprint.
				Section 6.1.1.2 and Figure 6.1	Construction exclusion zones and buffers, including exclusion of Mokota CP and Tiliqua Nature Reserve.
	4j	j) Provide details of ongoing research and monitoring programs to support an adaptive management approach and determine the effectiveness of the proposed mitigation measures.	Further information required.	Section 5.1.6	Consideration of the potential risk of injury or mortality of fauna from collision, which includes potential collision with moving rotor blades in the WF. It is noted that results from the suite of BBUS, and risk assessment will inform a Bird Adaptive Management Plan (BAMP) (if required).
				Section 5.4.2	Ongoing research and monitoring which includes references to partnerships between Neoen and other stakeholders (i.e. Government stakeholders and private stakeholders) which will assist in informing potential adaptive management measures within the GNWF (both short-term and long-term).
				Section 6	Consideration of the mitigation hierarchy.
				Section 6.2.2	Reference and commitment to the development of research initiatives associated with the protection of PBTL.
				Section 6.2.3	Reference and commitment to the development of monitoring the recovery of INTG at sites of Temporary Disturbance associated with the Project.
				Section 6.2.4	Overview of the components of the proposed OEMP, which will include specific environmental management and mitigation measures, a framework for actions, responsibilities and protocols, including management, review and auditing requirements, and ongoing communication with government stakeholders as required by legislation and for compliance reporting.
				Section 6.3.2.2, Section 6.3.2.3 and Section 9.3.2.2	Current and proposed research and monitoring programs specific to potential interactions between wind farms and PBTLs which may inform ongoing and adaptive management measures.
				Section 6.3.3	Monitoring and reporting, including provision of auditing requirements as set out in each management plan, which inform and determine the effectiveness of mitigations.
				Section 6.3.4	Adaptive management provides a summary of proposed adaptive management measures.
				Section 7	Assessment of impacts on Matters of National Environmental Significance, inclusive of subsections such as *mitigation hierarchy implemented and proposed to*

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
					avoid and minimize impacts, which outline effectiveness of each mitigation measure.
	4k	k) Discussion of the likely residual impacts to each relevant threatened species and ecological community after proposed avoidance and/or mitigation measures are taken into account.	Further information required.	Section 9	Offsets for residual impacts to INTG and PBTL.
	4l	l) Provide details of construction management measures, including: • Erosion and sediment controls for displaced soils and construction materials under rainfall and dry conditions. • Waste management procedures. • Revegetation areas and activities. • Weed management plan through life of the action. Timeline for construction of the proposed action that ensures temporal avoidance and all other relevant controls throughout the life of the proposed action that prevent adverse water quality and significant impacts to adjacent MNES.	Further information required.	Section 5	Project impacts, outlining the timeline for construction activities.
				Section 6.2.1 and Table 6.3	CEMP, outlining project specific sub-plans for environmental management (including a soil erosion and drainage management plan, stormwater management plan, rehabilitation management plan, landscaping and revegetation management plan, and flora and fauna management plan, and others) during construction and operation.
				Section 6.3.1	Overview of rehabilitation program for undertaking and monitoring rehabilitation.
	4m	m) Provide details of maintenance works, including: • management of native vegetation areas, including revegetation areas. • weed and pest management activities • waste management activities, including management of oil spills, sewage, land run-off and toxic contaminants (including any heavy metals) that may occur.	Further information required.	Section 2.2	Details of maintenance works, including increasing the height of OTL towers to avoid or reduce the need for maintenance of vegetation.
				Section 6.2.1 and Table 6.3	CEMP, outlining project specific sub-plans for environmental management (including a rehabilitation management plan, landscaping and revegetation management plan, flora and fauna management plan (inclusive of weed and pest management), waste management plan, fire and emergency response plan, and others).
				Section 6.2.1 and Table 6.3	OEMP, addressing construction as a minimum shall include specific management measures for the following aspects: noise and vibration; air quality and dust; native flora and fauna; revegetated areas, Aboriginal and European heritage; weeds and pests; traffic and access; erosion and stormwater management; site rehabilitation (post construction); storage and handling of hazardous substances; water quality; fire risk; contamination; public safety; emergency response planning; complaints management, including an on-going monitoring and mitigation protocol in respect to raptor and other bird species that may be impacted by the development.
	4n	n) Specify the criteria for the micro siting process that has been proposed within the referral documentation. This must include, but not be limited to, how the process will consider impacts to protected matters if the disturbance footprint is altered, survey protocols, and how the final disturbance footprint will be documented.	Further information required.	Section 2.2	Components of the Action, including Project definitions and key elements.
				Section 3.1.2	Field surveys and targeted surveys undertaken to locate MNES and MNES habitat, and details surrounding the application of micro siting during the Project's design and refinement over time.
				Section 6	Consideration of mitigation hierarchy, including design, and construction exclusion zones and buffers.
				Section 6.1.3	Micro siting, including justification and proposed approach to implementation.
				Section 7	Assessment of Matters of National Environmental Significance, including the application of micro siting to avoid each MNES, as listed in subsections, including PBTL specific impacts, mitigation hierarchy implemented for each MNES, and consideration during the significant impacts assessment for each MNES.
5. Proposed offsets **An offset package can comprise a combination of direct offsets and other compensatory measures, so long as it**	5a	a) The preliminary documentation must include an assessment of the likelihood of residual impacts occurring, after avoidance, mitigation and management measures have	Further information required.	Section 7	Assessment of Impacts on Matters of National Environmental Significance provides an assessment of likelihood of residual impacts occurring for each MNES considered.

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
meets the requirements of the EPBC Act Environmental Offset Policy. **Offsets should align with conservation priorities and be tailored specifically to the attributes of the protected matter that is impacted, in order to deliver a conservation gain.** **Offsets should compensate for an impact for the full duration of the impact.** **Offsets must directly contribute to the ongoing viability of protected matters and deliver an overall conservation outcome that improves or maintains the viability of the ecological community and habitat for protected matters, as compared to what is likely to have occurred under the status quo, i.e. if neither the action nor the offset had taken place.** **Offsets do not make an unacceptable impact acceptable and do not reduce the likely impacts of a proposed action. Instead, offsets compensate for any residual significant impact.** **Offsets required by the state can be applied if the offsets meet the department's EPBC Act Environmental Offsets Policy.** **Our detailed requirements for offsets will be provided if after provision of information outlined in this request, if it is considered a residual impact applies.**		been applied. This includes direct impacts such as habitat clearing and indirect impacts such as degradation of retained habitat. Should there be any residual significant impacts on MNES after the avoidance, mitigation and management measures have been applied, provide details of an offset package proposed to be implemented to compensate for the residual impacts of the proposed action. Provision of a complete offset strategy and its management plan can be considered as condition/s of approval. However, a preliminary strategy at a minimum, should be provided as part of the assessment to demonstrate a reasonable level of feasibility under Part 7 of the EPBC Act Environmental Offsets Policy.		Section 9	Residual Outcomes details the residual significant impact on MNES after the avoidance, mitigation and management measures have been applied.
	5b	b) An offset package must include:			
		i. details of the offset package (this may be in the form of an offset strategy and offset management plan) including how, when and where the offsets will be delivered and managed.	Further information required.	Section 9	Offsets for Residual Impacts
				Att14_GNWF_EPBC Offset Strategy	The EPBC Offset Strategy (in full).
				Section 9.2.1	PBTL Offset Strategy
				Section 9.4	INTG Offset Strategy
		ii. details of how the offset(s) will compensate for the significant residual impacts.	Further information required.	Section 9.1	Offset Requirements, details the residual impact and the criteria applied to determine the offset under a number of potential offset options.
		iii. a description of how the offset(s) will ensure the protection, conservation and management of protected matters for the duration of the impact (i.e. should impacts be in perpetuity, the offsets must also be delivered in perpetuity).	Further information required.	Section 9.2.1	Protection mechanisms for EPBC Offsets.
		iv. a description of how the offset(s) is/are consistent with relevant Commonwealth policies and guidance documents on offsets under the EPBC Act.	Further information required.	Section 9.3.3	Assessment of the proposed PBTL Offset against the principles
				Section 9.4.3	Assessment of the proposed INTG Offset against the principles
		v. the anticipated cost (financial and other) of delivery of the offsets(s).	Further information required.	Relevant content in Section 9 and in Att14_GNWF_EPBC Offset Strategy, however see comment.	Detailed costs for offsets have not yet been developed, and are expected to be presented in the Offset Management Plans. A high-level Offset Strategy is presented with the Preliminary Documentation response at this stage.
6. Environmental Outcomes	6a	a) In the event that the Minister decides to approve the action and attach conditions, should you wish to implement or pursue an outcomes-based approach to mitigating and/or offsetting impacts on protected matters, the preliminary documentation must provide information on the outcomes that will be achieved for the relevant protected matters. Outcomes need to be specific, measurable and achievable, and should be based on robust baseline data. Outcomes must be developed in consideration of the Outcomes-based Conditions Policy 2016 and Outcomes-based Conditions guidance 2016 with suitable justification for considerations identified in the policy and guidance. To allow application of outcomes-based conditions, the preliminary documentation should include the specific environmental outcomes to be achieved. It should also include the reasoning for these, including reference to any recovery plan, conservation advice	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets are included in the Offset Strategy, in Att14_GNWF_EPBC Offset Strategy.

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
		or threat abatement plan that may be relevant to the protected matters. For each proposed outcome, the information must include the following information:			
		i. the risks associated with achieving the outcome.	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets, and risks of not achieving them, are included in the Offset Strategy, in Appendix B.
		ii. the measurability of the outcome, including all suitable performance measures.	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets are included in the Offset Strategy, in Appendix B.
		iii. appropriate baseline data upon which the outcome has been defined and justified.	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets are included in the Offset Strategy, in Appendix B.
		iv. the likely impacts that the proposed outcome will address.	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets are included in the Offset Strategy, in Appendix B.
		v. demonstrated willingness and capacity of achieving the outcome.	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets are included in the Offset Strategy, in Appendix B.
		vi. the level of knowledge about the protected matter or its surrogate, upon which outcomes were based.	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets are included in the Offset Strategy, in Appendix B.
		vii. discussion of the appropriateness of any surrogates for protected matter outcomes.	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets are included in the Offset Strategy, in Appendix B.
		viii. commitments to independent and periodic audits of performance towards achieving outcomes.	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets are included in the Offset Strategy, in Appendix B.
		ix. assessment of the likely level of control that the proponent will have in achieving the outcome.	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets are included in the Offset Strategy, in Appendix B.
		x. details of proposed management to achieve the outcome, including, but not limited to performance indicators, periodic milestones, proposed monitoring and adaptive management, and record keeping, publication and reporting processes.	Further information required.	N/A	Neoen are not seeking an outcomes-based approach for overall approval of the GNWF. Outcomes specific to the proposed PBTL and INTG offsets are included in the Offset Strategy, in Appendix B.
7. Social and Economic matters **The preliminary documentation must address the economic and social impacts (both positive and negative)**	7a	Consideration of economic and social matters must include the following specific information: a) Details of any public consultation activities undertaken, and the outcomes.	Addressed in referral documentation	Section 9.6	Social and economic matters.
				Section 10.1	Public consultation.

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
of the proposed action. Economic and social impacts should be considered at the local, regional and national levels. Details of the relevant cost and benefits of any alternative options to the proposed action may also be requested.	7b	b) Details of any consultation with indigenous stakeholders	Addressed in referral documentation	Section 10.2	Indigenous stakeholder consultation.
		i. Provide evidence of Native Title land tenure and holders.	Further information required.	Section 1.5	Associated documents and attachments, specifically reference to the GNREF Cultural Heritage Report (redacted)
				Section 10.2	Indigenous stakeholder consultation inclusive of reference to relevant Traditional Owners.
		ii. Give further evidence of effective engagement with First Nations people and communities with regards to the *interim engaging with first nations people and communities on assessments and approvals under EPBC Act (interim guidance)*	Further information required.	Section 10.2 and Table 10.1	Indigenous stakeholder consultation, including a table for how Neoen has addressed the interim guidance for engaging with First Nations People and Communities, and assessments and approvals under the EPBC Act.
	7c	c) Any monitoring programs to monitor ongoing changes to economic and social characteristics potentially affected by the proposed action.	Further information required.	Section 10.3	Monitoring programs for economic and social characteristics.
	7d	d) Projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies.	Further information required.	Section 10.1.3	Summary of perceived benefits of the Project.
				Section 10.4 and Table 10.3	Cost-benefit analysis, including short and long-term costs and benefits at a localised level.
				Section 10.6 and Table 10.4	Community benefits, including Neoen's community benefit sharing principles and reference to Neoen's Community Benefit Sharing Program and Neighbour Benefit Scheme.
	7e	e) Employment opportunities expected to be generated by the project at each phase of the proposed action.	Further information required.	Section 10.5	Employment Opportunities, inclusive of projected employment targets and contract spend.
	7f	f) benefits to the local and wider community as a result of the proposed action	Further information required.	Section 10.1.3	Summary of perceived benefits of the Project.
				Section 10.4 and Table 10.3	Cost-benefit analysis, including short and long-term costs and benefits at a localised level.
				Section 10.6 and Table 10.4	Community benefits, including Neoen's community benefit sharing principles and reference to Neoen's Community Benefit Sharing Program and Neighbour Benefit Scheme.
8. Ecologically sustainable development	8a	Provide a description of the proposed action in relation to the following principles of ecologically sustainable development, as defined in the EPBC Act:	Further information required.	Section 11 and Table 11.1	Ecologically sustainable development.
		a) Provide a discussion of the long-term and short-term economic, environmental, social and equitable considerations.	Further information required.	Section 9.6, including subsections.	Social and economic matters.
				Section 11 and Table 11.1	Ecologically sustainable development considerations, inclusive of an overview of Project activities specific to this criterion, and how the Project will address ESD principles in accordance with the EPBC Act.
	8b	b) Consider the principles of inter-generational equity which states that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	Further information required.	Section 11 and Table 11.1	Ecologically sustainable development considerations, inclusive of an overview of Project activities specific to this criterion, and how the Project will address ESD principles in accordance with the EPBC Act.
				Section 11.2	Intergenerational equity.
	8c	c) Consider the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.	Further information required.	Section 11 and Table 11.1	Ecologically sustainable development considerations, inclusive of an overview of Project activities specific to this criterion, and how the Project will address ESD principles in accordance with the EPBC Act.
				Section 11.3	Conservation of biological diversity.

Key Areas (headings)	Item	Specific Content	Addressed in Referral?	Section in Preliminary Document	Comments
	8d	d) Consider improved valuation, pricing and incentive mechanisms should be promoted.	Further information required.	Section 11 and Table 11.1	Ecologically sustainable development considerations, inclusive of an overview of Project activities specific to this criterion, and how the Project will address ESD principles in accordance with the EPBC Act.
				Section 11.4	Improved valuation, pricing and incentive mechanisms.
9. Environmental record of person(s) proposing to take the action	9a	a) Details of the person proposing to take the action.	Addressed in referral documentation	Proponent information	Proponent information
	9b	b) For an action for which a person has applied for a permit, the details of the person making the application.	Addressed in referral documentation	Section 13	Other approvals and conditions associated with the Project, including state planning consent, native vegetation clearance approval (pending), and aboriginal heritage conditions (pending).
	9c	c) If the person proposing to take the action is a corporation, details of the corporation's environmental policy and planning framework must also be included.	Addressed in referral documentation.	Section 12	Neoen's environmental record.
				Att13_Neoen Sustainability Framework	Neoen's sustainability framework, inclusive of Neoen's Biodiversity Policy.
	9d	d) Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the proponent	Further information required.	Section 12	Neoen environmental record, including notation that there are no relevant past or present proceedings under Commonwealth, State or Territory law.
10. Other approvals and conditions	10a	The preliminary documentation must include information on any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action. This must include: a) a description of any approval that has been obtained or is required to be obtained from a state, territory or commonwealth agency or authority (other than an approval under the EPBC Act), including any conditions that apply (or are reasonably expected to apply) to the action.	Further information required.	Section 13	Other approvals and conditions associated with the Project, including state planning consent, native vegetation clearance approval (pending), and aboriginal heritage conditions (pending).
		b) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the proposed action.	Further information required.	Section 6.1.2	Monitoring, enforcement and review of construction exclusion zones and buffers.
				Section 6.1.3.1	Monitoring, enforcement and review of the proposed approach for pre-clearance checks and surveys, micro siting, and relocation of PBTLs if impact is unavoidable.
				Section 6.2.1	Monitoring, enforcement and review outlined in the CEMP.
				Section 6.2.2	Monitoring, enforcement and review outlined in the PBTL management plan.
				Section 6.2.3	Monitoring, enforcement and review outlined in the INGT management plan.
				Section 6.3.1	Monitoring, enforcement and review of rehabilitation activities.
				Section 6.3.3	Monitoring and reporting for PBTL.
				Section 6.3.4	Adaptive management.

APPENDIX B.
SUPPORTING LETTERS FROM TECHNICAL EXPERTS (PBTL RECOVERY TEAM)

From: Mike Gardner [redacted]
Sent: Wednesday, 23 July 2025 4:38 PM
To: [redacted]
Cc: [redacted]
Subject: RE: GNWF shadow flicker and noise assessment, and presentation

Hi all,

Thank you for the discussion and the documents to review.

In my role as chair of the Pygmy Bluetongue Recovery Team I am writing to revise the previous information provided to DCCEEW that the Recovery Team recommends a 2 km buffer with no turbines around the Nature Foundation Tiliqua Reserve. The recommended buffer distance is revised down to 500 m. The current closet proposed turbine to Tiliqua Reserve is 625 m. The proximity of proposed turbines to the other reserves (Mokota CP and the Heritage Agreement 1264) are not a concern in regard to pygmy bluetongue lizards and spiders, the proximity of turbines means there is minimal impact to these areas.

In the documentation provided, the estimates of the pygmy bluetongue likely habitat are quite conservative and the actual likely area is to be smaller.

The estimates of shadow flicker show that there is minimal shadow on the area of the Tiliqua Reserve with most (except for a very small area) of the Reserve only experiencing at most 30 hours or 8.3 days per year of shadow flicker. Siting of the turbines to lesson the impact means that the vast majority of the shadow flicker will be in the winter months which will have no direct impact on the lizards. The extent of shadow flicker days is not going to be consistent across the whole site for the days indicated.

The table (table 1 in the document) provides realistic estimates of the potential impacts to the lizards. It seems only very small areas that might be impacted detrimentally. At present it is difficult to understand if the impacts as assessed in 251-500 category as it may be that lizards are not in the areas impacted here as a lot of that area seems in the actual footprint of the turbines where no lizards will be found. There is a potential that there will be some impact 251-500 category, however the research and monitoring that will be done as part of the Goyder South project by Flinders University will help to understand these impacts and determine if further offsets are required. I am satisfied, however, that what has been presented is going to not impact the Tiliqua Reserve.

Please let me know if you require any further comments.

Kind regards,

Mike

Mike Gardner (he/him/his)

Professor of Biodiversity and Ecology

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College of Science and Engineering, Flinders University

Honours in Natural Sciences Coordinator

Past President Australian Society of Herpetologists

Chair of the Pygmy Bluetongue Recovery Team

[redacted]

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From: Mike Gardner [redacted]
Sent: Monday, 14 July 2025 2:35 PM
To: [redacted]
Cc: [redacted]
Subject: RE: PBTL population estimate and method verification

Hi [redacted]**,**

Thank you for the opportunity to examine your methods and estimates for pygmy bluetongue lizards at Goyder North Wind Farm. I enlisted my PhD student and assistant to help with this response as they have extensive on-ground knowledge of undertaking surveys.

To respond I will break my review into two sections as requested.

1) **The appropriateness / validity of our approach in terms of survey methodology, described limitations, habitat mapping and population estimates.**

The methodology used to search the areas of direct impact (disturbance footprint) is well thought out and implemented. We particularly liked the construction of the survey parameters and the confidence definitions. The use of a habitat suitability scale is really excellent and something we also might include in our future work at GN. These categories provide an excellent framework to understand how accurate the methodology would be in capturing the numbers of animals accurately on the ground. Whilst the methodology might not allow every single lizard in the disturbance footprint to be found, it is very unlikely that the team would miss 'hotspots' with large numbers of lizards. The population estimates from the lizard finds would therefore be reflective of the numbers within the disturbance area. The estimates may even be slight overestimates given the searching that occurred around lizard hotspots. One consideration that is relevant is that I note that these searches and therefore the estimates were taken after a few years of lizard booms. Although we don't have a complete understanding, we do know that pygmy bluetongue lizards go through 'boom and bust' cycles that are driven largely by rainfall. The years of the survey are near the end of that boom cycle so could be higher estimates for that reason as well. It is likely the actual numbers of lizards present in the whole impacted area and within the whole windfarm area are at the high end of the boom cycle or at least the earlier stages of lizard decline. I expect these are realistic estimates. It is noted that only the immediate disturbance footprint has been examined however and if higher quality habitat occurs in the whole windfarm area that the numbers may be underestimates across the entire zone. It is almost impossible to know what the numbers across the whole area could be due to the lack of our understanding in what makes 'good' pygmy bluetongue habitat. Of course, it is not currently possible to accurately possible to predict the impacts at these other areas and that is something that the long-term research will provide.

2) **Whether the level of survey effort undertaken is sufficient to give confidence to our impact estimates.**

The surveys were conducted in late summer and autumn. This is the best time of year to undertake survey work for pygmy bluetongues as the ground cover is less in those times and therefore visibility of spider burrows is the best. The start of 2024 was dry which would contribute to the searching as being of high visibility. The number of burrows searched was high and it is likely that, although a few lizards would have been missed within the disturbance area, the numbers missed would be small. I note that the locality of identified pygmy bluetongue habitat was a conservative estimate and likely the area of high quality habitat is lower than that of the estimates. The use of a 50 m diameter around lizards is appropriate. It is unclear at times if these isolated lizards are dispersers away from lizard hotspots or part of a larger patch. I consider the efforts to locate the lizard patches was adequate. Lizards normally occur in patches and the possibility of missing a lizard "patch" is fairly small given the methodology. I consider the identified potential impact on the lizards has been appropriately assessed.

This can be included in the response document to send to DCCEEW.

Kind regards,

Mike

Mike Gardner (he/him/his)

Professor of Biodiversity and Ecology

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