



GOYDER NORTH WIND FARM

Iron-grass Natural Temperate Grassland of
South Australia Threatened Ecological
Community Assessment

FINAL

June 2025

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Prepared by
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on behalf of
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Acknowledgement of Country

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Abbreviations

Term	Description
BAM	Bushland Assessment Method
DA	Development Application
DCCEEW	Department of Climate Change, Energy the Environment and Water
EBS	Environment and Biodiversity Services Pty Ltd – trading as EBS Ecology (now Umwelt).
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
FLB	Flinders Lofty Block
GNREF	Goyder North Renewable Energy Facility
GNWF	Goyder North Wind Farm
GRZ	Goyder Renewables Zone
GSHREP	Goyder South Hybrid Renewables Energy Project
GS	Goyder South
GSS1	Goyder South Stage 1
IBRA	Interim Biogeographical Regionalisation of Australia
INTG	Iron-grass Natural Temperate Grassland of South Australia (INTG) Threatened Ecological Community (TEC)
kV	Kilovolt
LSA Act	<i>Landscape South Australia Act 2019</i> (South Australia)
MDD	Murray Darling Depression
MNES	Matter(s) of National Environmental Significance
MW	Megawatts
NP	National Park
NPW Act	<i>National Parks and Wildlife Act 1972</i> (South Australia)

Term	Description
NVC	Native Vegetation Council
OTL	Overhead Transmission Line
PMST	Protected Matters Search Tool (Commonwealth)
SA	South Australia(n)
SCAP	State Commission Assessment Panel
SEB	Significant Environmental Benefit
SIG	Significant Impact Guidelines 1.1 for Matters of National Environmental Significance (DotE, 2013)
sp.	Species (singular)
spp.	Species (plural)
ssp.	subspecies
TEC	Threatened Ecological Community
Umwelt	Umwelt Australia Pty Ltd
WF	Wind Farm
WTG	Wind Turbine Generator

Glossary

Term	Description
Class A INTG	Condition Class A INTG (The highest quality representation of Iron-grass Natural Temperate Grassland). Class A INTG is protected by the EPBC Act.
Class B INTG	Condition Class B INTG (Iron-grass Natural Temperate Grassland of high quality with less native species diversity than Condition Class A). Class B INTG is protected by the EPBC Act.
Class C INTG	Iron-grass Natural Temperate Grassland that is typically significantly degraded, but amenable to rehabilitation. Class C INTG is not a Threatened Ecological Community protected by the EPBC Act.
Development Envelope	A 'buffered' version of the Disturbance Footprint that represents the spatial extent within which the Disturbance Footprint is expected to occur.
Disturbance Footprint	The area where permanent and temporary infrastructure is proposed and the maximum spatial extent of vegetation clearance and/or earthworks to allow for construction of the GNWF.
met mast	Meteorological mast (mast or tower equipped with instruments to measure windspeed and climatic conditions).
Operation	All activities that occur after 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 Area	Goyder North Wind Farm Project Area including OTL.
Project components	Includes boundaries of GNREF, GNWF, Development Envelope and, Disturbance Footprint.
Project elements	Distinct functional elements of the GNWF Project including WF, OTL and Site Access.
the Project	Goyder North Wind Farm.
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 <i>Matters of National Environmental Significance – Significant Impact Guidelines 1.1</i> (DEWHA, 2013)

Table of Contents

Abbreviations	i
Glossary	iii
1.0 Introduction	1
1.1 Objectives	1
2.0 Background	4
2.1 Project Area	4
2.2 Previous Survey Effort	6
2.3 Iron-grass Natural Temperate Grassland (INTG)	7
2.3.1 Conservation and Listing Status	7
2.3.2 Ecology	9
2.3.3 Distribution and Abundance	10
3.0 Methods	12
3.1 Field Survey	12
3.2 Limitations	12
4.0 Survey Results	14
4.1 Survey Conditions	14
4.1.1 Climate	14
4.1.2 Land Use	15
4.1.3 Fire History	15
4.2 INTG Condition Class Assessment	16
4.3 Confidence in Results	21
5.0 Discussion and Recommendations	24
5.1 GNWF Disturbance Footprint	24
5.2 INTG Regional Context	24
5.3 EPBC Referral	28
5.3.1 Mitigation Hierarchy	28
5.3.2 EPBC Offset Calculator	29
5.4 Recommendations	32
6.0 References	34

Figures

Figure 1.1	Goyder Renewables Zone (GRZ) and Location of Goyder North Project Area	3
Figure 2.2	Native Vegetation mapped within GNREF	5
Figure 4.1	Iron-grass Natural Temperate Grassland Mapped Within the GNWF Project Area	20
Figure 5.1	INTG and Project Disturbance Footprint of the Wind Farm	26
Figure 5.2	INTG and Project Disturbance Footprint of the Overhead Transmission Line	27

Graphs

Graph 4.1	Rainfall and mean maximum temperatures for 12 months preceding the survey, in comparison to historical data collected at the Clare Highschool weather station (021131) between 1994 and 2024	15
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Tables

Table 2.1	Previous Vegetation Surveys Conducted Within the Project Area	6
Table 2.2	EPBC Act Status and Associated Documents for INTG	8
Table 2.3	Criteria for Listing INTG as a Threatened Ecological Community	10
Table 4.1	Condition Class Rating of INTG Patches Assessed in October 2024. Red Text Indicates Where a Criterion Has Not Been Met	17
Table 4.2	Accordance with Survey Methodology in Relation to the Criteria Outlined in the Conservation Advice and National Recovery Plan	21
Table 4.3	Condition Assessment of BAM Sites Within the Project Area	23
Table 5.1	Occurrence of INTG Within the GNWF Project Area and Disturbance Footprint	24
Table 5.2	The Estimated Total Area of INTG remaining in SA and Impact of the Project	25
Table 5.3	Offset Assessment Guide Results	29

Appendices

Appendix 1	Flora Commonly Observed in INTG
Appendix 2	Flora Species List – Targeted INTG Survey Sites
Appendix 3	Survey Site Photo File

1.0 Introduction

Neoen is developing the Goyder North Renewable Energy Facility (GNREF) as a part of its wider Goyder Renewables Zone (GRZ) concept (**Figure 1.1**). As a part of this concept, the Goyder South Hybrid Renewables Energy Project was granted Development Approval in 2021, and EPBC Approval in July 2022 (Stage 1A EPBC/2021/8958; Stage 1B EPBC/2021/8957), with construction of Goyder South Stage 1 (GSS1) beginning in 2022, consisting of 412 megawatts of wind turbine power generation.

Given the scale of the Project, it is proposed to be constructed in stages. Neoen is currently progressing the development of a 600-megawatt wind farm, Goyder North Wind Farm (GNWF), north of the township of Burra, in the Goyder Regional Council within the mid-north of South Australia (the Project). Additionally, the Project incorporates an Overhead Transmission Line (OTL) which traverses approximately 48 kilometres south, to the existing Bunday Substation, near Robertstown.

The Project Area is known to contain *Lomandra* (Iron-grass) Grassland vegetation association, which has been broadly mapped (as VA6) within the Project Area in previous surveys undertaken between 2022 and 2024 by EBS Ecology (now Umwelt). It is likely that some areas of *Lomandra* Grassland meet the criteria for Iron-grass Natural Temperate Grassland of South Australia (INTG) Threatened Ecological Community (TEC) (hereafter INTG), listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Project received planning consent from the State Commission Assessment Panel (SCAP) in October 2024. Additionally, an EPBC Referral (2024/09929) was submitted to the Commonwealth Department of Climate Change, Energy the Environment and Water (DCCEEW) to address potentially significant impacts to Matters of National Environmental Significance (MNES), including INTG. The EPBC referral has been deemed a controlled action and will be assessed further by the preliminary documentation pathway. Subsequently, the Project design layout was amended, requiring a Referral variation, submitted in March 2025.

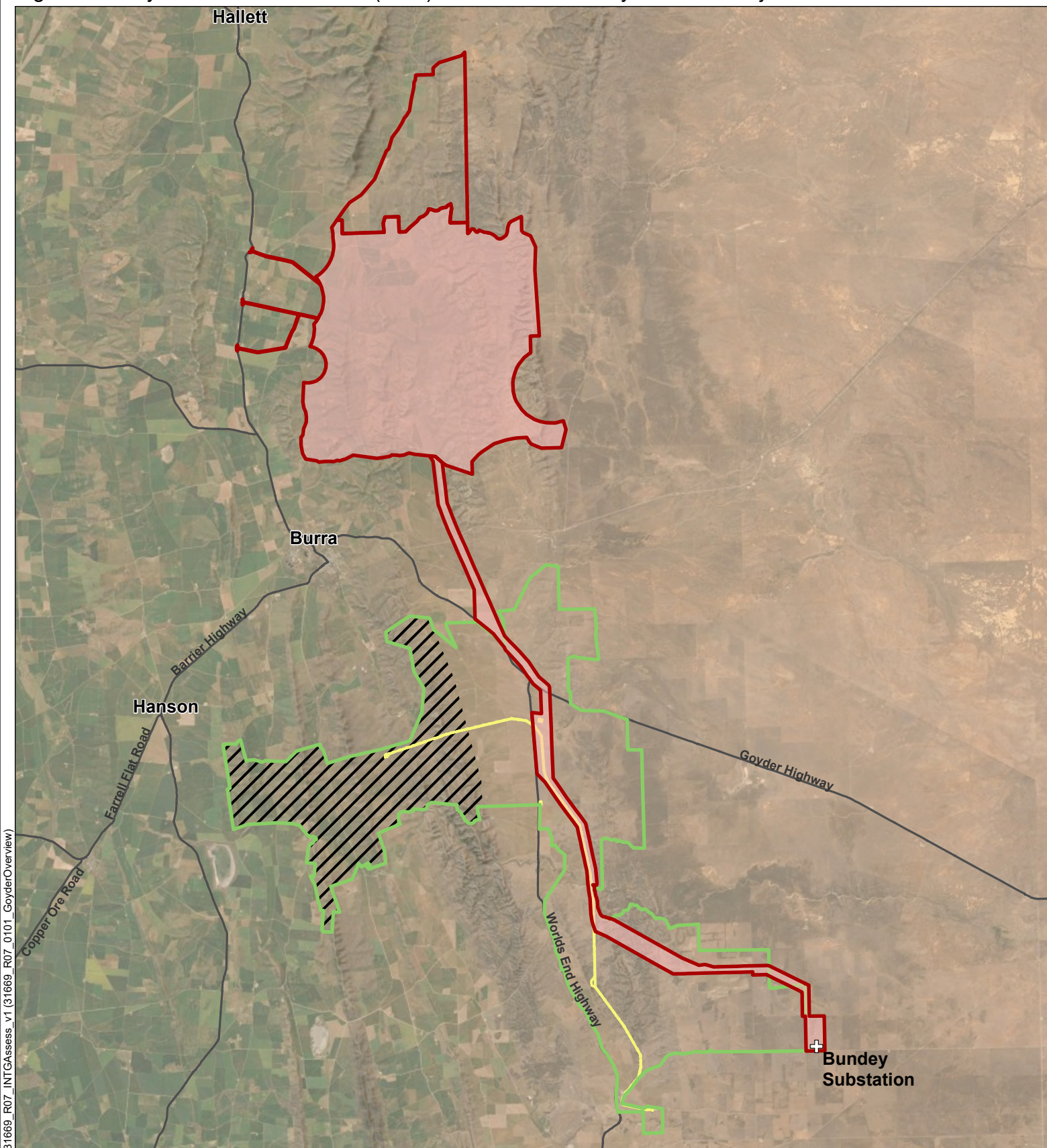
Umwelt were engaged by Neoen to undertake a targeted INTG survey in the Goyder North Wind Farm Project Area, including OTL, within the proposed Disturbance Footprint and Development Envelope of the Project Area.

1.1 Objectives

The objective of the targeted INTG survey were to:

- Assess and map the condition class of patches of INTG identified as intersecting the infrastructure / Disturbance Footprint or Development Envelope of the proposed wind farm, as per the criteria outlined in EPBC Act policy statement 3.7 – Peppermint Box (*Eucalyptus odorata*) Woodland of South Australia and Iron-grass Natural Temperate Grassland of South Australia (DEWR, 2007).

Figure 1.1 Goyder Renewables Zone (GRZ) and Location of Goyder North Project Area



GRZ Overview

- GNREF
- Goyder North Wind Farm
- GS
- GSS1
- GS OTL
- Bunday Substation (existing)



2.0 Background

2.1 Project Area

The proposed GNREF is located north-east of Burra and east of the Mount Bryan township in the Regional Council of Goyder. GNWF incorporates a portion of the broader GNREF and includes an OTL which travels approximately 48 kilometres (km) south from the Wind Farm (WF) site to an existing substation at Bunday.

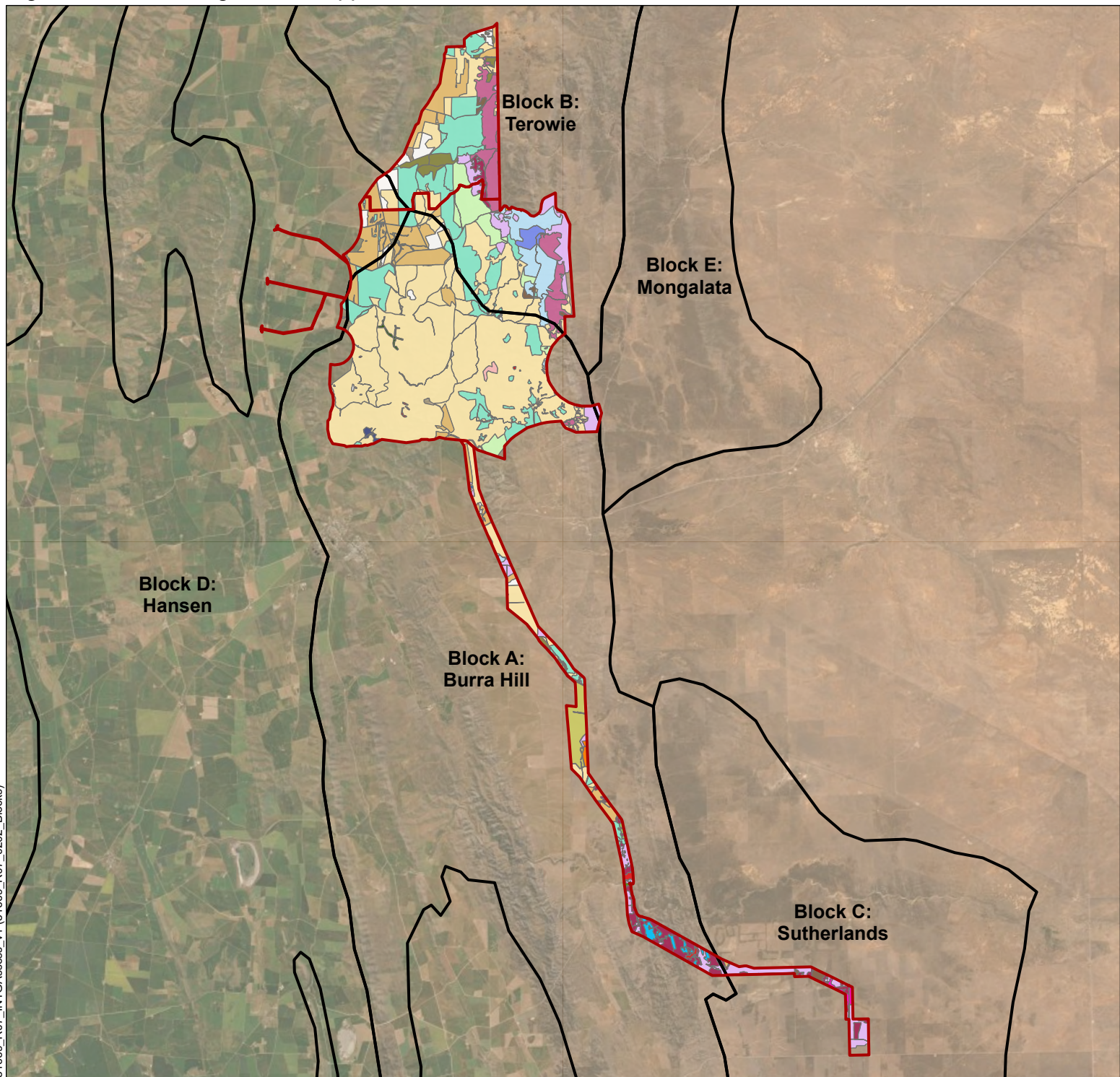
The Interim Biogeographical Regionalisation of Australia (IBRA) is a landscape-based approach to classifying the land surface across a range of environmental attributes. The GNWF primarily occurs within the Flinders Lofty Block (FLB) bioregion, with approximately 9.5 km of the southern end of the OTL within the Murray Darling Depression (MDD) bioregion.

Within the FLB, the Project Area is divided across four IBRA subregions (Blocks): Burra Hill, Terowie, Hansen and Mongolata. In these Blocks the GNREF is dominated by ridges, plains, and undulating low hills, with occasional rocky outcrops that fall away to low foot slopes and drainage channels at regular intervals. Native vegetation is comprised predominantly of grasslands, with large tracts of Iron-grass (*Lomandra* spp.) in the middle and eastern sections. Remnant mallee woodland associations occur along the eastern side of the site, where they drop steeply into chenopod dominated plains.

The OTL traverses low grassy hills and plains, chenopod dominated plains, and an area of the steep, mallee dominated Hallelujah Hills, before dropping again into chenopod shrublands and mallee plains in the MDD (Sutherlands subregion).

A total of 23 native vegetation associations have been mapped across the GNREF (WF and OTL) of which 21 associations are being impacted in the current Disturbance Footprint, including Lomandra Grassland (VA6) (**Figure 2.2**).

Figure 2.1 Native Vegetation mapped within GNREF



GNREF
Blocks

Vegetation Association

- VA1: *Eucalyptus porosa* +/- *E. gracilis* woodland over Chenopods
- VA2: Smooth Barked mixed mallee
- VA3: *E. porosa* low woodland over *Sclerophyllous* shrubs
- VA4: *Acacia pycnantha* tall shrubland over grass
- VA5: *Maireana aphylla* low shrubland
- 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
- VA13: *Hakea leucoptera* ssp. *leucoptera* tall shrubland
- VA14: *E. camaldulensis* Riparian Woodland
- VA15: *Juncus* sp. sedgeland in minor drainage pipe

- VA16: *Acacia nysophylla* shrubland
- 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

2.2 Previous Survey Effort

Neoen have previously undertaken several feasibility and environmental studies for the GRZ, which was separated into two broad projects to be developed and constructed separately. The first project, Goyder South (GS) (previously, Stony Gap) is located south of Burra and is currently under construction.

The second project, originally known as Mount Cone Wind Farm is located north of Burra. Several surveys were previously conducted by EBS (now Umwelt) at the proposed Goyder North Mount Cone site.

Following these earlier feasibility studies, the Mount Cone project was relocated to its current position and renamed GNREF. Surveys and assessments became targeted on the GNWF Project Area from late 2023 when the southernmost portion began to emerge as the Project likely to progress first. Assessments undertaken include a mixture of targeted flora and fauna survey work.

Table 2.1 presents relevant vegetation surveys undertaken within the Project Area.

Previous surveys have mapped the occurrence, extent and estimated Condition Class of INTG and extent of other vegetation associations. However, surveys were not targeted to assessing the condition class of INTG, requiring additional targeted surveys to be undertaken following finalisation of a Disturbance Footprint.

Table 2.1 Previous Vegetation Surveys Conducted Within the Project Area

Project Description	Assessment Year	Survey Type	Citation
GNREF on-ground flora assessment (GNWF)	November 2022	On-ground broad flora survey and fauna habitat assessment, and Desktop assessment.	(EBS Ecology, 2024)
GNREF OTL Desktop Flora and Fauna Assessment	July 2023	Desktop flora and fauna assessment Report for three proposed OTL options.	(EBS Ecology, 2023a)
GNREF Ecological constraints mapping	July 2023	Desktop summary of known ecological constraints to guide windfarm design process.	(EBS Ecology, 2023b)
GNREF and OTL Ecological Risk Assessment Summary	September 2023	Desktop summary of windfarm design revisions based on known ecological constraints.	(EBS Ecology, 2023c)

Project Description	Assessment Year	Survey Type	Citation
GNWF on-ground flora assessment	November 2023	Targeted GNWF and OTL native vegetation assessment, Native Vegetation Council (NVC) Bushland Assessment Methodology (BAM).	(Umwelt, 2025)
GNWF targeted EPBC listed threatened plant surveys (GNWF, OTL)	March 2024	On-ground targeted threatened plant searches along proposed infrastructure layout (GNWF, OTL).	(Umwelt, 2025)
GNWF on-ground flora assessment	February - March 2024	Native vegetation surveys (BAM) on additional proposed access and infrastructure areas for GNWF and OTL (White Hill Road, Gum Hill Road, Belcunda Road, OTL remaining/ adjusted alignment)	(Umwelt, 2025)
GNWF design update flora assessment	September 2024	Native vegetation surveys (BAM) on additional proposed infrastructure areas for GNWF.	(Umwelt, 2025)
Targeted INTG Condition Class Assessment	October 2024	Targeted INTG survey within areas proposed to be impacted by the Project.	This report

2.3 Iron-grass Natural Temperate Grassland (INTG)

2.3.1 Conservation and Listing Status

The EPBC Act legal status and associated documents for Iron-grass Natural Temperate Grassland, as provided within DCCEE's SPRAT Database (online) SPRAT Profile, are presented in **Table 2.2** below:

Table 2.2 EPBC Act Status and Associated Documents for INTG

EPBC Status	Listed as Critically Endangered (Date effective 21-Jun-2007)
Approved Conservation Advice	Department of the Environment, Water, Heritage and the Arts (2008). 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/publications/37-conservation-advice.pdf . In effect under the EPBC Act from 16-Dec-2008.
Listing Advice	Threatened Species Scientific Committee (2007). Commonwealth Listing Advice on Iron-grass Natural Temperate Grassland of South Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/publications/l-effusa.pdf . In effect under the EPBC Act from 22-Jun-2007.
Adopted / Made Recovery Plan	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 Threat Abatement Plan	Turner, J. (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.
Policy Statements and Guidelines	No Threat Abatement Plan has been identified as being relevant for this ecological community
EPBC Status	EPBC Act policy statement 3.7 - Peppermint Box (<i>Eucalyptus odorata</i>) 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, 2011) [Information Sheet]

2.3.2 Ecology

INTG is nationally listed as Critically Endangered under the EPBC Act. This TEC is endemic to South Australia and consists of tussock-forming perennial grasses, Iron-grasses (*Lomandra effusa* and/or *L. multiflora* ssp. *dura*) and a low presence (<10%) of trees and tall shrubs (DEWHA 2008; Turner 2012). Between 10% and 70% of the ground cover is covered by *Lomandra* spp. and a range of herbaceous plant species occur between tussocks (DEWHA 2008; DEWR 2007). Remaining patches of this ecological community typically occur on gentle to moderate slopes, hilltops and adjacent plains, on sandy-loam to clay-loam soil. The annual rainfall is between 300 and 600 mm per year (TSSC, 2007).

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).

Several 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) (Threatened Species Scientific Committee, 2007).

2.3.2.1 Criteria Listing and Condition Classification

The *National Recovery Plan for the Iron-grass Natural Temperate Grassland of South Australia Ecological Community*, 2012 (Turner 2012) lists a set of criteria for which a patch of INTG must be assessed in order to determine if it is of sufficient quality to qualify as the listed TEC (protected by the EPBC Act) or have potential for rehabilitation (**Table 2.2**).

Areas of Class A INTG are considered the highest quality representation of the community. Condition Class B INTG areas are also of high quality, but do not have the native species diversity of Class A INTG. Classes A and B INTG are indicative of the listed ecological community.

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.

Flora that is commonly observed in areas of INTG is provided in **Appendix 1** (Threatened Species Scientific Committee, 2007; Hyde, 1995; Department for Environment and Heritage (DEH), 2001; Robertson, 1998).

Table 2.3 Criteria for Listing INTG as a Threatened Ecological Community

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
Threatened Ecological Community					
A	0.1 ha	≥ 30	≥ 10	≥ 5	1/m
B	0.25 ha	≥ 15	≥ 3	≥ 4	1/m
Not the TEC, but amenable to rehabilitation					
C	No minimum	≥ 5	No minimum	≥ 1	No minimum

¹ Surveyed within a 50 x 50 metre (m) (or equivalent 2,500 m²) quadrat within a representative area of each patch. ²Disturbance resistance species: *Ptilotus spathulatus*; *Sida corrugata*; *Oxalis perennans*; *Euphorbia drummondii*; *Maireana enchylaenoides*; *Convolvulus angustissimus*. ³Average 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.

The Conservation Advice and EPBC Act Policy Statement 3.7 provides survey guidelines and criteria for assessing the Condition Class of INTG, including that they are:

- Undertaken in mid to late spring, and if necessary, over multiple visits, to ensure accurate plant identification.
- Assessed in good seasonal conditions or within two months of effective rain.
- Done at least two months after a disturbance (fire, grazing, slashing).
- Located in the most intact (least modified) vegetation in the remnant.
- Based on multiple quadrats and transect lines.

2.3.3 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 be 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 (Threatened Species Scientific Committee, 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.

Broad-scale 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.

3.0 Methods

3.1 Field Survey

A 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.

Surveys in areas of INTG followed 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 (DEWR, 2007).
- National Recovery Plan for the Iron-grass Natural Temperate Grassland of South Australia ecological community (Turner, 2012).

Condition Classes for each patch of INTG surveyed were determined by searching for and recording all species found within a 50 x 50 m (or equivalent 2,500m²) quadrat within a representative area of each patch.

A 50 m tape was laid at all sites and surveyed 25 m either side by two ecologists walking approximately 5- to 10 m apart. All species (including weeds) encountered within the quadrat were recorded. 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) (see **Table 2.1**).

To obtain a measure of the number of perennial native tussocks per metre, observers walked along the length of the 50 m transect and counted the number of grass tussocks which intersected the line. An estimate of Lomandra tussock density was made for each quadrat.

Survey areas were prioritised first according to where patches of INTG intersected with the proposed Disturbance Footprint or Development Envelope, and then, if not found to meet the criteria, additional surveys were undertaken within the same contiguous patch, to determine if any better-quality areas occurred, which met the criteria.

Areas not identified as INTG were categorised into one of the vegetation associations as highlighted in **Figure 2.2** or described as a new vegetation association.

3.2 Limitations

The survey was conducted at an optimal time of year during spring where spring annual herbs, forbs and grasses are most likely to have floral or seed characters to enable identification to species.

However, the preceding environmental conditions were hotter and drier than average, resulting in low presence of spring annual herb and forb species, some of which may have flowered and withered prior to the survey, and some of which may not have emerged in the poor conditions (see **Section 4.1.1**).

Additionally, the presence of heavy grazing pressure in most locations, meant that identification to species level was difficult for some flora species, especially native grasses, which were often grazed to ground level, highly modified in structure and with no mature seeds available for identification (see **Section 4.1.2**).

One large area mapped as *Lomandra* Grassland had been burnt extensively in 2023, and given the preceding environmental conditions, coupled with continual grazing, had not regenerated to its full potential. Surveys in this patch were targeted to areas which appeared to have avoided severe impacts.

Only areas with *Lomandra* species (spp.) covering more than 10 percent (%) of the assessed patch were considered *Lomandra* Grassland. Where *Lomandra* spp. cover was less than 10%, areas were assessed as native grassland with *Lomandra*. Similarly, areas which contained more than (>) 10% cover of tall shrubs (i.e. chenopods) were determined not to meet the listing description, regardless of *Lomandra* spp. cover. Cover ratings are subjective and assessments of cover for *Lomandra* and / or shrubs are likely to vary according to the surveyor.

Due to the above limitations, the precautionary principle was applied to areas where the assessment came very close to meeting the INTG condition class rating, and one or more of the above factors was present (i.e. if heavy grazing was present and not enough native perennial grass species were identified, but all other criteria were met, the precautionary principle would be applied to elevate the patch to INTG).

4.0 Survey Results

4.1 Survey Conditions

The survey was undertaken within the recommended survey window for the INTG TEC, in mid spring (14-18 October 2024), within two months of effective rain (23.2 mm on 16 August 2024, Clare High School station 021131).

Specific disturbance factors (such as grazing, slashing and fire) were unable to be specifically accommodated for the survey, due to the broad agricultural uses of the Project Area, the large number of landholders involved, and the Project timelines. Since 2022, multiple surveys have been undertaken in varying environmental conditions, using Native Vegetation Council endorsed Bushland Assessment Methodology, from which Condition Class ratings can be projected.

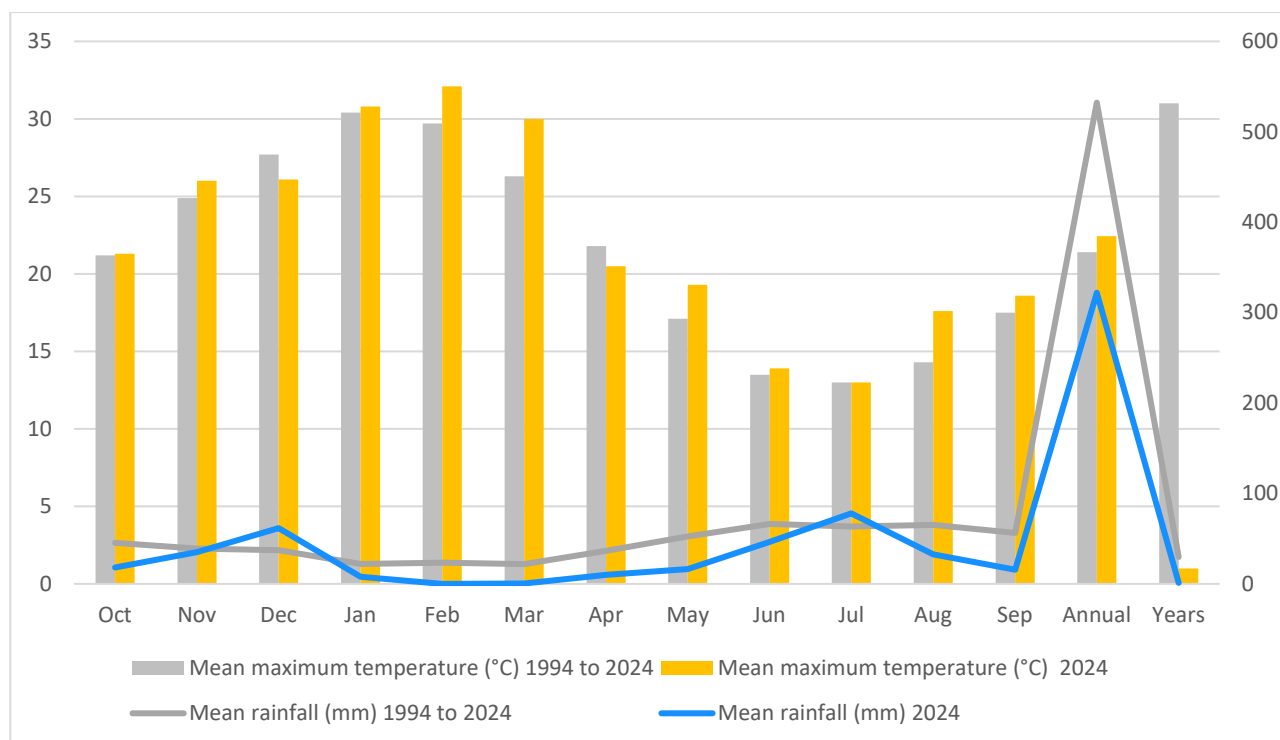
The conditions relevant to the survey period are discussed in more detail in **Section 4.1.1** and **Section 4.1.2**.

4.1.1 Climate

Climate data was sourced from the Clare High School Weather Station (site number: 021131), located approximately 40 km south of the southern boundary of the GNREF. The area surrounding Burra reaches relatively hot maximum temperatures in summer, with mean maximum temperatures highest in January and February, and winter dominated rainfall in June, July and August (Commonwealth of Australia, 2024)

Climatic conditions in the 12 months preceding the field survey included a higher-than-average mean maximum temperature (>1.03 degrees Celsius [$^{\circ}\text{C}$]), and lower than average rainfall (<210 mm). Slightly higher than average rainfall was recorded in December 2023 and in July 2024 (**Graph 4.1**).

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.



Graph 4.1 Rainfall and mean maximum temperatures for 12 months preceding the survey, in comparison to historical data collected at the Clare Highschool weather station (021131) between 1994 and 2024

4.1.2 Land Use

The Project Area is utilised for agricultural grazing practices for sheep and cattle. Grazing was evident across the entire Project Area, with some areas containing recently heavily grazed and highly modified condition, and others which showed only moderate or less recent signs of grazing. In areas that were heavily grazed, impacts included trampling of vegetation, soil erosion, presence of scat, modification of plant growth form and vegetative state and reduction in presence of identifying features such as mature seed heads.

4.1.3 Fire History

In January 2023 a large bushfire (approximately 2000 hectares) impacted the Wind Farm Project Area, including some areas mapped as Lomandra. Some areas impacted by the fire showed little sign of recovery, with the only evidence of the previous association being burnt stubs of Lomandra tussocks. Some areas showed signs of regeneration, and irregular pockets appeared to remain unaffected by the fire. Where this area was previously mapped as being Lomandra grassland but no longer appeared to meet the minimum 10% coverage of Lomandra tussocks, mapping has not been changed, given the relatively short time since fire, and potential for the grassland to regenerate over time. Surveys were undertaken in unaffected pockets within the burnt area.

4.2 INTG Condition Class Assessment

A total of 23 sites were surveyed for INTG condition class within the Project Area (GNWF) on 16 to 18 October 2024.

One site was determined to be Class A INTG, 14 sites were determined to be Class B INTG, and the remaining 8 sites were determined to be Class C INTG.

One site (LOM12) was found not to meet the criteria for listing as INTG, as it did not contain a high enough coverage of *Lomandra* spp. (>10%). LOM22 was mapped as Class C INTG due to the high relative cover of *Lomandra* spp., however the site did not meet the typical structural description of the community, having high cover (>10%) of chenopod shrub species including *Maireana rohrlachii* and *Maireana brevifolia*, with intermittent dense patches of *Hakea leucoptera*. Vegetation mapping for the Project Area was adjusted to incorporate these changes.

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.

A total of 72 native flora species were recorded between the 23 survey sites, with a complete list presented in **Appendix 2**. A further 41 introduced flora species were identified within the survey sites, including three species listed as Declared under the *Landscape South Australia Act 2019* (LSA Act) – *Echium plantagineum* (Salvation Jane), *Lycium ferocissimum* (African Boxthorn) and *Reseda lutea* (Cut-leaf Mignonette).

An overview map of the INTG, the 23 targeted INTG sites, and Bushland Assessment Sites within the Project Area is provided in **Figure 4.1**. Photographs of all the surveyed sites are provided in **Appendix 3**.

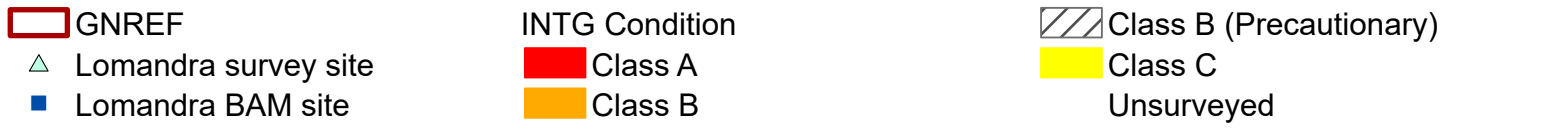
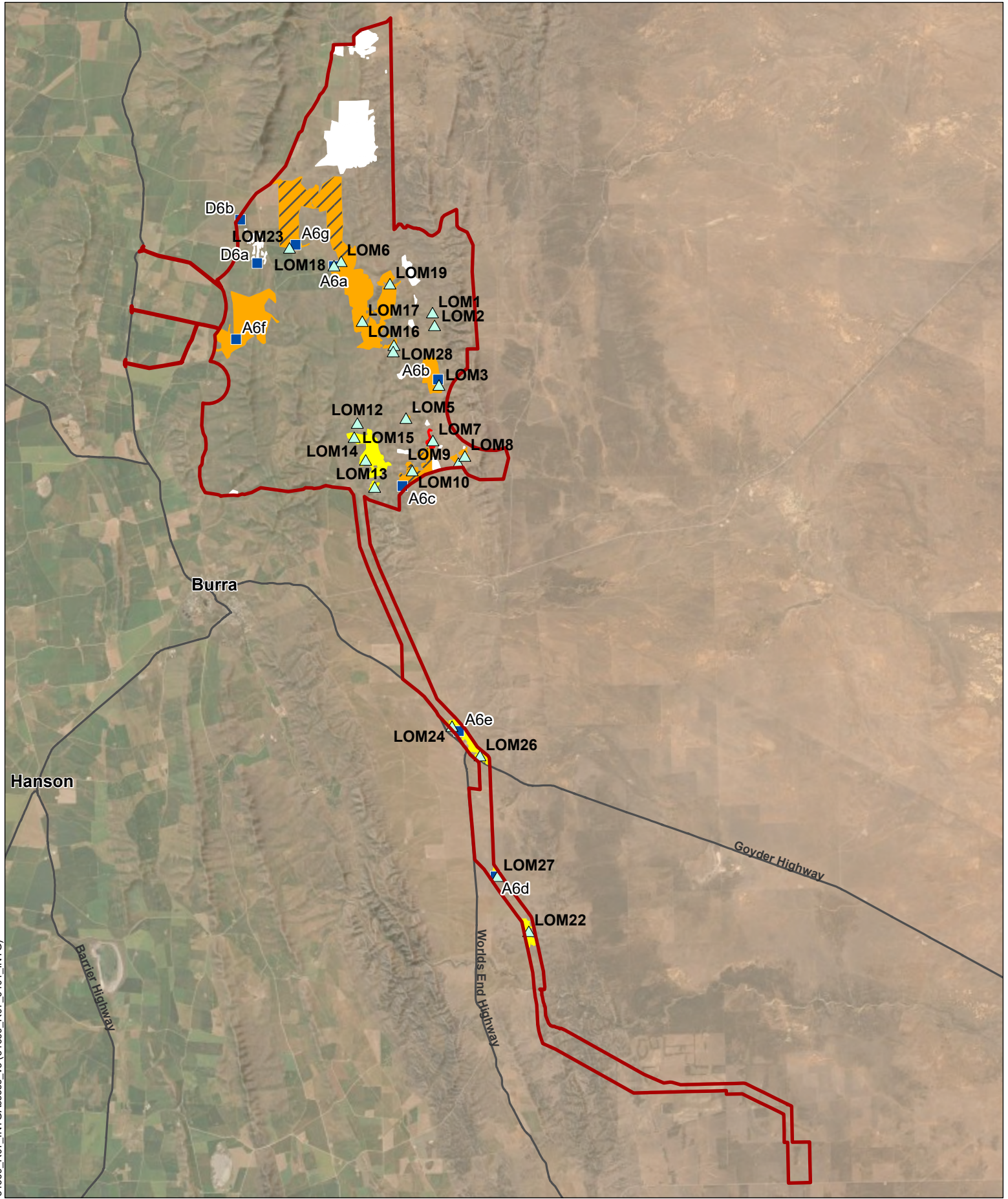
Table 4.1 Condition Class Rating of INTG Patches Assessed in October 2024. Red Text Indicates Where a Criterion Has Not Been Met

Survey Site No. / Patch ID	INTG Condition Class (A, B or C).	Diversity of Native Species (min)	Broad-leaved Herbaceous Species (min. excl. DRS)	Perennial Grass Species (min)	Tussock Count per m (min).	Lomandra Cover (%)	No. Threatened Species Present	Comments	Easting	Northing
LOM1	B	20	4	5	2.44	25	1		318434.43 53	6285322.5 39
LOM2	B	20	5	7	4.3	30	1		318531.12 84	6284722.5 91
LOM3	B	17	4	5	1.96	15	1		318736.42 31	6281917.0 93
LOM5	B	19	9	4	2.4	25-30	2		317185.72 43	6280359.8 07
LOM6	B	17	6	5	2.46	15-20	2		314136.61 02	6287735.3 49
LOM7	A	32	18	7	2.5	20	1		318450.05 86	6279310.0 92
LOM8	B	18	6	4	3.14	15	1		319954.07 03	6278579.0 53
LOM9	B	16	6	4	1.34	<5	1		318434.43 53	6285322.5 39

Survey Site No. / Patch ID	INTG Condition Class (A, B or C).	Diversity of Native Species (min)	Broad-leaved Herbaceous Species (min. excl. DRS)	Perennial Grass Species (min)	Tussock Count per m (min).	Lomandra Cover (%)	No. Threatened Species Present	Comments	Easting	Northing
LOM10	B	16	2	4	1.7	15	1	Precautionary	318531.1284	6284722.591
LOM12	<C	9	1	3	1	<10	0		314898.6465	6280127.211
LOM13	C	10	1	3	1.06	30	1		315712.7982	6277118.71
LOM14	C	10	1	3	1.8	10	0		315289.6357	6278392.721
LOM15	C	12	3	3	3.68	15-20	1		314750.7194	6279464.658
LOM16	B	21	7	7	3.48	20	2		316619.8277	6283790.309
LOM17	B	19	3	4	2.1	20	3		315129.0175	6284921.299
LOM18	B	20	3	10	1.62	30	2		313797.6677	6287528.027

Survey Site No. / Patch ID	INTG Condition Class (A, B or C).	Diversity of Native Species (min)	Broad-leaved Herbaceous Species (min. excl. DRS)	Perennial Grass Species (min)	Tussock Count per m (min).	Lomandra Cover (%)	No. Threatened Species Present	Comments	Easting	Northing
LOM19	B	20	5	7	1.12	15	1		316430.77 66	6286681.8 07
LOM22	C	12	3	2	1.08	35	1		322962.19 41	6256226.2 57
LOM23	B	17	7	3	1.86	25-30	1	Precautionary	311706.74 05	6288366.4 64
LOM24	C	10	3	1	0.76	15-20	1		319350.91 29	6265873.0 65
LOM26	C	7	1	2	1.02	15-20	1		320668.88 71	6264489.4 19
LOM27	C	12	4	1	1.38	35	1		321495.71 75	6258818.1 58
LOM28	B	19	5	7	4.34	10	2		316584.12 88	6283489.7 62

Figure 4.1 Iron-grass Natural Temperate Grassland mapped within the GNWF Project Area



4.3 Confidence in Results

Survey methodology was undertaken in accordance with the criteria listed in the National Recovery Plan (Turner, 2012) and the Approved Conservation Advice (DEWHA, 2008), as detailed in **Section 3.1**.

Due to limitations in climatic conditions and presence of ongoing agricultural grazing, discussed further in **Section 3.2** the *precautionary principle* was applied to areas where the assessment came very close to meeting the INTG condition class rating, and one or more of the above factors was present (i.e. if heavy grazing was present and not enough native perennial grass species were identified, but all other criteria were met, the precautionary principle would be applied to elevate the patch to INTG).

The survey criteria and accordance of the targeted INTG survey with each criterion is discussed in **Table 4.3**.

Table 4.2 Accordance with Survey Methodology in Relation to the Criteria Outlined in the Conservation Advice and National Recovery Plan

Survey Criteria	Achieved	Accordance with Criteria
Surveyed within a 50 x 50 m or equivalent 2,500 m ² quadrat within a representative area of each patch.	Yes	All surveys were undertaken within an equivalent 2,500 m square quadrat, measured using a 50 m tape, surveyed 25 m either side by walking transects approximately 5 m apart.
Undertaken in mid to late spring, and if necessary, over multiple visits, to ensure accurate plant identification.	Yes	• Spring 2022: Broad vegetation mapping and surveys. • Spring 2023: Detailed vegetation surveys using Bushland Assessment Methodology (BAM). • Spring 2024: Targeted INTG surveys in Disturbance Footprint.
Assessed in good seasonal conditions or within two months of effective rain.	No	The initial broad survey for the WF was undertaken in Spring 2022 in good seasonal conditions and above average annual rainfall (706.8 mm, compared to a long-term average of 528.6 mm), however, since that time, the site has been in drought conditions, considered generally poor for surveying INTG. Annual rainfall in 2023 was 443.6 mm and in 2024,

Survey Criteria	Achieved	Accordance with Criteria
		287.6 mm at the Clare High School Weather Station (021131) (Bureau of Meteorology (BOM), 2025). July 2024 received above average rainfall (78 mm compared to a long-term average of 63.4mm), however, the two months directly preceding the survey were below average.
Done at least two months after a disturbance (fire, grazing, slashing).	No	This was not possible due to the agricultural landscape which is utilised on an ongoing basis for grazing of sheep and cattle. Due to the dry conditions and high level of grazing, grasses were difficult to distinguish at some sites and were difficult to identify to species.
Located in the most intact (least modified) vegetation in the remnant.	Yes	Survey locations were selected based first on the location of the Disturbance Footprint, and then by the highest quality area within any intersecting patch.
Based on multiple quadrats and transect lines.	Yes	If a site undertaken within a patch was found not to meet the criteria on the first survey site, a second (and third) survey site was assessed, if necessary, to confirm the condition of the patch. A total of 23 targeted INTG sites were assessed in Spring 2024. Prior to this, 10 sites had been surveyed according to BAM, in Spring 2023. Although not assessed using the criteria outlined in the Conservation Advice, these sites were used as a proxy or in combination to assess condition in patches where the criteria were close to being met. Details of these sites is presented in Table 4.4 and the location of sites is shown on Figure 4.1.

Table 4.3 Condition Assessment of BAM Sites Within the Project Area

Site	Minimum Patch Size (ha)	Native Species Diversity ¹	No. Broad Leaved Herbaceous Species ² (excl. DRS ²)	No. Perennial Grass Species ³	% Cover Estimate ⁴	Unit Biodiversity Score	Condition Class (estimated based on 100x100 m Quadrat)
BAM Survey Sites (~1ha)							
A6a	>0.25	17	6	7	>50%	74.77	B
A6b	>0.25	20	8	5	>50%	80.69	B
A6c	>0.25	9	2	4	>25%	54.59	C
A6d	>0.25	9	1	3	>25%	54.26	C
A6e	>0.25	17	6	4	>50%	69.83	B
A6f	>0.25	11	5	4	>50%	62.23	C
A6g	>0.25	13	5	5	25-50%	51.76	C
B6a	>0.25	19	11	4	25-50%	46.06	B
B6b	>0.25	18	10	5	>50%	51.61	B
D6a	>0.25	11	5	4	>50%	67.81	C

Notes:

1 As measured in a 100 x 100 m quadrat utilised for BAM survey methodology.

2 Disturbance resistant species (DRS): *Ptilotus spathulatus*; *Sida corrugata*; *Oxalis perennans*; *Euphorbia drummondii*; *Maireana enchylaenoides*.

3 Includes true grasses, as well as species of *Lomandra*, *Dianella*, *Gahnia*, *Lepidosperma* and other perennial sedges and rushes.

4 Based on cover rating given for grasses and sedges in BAM scoresheet.

5.0 Discussion and Recommendations

5.1 GNWF Disturbance Footprint

A total of 7.70 ha of the Critically Endangered TEC (INTG Class B) may be impacted by the Disturbance Footprint (see **Table 4.2**, **Figure 5.1** and **Figure 5.2**), including 3.28 ha of permanent clearance and 4.42 ha of temporary clearance (not indicated on maps).

Table 5.1 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
INTG Class B	Yes	1,480.59	1,923.84	Yes	7.70	0.52
INTG Class C	No	308.00	308.00	Yes	4.73	1.54
Unsurveyed Lomandra Grassland	-	125.51	858.38	No	0	0
Total Area of Lomandra Grassland in GNWF		1,932.13	3,108.24	-	12.43	0.64
Total Maximum TEC (includes Class A, B)		1,498.62	1,941.86	-	7.70	0.51

5.2 INTG Regional Context

INTG once extended over an estimated 750,000 to 1,000,000 ha in South Australia (Specht, 1972; Hyde, 1995). However, the ecological community has declined dramatically in area and integrity across its natural range, to the point where it is now considered EPBC Critically Endangered.

The total area remaining, including modified and degraded INTG remnants, has been estimated at less than 50,000 ha (Turner, 2012), while the area in good condition is thought to be less than 5,000 ha (Hyde, 1995).

For the purposes of assessing the potential impact of the Project on INTG, the following has been compared in **Table 5.2** below:

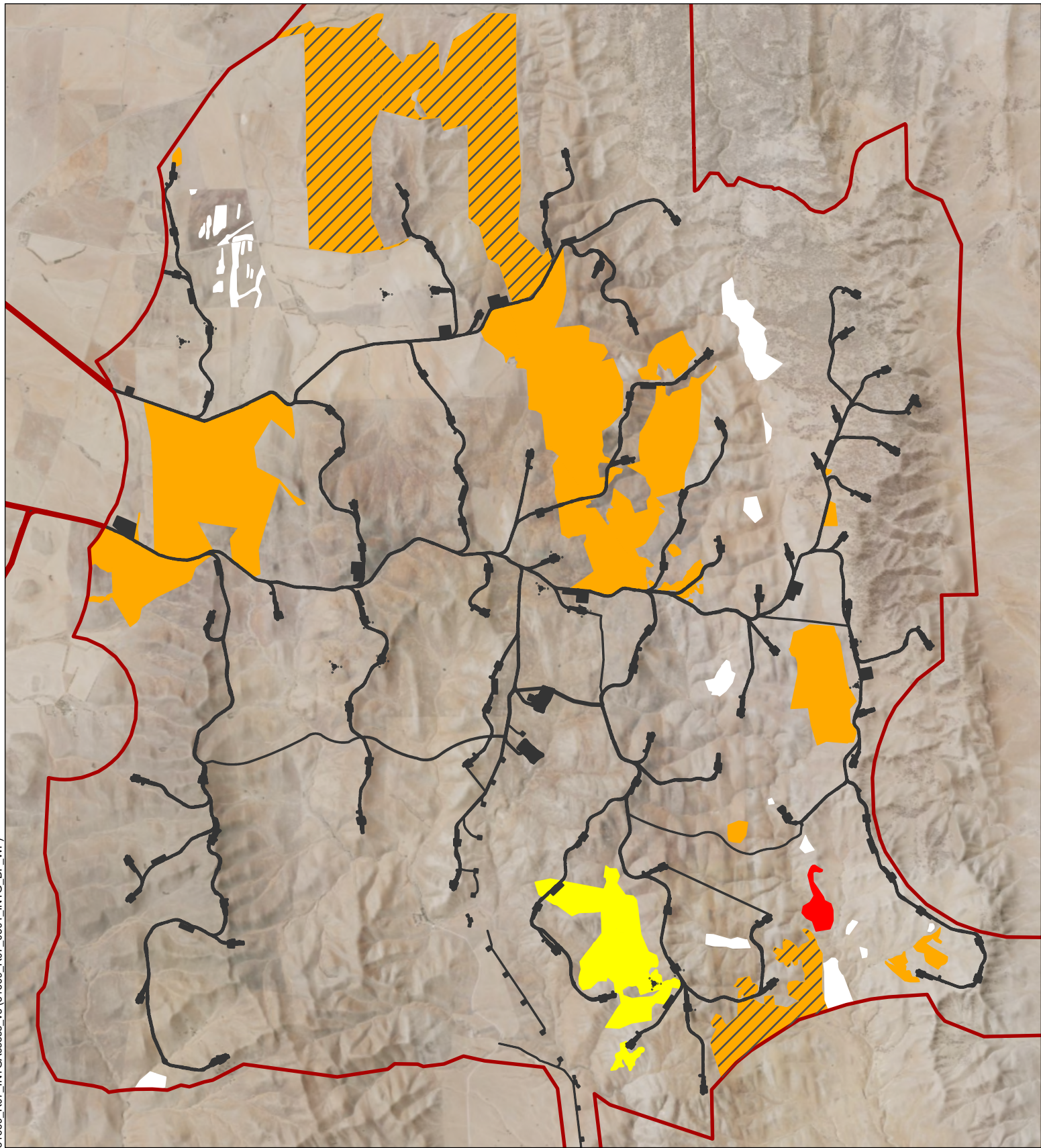
- The area of all INTG / Lomandra grassland (Class A, B and C) proposed to be impacted by the Project as a percentage of the 50,000-ha estimated to be remaining in South Australia; and

- The area of INTG TEC (Class A and 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 5.2 The Estimated Total Area of INTG remaining in SA and Impact of the Project

Total INTG remaining in SA (ha) (Turner 2012)	50,000 ha
Total INTG (Class A, B, C) impacted by the Disturbance Footprint (ha)	12.43 ha
Percentage of total INTG in SA impacted %	0.02%
Remaining INTG in 'good condition' in SA (ha) (Hyde 1995)	5,000 ha
INTG TEC impacted by the Disturbance Footprint (ha)	7.70 ha
Percentage of INTG in 'good condition' impacted by the Project	0.15%

Figure 5.1 INTG and Project Disturbance Footprint (WF)



GNREF
Disturbance Footprint

INTG Condition
Class A
Class B
Class B (Precautionary)
Class C
Unsurveyed

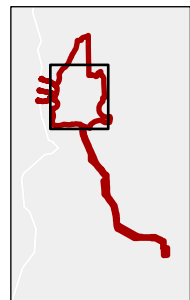
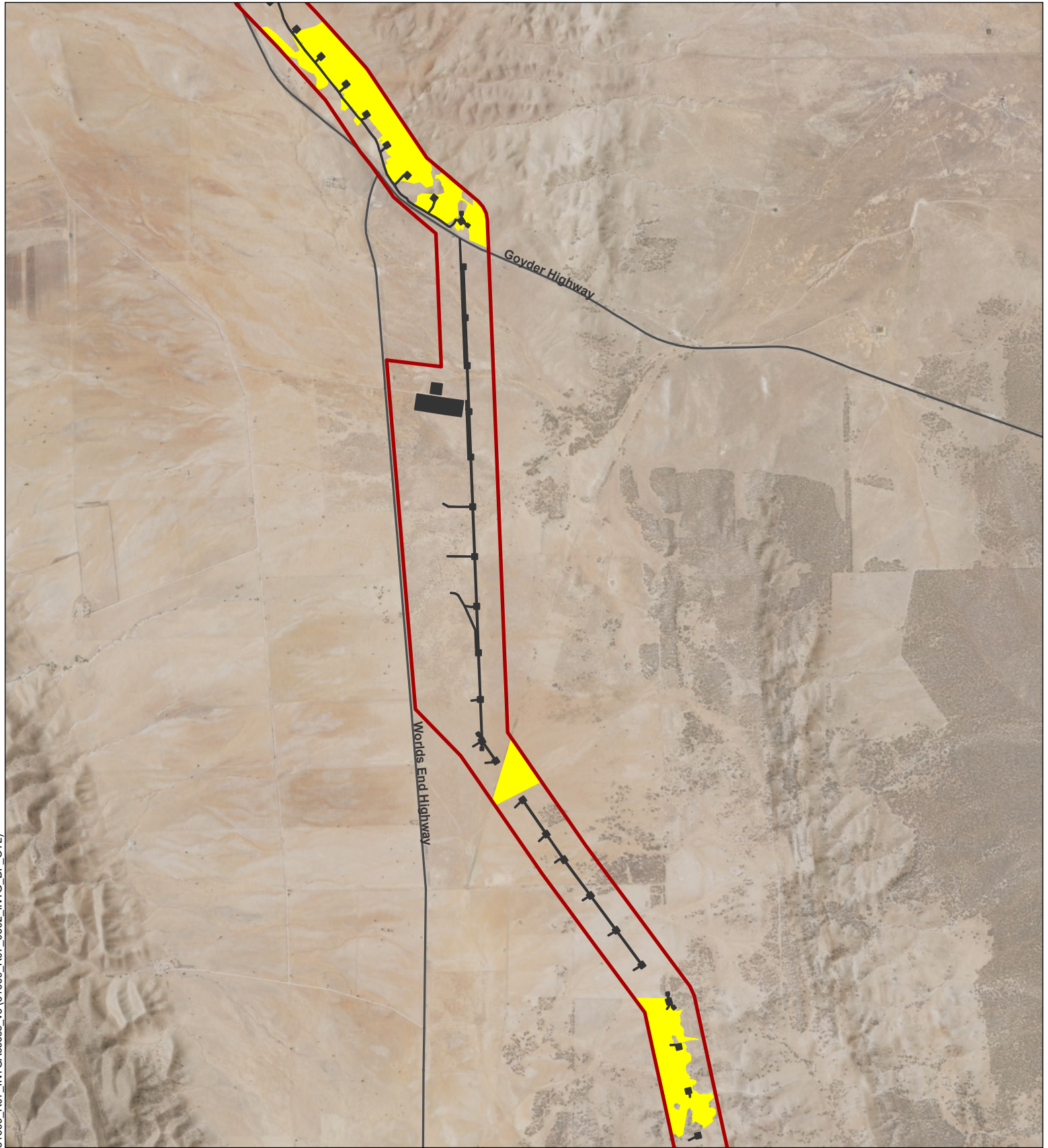
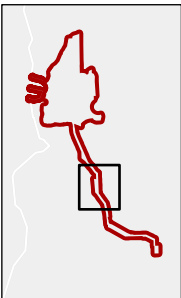


Figure 5.2 INTG and Project Disturbance Footprint (OTL)



- GNREF
- Disturbance Footprint
- INTG Condition
- Class C



5.3 EPBC Referral

Under the EPBC Act, actions that have, or are likely to have, a significant impact on a MNES must be referred to DCCEEW who will decide whether assessment and approval is required under the EPBC Act.

An EPBC Referral was submitted for the Project, utilising a precautionary principle to map all Lomandra Grassland impacted as Class B INTG. The Referral lists 29.64 ha as being impacted, including 11.93 ha of permanent clearance and 17.71 ha of temporary clearance for the Wind Farm and OTL. Subsequently, the Disturbance Footprint was refined and revised, resulting in a change to the Project Area boundary, and requiring a variation to be submitted to DCCEEW.

Based on results of the on-ground assessment and revisions to the design which incorporated significant efforts to reduce impacts to MNES, 21.94 ha of impact area can be removed from the impact assessment, representing a 74.02% reduction in the impacted area. The total residual impact proposed to INTG is 7.70 ha of Class B INTG.

5.3.1 Mitigation Hierarchy

The Project has considered the mitigation hierarchy during Project design and has sought to avoid and minimise impacts to INTG. Avoidance of impact to INTG has been one of the key influences during the design phase of the Disturbance Footprint. The following points have been taken into consideration by Neoen when considering the design of the Disturbance Footprint:

- Neoen has sought to avoid intersecting and fragmenting the Critically Endangered INTG TEC (Class A and Class B patches) as a key priority in the design process. This includes following existing farm tracks to cross large patches of Lomandra Grassland or crossing patches at the narrowest (i.e. least impact) area.
- During the design phase between July 2023 and January 2025, Neoen reduced the number of Wind Turbine Generators (WTGs) impacting Lomandra Grassland (all condition classes) from 41 to 16 and removed all WTGs occurring in higher quality vegetation. The design now only has one WTG encroaching on the edge of some Class B INTG, in addition to access tracks and electrical cables, demonstrating a significant reduction in impact from preliminary designs.
- Neoen has prioritised the placement of the Disturbance Footprint in already disturbed areas such as existing access tracks, where possible to minimise disturbance to INTG. Areas surrounding existing access tracks are likely to be already disturbed, so by placing the Disturbance Footprint in these locations, it reduced the impact on INTG in good condition.
- As a precautionary measure, INTG in Class C has also been avoided where possible as it is recognised that condition classes can change quickly under altered grazing regimes and by changes in seasonal conditions. This includes avoiding the requirement for a 10 m wide stringing corridor along the OTL by utilising novel approaches to transmission line stringing.

- The boundary of INTG TEC is arbitrary. It does not end at a definite point and cannot be mapped from aerial imagery. Therefore, the area calculated as impacted INTG by the linear Disturbance Footprint is likely to be a slight overestimation, where the impact is at the boundary of an INTG TEC.
- Further infrastructure micro-siting will include consideration of minimising disturbance to INTG.

5.3.2 EPBC Offset Calculator

Using the EPBC Offset Calculator the EPBC Offset for INTG, anticipated 26 ha is required to offset potential impacts to INTG at the Project Site.

The following calculations have been made using the following tools:

- *The Offsets Assessment Guide (the Guide)* (DSEWPaC, 2012) – this is the EPBC calculator excel spreadsheet.
- *How to Use the Offsets Assessment Guide* (DSEWPaC, Undated).
- *Guidance for deriving 'Risk of Loss' estimates when evaluating biodiversity offset proposals under the EPBC Act* (Maseyk, Evans, & Maron, 2017).

Table 5.3 summarises the findings of the Offsets Assessment Guide (Calculator) based on the known condition of the impact site, and assumptions regarding an offset site which has not yet been selected.

Table 5.3 Offset Assessment Guide Results

Parameter	Value	Reasoning
Impact Calculator		
Protected Matter Attribute	Area of community	The area of community attribute has been selected as it is the attribute that most effectively captures the nature of the residual impact.
Area of Impact (ha)	7.70	Class B INTG proposed to be impacted in revised GNWF Disturbance Footprint. Note that Class C INTG does not meet the criteria for listing and TEC and is not required to be offset.

Parameter	Value	Reasoning
Impact Area Habitat Quality (Scale of 1-10)	5	The overall quality of INTG at the impact site is fair to moderate. The average Vegetation Condition Score obtained from BAM survey sites is 35.95 (of a maximum of 80, representing a site at the pre-European Benchmark condition). This considers both Class B and Class C INTG, and therefore the impact area quality has been increased slightly (from 4 to 5) to reflect Class B INTG only. No Class A INTG is being impacted by the Project. Degrading factors present at the site include historical clearance, long history of agricultural grazing of sheep and cattle, weed encroachment, proximity to degraded exotic grasslands and cropped areas, drought and fragmentation.
Total Quantum of Impact (ha)	3.85	Adjusted hectares as calculated by the Guide.
Offset Calculator		
Protected Matter Attribute	Area of community	Aligning with the impact calculation protected matter attribute and based on the impact to the community from clearance for Wind Farm to be reduction in area of a community.
Proposed Offset	On ground	An on-ground offset is proposed. No site has been currently selected, however Neoen is working to secure a suitable site. Assumptions around the proposed offset site include that it is 'like for like' or better than the current condition of the impact site.
Time over which Loss is averted	20 years	Loss is expected to be averted over a 20-year period, corresponding to the life of the Project.
Time until Ecological Benefit	1 to 2 years	An ecological benefit is based on management actions including, but not limited to, exclusion of livestock or managed grazing regime, targeted feral herbivore removal and weed control. Ecological benefits include regeneration of
Start Area (ha)	18.30	Estimate based on obtaining 100% of Impact Offset as calculated by the Guide.

Parameter	Value	Reasoning
Start Quality of Habitat (scale 0-10)	5	Assuming the Offset site starts at the same condition as the impact site, which is likely to be typical of agricultural land across the region.
Risk of Loss (%) without Offset	0.03%	Risk of loss without offset based on the background rate of loss per annum for the Goyder local government area as per (Maseyk, Evans, & Maron, 2017) is 0.03%. The area selected will have no existing formal protections (i.e. conservation covenants) other than protections under State Legislation for clearance of Native Vegetation under the <i>Native Vegetation Act 1991</i>. If the offset site is like for like or better, it would also be protected under the EPBC Act, and clearance would require approval and an offset. Risk of loss would therefore be based on ongoing degrading practices such as agriculture, climate change (i.e. drought) and weed encroachment. Additionally, there is a higher risk of loss to patches which do not meet the criteria for listing, or which occur on agricultural land where knowledge of the TEC is low, and farming practices such as spraying, renovating pasture, and unapproved land clearing may occur.
Future Quality without Offset (Scale of 0-10)	4	The quality of the INTG within the region is likely to continue to decline, particularly regarding overgrazing associated with drought conditions, which limits the capacity of vegetation to bounce back. Continued grazing and other agricultural practices are likely to degrade INTG on agricultural land in the long-term resulting in loss of species diversity, reduction in native grass tussocks and reduction in cover and regeneration of Lomandra tussocks.
Risk of Loss (%) with Offset	0%	Risk of loss with offset, based on the expectation that the offset would provide further protection than the background risk of loss (0.03%) by implementing a conservation covenant at the site, thereby protecting it into the future.
Future Quality with Offset (Scale of 0-10)	7	Assuming quality improved over time through management actions.

Parameter	Value	Reasoning
Confidence in Result (%) – Future Quality	80%	The moderate to high confidence of 80% is due to the confidence that the vegetation condition will improve over time with simple and achievable management actions, including management of stocking rates.
% of Impact Offset	100%	As calculate by the Guide (DSEWPaC, 2012)

5.4 Recommendations

- Continue to investigate new opportunities to refine the design and reduce impacts in areas mapped as Class B INTG during construction.
- Continue to avoid areas of Class C INTG as much as possible as these areas represent INTG that is amenable to rehabilitation through measures such as weed control, natural regeneration and protection from grazing (however, this recommendation is lower than previous two recommendations).
- Additional assessments may be required if the design changes and causes impacts in areas which have not been adequately assessed according to the criteria.

Additionally, Umwelt recommends Neoen:

- Implement a project specific INTG Management Plan for use during construction and operation to minimise the likelihood of any off-target impacts to nearby INTG including:
 - The use of environmental no-go zone flagging to clearly identify approved clearance areas in INTG.
 - The use of environmental no-go zone flagging to clearly identify areas of INTG (including Class C) in close proximity to the construction area.
 - The use of sedimentation and erosion control measures to eliminate or reduce the likelihood of indirect impacts to the INTG, in addition to the direct clearance proposed.
- Identify a suitable INTG offset area to offset residual impact of the Project on INTG, estimated at approximately 18 hectares, but subject to change dependent on condition of proposed site. This includes the loss of up to 7.70 ha of Class B INTG.
- Investigate potential to collaborate with or contribute to existing INTG restoration projects within the Mid-North Region, such as the ‘Stronger Country’ project being implemented by the Northern and Yorke Landscape Board.

- Collaboration is likely to provide a better outcome for the INTG TEC, by utilising existing management knowledge of the Landscape Board, and providing landscape scale connections of the INTG TEC across multiple priority landholders.

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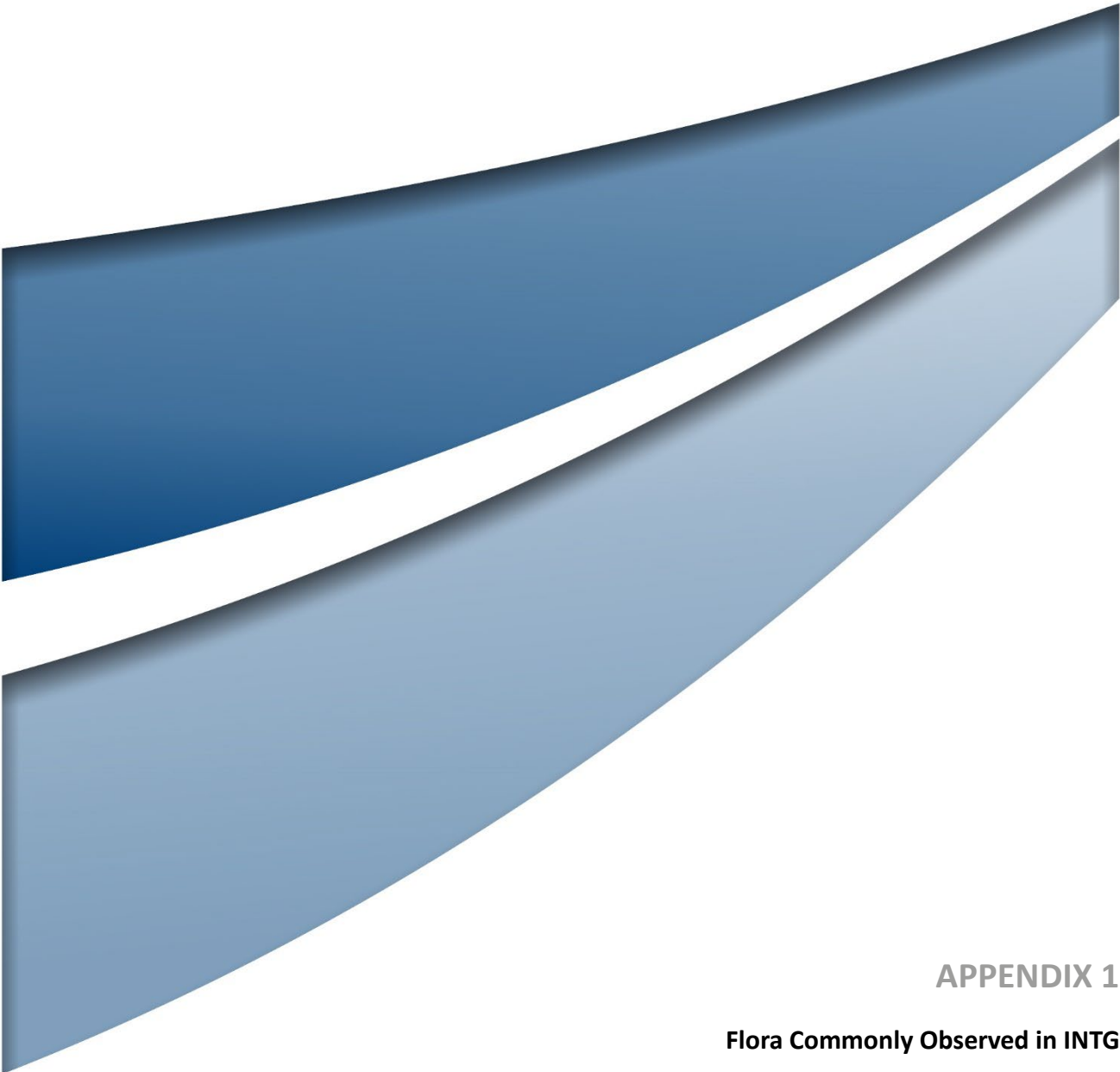
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APPENDIX 1

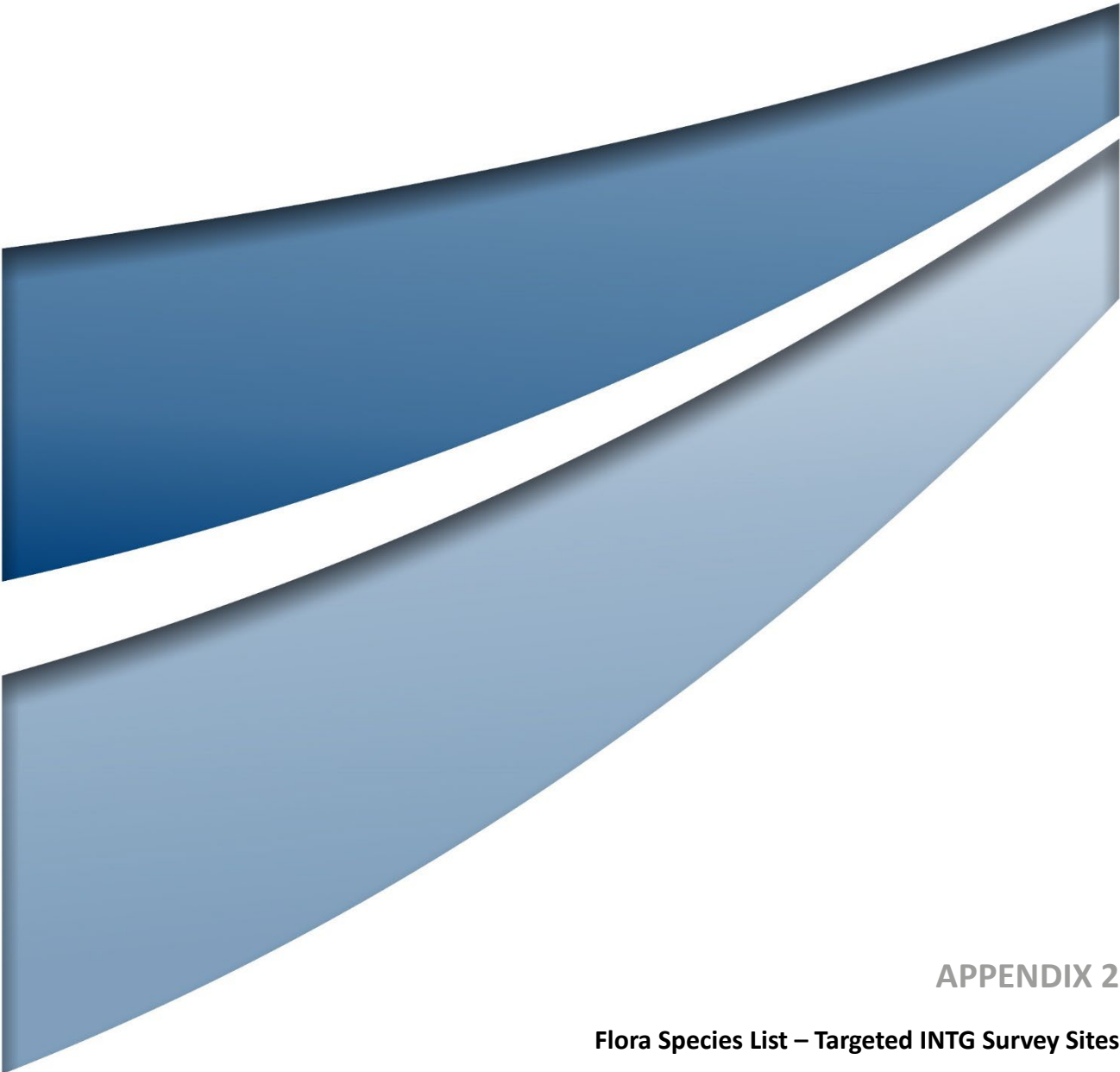
Flora Commonly Observed in INTG

Table A.1 Native Plant Species Commonly Recorded in INTG (Turner 2012)

Scientific Name	Common Name
<i>Aristida behriana</i>	Brush Wire-grass
<i>Arthropodium fimbriatum</i>	Nodding Vanilla-lily
<i>Arthropodium strictum</i>	Common Vanilla-lily
<i>Asperula conferta</i>	Common Woodruff
<i>Atriplex semibaccata</i>	Berry Saltbush
<i>Austrostipa blackii</i>	Crested Spear-grass
<i>Austrostipa elegantissima</i>	Feather Spear-grass
<i>Austrostipa eremophila</i>	Rusty Spear-grass
<i>Austrostipa nitida</i>	Balcarra Spear-grass
<i>Austrostipa nodosa</i>	Tall Spear-grass
<i>Austrostipa scabra</i> subsp.	Rough Spear-grass
<i>Austrostipa setacea</i>	Corkscrew Spear-grass
<i>Bulbine bulbosa</i>	Bulbine-lily
<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	Sweet Bursaria
<i>Calocephalus citreus</i>	Lemon Beauty-heads
<i>Chrysocephalum apiculatum</i>	Common Everlasting
<i>Convolvulus remotus</i>	Grassy Bindweed
<i>Convolvulus</i> sp. (syn. <i>C. erubescens</i>)	Australian Bindweed
<i>Cryptandra campanulata</i> (syn. <i>C. sp. Long hypanthium</i> (C.R. Alcock 10626))	Long-flower Cryptandra
<i>Dianella revoluta</i> var. <i>revoluta</i>	Black-anther Flax-lily
<i>Einadia nutans</i> subsp. <i>nutans</i>	Climbing Saltbush
<i>Elymus scaber</i> var. <i>scaber</i>	Native Wheat-grass
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush

Scientific Name	Common Name
<i>Enneapogon nigricans</i>	Black-head Grass
<i>Euphorbia drummondii</i> (syn. <i>Chamaesyce drummondii</i>)	Caustic Weed
<i>Glycine rubiginosa</i>	Twining Glycine
<i>Goodenia pinnatifida</i>	Cut-leaf Goodenia
<i>Goodenia pusilliflora</i>	Small-flower Goodenia
<i>Leptorhynchus squamatus</i> subsp. <i>squamatus</i>	Scaly Buttons
<i>Leptorhynchus tetrachaetus</i>	Little Buttons
<i>Lomandra effusa</i>	Scented Iron-grass
<i>Lomandra micrantha</i> subsp. <i>micrantha</i>	Small-flower Mat-rush
<i>Lomandra multiflora</i> subsp. <i>dura</i>	Stiff Iron-grass
<i>Maireana enchylaenoides</i>	Wingless Fissure-plant
<i>Maireana excavata</i>	Bottle Fissure-plant
<i>Minuria leptophylla</i>	Minnie Daisy
<i>Oxalis perennans</i>	Native Sorrel
<i>Pimelea curviflora</i> var.	Curved Riceflower
<i>Plantago varia</i>	Variable Plantain
<i>Ptilotus erubescens</i>	Hairy-tails
<i>Ptilotus spathulatus</i>	Pussy-tails
<i>Rhodanthe pygmaea</i>	Pigmy Daisy
<i>Rumex dumosus</i>	Wiry Dock
<i>Rytidosperma auriculata</i>	Lobed Wallaby-grass
<i>Rytidosperma caespitosa</i>	Common Wallaby-grass
<i>Rytidosperma carphoides</i>	Short Wallaby-grass

Scientific Name	Common Name
<i>Rytidosperma eriantha</i>	Hill Wallaby-grass
<i>Rytidosperma pilosa</i>	Velvet Wallaby-grass
<i>Rytidosperma setacea</i>	Small-flower Wallaby-grass
<i>Sida corrugata</i> var. <i>corrugata</i>	Corrugated Sida
<i>Stackhousia monogyna</i>	Creamy Candles
<i>Themeda triandra</i>	Kangaroo Grass
<i>Triptilodiscus pygmaeus</i>	Small Yellow-heads
<i>Vittadinia blackii</i>	Narrow-leaf New Holland Daisy
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	Fuzzy New Holland Daisy
<i>Vittadinia gracilis</i>	Woolly New Holland Daisy
<i>Vittadinia megacephala</i>	Giant New Holland Daisy
<i>Wahlenbergia luteola</i>	Yellow-wash Bluebell
<i>Wurmbea dioica</i> subsp. <i>dioica</i>	Early Star-lily



APPENDIX 2

Flora Species List – Targeted INTG Survey Sites

Table A.2 Native and Introduced Flora Species Detected at Survey Sites During Field Survey

Scientific Name	Common Name	NPW Act	EPBC Act	Plant Type	Declared
<i>Actinobole uliginosum</i>	Flannel Cudweed	-	-	Broad-leafed Herb	-
<i>Aira</i> sp.	Hair-grass	-	-	Introduced	-
<i>Aristida behriana</i>	Brush Wire-grass	-	-	Perennial Native Grass	-
<i>Arthropodium</i> sp.	Vanilla-lily	-	-	Broad-leafed Herb	-
<i>Asperula conferta</i>	Common Woodruff	-	-	Broad-leafed Herb	-
<i>Asphodelus fistulosus</i>	Onion Weed	-	-	Introduced	-
<i>Atriplex semibaccata</i>	Berry Saltbush	-	-	Broad-leafed Herb	-
<i>Atriplex vesicaria</i>	Bladder Saltbush	-	-	Native	-
<i>Austrostipa blackii</i>	Crested Spear-grass	-	-	Perennial Native Grass	-
<i>Austrostipa drummondii</i>	Cottony Spear-grass	-	-	Perennial Native Grass	-
<i>Austrostipa elegantissima</i>	Feather Spear-grass	-	-	Perennial Native Grass	-
<i>Austrostipa eremophila</i>	Rusty Spear-grass	-	-	Perennial Native Grass	-
<i>Austrostipa gibbosa</i>	Swollen Spear-grass	R	-	Perennial Native Grass	-
<i>Austrostipa nitida</i>	Balcarra Spear-grass	-	-	Perennial Native Grass	-
<i>Austrostipa nodosa</i>	Tall Spear-grass	-	-	Perennial Native Grass	-

Scientific Name	Common Name	NPW Act	EPBC Act	Plant Type	Declared
<i>Austrostipa scabra</i> group	Falcate-awn Spear-grass	-	-	Perennial Native Grass	-
<i>Austrostipa</i> sp.	Spear-grass	-	-	Perennial Native Grass	-
<i>Avena barbata</i>	Bearded Oat	-	-	Introduced	-
<i>Boerhavia dominii</i>	Tar-vine	-	-	Broad-leafed Herb	-
<i>Brachyscome lineariloba</i>	Hard-head Daisy	-	-	Broad-leafed Herb	-
<i>Brassica</i> sp.	(blank)	-	-	Introduced	-
<i>Bromus diandrus</i>	Great Brome	-	-	Introduced	-
<i>Bromus rubens</i>	Red Brome	-	-	Introduced	-
<i>Bromus</i> sp.	Brome	-	-	Introduced	-
<i>Carrichtera annua</i>	Ward's Weed	-	-	Introduced	-
<i>Carthamus lanatus</i>	Saffron Thistle	-	-	Introduced	-
<i>Cheilanthes austrotenuifolia</i>	Annual Rock-fern	-	-	Broad-leafed Herb	-
<i>Chrysocephalum apiculatum</i>	Common Everlasting	-	-	Broad-leafed Herb	-
<i>Chrysocephalum</i> sp.	Everlasting	-	-	Broad-leafed Herb	-
<i>Convolvulus erubescens</i> complex	(blank)	-	-	Disturbance Resistant Herb	-
<i>Convolvulus remotus</i>	Grassy Bindweed	-	-	Disturbance Resistant Herb	-
<i>Crassula</i> sp.	Crassula/Stonecrop	-	-	Broad-leafed Herb	-

Scientific Name	Common Name	NPW Act	EPBC Act	Plant Type	Declared
<i>Cryptandra</i> sp.	Cryptandra	-	-	Native	-
<i>Cymbonotus preissianus</i>	Austral Bear's-ear	-	-	Broad-leafed Herb	-
<i>Dianella</i> sp.	Flax-lily	-	-	Perennial Native Grass	-
<i>Dodonaea viscosa</i> ssp.	Sticky Hop-bush	-	-	Native	-
<i>Echium plantagineum</i>	Salvation Jane	-	-	Introduced	Yes
<i>Einadia nutans</i> ssp.	Climbing Saltbush	-	-	Broad-leafed Herb	-
<i>Enchylaena tomentosa</i> var.	Ruby Saltbush	-	-	Native	-
<i>Enneapogon nigricans</i>	Black-head Grass	-	-	Perennial Native Grass	-
<i>Erodium botrys</i>	Long Heron's-bill	-	-	Introduced	-
<i>Erodium cicutarium</i>	Cut-leaf Heron's-bill	-	-	Introduced	-
<i>Erodium</i> sp.	Heron's-bill/Crowfoot	-	-	Introduced	-
<i>Euphorbia drummondii</i>	(blank)	-	-	Disturbance Resistant Herb	-
<i>Glycine rubiginosa</i>	Twining Glycine	-	-	Broad-leafed Herb	-
<i>Glycine</i> sp.	Glycine	-	-	Broad-leafed Herb	-
<i>Goodenia pinnatifida</i>	Cut-leaf Goodenia	-	-	Broad-leafed Herb	-
<i>Goodenia pusilliflora</i>	Small-flower Goodenia	-	-	Broad-leafed Herb	-

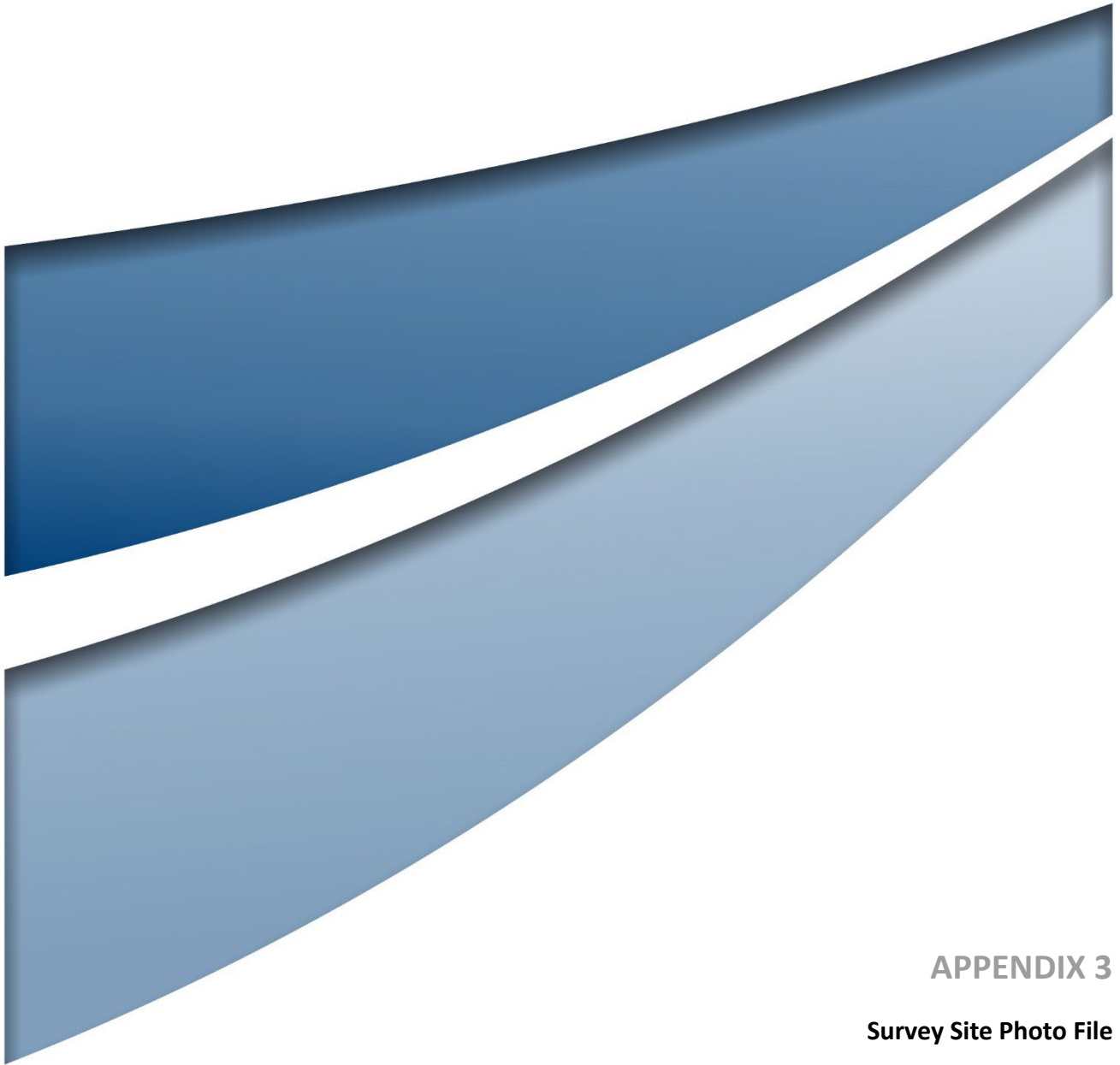
Scientific Name	Common Name	NPW Act	EPBC Act	Plant Type	Declared
<i>Goodenia</i> sp.	Goodenia	-	-	Broad-leafed Herb	-
<i>Heliotropium</i> sp.	Heliotrope	-	-	Introduced	-
<i>Hordeum</i> sp.	(blank)	-	-	Introduced	-
<i>Hordeum vulgare</i>	Barley	-	-	Introduced	-
<i>Hyalosperma semisterile</i>	Orange Sunray	-	-	Broad-leafed Herb	-
<i>Hypochaeris glabra</i>	Smooth Cat's Ear	-	-	Introduced	-
<i>Hypochaeris</i> sp.	Cat's Ear	-	-	Introduced	-
<i>Lepidium africanum</i>	Common Peppergrass	-	-	Introduced	-
<i>Leptorhynchos</i> sp.	Buttons	-	-	Broad-leafed Herb	-
<i>Lolium</i> sp.	Ryegrass	-	-	Introduced	-
<i>Lomandra effusa</i>	Scented Mat-rush	-	-	Sedge	-
<i>Lomandra multiflora</i> ssp.	Many-flower Mat-rush	-	-	Sedge	-
<i>Lycium ferocissimum</i>	African Boxthorn	-	-	Introduced	Yes
<i>Maireana brevifolia</i>	Short-leaf Bluebush	-	-	Native	-
<i>Maireana enchylaenoides</i>	Wingless Fissure-plant	-	-	Disturbance Resistant Herb	-
<i>Maireana excavata</i>	Bottle Fissure-plant	V	-	Broad-leafed Herb	-
<i>Maireana lobiflora</i>	Lobed Bluebush	-	-	Broad-leafed Herb	-
<i>Maireana rohrlachii</i>	Rohrlach's Bluebush	R	-	Native	-

Scientific Name	Common Name	NPW Act	EPBC Act	Plant Type	Declared
<i>Medicago</i> sp.	Medic	-	-	Introduced	-
<i>Moraea</i> sp.	(blank)	-	-	Introduced	-
<i>Neatostema apulum</i>	Hairy Sheepweed	-	-	Introduced	-
<i>Onopordum acaulon</i>	Horse Thistle	-	-	Introduced	-
<i>Onopordum</i> sp.	Thistle	-	-	Introduced	-
<i>Oxalis perennans</i>	Native Sorrel	-	-	Disturbance Resistant Herb	-
<i>Petrorhagia</i> sp.	Pink	-	-	Introduced	-
<i>Podotheca angustifolia</i>	Sticky Long-heads	-	-	Broad-leafed Herb	-
<i>Ptilotus erubescens</i>	Hairy-tails	R	-	Broad-leafed Herb	-
<i>Ptilotus spathulatus</i>	Pussy-tails	-	-	Disturbance Resistant Herb	-
<i>Reseda lutea</i>	Cut-leaf Mignonette	-	-	Introduced	Yes
<i>Reseda</i> sp.	Mignonette	-	-	Introduced	-
<i>Rhagodia parabolica</i>	Mealy Saltbush	-	-	Native	-
<i>Rhodanthe pygmaea</i>	Pigmy Daisy	-	-	Broad-leafed Herb	-
<i>Romulea rosea</i> var. <i>australis</i>	Common Onion-grass	-	-	Introduced	-
<i>Rostraria</i> sp.	(blank)	-	-	Introduced	-
<i>Rumex dumosus</i>	Wiry Dock	R	-	Broad-leafed Herb	-

Scientific Name	Common Name	NPW Act	EPBC Act	Plant Type	Declared
<i>Rytidosperma caespitosum</i>	Common Wallaby-grass	-	-	Perennial Native Grass	-
<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	Slender Wallaby-grass	-	-	Perennial Native Grass	-
<i>Rytidosperma setaceum</i>	Small-flower Wallaby-grass	-	-	Perennial Native Grass	-
<i>Rytidosperma</i> sp.	Wallaby-grass	-	-	Perennial Native Grass	-
<i>Salsola australis</i>	Buckbush	-	-	Native	-
<i>Salvia verbenaca</i> var.	Wild Sage	-	-	Introduced	-
<i>Scleranthus pungens</i>	Prickly Knawel	-	-	Native	-
<i>Sclerolaena diacantha</i>	Grey Bindyi	-	-	Broad-leafed Herb	-
<i>Sclerolaena parallelicuspis</i>	Western Bindyi	-	-	Broad-leafed Herb	-
<i>Sida corrugata</i> var.	Corrugated Sida	-	-	Disturbance Resistant Herb	-
<i>Sisymbrium</i> sp.	Wild Mustard	-	-	Introduced	-
<i>Sonchus</i> sp.	Sow-thistle	-	-	Introduced	-
<i>Taraxacum</i> sp.	Dandelion	-	-	Introduced	-
<i>Thysanotus baueri</i>	Mallee Fringe-lily	-	-	Broad-leafed Herb	-
<i>Trifolium</i> sp.	Clover	-	-	Introduced	-
<i>Triptilodiscus pygmaeus</i>	Small Yellow-heads	-	-	Broad-leafed Herb	-
<i>Valerianaceae</i> sp.	Corn-salad Family	-	-	Introduced	-

Scientific Name	Common Name	NPW Act	EPBC Act	Plant Type	Declared
<i>Vittadinia blackii</i>	Narrow-leaf New Holland Daisy	-	-	Broad-leafed Herb	-
<i>Vittadinia cuneata</i> var.	Fuzzy New Holland Daisy	-	-	Broad-leafed Herb	-
<i>Vittadinia gracilis</i>	Woolly New Holland Daisy	-	-	Broad-leafed Herb	-
<i>Vittadinia megacephala</i>	Giant New Holland Daisy	-	-	Broad-leafed Herb	-
<i>Vittadinia</i> sp.	New Holland Daisy	-	-	Broad-leafed Herb	-
<i>Vulpia</i> sp.	Fescue	-	-	Introduced	-
<i>Wahlenbergia luteola</i>	Yellow-wash Bluebell	-	-	Broad-leafed Herb	-
<i>Wahlenbergia</i> sp.	Native Bluebell	-	-	Broad-leafed Herb	-
<i>Wurmbea dioica</i> ssp.	Early Nancy	-	-	Broad-leafed Herb	-
<i>Dysphania cristata</i>	Crested Crumbweed	-	-	Broad-leafed Herb	-

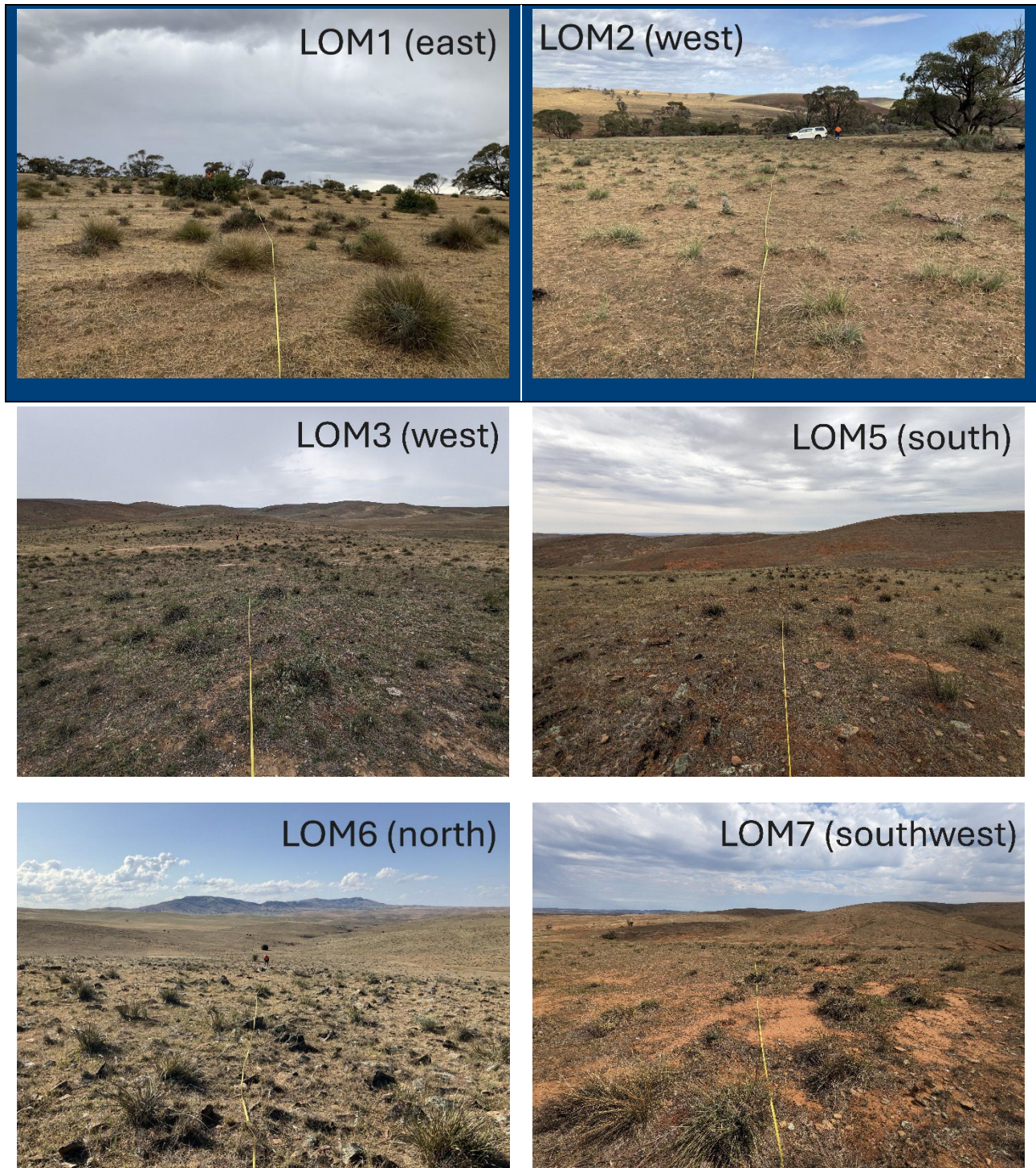
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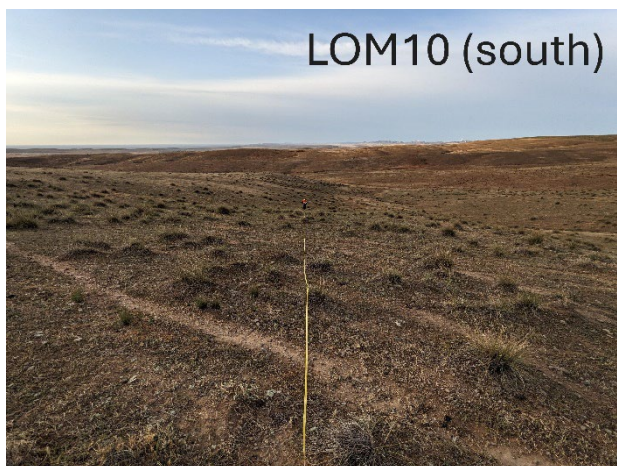
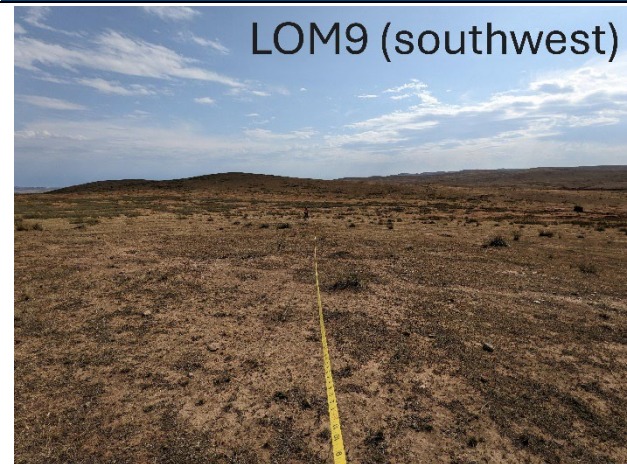
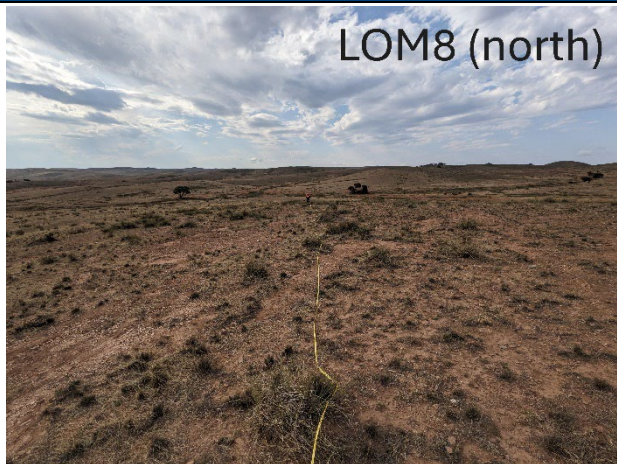
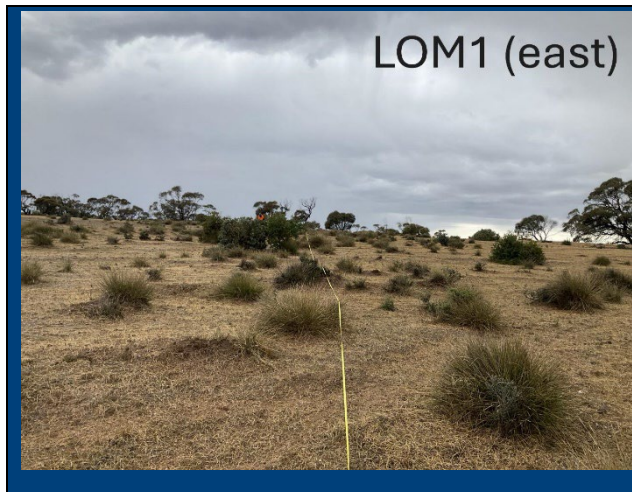


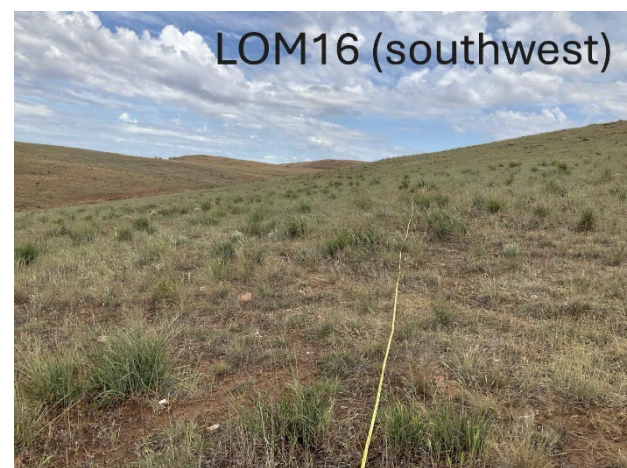
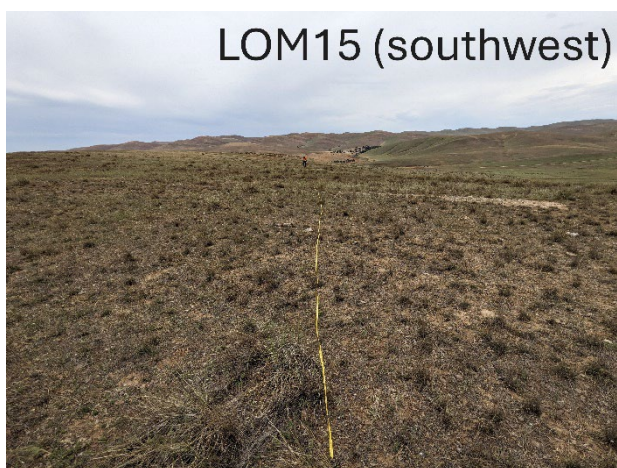
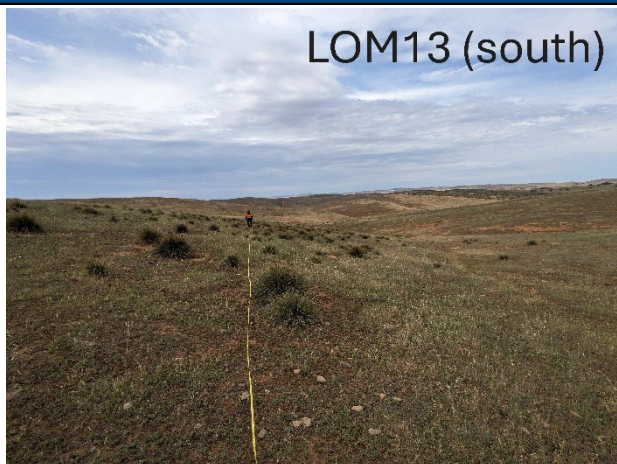
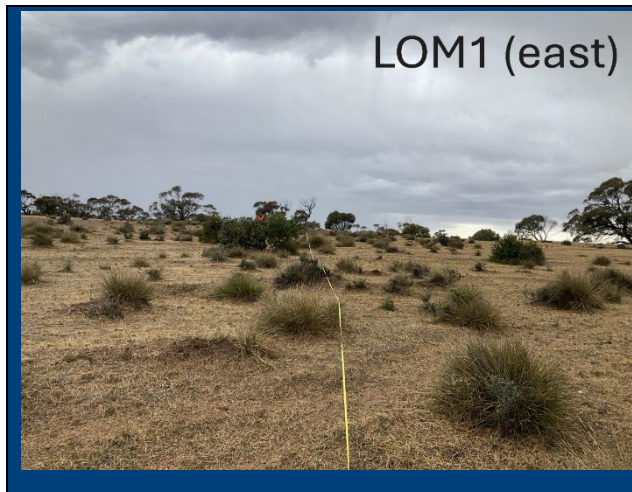
APPENDIX 3

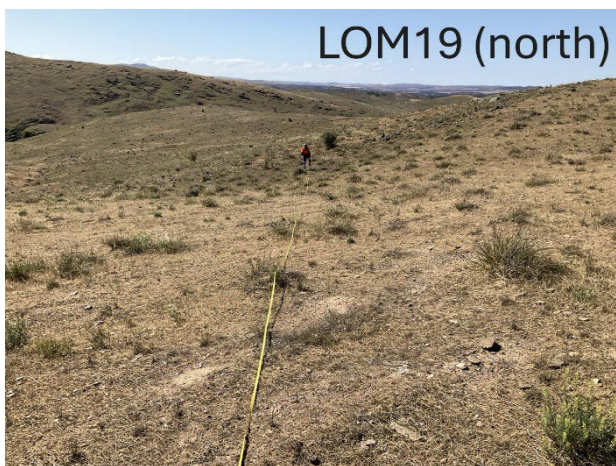
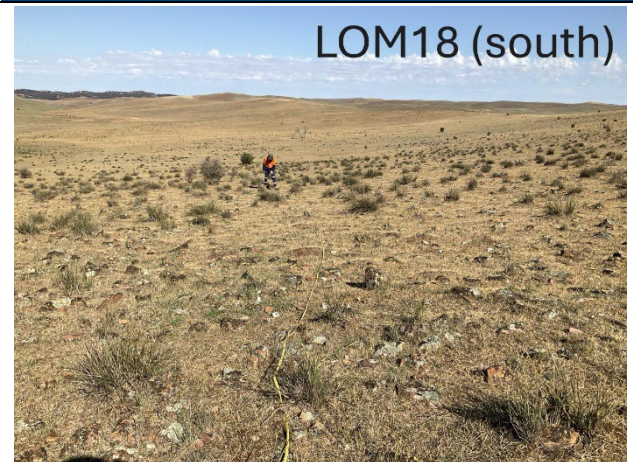
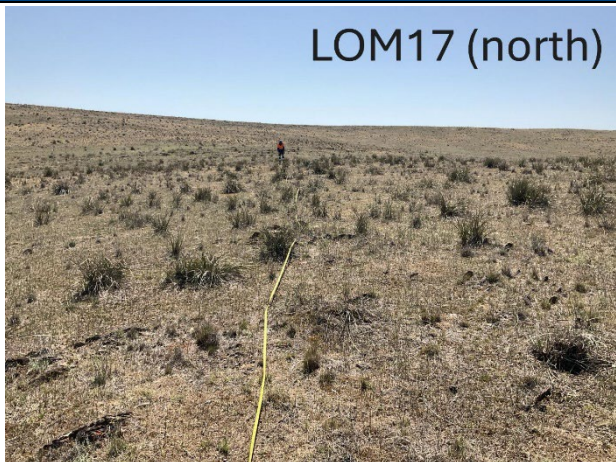
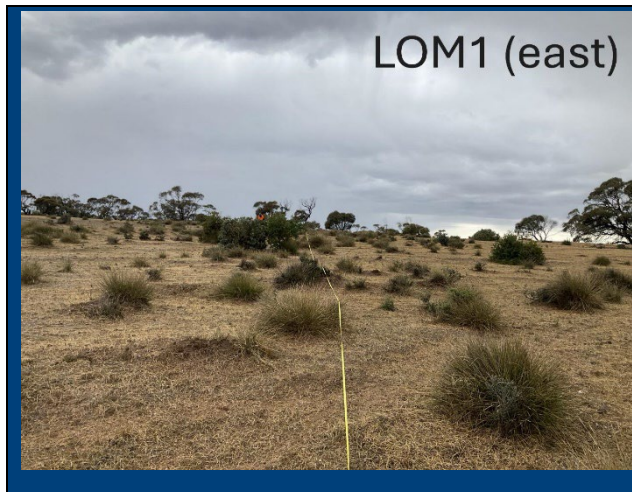
Survey Site Photo File

Table A.3 INTG Condition Assessment Site Photos









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