Goyder North Stage 1 Wind Farm Project

Significant Impact Assessment

under the *Environment Protection and Biodiversity Conservation Act 1999*

LATHWIDA ENVIRONMENTAL

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Executive Summary

ES1 Project Background

Neoen Australia Pty Ltd is developing the Goyder North Renewable Energy Facility (GNREF) as part of a wider Goyder Renewables Zone (GRZ). The broader GRZ includes both the Goyder South Project (approved and under construction) and the proposed GNREF. The GNREF is comprised of the Goyder North Stage 1 Project (GN1, also referred to as the Project herein) which is the subject of this assessment, and any subsequent stages in the northern portion of the GNREF, currently only in early prefeasibility stage.

The Project is in the Mid North of South Australia, approximately 150 km north of Adelaide. The Project will comprise up to 92 Wind Turbine Generators (WTGs), with a capacity of approximately 600MW (dependent on the technology used with a decision yet to be finalised), and up to 225MW / 900 MWh of battery energy storage capacity. The Project would be developed on a large number of freehold (privately owned) land parcels, two parcels of Crown Land, and utilise a number of local road reserves (collectively known as the Project Area), covering approximately 15,400 hectares (ha) of land (inclusive of all components including both overhead transmission line options), and approximately 14,435 ha for the WF, incorporating OTL Primary only. Within this area, a total Disturbance Footprint of approximately 607 ha will be required for the Project representing the Project incorporating OTL Primary only).

ES2 Significant Impact Assessment

To support the Project, a significant impact assessment (SIA) was undertaken to assess the significance of potential residual impacts of Neoen's proposed GN1 on Matters of National Environmental Significance (MNES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). The SIA has taken into consideration all expected disturbance activities (temporary and permanent) associated with the Project, including access roads and tracks, underground cabling (power and communications), 92 WTGs and associated hardstand areas, meteorological (met) masts, operations and maintenance buildings, concrete batching plants, overhead transmission lines (OTLs), collector substation/expansion of the existing Bundey Substation, an on-site battery energy storage system (BESS), and additional temporary facilities and infrastructure to enable construction.

Of note, two prospective OTLs have been included within this assessment, the primary OTL (OTL) and an alternative OTL (OTL-Alt), however, only one route will be selected for construction.

The assessment focuses on ecological and non-ecological MNES relevant to the Project Area as identified in a Protected Matters Search Tool (PMST) report generated on 30 April 2024 (inclusive of the OTL, and repeated for the OTL-Alt), which captures the most recent listing event dated 5 January 2024.

The PMST report identified a total of four Threatened Ecological Communities (TECs), 36 threatened species (15 flora, 15 birds, two fish, two reptiles, one mammal and one amphibian), and nine migratory

species (three of which are listed as both threatened and migratory species) that may be relevant to the Project Area. One Ramsar Wetland of International Importance, and a National Heritage Place were also identified as potentially relevant MNES within the PMST report.

A likelihood of occurrence assessment was undertaken for all species identified in the PMST report to determine the potential for interactions with the Project. The likelihood assessment considered information presented within an extensive library of existing reports and other information available at the time of preparation, including habitat and vegetation descriptions and on-ground survey data arising from baseline ecological surveys and assessments, principally undertaken between 2022 to 2024, including bird and bat utilisation surveys, targeted threatened species surveys, a species-specific management plan, and a comprehensive ecological assessment report summarising the findings of a series of reports prepared for the GN1 and broader GNREF.

Following the likelihood of occurrence assessment, where a species was considered as known to be present, considered likely to occur, or considered as potentially occurring within the Project Area, a SIA was undertaken of residual impacts against the significant impact criteria outlined in the Matters of National Environmental Significance: Significant Impact Guidelines 1.1 (DotE 2013a).

From the total of four TECS, two were considered to potentially interact with the Project; the Iron-grass Natural Temperate Grassland of South Australia and the Mallee Bird Community of the Murray Darling Depression Bioregion.

From a total of 15 threatened flora, the Project was assessed as potentially interacting with seven flora species, however, following a SIA, significant impacts were assessed as possible for six species, primarily based upon a lack of survey data associated with the OTL-Alt. These species include *Acacia glandulicarpa* (Hairy-pod Wattle), *Acacia spilleriana* (Spiller's Wattle), *Codonocarpus pyramidalis* (Slender Bell-fruit), *Dodonaea procumbens* (Trailing Hop-bush), *Dodonaea subglandulifera* (Peep Hill Hop-bush), and *Olearia pannosa* subsp. *pannosa* (Silver Daisy-bush).

From a total of 21 threatened fauna species, the Project was assessed as potentially interacting with six fauna species, however, following a SIA, significant impacts were assessed as possible for two species and likely for one species (respectively), including *Aphelocephala leucopsis* (Southern Whiteface, known to occur), *Melanodryas cucullata cucullata* (South-eastern Hooded Robin, known to occur), and *Tiliqua adelaidensis* (Pygmy Blue-tongue Lizard, known to occur).

Whilst one migratory species; *Apus pacificus* (Fork-tailed Swift) has been previously recorded as an aerial/fly-over species, the species did not meet the significant impact criteria for migratory species. All other migratory species were discounted during the likelihood of occurrence assessment based upon a lack of suitable habitat within the Project Area.

No non-ecological MNES will be impacted as a result of the Project.

ES2.1 Iron-grass Natural Temperate Grassland of South Australia (INTG)

The INTG has been recorded extensively across the GN1 Project Area, with total area of approximately 1,616.06 ha of *Lomandra* Grassland (VA6) mapped within the GN1 Wind Farm Area (particularly in the central and eastern portions), as well as areas with the OTL, of which approximately 29.64 ha is known to occur within the Disturbance Footprint (comprising 11.93 ha of permanent disturbance and 17.71 ha of temporary disturbance), representing approximately 1.83% within the GN1 and approximately 0.95% of the total area of INTG mapped in the broader GNREF Project Area, and substantially less compared with the overall distribution of the TEC. Whilst the Disturbance Footprint is relatively small (i.e. 1.83% within the GN1), and Project elements have been proposed to be micro sited to avoid significant impacts, two significant impact criteria are potentially triggered for this TEC; a reduction in the extent of the TEC and fragmentation of the TEC, principally as a result of native vegetation clearance.

ES2.2 Mallee Bird Community of the Murray Darling Depression Bioregion (MBC)

The southern extent of the OTL (and assumed areas within the OTL-Alt) overlap with the MBC. Three MBC dependent bird species have been recorded within the southern portion of the OTL, namely *Microeca fascinans* (Jacky Winter), *Nesoptilotis leucotis* (White-eared Honeyeater), and *Ptilotula ornata* (Yellow-plumed Honeyeater), subsequently qualifying suitable mallee vegetation as a TEC. The OTL potentially interacts with an alignment of approximately 9.5 km of MBC (approximately 2.13 ha within the Disturbance Footprint), and an alignment of approximately 34.2 km associated with the OTL-Alt (approximately 30.66 ha based upon the Department of Environment and Water inferred mapping). Whilst mitigation strategies include the potential to micro site elements of the OTL alignments to avoid areas of suitable or preferred habitat respectively, similarly to the INTG, two significant impact criteria are potentially triggered for this TEC; a reduction in the extent of the TEC and fragmentation of the TEC, principally as a result of native vegetation clearance.

ES2.3 Flora associated with the WF and OTL

From a total of 15 threatened flora species identified in the PMST report, seven were assessed as potentially occurring within the Project Area as a result of a likelihood of occurrence assessment. Significant impacts were assessed and discounted for all species within the WF and OTL following a significant impact assessment (based upon species records, rigorous on ground survey efforts over several years specifically within the proposed Disturbance Footprint, and other available literature). This includes potential for both direct and indirect impacts as a result of the Project, which can largely be avoided principally due to avoidance and micro siting of infrastructure in areas where threatened species have been identified, and a range of other mitigation measures.

ES2.4 Flora associated with the OTL-Alt

Several significant impact criteria were triggered for six MNES flora species associated with the OTL-Alt, principally due to a lack of data associated with this alignment, and includes possible impacts to the following species:

- *Acacia glandulicarpa* (Hairy-pod Wattle)
- *Acacia spilleriana* (Spiller's Wattle)
- *Codonocarpus pyramidalis* (Slender Bell-fruit)
- *Dodonaea procumbens* (Trailing Hop-bush)
- *Dodonaea subglandulifera* (Peep Hill Hop-bush)
- *Olearia pannosa* subsp. *pannosa* (Silver Daisy-bush)

The assessment has adopted a conservative approach to the species triggered in the OTL-Alt given the current limited availability of data, where detailed on-ground survey efforts and vegetation assessments for this alignment will verify the conservative inferences.

ES2.5 *Aphelocephala leucopsis* (Southern Whiteface)

The Southern Whiteface has a wide distribution across most of mainland Australia south of the tropics, occupying a wide range of open woodlands and shrublands. An estimated potential impact to suitable habitat for the species of 45.90 ha in the WF, 48.92 ha along the OTL, and 33.20 ha along the OTL-Alt will be disturbed as a result of the Project, noting much of this disturbance is divided across multiple (16 plus Mallee forest and woodland) vegetation associations, and the Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. Significant impacts as a result of the Project have been conservatively assessed as possible, due to potentially triggering one criteria; adversely affecting habitat critical to the survival of the species. However, the clearance of approximately 94.82 ha (for WF plus OTL), or 79.10 ha (for WF plus OTL-Alt) of potentially suitable habitat associated with the Disturbance Footprint represents a marginal reduction (0.0013% or 0.0011% respectively) of the reported Area of Occupancy of the species.

ES2.6 *Melanodryas cucullata cucullata* (South-eastern Hooded Robin)

The South-eastern Hooded Robin occurs in south-eastern Australia from far south-east Queensland to the Yorke Peninsula in South Australia, and is described as shy and largely sedentary, often occurring in pairs or small groups. The species generally forms 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). Habitat deemed critical to the survival of the species is documented in the Conservation Advice for the species and includes dry eucalypt and acacia woodlands and shrublands remnants with an open understorey, some grassy areas. An estimated potential impact area of 39.34 ha in the WF (predominantly associated with vegetation association 1), 45.97 ha along the OTL alignment (predominantly associated with vegetation association 18), and

33.17 ha along the OTL-Alt alignment (predominantly associated with Mallee Forest and woodland) will be disturbed as a result of the Project. Noting and the Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. Significant impacts as a result of the Project have been conservatively assessed as possible, due to potentially triggering one criteria; adversely affecting habitat critical to the survival of the species. However, the clearance of 85.31 ha (for WF plus OTL), or 72.51 ha (for WF plus OTL-Alt) of potentially suitable habitat associated with the Project represents 0.0028% or 0.0024% respectively of the reported Area of Occupancy of the species. Of note, total of 24.24 ha (WF and OTL Primary) is considered the maximum potential permanent clearance of potential Hooded Robin habitat, equating to <1% of the suitable vegetation mapped locally, in the GNREF Project Area.

ES2.7 *Tiliqua adelaidensis* (Pygmy Blue-tongue Lizard)

Targeted field surveys undertaken in February and March 2024 recorded a total of 138 individual Pygmy Blue-tongue Lizards (PBTL) in the GN1 Disturbance Footprint, and an additional 16 PBTL were detected during subsequent micro siting surveys within the wind farm area (WF). An estimated maximum number of 298 individuals may be impacted within the Disturbance Footprint during the construction phase, based on densities identified within currently surveyed areas. No PBTL were recorded along the OTL outside of the WF, and the species is considered unlikely to be present in the OTL or OTL-Alt corridor outside of the WF boundary of the GN1 Project Area. All known and future habitat is critical to the survival of the species, and critical habitat includes the area of occupancy for all known populations, all areas of the species' historical occurrence, and all areas of potential habitat throughout its geographical and ecological range. Impacts listed as temporary, which require the removal of/disturbance to topsoil are likely to be equivalent in impact to permanent clearance for this species, and ground disturbance is likely to alter soil conditions and preclude development of appropriate spider burrows for the medium to long term. A total of approximately 10,914.41 ha of potentially suitable habitat in the broader GN1 Project Area has been mapped, of which a maximum of 459.14 ha (or 4.21% of the GN1 Project Area, based on the GN1 plus OTL) is inside the GN1 Disturbance Footprint and potentially impacted by the Project, noting the south-central portion of the GN1 WF Area is deemed to be of the highest habitat suitability. Impacts to the PBTL as a result of the Project within the WF of the GN1 Project Area trigger several of the significant impact criteria, including leading to a long-term decrease in the size of a population, reducing the area of occupancy of a population, fragmenting a population into two or more populations, adversely affecting habitat critical to the survival of a species, disrupting the breeding cycle of a population, modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, and interfere with the recovery of a species. Pending finalisation of mitigation strategies, impacts as a result of the Project are considered possible but unlikely within the OTL and OTL-Alt outside of the WF Disturbance Footprint.

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1 Introduction

This document presents an assessment of the significance of residual impacts which may arise as a result of Neoen Australia Pty Ltd's (Neoen's) proposed Goyder North Stage 1 Wind Farm and Battery Energy Storage System (BESS) Project (the Goyder North Stage 1 Project, GN1 or the Project) on key Matters of National Environmental Significance (MNES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). The report provides an assessment of the potential for the Project to result in significant impacts to MNES and is intended as a supporting document for Neoen's formal referral under the EPBC Act.

The Project is part of a larger concept to be developed under Neoen, known as the Goyder Renewables Zone (GRZ), which includes the Goyder South Hybrid Renewables Energy Project (Development Approval granted in 2021, currently under construction), and the Goyder North Renewable Energy Facility (GNREF), which includes the Project discussed herein. The Project forms part of the GNREF and occurs on land within the GNREF Project Area which occurs to the south of White Hill Road. The prospective Goyder North Stage 2 Wind Farm also occurs on land within the GNREF Project Area but is situated to the north of White Hill Road, and is still in early prefeasibility planning, and not included as part of this current submission. The broader GNREF was submitted for Development Approval on 15 January 2024 (Planning Application 23036148) and is currently under assessment with the South Australian State Planning Commission (SPC).

The GN1, representing the Action which is seeking approval under the EPBC Act, is inclusive of all expected disturbance activities associated with the development, construction and operation of the Project. This includes a network of roads and tracks to connect infrastructure and provides site access, underground cabling (power and communications), 92 Wind Turbine Generators (WTGs), operations and maintenance buildings, concrete batching plants, an Overhead Transmission Line (OTL), collector substation, expansion of the existing Bundey Substation, a Battery Energy Storage System (BESS), and temporary construction facilities (compound/laydown areas) (Table 1.1).

The OTL will connect the Goyder North Stage 1 Wind Farm to the Bundey Substation, which is currently being built as part of the South Australia-New South Wales (SA-NSW) Interconnector Project EnergyConnect (PEC). For the purposes of this assessment, two routes are considered for the OTL, noting that only a single option will ultimately be constructed; OTL to the west, OTL-Alt to the east). The assessment considered the worst-case scenario OTL option for each MNES.

The assessment herein describes all potentially relevant ecological and non-ecological MNES, and focuses on the MNES identified as relevant to the Project, i.e. those identified in a Protected Matters Search Tool (PMST) report generated in April 2024, and subsequently considered relevant to the Project Area, which includes recently listed species (i.e. inclusive of the most recent listing events dated 5 January 2024).

The assessment uses habitat and vegetation descriptions and on-ground survey data, principally undertaken between 2022 to 2024 by EBS Ecology (EBS), arising from an ecological risk assessment summarising previous survey work (EBS 2023c), bird and bat utilisation surveys (EBS 2024a, 2024b), targeted threatened species surveys (EBS 2024c), baseline ecological surveys and assessments (2024d), a

comprehensive ecological assessment report summarising the findings of a series of reports prepared for the GN1 and broader GNREF (EBS 2024e), and a species-specific management plan (EBS 2024f).

This assessment focuses upon the proposed activities associated with the Project, and the associated Disturbance Footprint, as described within the Development Approval (submitted on 15 January 2024 under Planning Approval 23036148).

The proposed activities for the Project would be approved as a Planning Application under the *Planning, Development and Infrastructure Act 2016* (SA) and associated Planning and Design Code (the Code) as regulated by the SPC.

1.1 The Goyder North Stage 1 Project

The GN1 is located north-east of Burra and east of the Mount Bryan township in the Mid North of South Australia, approximately 150 km north of Adelaide (Figure 1.1). The Project will comprise up to 92 WTGs, with a capacity of approximately 600MW (dependent on the technology used with a decision yet to be finalised), and up to 225MW / 900 MWh of battery energy storage capacity.

The Project would be developed on a large number of freehold (privately owned) land parcels, up to four parcels of Crown Land (CR 5762/84, CR 5762/85, CR 5765/687, and CR 5745/722) and utilise a number of local road reserves (collectively known as the Project Area). OTL-Alt also crosses CR 6100/617 and CR 5762/40. The Project Area covers approximately 15,400 hectares (ha) of land (incorporating both OTL options), and approximately 14,435 ha for the Project incorporating OTL Primary only, most of which is categorised as rural agricultural land and is predominantly used for cattle and sheep grazing, and grain cropping. The Project's Disturbance Footprint incorporating OTL Primary only is substantially less than this at approximately 607 ha. The GN1 will include:

- Access roads and tracks
- Underground cabling (power and communications)
- Up to 92 Wind Turbine Generators
- Several temporary and permanent meteorological (met) masts
- Operations and maintenance buildings
- Concrete batching plants (three)
- Overhead power transmission lines
- A collector substation within the Wind Farm and expansion of Bundey Substation
- On-site battery energy storage system (BESS)
- Temporary facilities and infrastructure to enable construction.

The combined GNREF (i.e. the Goyder North Project Stage 1 and any subsequent stages) in its entirety, could comprise of up to 135 WTGs with a combined capacity of up to 1,000MW of wind generation and 900MW / 3,600MWh of battery energy storage capacity.

1.2 Background of Previous EPBC Referrals Associated with Goyder developments

The GN1 has not been referred previously, however, Neoen's sister project, the Goyder South Hybrid Renewable Energy Facility (REF) was referred and approved in 2021. Elements of the Goyder South Hybrid REF were previously referred to the DCCEEW in four discrete packages as outlined below:

- EPBC 2021/8957 Goyder South Hybrid REF – Wind Farm 1B, 5 km south of Burra (1 September 2021)
  Approval decision: Approved with controlling provisions (Listed Threatened Species and Communities (Section 18 and Section 18A), Listed Migratory Species (Section 20 and Section 20A))
- EPBC 2021/8958 Goyder South Hybrid REF – Wind Farm 1A, 10 km south of Burra (1 September 2021)
  Approval decision: Approved with controlling provisions (Listed Threatened Species and Communities (Section 18 and Section 18A), Listed Migratory Species (Section 20 and Section 20A))
- EPBC 2021/8959 Goyder South Hybrid REF – OTL and Substation, Worlds End (1 September 2021)
  Approval decision: Approved with controlling provisions (Listed Threatened Species and Communities (Section 18 and Section 18A))
- EPBC 2021/8960 Goyder South Hybrid REF – Battery, 5 km north Robertstown (1 September 2021)
  Referral decision: Not a controlled action.

1.3 Key Project Elements and Definitions

Key elements of the GN1 assumed for this assessment are summarised in Table 1.1 below. The Project current infrastructure layout is presented in Figure 1.3.

Key terms used throughout this assessment report include the following.

The Project: The Goyder North Stage 1 Project (GN1 Project), representing the Action seeking approval under the EPBC Act, as described in Section 1.1.

Goyder North Renewable Energy Facility (GNREF): The entire Goyder North proposed development, incorporating Goyder North Stage 1 (referred to herein as the Project), and the proposed Goyder North Stage 2 Project.

Project Area / Goyder North Stage 1 Project Area (GN1 Project Area): defined as the area encompassing the proposed Goyder North Stage 1 Wind Farm Area, which is the portion of the broader GNREF Project which occurs south of White Hill Road proposed to be developed as part of the GN1, and which is the focus of this assessment. The GN1 Project Area includes all wind generation infrastructure and associated infrastructure, including access roads, underground cables, substation, OTL, construction and operation compounds and met masts, required to transmit and connect into existing Bundey Substation. The GN1 Project Area incorporates both the primary OTL and the OTL-Alt as two options to transfer energy, noting that only one will be built.

Subsequent Stages of GNREF also referred to for simplicity as **Goyder North Stage 2 Project Area (GN2 Project Area):** The portion of the GNREF Project Area which occurs north of White Hill Road and may be developed as part of a potential future component of the GNREF Project.

Disturbance Footprint: The total initial clearance area (607 ha) required for safe and efficient construction of the proposed GN1 Project, including both permanent and temporary clearance areas and maintenance zones (defined below) for construction buffers, laydown areas, stockpile areas and construction access routes for the Wind Farm Generation Components and the OTL options.

Development Envelope: A 'buffered' area beyond the indicative GN1 Disturbance Footprint that represents the maximum spatial extent in which the Disturbance Footprint will occur within. It is within the GN1 Project Area and includes areas required for temporary and permanent project infrastructure, equipment and materials laydown, installation, and access. The Development Envelope allows flexibility in final positioning of the project infrastructure to occur once the GN1 Project has undergone detailed design and any further ecological assessments, and the contract has been awarded for supply and construction. This enables further optimising of final siting of infrastructure to allow for further avoidance and minimisation of ecological impacts and management of specific on-ground constraints that are identified in future technical assessments or during construction.

Primary Overhead Transmission Line (OTL): Overhead Transmission Line preferred route, which originates within the GN1 Project Area at the substation, and then traverses approximately 48 km south, connecting to Bundey Substation at the intersection of Powerline Road and Sutherlands Road. On-ground field surveys have been undertaken for the length of this alignment. Only one OTL option will be built, but both the preferred primary OTL and an alternate OTL (OTL-Alt) are included here for assessment in the event that land access cannot be agreed for either.

Alternate Overhead Transmission Line (OTL-Alt): OTL proposed alternate alignment which travels south-east from the centre of the GN1 Project Area, to the east of Red Banks Conservation Park, and then southward within the Murray Darling Basin Bioregion, to the existing Bundey Substation site. As above, only one OTL option will be built, but both are currently included for assessment to provide optionality.

Wind Farm Generation Components (WF): An indicative boundary around all infrastructure required for energy capture, storage and transmission at the GN1 WF area that is required, excluding the corridor(s) defined for the OTL and OTL-Alt. Infrastructure includes Wind Turbine Generators, access roads, underground cables, substation at the WF, BESS, and construction and operation compounds. Arterial site access road options that extend from the western boundary of the WF and connect into Barrier Highway are excluded from this definition on figures to indicate their optionality.

Within the Project Area and Disturbance Footprint, the following terms are used to reference particular study areas and components of the Project. These include:

- **Permanent Disturbance:** Permanent disturbance associated with operations and maintenance (O&M) compounds and access tracks required for the life the Project to access WTGs and facilities.
- **Temporary Disturbance:** Temporary construction facilities including compounds and laydown areas, concrete batching plants and brake and winch sites. Also includes access tracks required for construction of the OTL.
- **IMZ**: An Inner Maintenance Zone which extends 12.5 m either side of the 10 m wide stringing corridor and the centreline of the OTL. Vegetation within this zone will be maintained at or below (≤) 3 m in height to meet the South Australian State Legislation. Interactions with MNES to maintain these levels of maintenance are incorporated in this assessment.

- **OMZ**: An Outer Maintenance Zone which extends 12.5 m either side on the outer edge of the IMZ. This zone only requires vegetation trimming to within 3-6 m in height to meet the South Australian State Legislation. Interactions with MNES to maintain these levels of maintenance are incorporated in this assessment.

Access to the Project will be via the Barrier Highway, with three options currently being considered including White Hill Road, Gum Hill Road and Belcunda Road. Newly established roads and access tracks within the Project Area are to be constructed to support ongoing WF operations and infrastructure maintenance requirements and are part of the Project's Disturbance Footprint (Figure 1.6) and will utilise existing tracks where practical and possible to do so.

Water supply requirements (including concrete batching plant requirements) for Project construction and operation is anticipated to be accessed at the site through transportation tanks that will be stored at various facilities. The viability of a number of privately owned groundwater bores across the Project Area is currently being investigated.

Table 1.1: Key Project details – Goyder North Stage 1 Wind Farm

Component	Description
Wind Farm Construction and Operations	
Wind Turbine Generators (WTG)	Maximum number: 92 Minimum swept height: approximately 25 m Maximum swept height: approximately 240 m Maximum blade length: approximately 90 m Maximum rotor diameter: approximately 180 m Maximum speed of rotation: approximately 9 to 10 revolutions per minute (confirmed as detailed design progresses) 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.
Electrical substations	One fenced compound of approximately 200 m x 200 m within the WF. An expansion of the existing Bundey substation of approximately 220 m x 440 m including substation and ancillary equipment.
Construction and Operations Compounds and Facilities	~36 ha including: • 150 m x 150 m laydown areas x 7 • 150 m x 150 m construction facilities x 3 • 150 m x 150 m site office facilities x 3 • 300 m x 180 m storage facility storage area x 1 • 100 m x 100 m batch plant x 1 Approximately 6 ha (OTL Primary): • 320 m x 150 m OTL compound x 1 • 100 m x 100 m OTL batch plant Approximately 7 ha (OTL ALT) • 150 m x 150 m OTL ALT compound x 1 • 150 m x 150 m OTL ALT batch plant x 1
Meteorological (Met) Masts	Several met masts will likely be installed during the construction phase. These will be a similar height to the turbine hub height with a small disturbance footprint. Exact locations are still to be determined but are intended to be sited to avoid impacts to any MNES.
Access roads and tracks	Tracks to each infrastructure component. Tracks will be a permanent width of approximately 11 m, with temporary clearance expected to average around 21 m in width. After construction, tracks will be rehabilitated back to a width of less than 11 m. Within the OMZ, where existing access tracks don't exist, there is a 6 m access track allowance for construction of the OTL which will be incorporated as temporary disturbance. Ongoing access to the OTL during the life of the project will be via the stringing corridor. Allowances for access tracks for the OTL Primary and OTL-Alt options are itemised as 20 ha and 21 ha, respectively.
Underground cabling	Underground cabling for transmission (33-66 kV) and communications (fibre). Trench width approx. 0.5 m per circuit and depth approx. 1.2 m (0.9 mm coverage on top). Impact areas of 6 m width for cabling aligned with access tracks and 10 m width for cabling that is not road aligned.
Site Access	Primary access route from Barrier Highway. Three options considered including White Hill Road, Gum Hill Road and Belcunda Road. Will require widening in some locations and trimming of taller vegetation to enable transport of heavy machinery and large infrastructure components.

Component	Description
Battery Energy Storage System (BESS)	
Goyder North Stage 1 BESS	Maximum total capacity – 225MW/900MWh One fenced compound of approximately 9.8 ha.
Overhead Transmission Line (OTL)	
OTL (inc. stringing corridor, towers, construction road access, brake and winch sites)	275 or 330 kV multi-circuit overhead line connecting the WF substation to the Bundey Substation (approximately 48 km). Transmission towers of up to 65 m height with a footprint of approximately 26 m x 26 m. Spaced approximately 200-400 m apart.
Overhead Transmission Line (OTL-Alt)	
OTL (inc. stringing corridor, towers, construction road access, brake and winch sites)	275 or 330 kV multi-circuit overhead line connecting the WF substation to the Bundey Substation (approximately 47 km). Transmission towers of up to 65 m height with a footprint of approximately 26 m x 26 m. Spaced approximately 200-400 m apart.
Key demands and supplies	
Power	Electrical connection to the existing grid via Bundey Substation Extension.
Water	Water to be transported in and stored at various compounds. Opportunities to source water from groundwater bores will also be explored.
Workforce and Workforce Accommodation	Workforce TBC. Currently in prefeasibility stage, with an accommodation village potentially located on the outskirts of Burra.

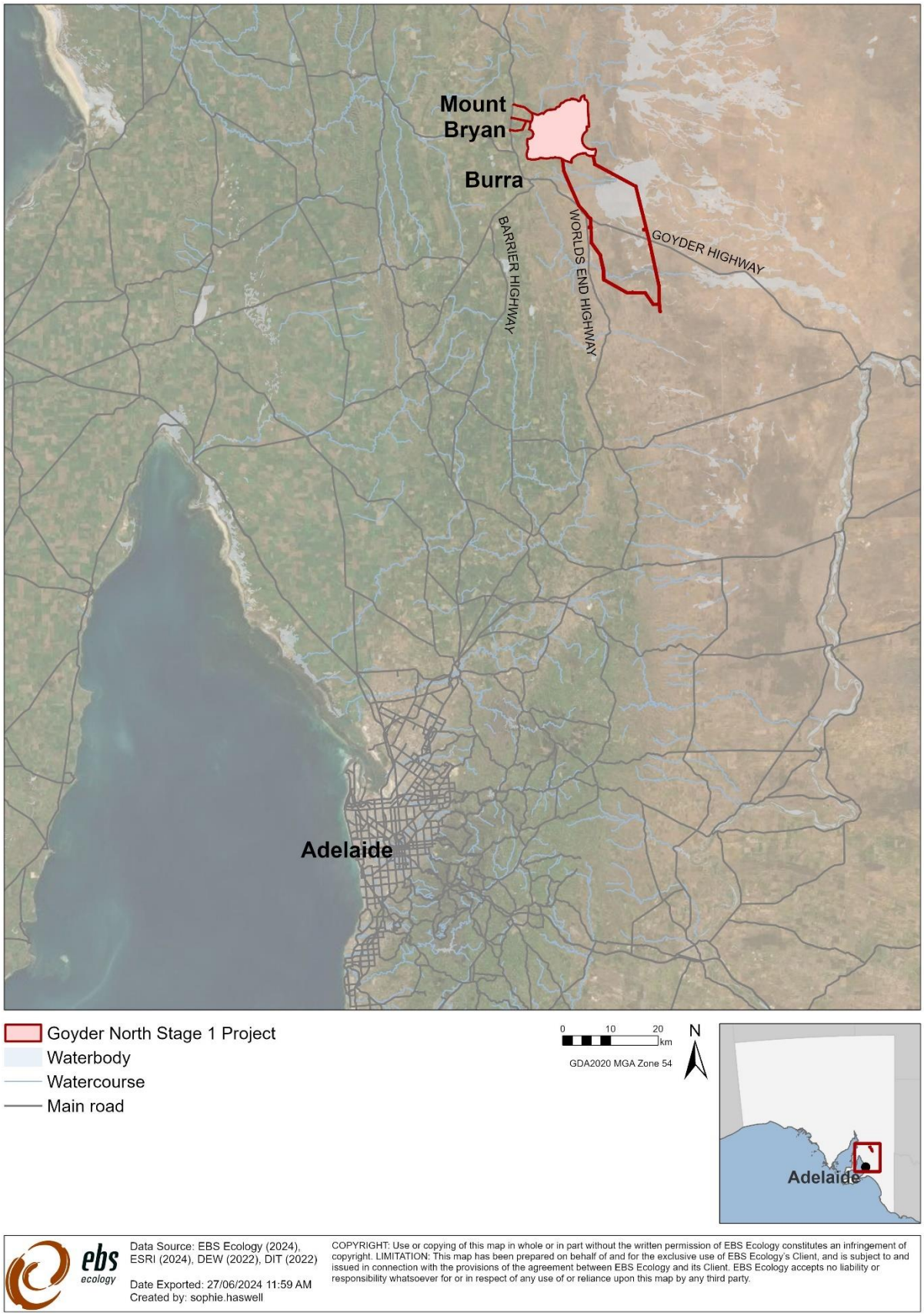

Figure 1.1: Location of the Goyder North Stage 1 Project

Acknowledgement: Figure developed by EBS Ecology.

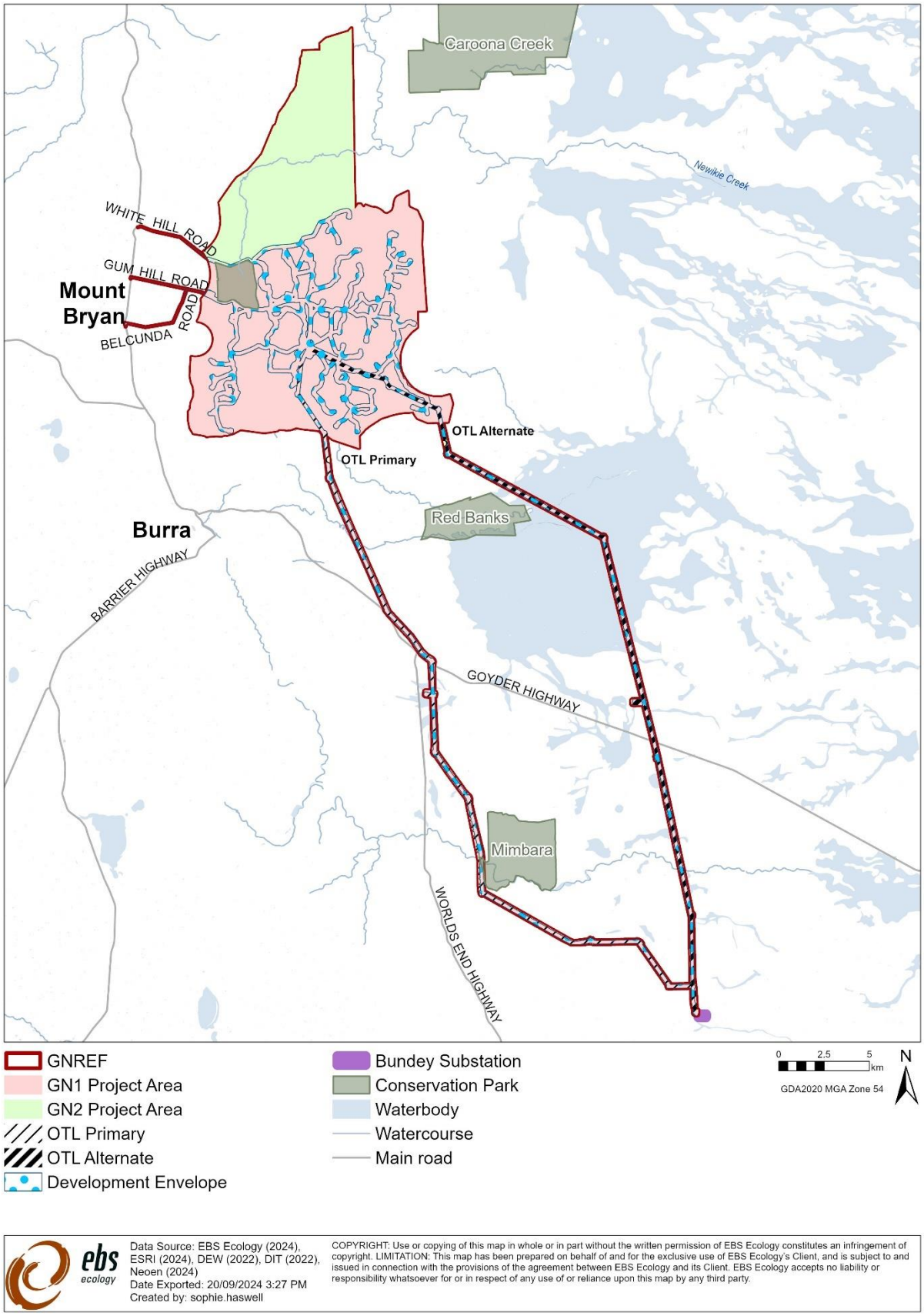

Figure 1.2: Goyder North Stage 1 Project Area

Acknowledgement: Figure developed by EBS Ecology.

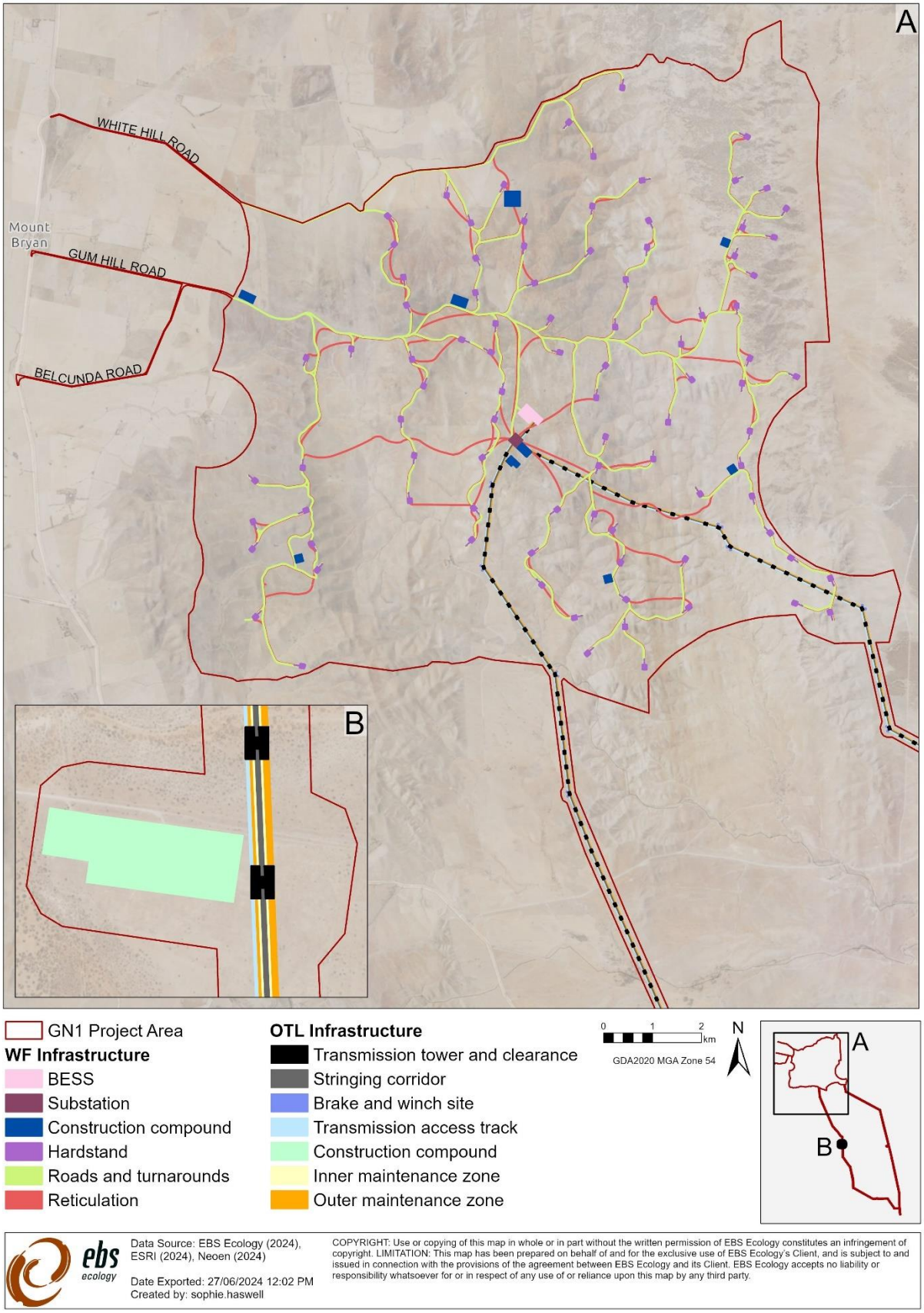

Figure 1.3: Project Infrastructure Layout

Acknowledgement: Figure developed by EBS Ecology.

1.4 Goyder North Disturbance Footprint

A total Disturbance Footprint (DF) of approximately 607 ha (inclusive of OTL and excluding OTL-Alt) will be required for the Project (excluding areas of pre-existing disturbances associated with agricultural and pastoral activities). This is comprised of WTGs, access roads and tracks, underground cables, a substation at the WF, BESS, construction and operation compounds, OTL or OTL-Alt and an expansion at existing substation Bundey. This includes both permanent and temporary clearance areas and maintenance zones (defined below) for construction buffers, laydown areas, stockpile areas and construction access routes for the Wind Farm Generation Components and the OTL options.

The total Disturbance Footprint for the Project represents direct impacts to native vegetation and habitat. Other direct impacts as a result of the Project include potential impact pathways such as vehicle strike/WTG blade strike to fauna, and bird collision with power lines once operational. Additional indirect impacts are also plausible, such as weed introduction resulting in reduced habitat quality, or noise or vibration disturbance resulting in avoidance of habitat or less successful breeding. All plausible impact pathways (both direct and indirect) are considered where relevant in this assessment.

Of note, the total initial maximum Disturbance Footprint required for safe and efficient construction of the proposed GN1 Project is approximately 607 ha, and includes the Disturbance Footprint associated with the OTL Primary. With both OTL Primary and OTL Alternate included, the total Approval Footprint is approximately 728 ha, noting that only one of either the OTL Primary (~123 ha) or OTL Alternate (~122 ha) will be built. Given OTL Primary is the primary proposed and likely OTL route, the total assumed Disturbance Footprint of 607 ha is used throughout this assessment. This significant impact assessment has, however, also provided consideration to potential impacts as a result of the OTL Alternate to maintain optionality for the Project.

1.5 Existing Environment Description

The Interim Biogeographic Regionalisation for Australia (IBRA) describes land for conservation under Australia's Strategy for the National Reserve System (Thackway and Creswell 1995). The IBRA classifies Australia into 89 bioregions and 419 subregions. Each bioregion is a distinct area characterised by geology, landform patterns, climate, ecological features, and plant and animal communities.

The GN1 overlaps two main Regions and three subregions as classified by the IBRA system. The Project is principally situated within the Flinders Lofty Block (FLB) region, with a portion of the Disturbance Footprint (OTL) extending east into the Murray Darling Depression (MDD) region. The OTL-Alt occurs predominantly within the MDD, the exception of the very northern portion adjacent to the WF. The Project overlaps three IBRA Subregions, including Broughton, the Olary Spur, a small area of Murray Mallee at the southernmost end of the OTL. The OTL-Alt traverses an additional subregion, an area across the southeastern extent of the Braemer subregion.

The FLB Bioregion is categorised as temperate to arid Proterozoic ranges, alluvial fans and plains, and some outcropping volcanics, with the semi-arid to arid north supporting native cypress, black oak (belah) and mallee open woodlands, *Eremophila* and *Acacia* shrublands, and bluebush/saltbush chenopod shrublands on shallow, well-drained loams and moderately deep, well-drained red duplex soils. The

increase in rainfall to the south corresponds with an increase in low open woodlands of *Eucalyptus obliqua* and *E. baxteri* on deep lateritic soils, and *E. fasciculosa* and *E. cosmophylla* on shallower or sandy soils.

The MDD Bioregion is categorised as an extensive gently undulating sand and clay plain of Tertiary and Quaternary age frequently overlain by aeolian dunes. Vegetation consists of semi-arid woodlands of Black Oak / Belah, Bullock Bush/Rosewood and *Acacia* spp., mallee shrublands and heathlands and savanna woodlands. Substantial areas of mallee remain today in the western aeolian dunes, mainly in South Australia and but also western NSW. Clearing has also been widespread in the northeastern portion of the bioregion in NSW particularly on the undulating plains and relict river channels and lakes associated with the Murray and Darling Rivers.

The land has a rich history of agriculture and sheep and cattle grazing post-European settlement and is currently used for a combination of agricultural and pastoral activities across the different land parcels.

The Project Area is wholly within the Northern and Yorke (N&Y) Landscape Management Region and is managed by the N&Y Landscape Management Board. The area is governed by the Regional Council of Goyder, and the Project Area overlaps the border of Goyder's Line, the line of demarcation between areas suitable for agriculture based upon annual rainfall, and the border where rainfall prevents cropping activities (though low intensity grazing practices may still be supported) (RCoG 2024).

Numerous habitat and vegetation assessments have been undertaken across the broader GNREF area which have identified a total of 23 native vegetation associations, and a total of 241 species of native plants (EBS 2023c, 2024d, 2024e) (Figure 1.4). Native vegetation across the Project Area is comprised predominantly of grasslands, with large areas of Iron-grass (*Lomandra* spp.) in the central and eastern portions of the GNREF. Remnant mallee woodland associations occur along the eastern side of the Project Area, where the vegetation changes into typical chenopod-dominated plains.

Each vegetation association is correlated with different landforms and soil characteristics, and therefore representing different habitat types which are potentially suitable to support EPBC listed threatened and migratory species.

No groundwater dependent ecosystems have been identified in any studies undertaken to date.

Disturbance Footprint area calculations per TEC and vegetation association associated with the Project are provided in Table 1.2 and Table 1.3.

Iron-grass Natural Temperate Grassland and Mallee Bird Community of the Murray Darling Depression Bioregion TECs overlain with the Project's Disturbance Footprint are shown on Figure 1.5.

Vegetation associations overlain within the Project's Disturbance Footprint are shown on Figure 1.6, Figure 1.7, and Figure 1.8.

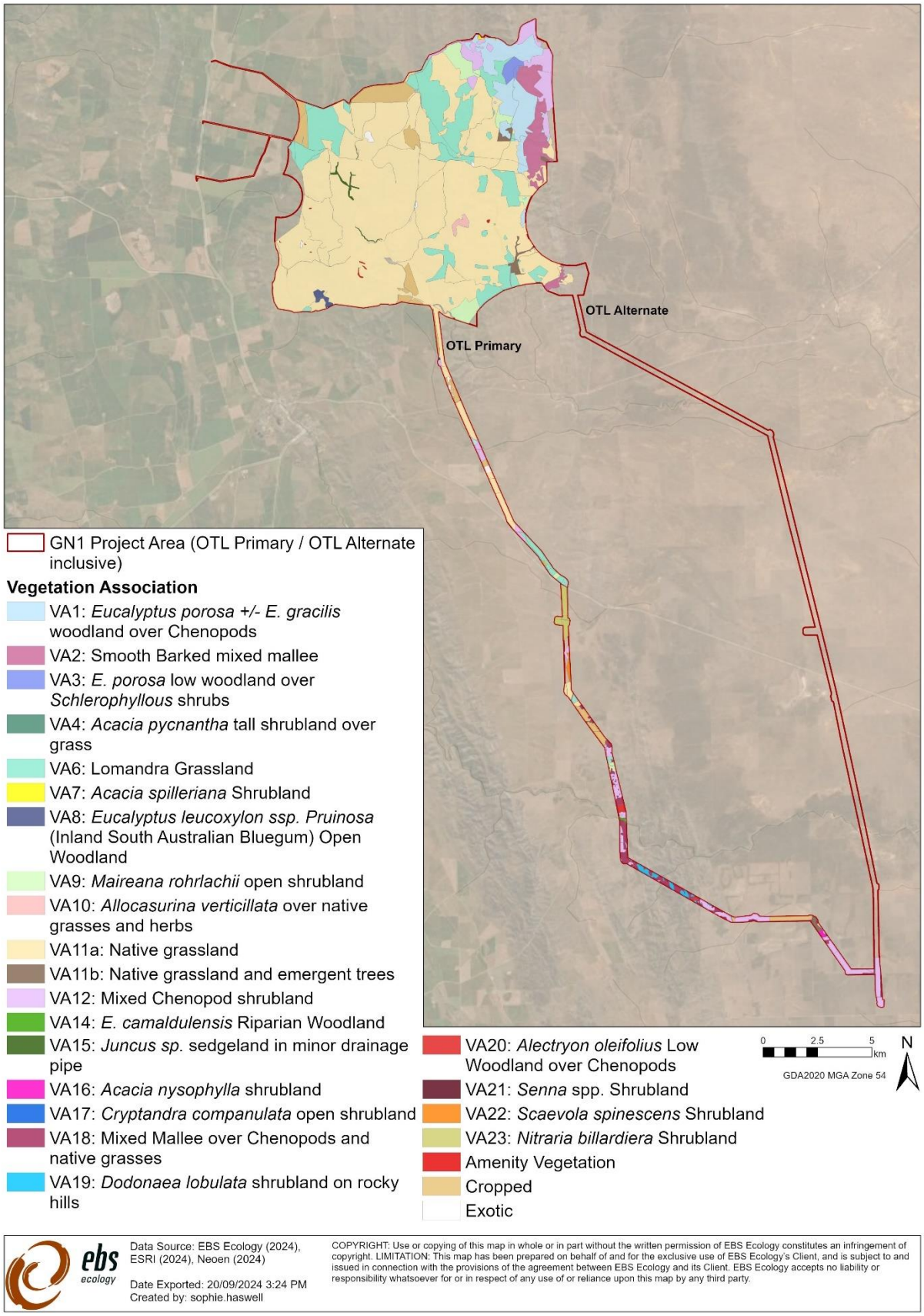

Figure 1.4: Vegetation Associations within the Goyder North Stage 1 Project Area

Acknowledgement: Figure developed by EBS Ecology.

Table 1.2: Approximate areas of TECs within Disturbance Footprint (both temporary and permanent)

Threatened Ecological Community	Approximate Disturbance Footprint within the Project Areas (ha)[1]		
	WF Project Area (WTG, BESS and all associated infrastructure excluding OTL envelopes)	Overhead Transmission Line (OTL)	Overhead Transmission Line (OTL-Alt)
Iron-grass Natural Temperate Grassland	21.89	7.75	0.02
Mallee Bird Community of the Murray Darling Depression Bioregion	-	2.13	30.66

[1] Source EBS 2024e

Table 1.3: Approximate areas of vegetation associations within Disturbance Footprint (both temporary and permanent)

VA	Vegetation Association	Approximate Disturbance Footprint within the Project Areas (ha)[1]		
		WF Project Area (WTG, BESS and all associated infrastructure excluding OTL envelopes)	Overhead Transmission Line (OTL)	Overhead Transmission Line Alternative (OTL-Alt)
VA1	*Eucalyptus porosa* plus/- *E. gracilis* / *E. brachycalyx* Woodland over Chenopods	26.94	1.49	-
VA2	Smooth-barked Mixed Mallee *(E. gracilis* plus/- *E. brachycalyx* plus/- *E. dumosa* plus/- *E. leptophylla* plus/- *E. socialis*) over Chenopods	7.93	-	1.71
VA3	*E. porosa* Woodland over *Senna artemisioides* sp. *coriacea* and *Sclerophyllous* Shrubs	2.13	-	-
VA4	*Acacia pycnantha* Tall Shrubland plus/- *Austrostipa* spp. plus/- *Cymbopogon ambiguus* in rocky creek	0.04	-	-
VA5	*Maireana aphylla* Shrubland over native and exotic grasses	-	-	-
VA6	*Lomandra* spp. Grassland	21.89	7.75	0.02

VA	Vegetation Association	Approximate Disturbance Footprint within the Project Areas (ha)[1]		
		WF Project Area (WTG, BESS and all associated infrastructure excluding OTL envelopes)	Overhead Transmission Line (OTL)	Overhead Transmission Line Alternative (OTL-Alt)
VA7	*Acacia spilleriana* Shrubland	-	-	-
VA8	*E. leucoxylon* ssp. *pruinosa* plus/- *E. odorata* (Peppermint Box) Very Open Woodland over exotic grasses	-	-	-
VA9	*Maireana rohrlachii* open shrubland over *Austrostipa* sp. and exotics plus/- *Lomandra* spp.	6.45	1.24	-
VA10	*Allocasuarina verticillata* over *Cymbopogon ambiguus* and herbs on steep rocky slopes	1.00	-	0.61
VA11a / VA11b	VA11a: Mixed *Austrostipa* spp. and *Rytidosperma* spp. Grassland VA11b: plus/- emergent *Eucalyptus* (*E. porosa* / *E. socialis*) trees	378.13	35.33	19.02
VA12	Mixed Chenopod Shrubland of *Maireana pyramidata* and *Atriplex stipitata* over native and exotic grasses plus/- *Lomandra* spp.	5.11	40.20	16.65
VA13	*Hakea leucoptera* ssp. *leucoptera* Shrubland	-	-	-
VA14	*Eucalyptus camaldulensis* Riparian Woodland over reeds and sedges	0.11	0.63	-
VA15	*Juncus* spp. Sedgeland plus/- *Typha domingensis* plus/- *Phragmites australis* associated with minor drainage lines and creeks	0.05	-	-
VA16	*Acacia nyssophylla* shrubland	-	0.96	-
VA17	*Cryptandra* spp. Shrubland plus/- *Lomandra* spp.	-	-	-
VA18	Mixed Mallee (inc. *E. oleosa* dominant) over Chenopods and native grasses	-	31.92	-
VA19	*Dodonaea lobulata* Shrubland plus/- Scattered Mallee *Eucalyptus* spp.	-	9.21	-

VA	Vegetation Association	Approximate Disturbance Footprint within the Project Areas (ha)[1]		
		WF Project Area (WTG, BESS and all associated infrastructure excluding OTL envelopes)	Overhead Transmission Line (OTL)	Overhead Transmission Line Alternative (OTL-Alt)
VA20	*Alectryon oleifolius* Low Woodland over Chenopods	-	1.62	-
VA21	*Senna* spp. Shrubland	-	0.11	-
VA22	*Scaevola spinescens* Shrubland over Grass	-	0.77	-
VA23	*Nitraria billardiera* Shrubland	-	14.74	-
Total Native Vegetation		**449.78**	**145.97**	**38.01**
Exotic	Pastures dominated by exotic grasses (i.e., *Hordeum vulgare*, Barley Grass)	7.04	1.77	-
Cropped	Agricultural land currently or historically utilised for cropping	16.41	13.80	-
Total Non-Native Vegetation		**16.41**	**13.80**	**-**
Total (Combined Native Vegetation and Cropped)		**473.23**[2]	**161.54**[2]	**38.01**

[1] Source EBS 2024e

[2] Very minor rounding errors may occur within the total values, however, the total Disturbance Footprint of the WF and OTL is accepted as 607.

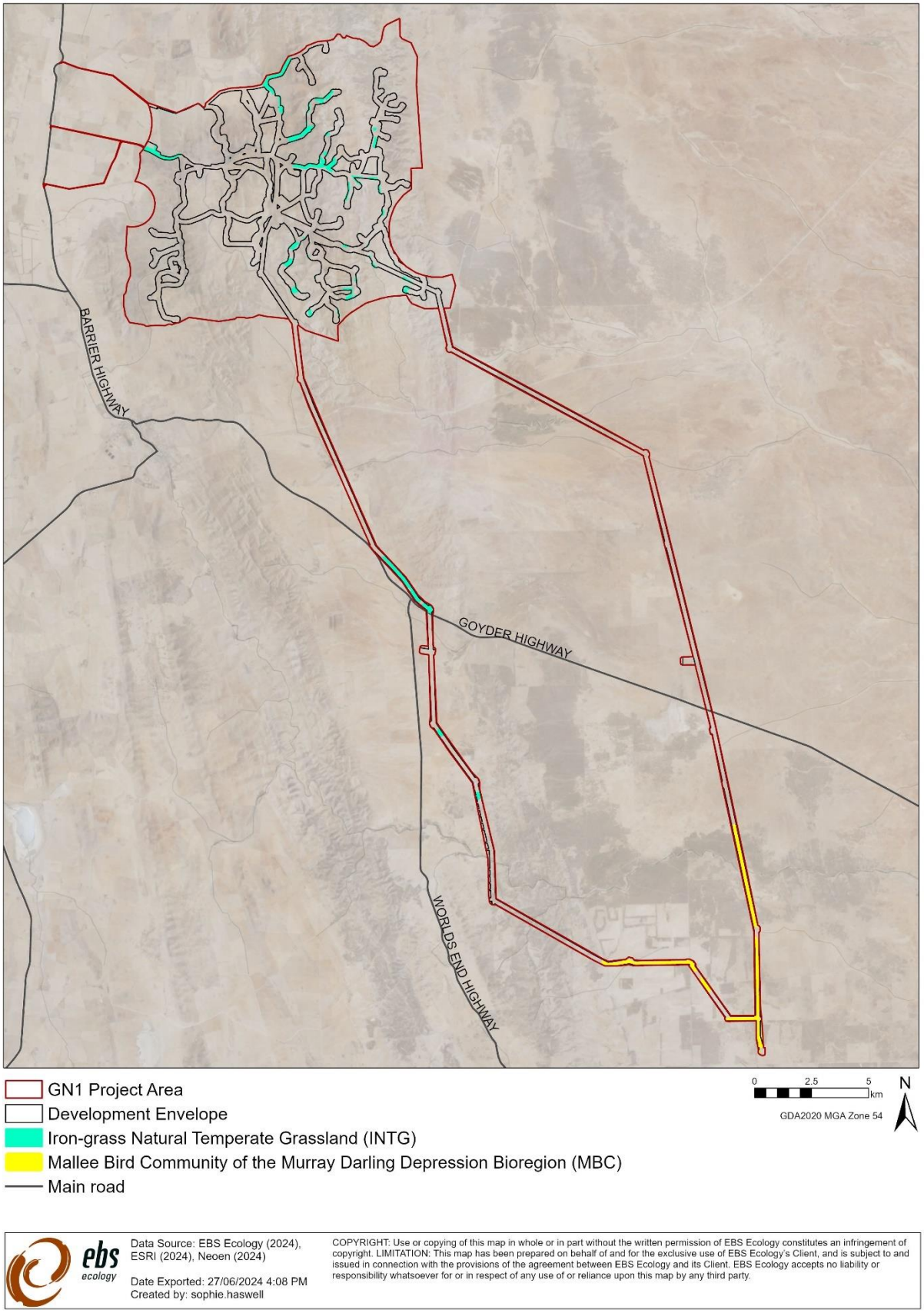

Figure 1.5: Approximate Areas of TECs within Disturbance Footprint (both temporary and permanent)

Acknowledgement: Figure developed by EBS Ecology.

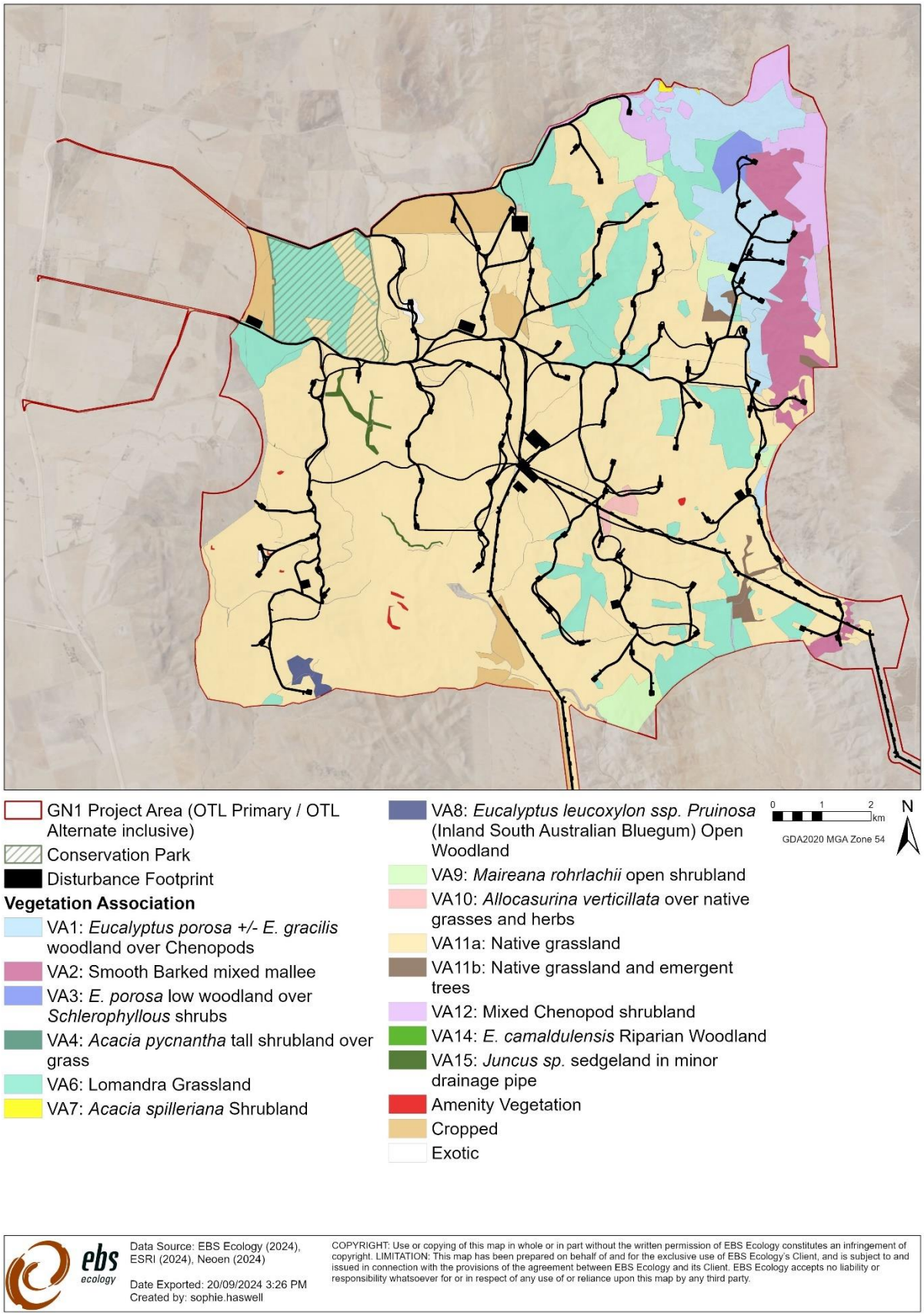

Figure 1.6: Vegetation Associations within the Disturbance Footprint (WF)

Acknowledgement: Figure developed by EBS Ecology.

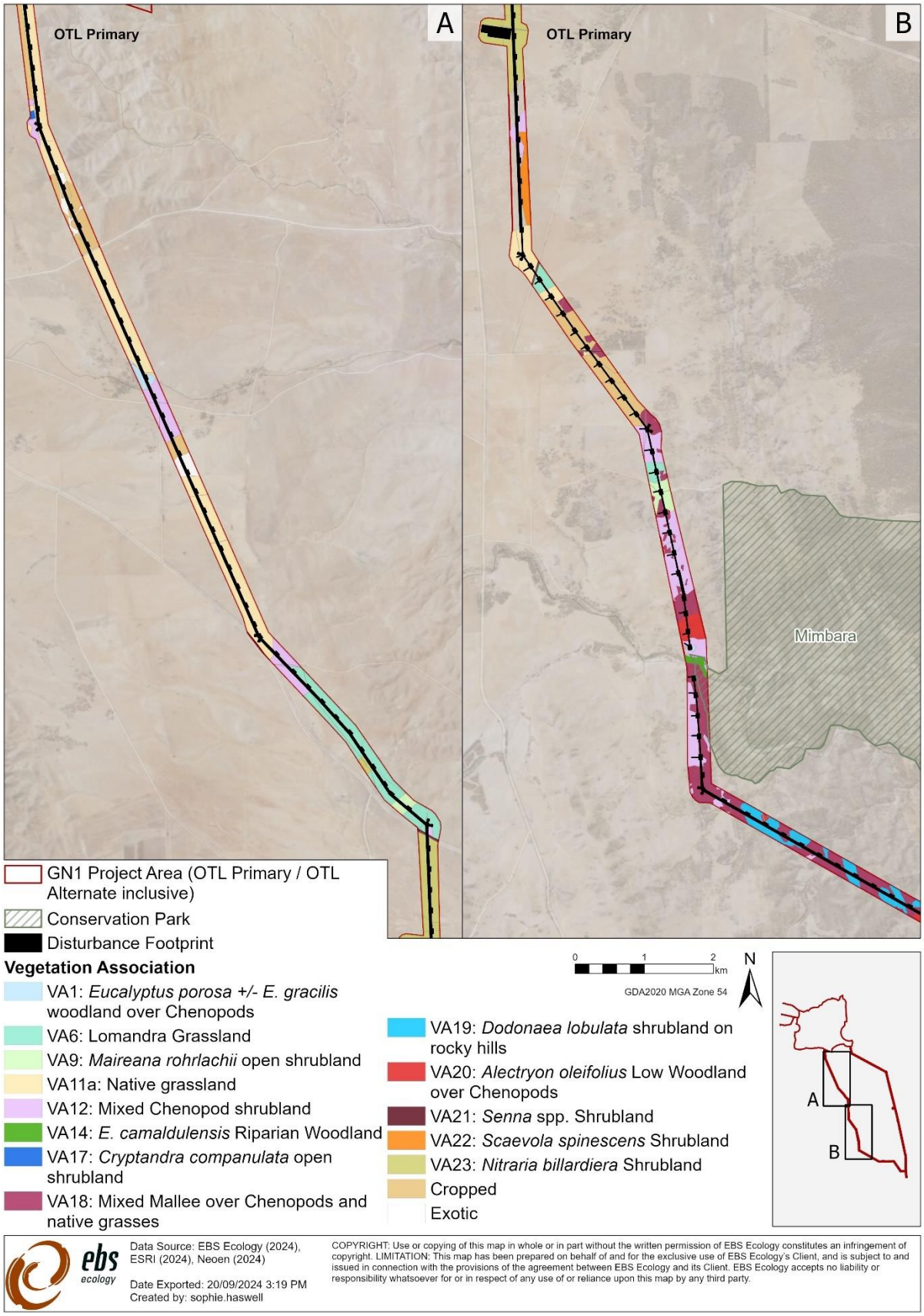

Figure 1.7: Vegetation Associations within the Disturbance Footprint (OTL northern and mid extent)

Acknowledgement: Figure developed by EBS Ecology.

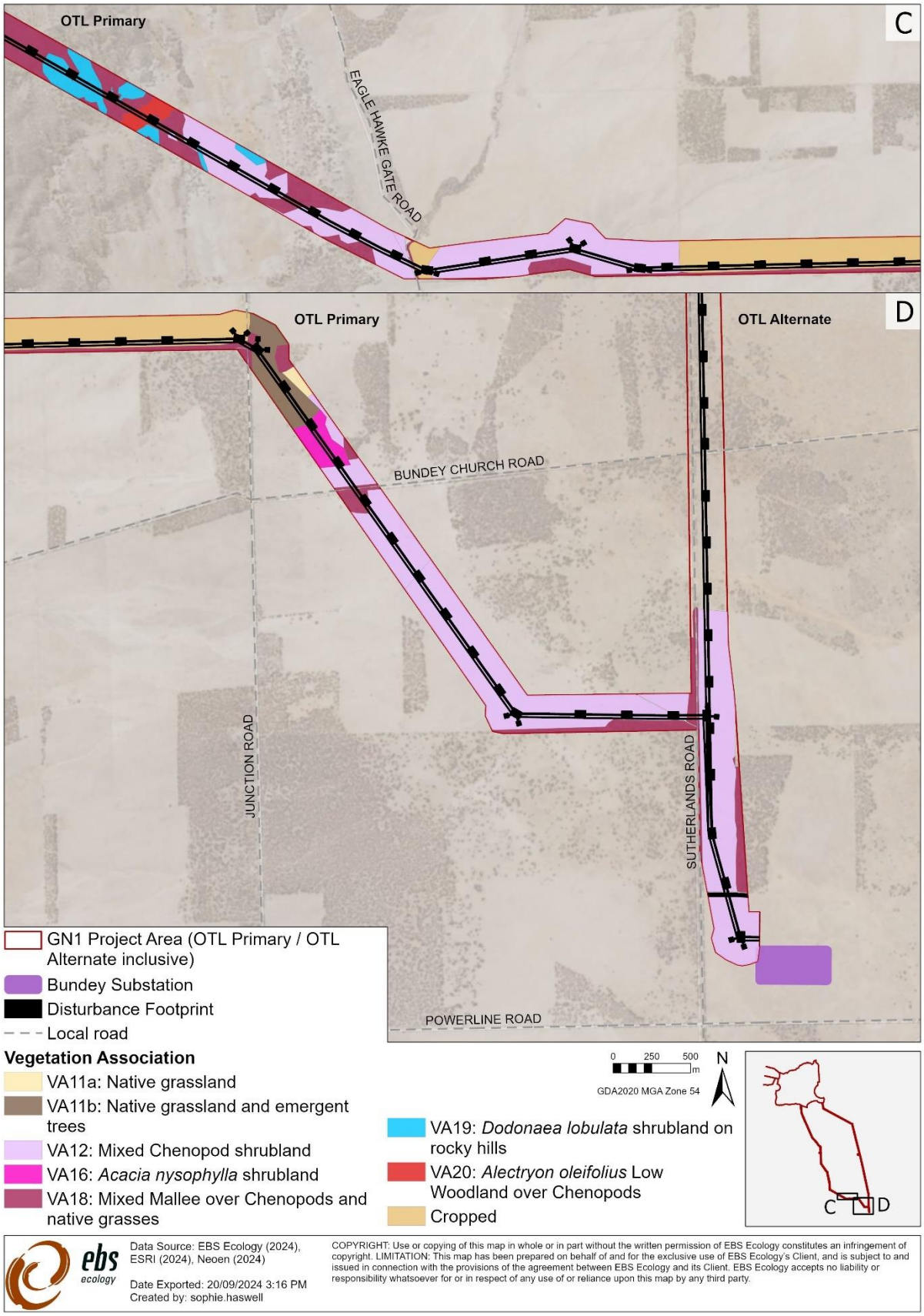

Figure 1.8: Vegetation Associations within the Disturbance Footprint (OTL southern extent)

Acknowledgement: Figure developed by EBS Ecology.

2 Methodology

2.1 Approach to Significant Impact Assessment

This document draws upon information available at the time of preparation, including habitat and vegetation descriptions and on-ground survey data, principally undertaken between 2022 to 2024 by EBS, arising from an ecological risk assessment summarising previous survey work (EBS 2023c), bird and bat utilisation surveys (EBS 2024a, 2024b), targeted threatened species surveys (EBS 2024c), baseline ecological surveys and assessments (2024d), a comprehensive ecological assessment report summarising the findings of a series of reports prepared for the GN1 and broader GNREF (EBS 2024e), and a species-specific management plan (EBS 2024f). The assessment also utilises a range of information available at the time of preparation, including recovery plans, Conservation Advice, species profile and threat databases, public datasets (Biological Database of South Australia (BDBSA) records accessed via NatureMaps or the Atlas of Living Australia, and other relevant government datasets).

This data and information were used to inform the likelihood of occurrence assessment and the significant impact assessment to MNES by applying the significant impact criteria as outlines by DotE (2013a).

For the purpose of this assessment, a PMST output inclusive of a 5 km buffer surrounding the Disturbance Footprint, i.e. GN1 Project Area inclusive of OTL, was undertaken on 30 April 2024 and was repeated for the GN1 Project Area inclusive of the OTL-Alt (Appendix A). A 5 km buffer was applied and in keeping with requirements set out within the South Australian Native Vegetation Council (NVC) Bushland Assessment Manual/Methodology (NVC 2020a, NVC 2020b). The PMST output has formed the basis of this assessment and includes species updates to capture recently listed MNES under the EPBC Act (i.e. the latest PSMT output is inclusive of *Calidris acuminata* (Sharp-tailed Sandpiper), *Calidris ferruginea* (Curlew Sandpiper) and *Gallinago hardwickii* (Lantham's Snipe) which have recently been listed as Vulnerable (5 January 2024), in addition to their existing EPBC Act migratory listing).

Reference reports were used in conjunction with information sourced from publicly available documents and datasets, along with the outcomes from reports referenced in Table 2.1 to assess whether the Project is considered likely to have a significant impact on MNES.

Impacts related to National Heritage Places utilised information included within the Biosis (2024) report.

2.2 Existing Studies and Field Surveys

A number of desktop studies and field surveys have been completed for the Project which provide the current understanding of vegetation, habitat and existing ecological values within the Project Area. A summary of previous studies undertaken is provided in Table 2.1 below. These studies have been each been used to support the assessment outlined in Section 2.2.

Table 2.1: Summary of key studies and reference reports used in this assessment

Report	Target Area/Description	Assessment
EBS 2022 (in draft)	GNREF on-ground flora assessment (GN1, GN2)	Desktop assessment including early ecological constraints identification and on-ground broad flora survey and fauna habitat assessment.
EBS 2023a (in draft)	GNREF OTL Desktop Flora and Fauna Assessment	Desktop flora and fauna assessment. Report scope covered three proposed OTL options.
EBS 2023b	GNREF Ecological constraints mapping	Desktop summary of known ecological constraints to guide wind farm design process.
EBS 2023c	GNREF and Overhead Transmission Line Ecological Risk Assessment Summary	EBS provided a short, consolidated report summarising previous ecological studies (flora and fauna) in the area associated with the broader proposed GNREF Project (i.e. Stage 1 and Stage 2) undertaken on behalf of the then project proponent Investec), with past on-ground surveys occurring in 2010, 2012, and 2019, and desktop assessments for species listed under the EPBC Act (and NPW Act (SA)) occurring in 2023. The assessment included an updated on-ground survey which was undertaken from 12 to 16 September 2022, noting this occurred prior to finalisation of the wind turbine layout, with recommendations provided to guide future design of the WTG layout. Flora assessments were conducted using the Native Vegetation Council (NVC) (SA) Bushland Assessment Method (BAM) and Scattered Tree Assessment Method (STAM) in accordance with (NVC 2020a, 2020b and 2020c). Findings of the report indicated several EPBC listed species were known to occur or are likely to occur within the Project Area, including known to occur species the PBTL (*Tiliqua adelaidensis*) and the Flinders Ranges Worm Lizard (*Aprasia pseudopulchella*). In addition, the desktop assessment indicated seven then-listed EPBC plant species may occur within the Project Area.
EBS (results incorporated into both EBS 2024d and EBS 2024e)	GNREF on-ground flora assessment (Spring 2023)	Targeted GN1 and OTL native vegetation assessment.
EBS 2024a (in draft)	GN1 Project Area Bird and Bat Assessment (Spring 2023)	An inaugural bird and bat utlisation survey (BBUS) was undertaken from 20 to 24 November 2023 in accordance with DCCEEW's Draft Onshore Wind Farm Guidance (DCCEEW 2024f), as part of a proposed two-year survey package (including a total of eight short summary documents), which are intended to feed into a Bird and Bat Monitoring Program (BBMP) for the Project. Nine bird monitoring sites (each site 2 ha) and three bat monitoring sites were established across a range of habitats across the GN1 Area (noting no threatened bat species are known to occur within the Project Area). Avian surveys were in accordance with Birdlife Australia Systematic Bird Survey methodology and recorded species observed, number of individuals, flight height above ground (minimum and maximum where relevant) and behaviour. In addition, opportunistic observations were also recorded. AnaBat recorders were deployed at each of the three bat monitoring sites for one night per site. A total of 33 species of birds (comprised of 413 individuals) were recorded during the survey, comprising 29 native species and three introduced species.

Report	Target Area/Description	Assessment
		Of note, only one species listed under the EPBC Act was recorded: the Southern Whiteface (*Aphelocephala leucopsis leucopsis*, Vulnerable), where 12 individuals were recorded at Site 5.
EBS (results included within EBS 2024e)	GNREF targeted Mallee Bird Community (MBC) surveys	On-ground targeted spring MBC bird surveys within suitable patches of mallee vegetation along the OTL within the MDD Bioregion. A total of seven MBC sites were surveyed over four days in Spring 2023 (15 November and 20 to 23 November 2023). An alignment of approximately 9.5 km in the south of the OTL alignment was determined to be within the MDD Bioregion, in which mallee vegetation patches meet certain criteria which may qualify as a nationally listed TEC – MBC of the Murray Darling Depression Bioregion. It was noted unsurveyed areas of mallee vegetation along the OTL-Alt are also likely to qualify as MBC.
EBS 2024b (in draft)	GN1 Project Area Bird and Bat Utilisation Survey (Summer 2024)	Following on from the inaugural BBUS survey (EBS 2024a), an additional seven bird monitoring sites were established during the Summer 2024 survey undertaken from 13 to 16 February 2024, bringing the total bird monitoring sites to 16. A total of 35 species of birds (comprised of 648 individuals) were recorded during the survey, comprised of 33 native species and two introduced species. Of note: • The Southern Whiteface was once again recorded (Vulnerable), where 24 individuals were recorded at Site 10 (noting none were recorded at Site 5 as per previous survey). • Two Migratory species were recorded: the Fork-tailed Swift (*Apus pacificus*, Migratory Marine), where a single individual was recorded at Site 12, and the Rainbow Bee-eater (*Merops ornatus*, Migratory Marine, not identified in PMST report (DCCEEW 2024a)), where a single individual was recorded opportunistically on the eastern edge of the WF near Site 16. The Fork-tailed Swift was recorded at a maximum height of approximately 50 m and considered an 'at-risk movement'[1] species.
EBS 2024c (in draft)	GN1 Project Area Targeted Pygmy Bluetongue Lizard Survey Report	An initial survey period was conducted over 20 days between 12 February 2024 and 8 March 2024, in survey blocks (5 days per survey). A total of 15,534 potential burrows were searched during the survey, with 136 burrows confirmed to contain PBTL, including one burrow which contained three individuals (one adult and two juveniles), bringing the total count of PBTLs detected to 138 individuals. Despite widespread distribution of PBTLs, the survey identified several areas of higher PTBL density, particularly surrounding: • WTG 015 (nine individual PBTLs), WTG 087 and WTG 092 (both densely populated particularly along access track and/or hardstand areas), WTG 090 and WTG 091 (three individuals within each hardstand area), access track to WTG 059 and WTG 086 (seven individuals), WTG 098 (cluster of 13 individuals in atypical *Maireana rohrlachii* shrubland over grass habitat), OTL (within boundary of GNREF, 19 records/individuals along direct route area), BESS site (three individuals). A follow-up survey period was conducted over five days between 18 and 22 March 2024, focussed on several potential micro-siting locations and road access options. Of these sites, a total of 15 burrows were confirmed to contain PBTLs, including one burrow which contained two individuals (one adult and one juvenile), bringing the total count of PBTL detected to 16 individuals. In summary: • PBTLs were not detected along the proposed access road (Belcunda Road) or at several micro-sited locations (WTG126-Alt, WTG121-Alt / WTG121-Alt, WTG120-Alt). • PBTLs were detected at site WTG015-Alt (two individuals, in difficult terrain)

Report	Target Area/Description	Assessment
		• PBTLs were detected at site WTG098-Alt (11 occupied burrows, 12 individuals within the WTG hardstand location, and two additional PBTLs in the surrounding area between the vehicle track and the proposed location). The majority of burrows (i.e. 116 burrows) containing PBTLs were recorded within VA11a (Mixed *Austrostipa* spp. and *Rytidosperma* spp. Grassland) / VA11b (Mixed *Austrostipa* spp. and *Rytidosperma* spp. Grassland plus/- emergent *Eucalyptus* (*E. porosa* / *E. socialis*) trees). Other PBTL occupied burrows were located in VA9 (i.e. 26 occupied burrows in *Maireana rohrlachii* open shrubland over *Austrostipa* sp. and exotics plus/- *Lomandra* spp.) or VA6 (i.e. four occupied burrows in *Lomandra* spp. Grassland). A further two occupied burrows were located in agricultural land (currently or historically used for cropping), and a further three occupied burrows occurred in areas that have not been mapped for vegetation associations previously, typically occurring on road edges, but represent VA11 Grassland. No PBTLs were found to occur along the OTL, noting habitat in this area is predominantly chenopod shrubland and mallee woodland with a limited grassy understory component.
EBS (results included within EBS 2024e)	GNREF targeted EPBC listed threatened plant surveys (WF, OTL)	On-ground targeted threatened plant searches along proposed infrastructure layout (WF, OTL).
EBS 2024d	GNREF Flora and Fauna Assessment	An ecological assessment, including desktop fauna and on-ground flora assessment (undertaken between 12 to 16 September 2022) was undertaken, with the study focussed upon native vegetation surveys on additional proposed access and infrastructure areas for GN1 and OTL (White Hill Road, Gum Hill Road, Belcunda Road, OTL remaining/ adjusted alignment). As per EBS 2023c, flora assessments were conducted using the Native Vegetation Council (NVC) (SA) Bushland Assessment Method (BAM) and Scattered Tree Assessment Method (STAM) in accordance with (NVC 2020b and 2020c).
EBS 2024e	GNREF Ecological Assessment Report	Consolidated report summarising a range of previous desktop and ecological studies undertaken by EBS, including a summary of all native vegetation mapped to date, a summary of previous desktop assessments highlighting species considered as known to occur or potentially occur within the WF and both OTL and OTL-Alt alignments, a summary of targeted species surveys (including BBUS, Mallee Bird Community (MBC) of the Murray Darling Depression Bioregion, TEC survey, PBTL survey and threatened flora surveys, and identification of potential ecological constraints relevant to the Project. In summary: • 23 native vegetation association have been previously mapped across the Project Area, incorporating 241 species of native plants and 84 weed species. Of note: ○ Two EPBC listed plant species have been recorded within the Project Area; *Acacia spilleriana* (Spillers Wattle, Endangered) planted trees specimens located on the southern side of the road, however, not proposed to be impacted (although do occur within the Development Envelope), and *Dodonaea procumbens* (Trailing Hop-bush, Vulnerable) where a population is known to occur in Mokota Conservation Park directly adjacent to the Disturbance Footprint, with at least two historical records within the Development Envelope.

Report	Target Area/Description	Assessment
		○ One TEC; Irongrass Natural Temperate Grassland of South Australia was mapped within the Project Area. Approximately 3,122.23 ha of *Lomandra* Grassland (VA6) is known to occur within the entire GNREF Project Area (Stage 1 and 2), however, only a small portion of this vegetation association would be impacted (approximately 11.93 ha of permanent disturbance and 17.71 ha of temporary disturbance within the Project Area, representing approximately 0.95% of the total area of INTG mapped in the entire GNREF Project Area). ○ An additional TEC; Mallee Bird Community of the Murray Darling Depression Bioregion, is known to occur within the southern portion of the OTL. A total of 36 bird species were identified at MBC survey sites during the field survey, including three species listed in the Approved Conservation Advice (DAWE 2021) as mallee dependent species; *Microeca fascinans* (Jacky Winter), *Nesoptilotis leucotis* (White-eared Honeyeater), and *Ptilotula ornata* (Yellow-plumed Honeyeater). • A total of 112 fauna species have been recorded comprising 94 species of bird (including four introduced), 10 mammals (six introduced), three native frogs, four native reptiles and one species of crustacean. Of note: ○ Four EPBC listed threatened species; *Aphelocephala leucopsis leucopsis* (Southern Whiteface), *Melanodryas cucullata cucullata* (Hooded Robin), *Stagonopleura guttata* (Diamond Firetail), and *Tiliqua adelaidensis* (Pygmy Bluetongue Lizard). ○ One EPBC listed migratory species; *Apus pacificus* (Pacific Swift) ○ Targeted surveys were undertaken across the southern portion of the OTL, in accordance with MBC survey guidelines; identifying three MBC dependent bird species, therefore qualifying suitable mallee vegetation as a MBC of the Murray Darling Depression Bioregion. It was noted surveyed areas of mallee along the OTL-Alt would likely also qualify as a MBC based on the proximity of historical and EBS survey records.
EBS 2024f	GNREF Pygmy Blue-tongue Lizard (PBTL) Management Plan	Preparation of a management plan (MP) (in preparation) specific to the Pygmy Blue-tongue Lizard (PBTL) within the GN1 Area, with the purpose of outlining the likely and potential direct and indirect impacts to the PBTL (*Tiliqua adelaidensis*) and its habitat during construction and operation. The MP also describes the proposed management measures that will be implemented to avoid, minimise and/or mitigate these impacts.
Protected Matters database, accessed via the online Protected Matters Search Tool (DCCEEW 2024a)	GN1 Wind Farm Project Area (plus 5 km buffer)	To support this significant impact assessment, the Australian Government's DCCEEW PMST was used to produce a list of MNES which are relevant to the Project Disturbance Footprint (plus a buffer of 5 km surrounding the Project Area) (Figure 1.6). The PMST output was undertaken on 30 April 2024 to inform MNES species relevant to the Project and ensures recently listed species (i.e. those listed on 5 January 2024) were included within this significant impact assessment. Results of the PMST search (DCCEEW 2024a) are summarised in Table 3.1 along with Other Matters Protected by the EPBC Act.

[1] For the purposes of this report, flight heights of 40 metres (m) and above are considered 'at-risk movement' given that this airspace corresponds with the rotor-swept zones of the proposed WTG (EBS 2024a).

3 Overview of PMST Assessment

A summary of the number of MNES identified from the April 2024 PMST output is provided in Table 3.1.

Table 3.1: Summary of the PMST assessment

MNES	PMST Results – incorporating OTL	PMST Results – incorporating OTL-Alt
Listed Threatened Ecological Communities	4	4
Listed Threatened Species	36*	35
Listed Migratory Species	9**	9**
Wetlands of International Importance (Ramsar)	1	1
Commonwealth Marine Areas	None	None
World Heritage Properties	None	None
National Heritage Places	1	1
The Great Barrier Reef Marine Park	None	None

* Note *Lachnagrostis limitanea* (Spalding Blown Grass) is the sole additional MNES species which appears in the PMST output incorporating the OTL.

** Note three species: *Calidris acuminata* (Sharp-tailed Sandpiper), *Calidris ferruginea* (Curlew Sandpiper), *Gallinago hardwickii* (Latham's Snipe) appear in both Listed Threatened Species and Migratory Species categories, however, are only assessed once within this report.

MNES identified as potentially present within the Project Area or surrounding buffers are further examined in Table 4.6. This table provides a summary of the potential impacts to the MNES from the proposed Project, the realistic and achievable mitigation measures which would be applied to avoid or reduce potential impacts, and an assessment of the residual significance of any potential impact against the significant impact criteria (as outlined in Section 4.2, Section 4.3 and Section 4.4).

Section 4.5 contains an assessment of the significance of residual impacts to ecological MNES, which is the primary focus of this report. A high-level summary of the assessment of significance of residual impacts for ecological MNES relative to the GN1 Project Area (including the OTL and OTL-Alt) is provided in Section 4.6.

Section 5 of this assessment addresses other matters protected under the EPBC Act that may be applicable to the Project.

4 Assessment of Ecological MNES

4.1 Likelihood of Occurrence Criteria

This section assesses the significance of residual impacts predicted for EPBC-listed ecological MNES which have been identified in the most recent PMST output as potentially present within the GN1 Area. This includes Listed TECs, Threatened Species (both flora and fauna) and Listed Migratory Species which were considered as known to be present, those which are considered likely to occur, or those which potentially occur in the area, and are therefore potentially influenced by the GN1.

In support of the significant impact assessment, an initial assessment has been made regarding each species likelihood of occurrence. The likelihood of occurrence was determined for the overall area of the GN1 using habitat and vegetation descriptions and on-ground survey data arising from baseline ecological surveys and assessments, principally undertaken between 2022 to 2024, by EBS Ecology (EBS) (EBS 2023c, 2024d), bird and bat utilisation surveys (EBS 2024a, 2024b), targeted threatened species surveys (EBS 2024c), a species-specific management plan (EBS 2024f), and a comprehensive ecological assessment report summarising the findings of a series of reports prepared for the GN1 and broader GNREF (EBS 2024e). Additionally, available literature (recovery plans, conservation advice, species profile and threat database) were used during the assessment. A previous likelihood of assessment undertaken by EBS (2024e) was reviewed, and revised where required, based on the criteria summarised in Table 4.1.

Table 4.1: Likelihood of occurrence criteria

Likelihood of Occurrence	Definition
Does not occur	No recent (1995 or more recent) or historic records (older than 1995) of the species in the Project Area, or in surrounding areas. No suitable habitat for the species within the Project Area. Mapped species distribution does not overlap with the Project Area.
Unlikely	No recent records (1995 or more recent) of the species in the Project Area, or in surrounding areas. No historic records (older than 1995) of the species in the Project Area, but historic records exist within surrounding areas. No suitable habitat for the species in the Project Area, or suitable habitat which is present is highly disturbed or degraded. Project Area is on the fringe of the mapped species distribution and the distribution only potentially overlaps with the Project Area.
Potential	No recent records (1995 or more recent) of the species in the Project Area, or in surrounding areas. No historic records (older than 1995) of the species in the Project Area, but historic records exist within surrounding areas. Suitable habitat for the species exists in the Project Area. Project Area is within the mapped species distribution.
Likely	No recent records (1995 or more recent) of the species in the Project Area, however there are recent records within 20 km of the Project Area. Historic records (older than 1995) may exist in the Project Area and/or in surrounding area. Important habitat for the species (for foraging or breeding) is present in moderate to good condition within the Project Area.

Likelihood of Occurrence	Definition
	Known species distribution overlaps with the Project Area.
Known	Species has been recently (1995 or more recent) recorded in the Project Area. Important habitat for the species (for foraging or breeding) is present within the Project Area. Known species distribution overlaps with the Project Area.

For species that have the potential to occur, are considered likely to occur, or are known to occur, a further assessment on the significance of potential residual impacts is provided in accordance with the significant impact criteria provided by DotE (2013a). This assessment considers recent and historic records and habitat overlapping with the Project's Disturbance Footprint, and only residual impacts after project mitigation measures are applied, rather than inherent risks or impacts to MNES. As further data becomes available, the findings of this assessment may be updated.

MNES identified as potentially present within the GN1 Project or surrounding buffers are assessed against the relevant Significant Impact Criteria (relevant to their EPBC listing category) in Table 4.6. This table provides a summary of the potential impacts to the MNES from the proposed GN1 Project, the realistic and achievable mitigation measures which would be applied to avoid or reduce potential impacts, and an assessment of the residual significance of any potential impact against the significant impact criteria (as outlined in Section 4.2, Section 4.3 and Section 4.4 below).

The GN1 Project Area is expected to interact with, or may potentially interact with, the following ecological MNES, which are therefore considered relevant the GN1 Project:

- Listed threatened species and ecological communities
    - Critically Endangered or Endangered species and ecological communities
    - Vulnerable species
- Listed migratory species

Four TECs were identified as potentially present within proximity to the Project Area and these are assessed in Table 4.6.

The significant impact criteria for relevant MNES are outlined by DotE (2013a) and are summarised in Section 4.2, Section 4.3 and Section 4.4 below for reference in the significant impact assessment. In assessing whether the Project is likely to have a significant impact on MNES, the nature and magnitude of potential impacts were considered, as outlined by DotE (2013a). The nature and magnitude of an action's impacts, include matters such as:

- the sensitivity of the environment which will be impacted
- the timing, duration and frequency of the action and its impacts
- all onsite and offsite impacts
- all direct and indirect impacts
- the total impact which can be attributed to the action over the entire geographic area affected, and over time
- existing levels of impact from other sources, and
- the degree of confidence with which the impacts of the action are known and understood.

4.2 Listed Threatened Ecological Communities (TECs) Significant Impact Criteria

The significant impact criteria applied to listed TECs differ depending on the conservation rating of the TEC. Those which are listed as Critically Endangered or Endangered are assessed against the criteria presented in Table 4.2. Ecological communities which are listed as Vulnerable under the EPBC Act are not matters of national environmental significance for the purposes of Part 3 of the EPBC Act (requirements for environmental approvals).

Within this assessment, all four listed TECs potentially relevant to the Project Area are listed as Critically Endangered or Endangered.

Table 4.2 Significant impact criteria for critically endangered and endangered ecological communities

Criteria Reference Used in Assessment	Criteria
A	Reduce the extent of an ecological community
B	Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines
C	Adversely affect habitat critical to the survival of an ecological community
D	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
E	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, for example through regular burning or flora or fauna harvesting
F	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 the growth of species in the ecological community, or
G	Interfere with the recovery of an ecological community.

4.3 Listed Threatened Species Significant Impact Criteria

The significant impact criteria applied to listed threatened species differ depending on the conservation rating of the listed threatened species. Those which are listed as Critically Endangered or Endangered are assessed against the criteria presented in Table 4.3, whilst those which are listed as Vulnerable are assessed against the criteria in Table 4.4.

Table 4.3: Significant impact criteria for critically endangered or endangered species

Criteria Reference Used in Assessment	Criteria
A	Lead to a long-term decrease in the size of a population
B	Reduce the Area of Occupancy of the species
C	Fragment an existing population into two or more populations
D	Adversely affect habitat critical to the survival of a species
E	Disrupt the breeding cycle of a population
F	Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
G	Result in harmful invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat
H	Introduce disease that may cause the species to decline
I	Interfere with the recovery of the species

For species listed as Vulnerable, the term 'important population' is used to define a number of the significant impact criteria. An 'important population' is defined as a population that is necessary for a species' long-term survival and recovery (DotE 2013a), and may include populations identified by recovery plans and/or that are:

- 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.

Examples of populations that do not represent important populations would be small portions of much larger and/or predominantly continuous populations, or discrete populations as part of a larger patchy population distribution because of natural habitat variability and islanding of microhabitat features.

Table 4.4: Significant impact criteria for vulnerable species

Criteria Reference Used in Assessment	Criteria
A	Lead to a long-term decrease in the size of an important population of a species
B	Reduce the Area of Occupancy of an important population
C	Fragment an existing important population into two or more populations
D	Adversely affect habitat critical to the survival of a species
E	Disrupt the breeding cycle of an important population
F	Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
G	Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat
H	Introduce disease that may cause the species to decline
I	Interfere substantially with the recovery of the species

4.4 Listed Migratory Species Significant Impact Criteria

The significant impact criteria applied to listed migratory species are presented in Table 4.5 below. DotE (2013a) provide further details on what constitutes important habitat for migratory species, and how to define a population of a migratory species.

Table 4.5: Significant impact criteria for migratory species

Criteria Reference Used in Assessment	Criteria
A	Substantially modify (including by fragmenting, altering fire regimes, nutrient cycles or hydrological cycles), destroy or isolate an area of important habitat for a migratory species
B	Result in an invasive species that is harmful to a migratory species becoming established in an area of important habitat for migratory species
C	Seriously disrupt the life cycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of a population of a migratory species

4.5 Significant Impact Assessment for EPBC Listed Species and Communities

The Significant Impact Assessment for EPBC Listed Species and Communities is provided in Table 4.6.

Species that are considered known to occur, likely to occur, or potentially occur within the Project Area are highlighted in bold.

Table 4.6: Likelihood and Significant Impact Assessment for EPBC Listed Communities and Species

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
EPBC Act Threatened Ecological Communities						
Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia	CE	-	The 2024 PMST output indicates that this TEC is 'likely to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia is an ecological community listed as Critically Endangered. The TEC is dominated by Peppermint Box in the tree canopy (canopy height of 5-10 m), occurring in woodland tree form with a single main truck at the base with low branches (TSSC 2008a). The vegetation structure of this TEC is open to dense woodland, with a mainly grassy and herb understory, and may include Wallaby Grasses (*Rytidosperma*spp.), Spear Grasses (*Austrostipa* spp.), and Iron grasses (*Lomandra* spp.) to name a few. The TEC is known only from South Australia, from the Southern Flinders Ranges to Lake Alexandrina, with the majority of the TEC within the Flinders-Lofty Block (FLB) (TSSC 2008a). Whilst individual specimens of Peppermint Box have been recorded within one isolated locality within the WF in the area mapped as VA8, the community did not meet the criteria to qualify for a listing as a TEC (EBS 2024e). Therefore, although individuals of this species are known to occur, the TEC is considered **unlikely to occur** (i.e. there is no vegetation matching the TEC criteria). No Gum Woodland matching this description is mapped along the OTL-Alt and it is considered unlikely to occur.	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F** and **G** not likely as the Threatened Ecological Community is considered unlikely to occur in the GN1 Project Area including the OTL or OTL-Alt.
Iron-grass Natural Temperate Grassland of South Australia	CE	-	The 2024 PMST output indicates that this TEC is 'likely to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Iron-grass Natural Temperate Grassland (INTG) of South Australia is an ecological community listed as Critically Endangered. The TEC as a natural temperate grassland or "other tussock grassland", with tussock-forming perennial grasses and Iron-grasses (*Lomandra multiflora* subsp. *dura* and *L. effusa*) dominating the ground layer of the community, and structurally, and notably, has an absence of trees and tall shrubs (TSSC 2008b, Turner 2012). A range of herbaceous plant species occur in the inter-tussock spaces, including Bulbine Lily (*Bulbine bulbosa*), Yellow Buttons (*Chrysocephalum apiculatum*), Australian Bindweed (*Convolvulus erubescens*) and Scaly Buttons (*Leptorhynchos squamatus*). The INTG is the only natural temperate grassland in Australia to be dominated by tussock-forming species that are not true grasses. The INTG extends from the western bank of the Murray River, through to the Lofty Ranges and north to the Mount Brown Conservation Park, typically occurring on	Direct clearance or disturbance of vegetation (up to 29.64 ha within GN1), impacting the MNES through either loss of habitat or direct loss of the MNES species (or TEC). Direct clearance or disturbance of vegetation or habitat within areas considered as 'buffers' around the TEC. Reduced habitat quality through the introduction of new weed species (or disease), or spread of existing weed species through ground disturbance of transport of organic materials on construction vehicles or machinery. Reduced habitat quality through the introduction of new weed species (or disease), or spread of existing weed species along access tracks and inspection points	Desktop and field surveys carried out to identify key ecological constraints, feeding into iterative design process to avoid and minimise interaction with important habitat as far as reasonably practicable. Where the construction footprint intersects with, or comes within proximity to, key habitats supporting EPBC species or communities, flagging to be applied to agreed construction footprint boundary to avoid unintentional disturbance outside of defined construction areas. Where flagging is not practicable due to distance, audits of construction footprint boundary to be undertaken post disturbance. Identification of key habitats to be identified by suitably qualified ecologist prior to disturbance.	**Significant impacts are considered possible.** **A. Possible.** Whilst large areas of Iron-grass have been recorded within the central and eastern extent of the GN1 Project Area, with a total mapped area of approximately 1,616.06 ha of *Lomandra* Grassland (VA6), the Disturbance Footprint associated with the Project is a small portion of this, of which approximately 29.64 ha of potential INTG is known to occur within the Disturbance Footprint (11.93 ha of permanent disturbance and 17.71 ha of temporary disturbance). This represents approximately 1.83% within GN1 (and 0.95% of the total area of INTG mapped in the broader GNREF Project Area) noting the TEC extends beyond the GN1 Project Area and thus the proportion of disturbance is considered to be a portion of the TEC in the broader surrounding area. Whilst these areas are relatively small compared with the total area mapped within the GN1 (i.e. 1.83%), impacts as a result of the Project may result in a reduced extent of the TEC. **B. 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. The Project has been designed to reduce impacts to the TEC where possible, with the Development Envelope providing allowance for micro-siting of infrastructure to avoid the TEC where

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			gentle slopes of low hills above 380 m altitude, with soils that are generally loams to clay loams, and those that commonly have surface pebbles, shale or sandstone rocky outcrops (Robertson 1998 cited in TSSC 2008b). Native vegetation throughout the GN1 Project Area is comprised predominantly of grasslands, with large areas of Iron-grass (*Lomandra* spp.) in the central and eastern portions. The INTG has been recorded extensively across the GN1 Project Area, with total area of approximately 1,616.06 ha of *Lomandra* Grassland (VA6) now mapped within the GN1 Project Area, including areas of the OTL (EBS 2024d, EBS 2024e), of which approximately 251.67 ha occurs within the Development Envelope. The Disturbance Footprint associated with the Project is approximately 29.64 ha (11.93 ha of permanent disturbance and 17.71 ha of temporary disturbance), representing approximately 0.95% of the total area of INTG mapped in the broader GNREF Project Area. This TEC is therefore considered as **known to occur** within the GN1 Project Area.	through transport of organic materials on maintenance vehicles. Reduced habitat quality in surrounding TEC through indirect impacts to vegetation caused by increased traffic (dust deposition) and change in hydrology / water runoff / erosion (due to altered landform).	Implement INTG Management Plan to address potential direct and indirect impacts to TEC as a result of construction activities. During construction, implement weed hygiene practices including: vehicle checks and washdowns as required on vehicles or plant entering the construction site. During construction, undertake monthly weed surveillance monitoring targeting WoNS and Declared Weed species, with follow up controls as required for any identified weed outbreaks. During operation, implement weed surveillance and control programs targeting WoNS and Declared Weed species (if weeds identified) on an annual basis. Implement INTG Management Plan to mitigate potential direct and indirect impacts to TEC during operation of the wind farm.	practicable. Therefore, it is possible that impacts as a result of the Project may be considered to fragment or increase fragmentation of an ecological community. **C. Possible.** Approximately 11.93 ha of permanent disturbance and 17.71 ha of temporary disturbance within the GN1 Project Area, representing approximately 1.83% of the total area of INTG mapped in the GN1 will be impacted upon as a result of the Project. 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 Although the condition class of the TEC has not yet been confirmed, it is assumed to be 'condition class B', whereby all sites that meet such criteria are considered habitat critical for the survival of the ecological community (Turner 2012). Therefore, it is possible impacts as a result of the Project may adversely affect habitat critical to the survival of the TEC. **D. Unlikely.** Relevant mitigation measures are included within the COEMP, including erosion and sediment controls associated with roads and infrastructure. The Project is not expected to modify or destroy abiotic (non-living) factors such as water, nutrients or soil necessary for the TEC survival. **E. Unlikely**. The Project is not expected to cause a substantial change in the species composition of an occurrence of an ecological community. 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 2023g), and it is anticipated some individual PBTLs may be impacted upon, 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 *Lomandra* Grassland areas associated with the OTL. Approximately 11.93 ha of permanent disturbance and 17.71 ha of temporary disturbance within the Project Area, representing approximately 1.83% of the total area of INTG mapped in GN1. The Project has been designed to reduce impacts to the TEC where possible and further design optimisations will occur, with the Development Envelope providing allowance for micro-siting of infrastructure to avoid the TEC where practicable. However, based upon the limited area disturbance as described above, impacts are not expected to cause a decline or loss of functionally important species to either the TEC or PBTL when mitigation strategies are applied (such as micro siting of infrastructure, and translocation as PBTLs as described in further detail in the PBTL assessment and within EBS 2024g). **F**. **Unlikely.** 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. **G. Unlikely.** Whilst the Project is expected to impact some areas of the TEC, principally due to the clearing of vegetation for roads/tracks and WTG siting associated with construction and

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						operation access to the WTGs, impacts as a result of the Project (i.e. 11.93 ha of permanent disturbance and 17.71 ha of temporary disturbance representing 1.83% of the mapped INTG within the GN1) are not expected to be such that they interfere with the recovery of a TEC. Large portions of the GN1 are currently used for stock grazing, and thus the TEC is unlikely to be on a recovery trajectory with the existing grazing pressures. It is also noted the TEC extends beyond the GNREF Project Area and thus the disturbance associated with the GN1 is considered to be a portion of the TEC in the broader surrounding area.
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	EN	-	The 2024 PMST output indicates that this TEC is 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregion is listed as Endangered. Buloke Woodlands are typically dominated by *Allocasuarina luehmannii* (buloke, also known as bull oak), or other tree species such as grey box and slender cypress-pine *Callitris gracilis* (DCCEEW 2023a). The TEC woodlands are distributed across two IBRA regions, occurring in tracts or as patches within open-forests or woodlands. Within South Australia the TEC occurs in the south-east of the MDD bioregion, in areas with a presence of clayey and/or alkaline sub-soils, as well as in areas where calcrete underlies the sub-soil. No vegetation matching the Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions criteria has been recorded within the GN1 Project Area or OTL, and indicative mapping undertaken by the Department of Environment and Water (DEW) does not indicated this type of vegetation is present within the OTL-Alt (EBS 2024e), nor and these areas within the TECs known distribution. Therefore, the TEC is considered **unlikely to occur** (i.e. no vegetation matching the TEC criteria).	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F** and **G** not likely as the Threatened Ecological Community is considered unlikely to occur in the GN1 Project Area including the OTL or OTL-Alt.
Mallee Bird Community of the Murray Darling Depression Bioregion	EN	-	The 2024 PMST output indicates that this TEC is 'likely to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Mallee Bird Community (MBC) of the Murray Darling Depression Bioregion is listed as Endangered. The MBC refers to a community of avifauna found in the Murray Darling Depression bioregion (including all seven subregions), comprising an assemblage of 20 species of bird that are all dependent on the mallee vegetation that characterises the bioregion (DAWE 2021a). A Recovery Plan is not required for the MBC (DCCEEW 2024b). Areas critical to the survival of the TEC include known populations of threatened mallee birds listed individually under national environmental law (EPBC Act), especially limited range mallee specialists, and	Direct clearance or disturbance of vegetation or habitat including within areas considered as 'buffers' around the TEC. Impact to normal MBC bird species activity during construction as a result of habitat clearance, increased disturbance and noise. Reduced habitat quality through the introduction of new weed species (or disease), or spread of existing weed species through ground disturbance of transport of organic materials on	Desktop and field surveys carried out to identify key ecological constraints, feeding into iterative design process to avoid and minimise interaction with important habitat as far as reasonably practicable. Where the construction footprint intersects with, or comes within proximity to, key habitats supporting EPBC species or communities, flagging to be applied to agreed construction footprint boundary to avoid unintentional disturbance outside of defined construction areas.	**Significant impacts are considered possible.** **A. Possible.** An alignment of approximately 9.5 km of the southern extent of the OTL intersects with the MBC mallee vegetation, however, the Disturbance Footprint within this area is small (maximum 2.13 ha for OTL (0.8 ha of this is within the OMZ which will only be selectively trimmed where vegetation is >6 m in height), noting much of the region is a mix of chenopod shrubland with pockets of mallee. An alignment of approximately 34.2 km of the OTL-ALT may intersect with the MBC mallee vegetation (i.e. 34.2 km of the alignment is within the MDD region), however, it should be noted that on-ground vegetation mapping has not been undertaken for the OTL-Alt to date, and the Disturbance Footprint within this area is anticipated to be much less than the currently understood estimate of approximately 30.66 ha based on DEW mapping and interpretation of aerial imagery (EBS 2024e)). **B. Possible.** Some fragmentation of the TEC is expected as a result of the Project, principally due to the clearing of vegetation for

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			areas where several members of the Mallee Bird community are known to occur and can act as a reservoir or source population to assist colonisation of other nearby sites, if populations in the latter suffer impact (e.g. contingency populations) (DAWE 2021a). Other areas important to the survival of the TEC include areas where several members of the Mallee Bird community were previously known to occur (recorded) within at least the past ten years and bird populations and/or mallee habitats that may regenerate, either naturally over time or with assisted reintroductions and revegetation, and areas where there has been long-term monitoring of either bird populations and/or mallee habitats (DAWE 2021a). Additionally, areas of high value are described, including mallee habitats that are mostly intact (with larger mid to old growth mallee trees, particularly with hollows), occurrences of mallee outside of conservation tenure that function as wildlife corridors connecting conservation areas, occurrences of habitat that have surrounding, adjacent and/or buffering areas of native vegetation, occurrences in areas where the TEC has been most heavily impacted, areas of woodland containing nationally or state-listed threatened species (not limited to member of the MBC), and mallee areas where key threats are low and can be managed (DAWE 2021a). Only the southern portion of the OTL, and some areas within the OTL-Alt overlap the with the Mallee Bird Community of the Murray Darling Depression Bioregion. A total of seven MBC sites were surveyed over four days during Spring 2023 (15 November and 20 to 23 November 2023) within the OTL. Recent surveys (EBS 2024e) reported three MBC dependent bird species; *Microeca fascinans* (Jacky Winter), *Nesoptilotis leucotis* (White-eared Honeyeater), and *Ptilotula ornata* (Yellow-plumed Honeyeater)., which qualifies suitable mallee vegetation as a TEC (an alignment of approximately 9.5 km). It was noted unsurveyed areas of mallee vegetation along the OTL-Alt is also likely to qualify as MBC (based upon historic records and EBS records, EBS 2024e) (an alignment of approximately 34.2 km). Efforts have been made to avoid the TEC, and only one small patch (approximately 60 m in width) would be impacted by the OTL Disturbance Footprint. Consideration has been made for the placement of transmission towers to avoid this area of vegetation (i.e. VA18). Therefore, the Mallee Bird Community of the Murray Darling Depression Bioregion TEC is **unlikely to occur** within the GN1 WF, but is **known to occur**	construction vehicles or machinery. Reduced habitat quality through the 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.	Where flagging is not practicable due to distance, audits of construction footprint boundary to be undertaken post disturbance. Identification of key habitats to be identified by suitably qualified ecologist prior to disturbance. As far as practicable, undertake construction works in areas mapped as MBC, outside of regular breeding season for most bird species (i.e. late winter to early spring) to minimise potential disruption to populations and minimise potential for direct impact to nesting individuals. During construction, implement weed hygiene practices including: vehicle checks and washdowns as required on vehicles or plant entering the construction site. During construction, undertake monthly weed surveillance monitoring targeting WoNS and Declared Weed species, with follow up controls as required for any identified weed outbreaks. During operation, implement weed surveillance and control programs targeting WoNS and Declared Weed species (if weeds identified) on an annual basis.	roads/tracks and OTL siting (including transmission towers) associated with construction, operation and access to the OTL. The Project has been designed to reduce impacts to the TEC where possible, with the Development Envelope providing allowance for micro-siting of infrastructure to avoid the TEC where practicable. Therefore, although impacts are likely to be mostly mitigated, the Project may possibly fragment or increase fragmentation of an ecological community due to the clearance of vegetation for roads, tracks and transmission lines within the OTL-Alt. **C. Possible.** Whilst some TEC habitat will be impacted upon, principally due to the clearing of vegetation for roads/tracks and OTL siting associated with construction, operation and access to the OTL, impacts are not expected to adversely affect habitat critical to the survival of the ecological community. A Disturbance Footprint of approximately 2.13 ha for the OTL and a maximum estimated area of 30.66 ha for the OTL-Alt would impact the MBC TEC, noting to date, mallee associated with the MBC has not been mapped for OTL-Alt. 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. However, impacts associated with the OTL-Alt may possibly impact the TEC should it meet the criteria of areas critical to the survival of the TEC as listed in DAWE 2021a. **D. Unlikely.** The Project is not expected to modify or destroy abiotic (non-living) factors such as water, nutrients or soil necessary for the TEC survival. **E. Unlikely**. The Project is not expected to cause a substantial change in the in the species composition of an occurrence of an ecological community. Whilst the Project has been designed to reduce impacts to the TEC where possible, it is anticipated some individual bird species associated with the MBC may be impacted upon, principally due to the clearing of vegetation for roads/tracks and OTL siting associated with construction, operation and access to the OTL. A Disturbance Footprint of approximately 2.13 ha for the OTL and approximately 30.66 ha for the OTL-Alt would impact the MBC TEC, noting to date, mallee associated with the MBC has not been mapped for OTL-Alt. The Project has been designed to reduce impacts to the TEC 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 TEC or bird species associated with the MBC. **F. Unlikely.** 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. A network of existing roads and fence lines already occur within the area mapped as potential MBC and therefore a stringing corridor and other associated clearance is unlikely to increase accessibility of invasive species into this already disturbed area. A COEMP will address mitigation measures to prevent indirect impacts such as weed incursion, erosion and altered hydrology.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			within the southern portion of the OTL, and **likely to occur** within the OTL-Alt.			**G. Unlikely.** Whilst the Project is expected to impact some areas of the mallee within the TEC, principally due to the clearing of vegetation for roads/tracks and OTL siting associated with construction, operation and access to the OTL or OTL-Alt, impacts are not expected to be such that they interfere with the recovery of a TEC (noting that detailed on-ground vegetation mapping has not been undertaken to date within the OTL-Alt).
EPBC Act Threatened Flora						
***Acacia glandulicarpa* (Hairy-pod Wattle)**	VU	E	The 2024 PMST output indicates that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Hairy-pod Wattle is a dense, rounded, spreading and many-branched shrub growing to 0.5-2 m high, with dull to bright olive-green foliage. Although the species has a wide total distribution, plants appear to be restricted to three widely separated broad locations, one of which is relevant to the Project; namely around Burra in SA (DAWE 2021b). A Recovery Plan is not required for the Hairy-pod Wattle (DCCEEW 2024b). Conservation Advice for the species does not list or define any known important populations or subpopulations , nor any habitat critical to the survival of the species. As such, the advice recommends that all identified populations and supporting habitat should be considered important to the survival of the species. Despite numerous vegetation surveys undertaken within the Project Area the species has not been recorded (i.e. Disturbance Footprint, GN1 or broader GNREF), noting the OTL-Alt has not yet been surveyed (EBS 2024e) and field surveys have not extensively covered the Development Envelope, resulting in some 'at risk' locations potentially remaining for this species (should the current Disturbance Footprint be altered). Therefore, this species is considered **unlikely to occur** within the WF but is considered a **possible occurrence** within small pockets of suitable habitat along the OTL and/or OTL-Alt (i.e. within pockets of Low Open Shrubland).	Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species.	All known records of the species have been avoided during the design phase. If species identified on-site during on-going survey effort prior to construction, or whilst undertaking pre-clearance micro-siting surveys, implement processes to avoid or minimise impacts to identified plants, as far as reasonably practicable. If encountered during construction: Where the construction footprint intersects with, or comes within proximity to, key habitats supporting EPBC species or communities, 'ecological no-go zone' flagging to be applied to agreed construction footprint boundary to avoid unintentional disturbance outside of defined construction areas. Where flagging is not practicable due to distance, audits of construction footprint boundary to be undertaken post disturbance. Identification of key habitats to be identified by suitably qualified ecologist prior to disturbance.	**Significant impacts are considered unlikely within WF and OT but possible within OTL-Alt.** **A. Unlikely within WF and OTL/Possible within OTL-Alt.** Despite numerous vegetation surveys undertaken within the WF and across the OTL the species has not been recorded. It is considered that small suitable pockets of habitat and associated vegetation occurs along areas within the OTL, however, with micro siting it is expected individuals would likely be avoided. The species is considered a possible occurrence within the OTL-Alt based upon potentially suitable habitat (Low Open Shrubland), noting this area has not yet been surveyed, so impacts within the OTL-Alt are conservatively assessed as possible. No important populations of this Vulnerable species have been defined (DAWE 2021b), and it is considered unlikely, given the lack of records despite survey effort, that an important population exists within the Project Area (or Disturbance Footprint). Therefore, the Project is unlikely to lead to a long-term decrease in the size of an important population within the WF and OTL, but may possibly impact the species within the OTL-Alt, pending detailed vegetation assessments. **B. Unlikely.** As above, no important populations have been defined for this species, and there is no defined area of occupancy described for this species (DAWE 2021b) The species has not been recorded within the WF and is considered only a potential occurrence within the OTL. It is very unlikely that an important population of the species exists within the Project Area. The species is considered a possible occurrence within the OTL-Alt based upon potentially suitable habitat (Low Open Shrubland), noting this area has not yet been surveyed. Thus, impacts as a result of the Project are unlikely to reduce the area of occupancy of an important population. **C. Unlikely.** As above, despite numerous vegetation surveys undertaken within the WF and across the OTL the species has not been recorded. It is considered that small suitable pockets of habitat and associated vegetation occurs along areas within the OTL, however, with micro siting it is expected individuals would likely be avoided. The species is considered a possible occurrence within the OTL-Alt based upon potentially suitable habitat (Low Open Shrubland), noting this area has not yet been surveyed. Therefore, it is unlikely the Project will fragment an existing important population into two or more populations. **D. Unlikely.** As above, the species has not been previously recorded within the WF or OTL, and whilst there is some potentially suitable habitat within the OTL-Alt, it is considered unlikely that impacts as a result of the Project within the OTL and/or OTL-Alt would adversely affect habitat critical to the survival of the species.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						E. Unlikely. As the species has not been detected within the WF or OTL it is considered impacts as a result of the Project would disrupt the breeding cycle of an important population. Should the species be recorded within the OTL-Alt, it would be expected elements of the Project would be micro sited to avoid individual plants, and therefore, impacts as a result of the Project are unlikely to disrupt the breeding cycle of the species, should it be recorded within the OTL-Alt. **F. Unlikely.** As above, despite numerous vegetation surveys undertaken within the WF and across the OTL the species has not been recorded. It is considered that small suitable pockets of habitat and associated vegetation occurs along areas within the OTL, however, with micro siting it is expected individuals would likely be avoided. The species is considered a possible occurrence within the OTL-Alt based upon potentially suitable habitat (Low Open Shrubland), noting this area has not yet been surveyed. 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 be recorded within the OTL-Alt). **G and H. Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the WF or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction 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. **I. Unlikely.** As above, as the species has not been detected within the WF or OTL it is considered impacts as a result of the Project would not interfere substantially with the recovery of the species. Should the species be recorded within the OTL-Alt, it would be expected elements of the Project could be micro sited to avoid individual plants, and therefore, impacts as a result of the Project are unlikely to interfere substantially with the recovery of the species.
Acacia menzelii (Menzel's Wattle)	VU	V	The 2024 PMST output indicates that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). Menzel's Wattle is endemic to South Australia with populations scattered between the Northern Flinders Ranges and Murray Bridge (DEWHA 2008a). The species is known to overlap with several EPBC listed TECs, including the aforementioned three TEC above (excluding the MBC). A Recovery Plan is not required for Menzel's Wattle (DCCEEW 2024b). Habitat critical to the survival of the species includes all known habitat. There are no listed important populations of the species, but all known and	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			verified populations are likely to be considered important (Obst 2005). Despite numerous vegetation surveys undertaken within the GN1 Project Area the species has not been recorded. Potentially suitable habitat (i.e. *Eucalyptus socialis* / *E. incrassata* open mallee / *E. porosa* low woodland) occurs in unsurveyed portions of the Development Envelope and along the OTL-Alt, however, the Conservation Advice states that the species is known from disjunct populations in the Flinders Ranges and around Monarto (Murray Bridge). An unverified (low spatial reliability) ALA (2024) record exists within the Disturbance Footprint, which has not been verified. Although not surveyed to date, it is unlikely the species would occur within the OTL-Alt (EBS 2024e). Therefore, this species is considered **unlikely to occur**.			
Acacia spilleriana **(Spiller's Wattle)**	EN	E	The 2024 PMST output indicates that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). Spiller's Wattle is endemic to South Australia and is known to occur from the Northern Mount Lofty Ranges and the ranges surrounding Burra and Auburn (DEWHA 2009a). 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 2009a). A Recovery Plan is not required for Spiller's Wattle as the Conservation Advice provides sufficient direction to implement priority actions and mitigate against key threats (DCCEEW 2024b). A targeted threatened species survey was undertaken by EBS (EBS 2024e) to specifically locate any *Acacia spilleriana* within suitable habitat within the Disturbance Footprint. Within the WF and OTL, individual planted specimens were recorded on Gum Hill Road and White Hill Road. Whilst the individual specimens are within the Development Envelope, they do not occur within the Disturbance Footprint. Efforts will be made to avoid impacts to these areas during the construction phase of the Project. The species is considered likely to occur within the OTL-Alt, noting the species has been observed during field surveys adjacent to the OTL-Alt and suitable habitat is present (i.e. Mid-Mallee Shrubland) (EBS 2024e). Therefore, this species is considered **known to occur** within the WF Project Area and OTL, and considered to **possibly occur** within the OTL-Alt.	Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species. Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species (or TEC). Reduced habitat quality through the introduction of new weed species (or disease), or spread of existing weed species through ground disturbance of transport of organic materials on construction vehicles or machinery. Reduced habitat quality through the 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. Indirect impacts to known individuals or species habitat (i.e. roadside vegetation), due to increased traffic causing dust deposition, reducing plant health. Altered hydrology / runoff / erosion from changed land form and road surface impacting individual plant health and habitat quality.	All known records of the species have been avoided in the Disturbance Footprint, however, the species is known to occur in the Development Envelope, close to proposed works. Desktop and field surveys carried out to identify key ecological constraints, feeding into iterative design process to avoid and minimise interaction with important habitat as far as reasonably practicable. Where the construction footprint intersects with, or comes within proximity to, key habitats supporting EPBC species or communities, 'ecological no-go zone' flagging to be applied to agreed construction footprint boundary to avoid unintentional disturbance outside of defined construction areas. Where flagging is not practicable due to distance, audits of construction footprint boundary to be undertaken post disturbance. Identification of key habitats to be identified by suitably qualified ecologist prior to disturbance. During construction, implement weed hygiene practices including: vehicle checks and washdowns as required on vehicles or plant entering the construction site. During construction, undertake monthly weed surveillance	**Significant impacts are considered unlikely within WF and OTL but possible within OTL-Alt.** **A. Unlikely within WF and OTL/Possible within OTL-Alt.** Whilst records exist for Spiller's Wattle within the WF and OTL, to date the individual specimens have been isolated to roadside areas adjacent to Gum Hill Road and White Hill Road, noting most populations of this species are reported to consist of one or two plants (State Herbarium of South Australia as cited in DEWHA 2009a). The recorded specimens are located within the Development Envelope, however, the Disturbance Footprint does not intersect with areas where the Spiller's Wattle has been recorded, and additionally, should the species be recorded within development areas, 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 lead to a long-term decrease in the size of a population, noting the Spiller's Wattle may be a possible occurrence within the OTL-Alt which is yet to be assessed. **B. Unlikely within WF and OTL/Possible within OTL-Alt.** As above, records for Spiller's Wattle within the WF and OTL are currently known from isolated roadside areas adjacent to Gum Hill Road and White Hill Road (EBS 2024e). The Disturbance Footprint does not intersect with areas where the Spiller's Wattle has been recorded, and additionally, should the species be recorded within development areas, 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 area of occupancy of the species, noting the Spiller's Wattle may be a possible occurrence within the OTL-Alt which is yet to be assessed. **C. Unlikely within WF and OTL/Possible within OTL-Alt.** As above, records for Spiller's Wattle within the WF and OTL are currently known from isolated roadside areas adjacent to Gum Hill Road and White Hill Road (EBS 2024e). The Disturbance Footprint does not intersect with areas where the Spiller's Wattle has been recorded, and additionally, should the species be recorded within development areas, efforts would be made to avoid areas where

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
					monitoring targeting WoNS and Declared Weed species, with follow up controls as required for any identified weed outbreaks. During operation, implement weed surveillance and control programs targeting WoNS and Declared Weed species (if weeds identified) on an annual basis. Include species specific measures in a COEMP, such as implementation of no-go zones and barrier fencing; requirements for dust suppression activities (ensure water quality does not impact plant health); weed suppression and monitoring; weed hygiene measures.	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, noting the Spiller's Wattle may be a possible occurrence within the OTL-Alt which is yet to be assessed. **D. Unlikely.** As above, records for Spiller's Wattle within the WF and OTL are currently known from isolated roadside areas adjacent to Gum Hill Road and White Hill Road, (EBS 2024e). Some minor vegetation removal and trimming would be required for access to the Project in some locations. Thus, the Project is unlikely to affect adversely affect habitat critical to the survival of the species within the WF and OTL, however, the species may be a possible occurrence within the OTL-Alt which is yet to be assessed. **E. 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 2009a). The WF and OTL alignment does not traverse any areas of identified Spiller's Wattle specimens. 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 development areas, 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. **F. 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 development areas, efforts would be made to avoid areas where this species is present and to micro-site roads, tracks and infrastructure where practicable, and control measures will 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. **G and H. Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the Project Area or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the Project Area is 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. **I. Unlikely.** The Project does not interfere with any recovery actions for this species, as outlined by DEWHA (2009a), noting main threats to the species include habitat loss, habitat fragmentation, damage

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						from roadwork, and weed invasion and grazing. Whilst the recorded specimens are located within the Development Envelope, the Disturbance Footprint does not intersect with areas where the Spiller's Wattle has been recorded. Should the species be recorded within development areas, 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.
Caladenia tensa (Greencomb Spider-orchid, Rigid Spider-orchid)	EN	-	The 2024 PMST output indicates that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Rigid Spider-orchid is an herbaceous perennial orchid growing to 35 cm high and dies back annually to a small underground tuber. Within South Australia the species occur in association with *Callitris* spp. (cypress pine), *Eucalyptus leucoxylon* (yellow gum) woodland and *Melaleuca uncinata* (broombush) mallee on Tertiary and Quaternary aeolian sandy loams in the Murray Darling Depression bioregion (Todd 2000 cited in TSSC 2016a). Despite numerous vegetation surveys undertaken within the WF, the species has not been recorded and it is noted no suitable habitat occurs within the WF or OTL (EBS 2024e). Although not surveyed to date, it is unlikely the species would occur within the OTL-Alt as it's unlikely suitable habitat occurs within this area (EBS 2024e). Therefore, this species is considered **unlikely to occur**.	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area including the OTL or OTL-Alt.
Codonocarpus pyramidalis **(Slender Bell-fruit, Camel Poison)**	VU	E	The 2024 PMST output indicates that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Slender Bell-fruit is a shrub or small tree that grows to 8 m tall, often with more than one stem. The species occurs in the Northern Lofty Ranges, Flinders Ranges and eastern regions of South Australia (Davies 1995 cited in DEWHA 2008b), preferring the crests and slopes of low ridges, hills and along creeks in loamy sand or sandy clay loam soils. The species is known to overlap with several EPBC listed TECs, including the aforementioned three TECs above (excluding the MBC). All populations are considered important (DCCEEW 2024b). A Recovery Plan is not required for the Slender Bell-fruit (DCCEEW 2024b). A targeted threatened species survey was undertaken by EBS (EBS 2024e) to locate any *Codonocarpus pyramidalis* within the Disturbance Footprint. The species has not been previously recorded within the WF or OTL (EBS 2024e), however, there are records of the species within the	Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species. Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species.	All known records of the species have been avoided during the design phase. If species identified on-site during on-going survey effort prior to construction, or whilst undertaking pre-clearance micro-siting surveys, implement processes to avoid or minimise impacts to identified plants, as far as reasonably practicable. If encountered during construction: Where the construction footprint intersects with, or comes within proximity to, key habitats supporting EPBC species or communities, 'ecological no-go zone' flagging to be applied to agreed construction footprint boundary to avoid unintentional disturbance outside of defined construction areas.	**Significant impacts are considered possible within OTL-Alt.** **A. Unlikely.** Despite numerous surveys the species has not been previously recorded within the WF and it is considered unlikely that the species would occur within the WF based upon very limited potential habitat areas. No important populations have been defined for this species (DEWHA 2008b). As such, it is considered very unlikely that an important population of the species exists within the Project Area. However, whilst the species has not been previously recorded within the WF, or OTL potentially suitable habitat is considered as possibly occurring. Likewise, although not surveyed to date, habitat in the OTL-Alt is also considered to be broadly suitable. Should the species be recorded within development areas, 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 lead to a long-term decrease in the size of an important population, if found to occur within the OTL or OTL-Alt. **B. Unlikely within WF and OTL/Possible within OTL-Alt.** As above, the species has not been recorded within the WF, and thus no impacts to the species' area of occupancy are expected to occur within the WF footprint. Whilst the species has not been previously recorded within the OTL, and noting OTL-Alt has not yet been

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			Caroona Creek Conservation Park to the north of the GN1 Project Area. Areas of suitable habitat within the GN1 Project Area are limited and the species is considered **unlikely to occur** within the WF. There is, however, potentially suitable habitat within the OTL and although not yet surveyed, there is broadly suitable habitat within the OTL-Alt. Therefore, the species is conservatively considered to **potentially occur** within areas of the OTL and OTL-Alt.		Where flagging is not practicable due to distance, audits of construction footprint boundary to be undertaken post disturbance. Identification of key habitats to be identified by suitably qualified ecologist prior to disturbance.	surveyed, potentially suitable habitat is may occur. Should the species be detected within development areas in future, efforts would be made to avoid areas where this species is present and to micro-site roads, tracks and OTL infrastructure where practicable, and it is very unlikely that an important population of the species exists within the Project Area. Therefore, it is unlikely within the OTL, but possible within the OTL-Alt, that impacts as a result of the Project may reduce the area of occupancy of an important population of the species, if known to occur within the OTL or OTL-Alt. **C. Unlikely.** Due the species' small size and limited range of populations and individuals, and the apparent contraction of the species' distribution, all known populations are important for the survival and protection of the species (DCCEEW 2024b). Currently the exact population size is not known or estimated (DCCEEW 2024b). As above, despite previous vegetation surveys, the species has not been recorded within the WF or OTL, thus it is unlikely impacts as a result of the Project would fragment and existing population into two or more populations within the WF or OTL. In reference to the OTL-Alt, it should be noted that this area has not yet been surveyed and impacts as a result of the OTL-Alt could pose a potential loss of individuals or population(s) during construction if not detected and / or micro-siting is not undertaken following design changes. However, should the species be detected within future development areas, 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 fragment an existing important population into two or more populations, if found to occur within the OTL-Alt. **D. Unlikely.** As above, no impacts to the species' area of occupancy are expected to occur within the WF, and despite previous vegetation surveys, the species has not been recorded within the OTL, thus it is unlikely the OTL would not adversely affect habitat critical to the survival of the species. Likewise, although the OTL-Alt has not yet been surveyed, should the species be recorded within development areas, 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. **E. Unlikely.** There are no known population estimates for this species, but it is currently understood that all known populations of this species are important (DCCEEW 2024b). 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 2024b). Despite previous vegetation surveys, the species has not been recorded within the WF Project Area or OTL alignment. Reproduction of the Slender Bell-fruit, where present, would not be expected to be disrupted by the construction and operation of the OTL. Although the OTL-Alt has not yet been surveyed, should the species be recorded within development areas, efforts would be made to avoid areas where this species is present and to micro-site roads, tracks and OTL infrastructure where

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						practicable. Therefore, it is unlikely impacts as a result of the Project would disrupt the breeding cycle of a population. **F. Unlikely.** As above, there are no known records of the species occurring within the WF or OTL alignment. Should the species be detected within development areas, 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 COEMP to prevent indirect impacts to the species such as dust deposition or water runoff. 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 is likely to decline. Although the OTL-Alt has not yet been surveyed, should the species be recorded within development areas, 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 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. **G and H. Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the Project Area or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the Project Area is 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. **I. 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 2024b), noting the Slender Bell-fruit may be a possible occurrence within the OTL-Alt which is yet to be assessed.
Dodonaea procumbens **(Trailing Hop-bush)**	VU	V	The 2024 PMST output indicates that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Trailing Hop-bush is a poorly known small prostrate shrub endemic to south-eastern Australia. There are currently estimated to be about 50-55 populations of Trailing Hop-bush across its entire range (Carter 2010, ALA 2024). Within South Australia there are several known populations, several of which range from Eudunda to just north of Burra within the Mokota Conservation Park	Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species. Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species (or TEC). Reduced habitat quality through the introduction of new weed species (or disease), or spread of	All known records of the species have been avoided in the Disturbance Footprint, however, the species is known to occur in the Development Envelope, close to proposed works. Desktop and field surveys carried out to identify key ecological constraints, feeding into iterative design process to avoid and minimise interaction with important	**Significant impacts are considered unlikely within WF and OTL but possible within OTL-Alt.** **A. Unlikely within WF and OTL/Possible within OTL-Alt.** 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, ALA 2024). A known population exists within Mokota Conservation Park, and whilst the Development Envelope intersects with this area, the Disturbance Footprint does not. Although not recorded, the species is thought to be a possible occurrence within the OTL, and although not surveyed, it is considered likely the species may be present within the OTL-Alt

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			(Carter 2010), where the species grows in *Rytidosperma* low tussock grassland on rocky outcrops and in shallow soils, with *Vittadinia cuneata*, *Calocephalus citreus*, *Leptorhynchos tetrachaetus*, and *Triptilodiscus pygmaeus* (DEH 2006 cited in Carter 2010). Populations are typically small, containing 50 plants or less. Important populations are those where locations are precisely known and have recent abundance information (Carter 2010). A targeted threatened species survey was undertaken by EBS (EBS 2024e) to locate any *Dodonaea procumbens* within the Disturbance Footprint. To date, the species has been recorded solely within the Development Envelope where it overlaps the Mokota Conservation Park (including two historical records, EBS 2024e), where it is protected from herbivore grazing, however, the species has not been recorded within the Disturbance Footprint of the WF or OTL. EBS (2024e) noted it is highly likely the species may be present within the OTL-Alt, noting the species has been recorded within 5 km of the OTL-Alt in 2021 and suitable habitat is likely present in the area (*Austrostipa* spp. Grassland). Therefore, the species is **known to occur** within the OTL Development Envelope and considered to **potentially occur** within the OTL-Alt.	existing weed species through ground disturbance of transport of organic materials on construction vehicles or machinery. Reduced habitat quality through the 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. Indirect impacts to known individuals or species habitat (i.e. roadside vegetation), due to increased traffic causing dust deposition, reducing plant health. Altered hydrology / runoff / erosion from changed land form and road surface impacting individual plant health and habitat quality.	habitat as far as reasonably practicable. Where the construction footprint intersects with, or comes within proximity to, key habitats supporting EPBC species or communities, 'ecological no-go zone' flagging to be applied to agreed construction footprint boundary to avoid unintentional disturbance outside of defined construction areas. Where flagging is not practicable due to distance, audits of construction footprint boundary to be undertaken post disturbance. Identification of key habitats to be identified by suitably qualified ecologist prior to disturbance. During construction, implement weed hygiene practices including: vehicle checks and washdowns as required on vehicles or plant entering the construction site. During construction, undertake monthly weed surveillance monitoring targeting WoNS and Declared Weed species, with follow up controls as required for any identified weed outbreaks. During operation, implement weed surveillance and control programs targeting WoNS and Declared Weed species (if weeds identified) on an annual basis. Include species specific measures in a COEMP, such as implementation of no-go zones and barrier fencing; requirements for dust suppression activities (ensure water quality does not impact plant health); weed suppression and monitoring; weed hygiene measures.	(EBS 2024e). Should the species be detected within development areas, 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 lead to a long-term decrease in the size of an important population with the WF or OTL, but impacts as a result of the OTL-Alt are conservatively considered possible pending further vegetation assessments in the OTL-Alt. **B. Unlikely within WF and OTL/Possible within OTL-Alt**. As above, no impacts to the species' area of occupancy are expected to occur as a result of the Project within the WF or OTL, noting the Disturbance Footprint does not intersect with the recorded occurrence of the species in the area, which is currently only known from the Mokota Conservation Park (within a fenced area protected from herbivore grazing). However, EBS (EBS 2024e) notes it is highly likely the species may be present within the OTL-Alt (based upon nearby records and potentially suitable habitat associated with *Austrostipa* spp. Grassland and *Lomandra* grassland). Therefore, it is unlikely the Project will reduce the area of occupancy of the species with the WF or OTL, but impacts as a result of the OTL-Alt are conservatively considered possible pending further vegetation assessments. **C. Unlikely.** As above, despite numerous surveys within the WF Project Area and OTL the populations of the species have not been recorded, with the exception of a population within the Mokota Conservation Park. Whilst this population sits within the Project's Development Envelope it is outside of the Disturbance Footprint, thus the Project is not expected to result in fragmentation of an existing important population into two or more populations in these areas. However, as described above, although no surveys have occurred in the area to date, it is considered likely the species may be present within the OTL-Alt. Should specimens and/or a population be recorded within the OTL-Alt, noting there are currently only a small number of known populations, and all known populations are considered important, 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, if present, as gene flow will still be possible via fertilisation. **D. Unlikely within WF and OTL, Possible within OTL-Alt.** As above, most suitable habitat for the species in the area within the adjacent the WF and OTL occurs within the Mokota Conservation Park, outside of the Project's Disturbance Footprint, and with a fenced area protected from grazing herbivores. Therefore, impacts as a result of the Project within the WF or OTL are unlikely to adversely affect habitat critical to survival of the species. However, although no surveys have occurred in the area to date, it is highly likely the species may be present within the OTL-Alt. Should specimens and/or a population be recorded within the OTL-Alt, noting there are currently only a small number of known populations, and all known populations are considered important, efforts would be made to avoid areas where this species is present and to realign/micro-site roads, tracks and OTL infrastructure where

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						practicable. Therefore, it is unlikely impacts as a result of the Project would adversely affect habitat critical to the survival of the species, noting the Trailing Hop-bush may be a possible occurrence within the OTL-Alt which is yet to be assessed. **E. 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. Although the OTL-Alt has not yet been surveyed, should the species be recorded within development areas, 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. **F. Unlikely.** As above, despite numerous surveys the species is only known from records within the Mokota Conservation Park, within the Project's Development Envelope but outside of the Disturbance Footprint. Although the OTL-Alt has not yet been surveyed, should the species be recorded within development areas, efforts would be made to avoid areas where this species is present and to micro-site roads, tracks and OTL infrastructure where practicable. Indirect impacts from dust deposition or water runoff will be addressed within the COEMP. 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. **G and H. Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the Project Area or OTL or OTL-Alt Areas (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the Project Area is 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. **I. Unlikely within WF and OTL/Possible within OTL-Alt**. 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 2024b)) within the WF or OTL. The Trailing Hop-bush may be a possible occurrence within the OTL-Alt which is yet to be assessed, and therefore impacts as a result of the Project may be possible within the OTL-Alt. Recovery of the known population in Mokota CP is not expected to be impacted due to the implementation of avoidance buffers,

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
Dodonaea subglandulifera **(Peep Hill Hop-bush)**	EN	E	The 2024 PMST output indicates that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Peep Hill Hop-bush is a South Australian endemic perennial shrub growing to 1 to 2 m high. The species has a restricted and disjunct distribution, having been recorded from semi-arid mallee areas of the Murray Darling Basin, Mid North, and Flinders Ranges within South Australia (Moritz 2010a). From the current knowledge, the species is now considered to comprise of at least 11 distinct sub-populations across 45 sites containing more than 45,700 individual plants. The species is found in several types of habitats, including two that are considered to be poorly to moderately conserved; *Eucalyptus porosa* (mallee box) plus/- *Callitris gracilis* (Murray pine) low open woodland and *C. gracilis* dominated low open woodland (Moritz 2010a). The species has been recorded in association with two State-listed plants; *Swainsona tephrotricha* (ashy-haired Swainson pea) and *Maireana rohrlachii* (Rohrlach's bluebush), and two EPBC Act listed species; *Stagonopleura guttata* (Diamond Firetail) and *Melanodryas cucullata* subsp *cucullata* (South-eastern Hooded Robin). Additionally, potential distributions of the species are suggested to be within suitable habitat between the Murray River township of Morgan extending to the west to Eudunda, and further north of the Project surrounding Peterborough and Terowie, and potentially to the east of Burra Creek Gorge (Smith 2000 cited in Moritz 2010a). No important sub-populations exist within the WF or OTL or OTL-Alt (Moritz 2010a). A targeted threatened species survey was undertaken by EBS (EBS 2024e) to specifically locate any *Dodonaea subglandulifera* within suitable habitat within the Disturbance Footprint (WF and OTL). Despite numerous vegetation surveys to date the species has not been recorded within the WF, however, EBS (EBS 2024e) notes the species may be a possible occurrence adjacent the OTL due to potentially suitable habitat. Although not previously surveyed, the species may be a possibly occurrence within the OTL-Alt due to broadly suitable habitat (Low Open Shrubland and Mid Mallee Woodland, and records from adjacent areas (<10 km from OTL-Alt). Therefore, the species is conservatively considered to **potentially occur** within areas of the OTL and OTL-Alt.	Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species. Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species	All known records of the species have been avoided during the design phase. If species identified on-site during on-going survey effort prior to construction, or whilst undertaking pre-clearance micro-siting surveys, implement processes to avoid or minimise impacts to identified plants, as far as reasonably practicable. If encountered during construction: Where the construction footprint intersects with, or comes within proximity to, key habitats supporting EPBC species or communities, 'ecological no-go zone' flagging to be applied to agreed construction footprint boundary to avoid unintentional disturbance outside of defined construction areas. Where flagging is not practicable due to distance, audits of construction footprint boundary to be undertaken post disturbance. Identification of key habitats to be identified by suitably qualified ecologist prior to disturbance.	**Significant impacts are considered unlikely within WF and OTL but possible within OTL-Alt.** **A. Unlikely within WF and OTL/Possible within OTL-Alt.** Despite numerous surveys, including a targeted species survey, there are currently no records for individual specimens or populations within the WF or OTL or OTL-Alt (EBS 2024e, ALA 2024). There is, however, potentially suitable habitat within both the OTL and OTL-Alt, and records of the species exist nearby; slightly to the south of Burra/southwest of Bundey (ALA 2024). Should the species be recorded within OTL development areas, 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 lead to a long-term decrease in the size of a population, noting potential impacts as a result of the OTL-Alt are conservatively considered possible pending further vegetation assessments in that area. **B. Unlikely.** As above, there are currently no records for individual specimens or populations within the WF or OTL or OTL-Alt. Should the species be recorded within OTL development areas, 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 area of occupancy of the species. **C. Unlikely.** As above, despite numerous surveys within the WF and OTL, populations of the species have not been recorded, thus it is unlikely the Project would fragment and existing population into two or more populations. However, as described above, although no surveys have occurred in the area to date, it is considered likely the species may be present within the OTL-Alt. Should specimens and/or a population be recorded within the OTL-Alt, 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 may fragment an existing population into two or more populations, if known to occur within the OTL-Alt. **D. Unlikely.** It is considered that all currently occupied and potential habitat is critical to the species survival. The Peep Hill Hop-bush is known to be found in a range of habitats, however, despite species-specific targeted surveys in suitable habitat the species has not been recorded within the WF. Whilst the species may be considered a likely occurrence within the OTL-Alt, should the species be recorded within development areas, 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. **E. Unlikely.** The Peep Hill Hop-bush is dioecious; with male and female flowers occurring on different plants, and flowers 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. Although the OTL-Alt has not yet been surveyed, should the species be recorded within development areas, efforts would be made to avoid areas where this species is present and to realign/micro-site roads, tracks and

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						OTL infrastructure where practicable. Therefore, it is unlikely impacts as a result of the Project would disrupt the breeding cycle of a population. **F. Unlikely.** As above, despite numerous surveys the species has not been recorded within the WF or OTL. Although the OTL-Alt has not yet been surveyed, should the species be recorded within development areas, efforts would be made to avoid areas where this species is present and to micro-site roads, tracks and OTL infrastructure where practicable. 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. **G and H. Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the Project Area or OTL or OTL-Alt Areas (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the Project Area is 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. **I. 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 2010a), noting the Peep Hill Hop-bush may be a possible occurrence within the OTL-Alt which is yet to be assessed.
Euphrasia collina subsp. *osbornii* (Osborn's Eyebright)	EN	E	The 2024 PMST output indicates that this species or species habitat 'may occur' in 'buffer area only' (DCCEEW 2024a). Osborn's Eyebright is a South Australian endemic perennial and partly parasitic erect herb that grows to 25 to 47 cm high, with flowers that vary from white to pink to lavender. The species is found in Kangaroo Island, across Adelaide and the Mount Lofty Ranges, Mid North and South East regions of South Australia. A total of 26 distinct populations have been identified in the current distribution of the species, where it is often recorded within *Eucalyptus odorata* (Peppermint Box) low woodlands and *E. porosa* (Mallee Box) woodlands and across the Fleurieu Peninsula swamps of the Mount Lofty Ranges (Moritz 2010b). The most northern extent of the species' range includes a single record from the outskirts of the township of Burra (along the Barrier Highway) (ALA 2024) as well as several sites recorded around Clare (Moritz 2010b).	Unlikely to occur, N/A.	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			Despite numerous vegetation surveys to date the species has not been recorded within the WF or OTL (EBS 2024e). The closest records to the Project for this species include a small cluster of records surrounding Clare and a single record on the southern side of the township of Burra (i.e. >5 km from the Project, ALA 2024). Therefore, this species is considered **unlikely to occur**.			
Lachnagrostis limitanea (Spalding Blown Grass, Spalding Blowngrass)	EN	E	The 2024 PMST output indicates that this species or species habitat 'may occur' in 'buffer area only' (DCCEEW 2024a). Spalding Blown Grass is a short-lived tufted perennial grass growing to 30-45 cm high (Robertson 2012). The species endemic to the Northern Lofty Ranges in South Australia, with only three extant, naturally occurring populations (and one translocated sub-population). The species known extent of occurrence is less than 1,000 km^2 and the area of occupancy is <1 ha. The main population is located at Yakkalo, with sub-populations located in a small water reserve on the upper Broughton River near Spalding, another sub-population north of Tarlee, and third sub-population outside of Riverton. Known habitat for this species consists of low-lying, flood-prone clay loam areas near watercourses in the Northern Lofty Flora Region of South Australia, with all known extant populations occurring in swampy habitat that is excluded from regular livestock grazing (Robertson 2012). There is no approved Conservation Advice for this species, however, a Recovery Plan has been adopted. Despite numerous vegetation surveys to date the species has not been recorded within the WF or OTL (EBS 2024e), and it is considered there is no suitable habitat within the WF or OTL or OTL-Alt. Therefore, this species is considered **unlikely to occur**.	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area including the OTL or OTL-Alt.
Olearia pannosa* subsp. *pannosa **(Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush)**	VU	V	The 2024 PMST output indicates that this species or species habitat is 'known to occur' in the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Silver Daisy-bush is a spreading undershrub or shrub growing up to 1.5 m high. The species is endemic to South Australia where it is scattered across agricultural areas, including the Southern and Northern Mount Lofty Ranges, and Murray and South Eastern regions of South Australia. The species occurs in sandy, flat areas and in hilly, rocky areas in woodland or Mallee (Cropper 1993 and Kahrimanis et al. 2001 cited in DotE 2013b), and is known from hilly area soil types, including hard pedal mottled-yellow duplex and hard pedal red duplex soils (Laut et al. 1977 cited in DotE 2013b). The species is known to overlap three TECs,	Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species. Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species.	All known records of the species have been avoided during the design phase. If species identified on-site during on-going survey effort prior to construction, or whilst undertaking pre-clearance micro-siting surveys, implement processes to avoid or minimise impacts to identified plants, as far as reasonably practicable. If encountered during construction: Where the construction footprint intersects with, or comes within proximity to, key habitats supporting EPBC species or	**Significant impacts are considered unlikely within WF and OTL but possible within OTL-Alt.** **A. Unlikely within WF and OTL/Possible within OTL-Alt.** Despite numerous surveys the species has not been previously recorded within the WF or OTL and it is considered unlikely that the species would occur within the WF or OTL. Potentially suitable habitat occurs across the Project Area, and although it has not been detected during GN1 field surveys, the species may occur in parts of the Development Envelope that have not been surveyed to date. Suitable habitat may also occur along the OTL-Alt in areas associated with sandy, flat area, or hilly, rocky areas in woodland or mallee. No important populations have been defined for the Silver Daisy-bush (DCCEEW 2024b). Should the species be detected within development areas, 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 lead to a long-term decrease in the size

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			including the Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia. There is currently no information available regarding the species' total extent of occurrence, total area of occupancy or population size (DotE 2013b). A Recovery Plan is not required for the Silver Daisy-bush as the Conservation Advice provides sufficient direction to implement priority actions, mitigate against key threats and support the recovery of the species (DCCEEW 2024b). No critical habitat or important populations have been defined for this species. Despite numerous vegetation surveys to date the species has not been recorded within the WF or OTL (EBS 2024e), however, suitable habitat is considered to occur across the Project Area (although not previously detected) and OTL-ALT (within potential Mid Mallee Woodland areas). Therefore, the species is conservatively considered to **potentially occur** within unsurveyed areas of the WF, OTL and OTL-Alt.		communities, 'ecological no-go zone' flagging to be applied to agreed construction footprint boundary to avoid unintentional disturbance outside of defined construction areas. Where flagging is not practicable due to distance, audits of construction footprint boundary to be undertaken post disturbance. Identification of key habitats to be identified by suitably qualified ecologist prior to disturbance.	of an important population, even if identified as present within the OTL, noting the OTL-Alt is yet to be assessed. **B. Unlikely.** No important populations have been defined for this species (DCCEEW 2024b). Despite extensive vegetation surveys, the species has not been previously recorded within the WF or OTL, and noting OTL-Alt has not yet been surveyed. Potentially suitable habitat is considered to occur within unsurveyed areas of the GN1, including the OTL-Alt. Should the species be detected within development areas, 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 OTL and/or OTL-Alt, it is unlikely impacts as a result of the Project would reduce the area of occupancy of the species. **C. Unlikely.** As above, there is no defined important populations for the Silver Daisy-bush and the exact population size is not known or estimated (DCCEEW 2024b). Despite extensive vegetation surveys the species has not been previously recorded within the WF or the OTL. Suitable habitat exists for the species within OTL-Alt unsurveyed areas, however, and should the species be detected within development areas, 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, even if identified as present within the OTL-Alt. **D. Unlikely.** The Silver Daisy-bush is considered to have a wide distribution across several regions within South Australia, and no critical habitat is defined in the literature. Despite previous vegetation surveys, the species has not been recorded within the WF Area or OTL, thus it is unlikely the OTL would adversely affect habitat critical to the survival of the species. Likewise, although the OTL-Alt has not yet been surveyed, should the species be recorded within development areas, 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. **E. Unlikely.** There are no known population estimates for this species, and there are no defined important populations (DCCEEW 2024b). Despite previous vegetation surveys, the species has not been recorded within the WF or OTL alignment. 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 OTL. Although the OTL-Alt has not yet been surveyed, should the species be recorded within development areas, 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. **F. Unlikely.** As above, there are no known records of the species occurring within the WF or OTL alignment, and although the OTL-Alt has not yet been surveyed, should the species be recorded within development areas, 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

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						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, noting the Silver Daisy Bush may be a possible occurrence within the OTL-Alt which is yet to be assessed. **G and H. Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the WF or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the Project Area is 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. **I. Unlikely**. 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 2024b), noting the Silver Daisy Bush may be a possible occurrence within the OTL-Alt which is yet to be assessed.
Prasophyllum pallidum (Pale Leek-orchid)	VU	R	The 2024 PMST output indicates that this species or species habitat 'may occur' in the 'buffer area' (DCCEEW 2024a). The Pale Leek-orchid is a terrestrial orchid of slender habit ranging from 15-30 cm high. The species is known singularly or in groups in well-grassed open forests from the Flinders Ranges to the Northern and Southern Lofty Regions of South Australia ((Jessop & Toelken, 1986 cited in DEWHA 2008c). The species is known to overlap with several EPBC listed TECs, including the three TEC described herein (excluding the MBC). The species tends to occur in localised areas across several regions within South Australia (ALA 2024). A Recovery Plan is not required for the Pale Leek-orchid (DCCEEW 2024b). Despite numerous vegetation surveys to date the species has not been recorded within the WF or OTL (EBS 2024e). The closest records to the Project Area for this species include a small cluster of records surrounding Clare (approximately 45 km to the west of the OTL) (ALA 2024). Therefore, this species is considered **unlikely to occur**.	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
Pterostylis xerophila (Desert Greenhood)	VU	V	The 2024 PMST output identified that this species or species habitat 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Desert Greenhood is a small, deciduous, terrestrial orchid endemic to inland South Australia and Victoria. The species is understood to occur in remote locations in semi-desert environments, predominantly growing under low shrubs in rock outcrops (Duncan 2010). Little is known about the species biology, ecology, distribution and abundance, with only eight populations known to occur, containing approximately 150 plants (Duncan 2010). The species is known from several regions in South Australia, including Murray Darling Depression. The species occurs in dry woodland on fertile red loamy soils (Bates and Weber 1990 cited in Duncan 2010), on or around granite or quartzite rock outcrops (Jessop & Toelken 1986 cited in Duncan 2010). The species has not been recorded within the WF or OTL previously despite numerous vegetation surveys. There are no preferred semi-desert habitats within the WF or OTL (EBS 2024e). Habitat may be broadly suitable within the OTL-Alt, however, is considered unlikely. The nearest historic record of the species is greater than 120 km away to the southwest adjacent the South Australian/Victorian border (ALA 2024). This species, therefore, is considered **unlikely to occur.**	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area including the OTL or OTL-Alt.
Senecio macrocarpus (Large-fruit Fireweed, Large-fruit Groundsel)	VU	V	The 2024 PMST output identified that this species or species habitat 'may occur' within the 'buffer area only' (DCCEEW 2024a). The Large-fruit Groundsel is a small long-lived perennial plant endemic to south-eastern Australia, growing to 70 cm high (Sinclair 2010). Individual plants are thought to live for many years, possibly even decades. There are approximately 15 populations containing 36,000 plants, with most individuals (35,000) occurring in one population (within Messent Conservation Park near Salt Creek in SA) (Sinclair 2010). In South Australia, the species has been recorded within several regions, including the Flinders and Mount Lofty Ranges and Flinders Lofty Block, preferring shallow depressions on loamy sand with numerous sedge and herb species (Sinclair 2010). Despite numerous vegetation surveys undertaken within the WF and OTL the species has not been recorded and it is noted no suitable habitat occurs within the WF or OTL. Although not surveyed to date, it is unlikely the species would occur within the OTL-Alt (EBS 2024e). Therefore, this species is considered **unlikely to occur**.	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
Senecio megaglossus **(Superb Groundsel)**	VU	E	The 2024 PMST output identified that this species or species habitat is 'likely to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Superb Groundsel is a perennial shrub, usually erect but with many branches, growing up to 80 cm (DEWHA 2008d). The species occurs in six scattered localities from the Southern Flinders Ranges to Northern Flinders Ranges in South Australia, with three populations within the latter area, being Orroroo, Black Rock and Newikie Creek (Davies 1992 and 1995 cited in DEWHA 2008d). The species typically inhabits rocky gorges and valley slopes, and has been recorded in association with grasslands; tall open shrublands with Native Apricot (*Pittosporum angustifolium*), Bullock Bush (*Alectryon oleifolius*), and Emu Bush (*Eremophila longifolia*); with Spinifex (*Triodia irritans*); and *Senecio megaglossus* with White Cypress-pine (*Callitris columellaris*) and River Red Gum (*Eucalyptus camaldulensis*) (DEWHA 2008d). The species is known to overlap with several EPBC listed TECs, including the three TEC described herein (excluding the MBC). No important populations have been described for the Superb Groundsel. A Recovery Plan is not required for the Superb Groundsel (DCCEEW 2024b). Despite numerous vegetation surveys undertaken within the GN1 Project Area the species has not been recorded, however, although unlikely it is noted suitable habitat occurs within the WF and OTL. Although not surveyed to date, it is unlikely the species would occur within the OTL-Alt (EBS 2024e). Therefore, this species is considered **unlikely to occur** within OTL-Alt, but considered a **possible occurrence** within the WF and OTL.	Direct clearance or disturbance of vegetation, impacting the MNES through either loss of habitat or direct loss of the MNES species. Reduced habitat quality through the introduction of new weed species (or disease), or spread of existing weed species through ground disturbance of transport of organic materials on construction vehicles or machinery. Reduced habitat quality through the 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.	Desktop and field surveys carried out to identify key ecological constraints, feeding into iterative design process to avoid and minimise interaction with important habitat as far as reasonably practicable. Where the construction footprint intersects with, or comes within proximity to, key habitats supporting EPBC species or communities, flagging to be applied to agreed construction footprint boundary to avoid unintentional disturbance outside of defined construction areas. Where flagging is not practicable due to distance, audits of construction footprint boundary to be undertaken post disturbance. Identification of key habitats to be identified by suitably qualified ecologist prior to disturbance. During construction, implement weed hygiene practices including: vehicle checks and washdowns as required on vehicles or plant entering the construction site. During construction, undertake monthly weed surveillance monitoring targeting WoNS and Declared Weed species, with follow up controls as required for any identified weed outbreaks. During operation, implement weed surveillance and control programs targeting WoNS and Declared Weed species (if weeds identified) on an annual basis.	**Significant impacts are considered unlikely.** **A. Unlikely.** Despite numerous surveys the species has not been previously recorded within the WF or OTL, however, potentially suitable habitat is considered as possibly occurring in the unsurveyed areas outside of the Disturbance Footprint within the WF and OTL. Although not surveyed to date, habitat in the OTL-Alt is considered unlikely to support the species. No important populations have been defined for the Silver Daisy-bush (DCCEEW 2024b), and it is considered unlikely that the Project Area supports an important population (which would be previously unknown). Should the species be recorded within development areas, 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 that impacts as a result of the Project would lead to a long-term decrease in the size of an important population, if known to occur within the OTL. **B. Unlikely.** As above, no important populations have been described for this species and are considered unlikely to be present within the WF and OTL Disturbance Footprint. The species is considered unlikely to occur within the OTL-Alt. Should the species be detected within the WF and/or OTL it is unlikely any impacts as a result of the Project would reduce the area of occupancy of an important population. **C. Unlikely.** As above, no important populations have been described for this species. The species is considered unlikely to occur within the WF and OTL Disturbance Footprint and OTL-Alt. Should the species be detected within the OTL it is unlikely any impacts as a result of the Project would fragment an existing important population into two or more populations. **D. Unlikely.** Suitable habitat may be present within the WF and OTL, however, the species has not been recorded to date. 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 highly unlikely that if the species is confirmed as present, that impacts as a result of the Project would adversely affect habitat critical to the survival of the species. **E. Unlikely.** There are no known population estimates for this species, and there are no defined important populations (DCCEEW 2024b). Despite previous vegetation surveys, the species has not been recorded within the WF or OTL. 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, however, should the species be recorded within development areas, 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. **F. Unlikely.** As above, there are no known records of the species occurring within the WF or OTL. Should the species be recorded within development areas, 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

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						decrease the availability of quality of habitat to the extent that the species is likely to decline. Should the species be recorded within development areas, 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 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. **G and H. Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the Project Area or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the Project Area is 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. **I. 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 2024b).
Swainsona pyrophila (Yellow Swainson-pea)	VU	R	The 2024 PMST output identified that this species or species habitat 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Yellow Swainson-pea is a short-lived, erect shrub growing to 1 m high. The species is fire adapted and typically occurs in mallee vegetation communities in inland south-eastern Australia. In South Australia, the species occurs in several regions, including Murray Darling Depression (Tonkinson 2010). The species occurs on a variety of soil types, including well drained sands, sandy loams and heavier clay loams. The only detailed habitat information is from South Australia, where the species was recorded from mallee woodland with *Eucalyptus* species including *E. brachycalyx*, *E. calycogona*, *E. dumosa*, *E. gracilis*, *E. incrassata*, *E. leptophylla*, *E. oleosa* and *E. socialis*, sometimes with Broombush *Melaleuca uncinata* tall shrubland (Tonkinson 2010). Within South Australia, important populations of the species are believed to occur in Hambidge, Munyaroo, Heggaton and Messent Conservation Parks. Despite numerous vegetation surveys undertaken within the GN1 Project Area the species has not been recorded. It is considered no suitable habitat	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			occurs within the WF, OTL or OTL-Alt (EBS 2024e). Therefore, this species is considered **unlikely to occur**.			
EPBC Act Threatened Fauna – Mammals						
Nyctophilus corbeni (Corben's Long-eared Bat, South-eastern Long-eared Bat)	VU	V	The 2024 PMST output identified that this species or species habitat 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The South-eastern Long-eared Bat is a relatively large solid bat with a head and body length of 50-75 mm, a forearm length of 40-50 mm, and a tail length of 35-50 mm (Reardon 2012 and Department of the Environment 2013 cited in TSSC 2015). Females are typically heavier than males, weighing between 14-21 g and 11-15 g respectively (TSSC 2015). The species if found across southern central Queensland, central western New South Wales, north-western Victoria and eastern South Australia, where it is patchily distributed, with most of its range in the Murray Darling Basin (Duncan et al. 1999 and Turbill and Ellis 2006 cited in TSSC 2015). The species is found in a wide range of inland woodland vegetation types, including box / ironbark / cypress pine woodlands, Buloke woodlands, Brigalow woodland, Belah woodland, smooth-barked apple woodland, river red gum forest, black box woodland, and various types of tree mallee. Within South Australia, the species is associated with Buloke woodlands, primarily within the MDD, noting the Project is on the very edge of the species known range. Despite a lack of suitable habitat within the GN1 Project Area, it is noted the mallee vegetation in the east of the broader GNREF contains an abundance of suitable roosting hollows (EBS 2024e). Anabat recorders were deployed at three sites for one night each across the WF with the aim of capturing ultrasonic bat calls during the Spring and Summer BBUS, with any calls recorded to be analysed at the conclusion of all BBUS (EBS 2024a). As the WF, OTL and OTL-Alt 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, OTL and OTL-Alt, the species is considered **unlikely to occur**.	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including OTL or OTL-Alt.
EPBC Act Threatened Fauna – Birds						
Amytornis striatus howei (Murray Mallee Striated Grasswren, Striated Grasswren (sandplain))	EN	R (species not sub-species)	The 2024 PMST output identified that this species or species habitat 'may occur' within the 'buffer area only' (DCCEEW 2024a). The Murray Mallee Striated Grasswren is a medium sized grasswren, with a slender bill and long tail. The sub-species occurs in New South Wales, South Australia and Victoria. As the name suggests, the sub-species typically is known to occur in the Murray Mallee region, noting they occur patchily	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			through the Riverland Biosphere Reserve in South Australia (TSSC 2023). The sub-species is known to occur in sandplains dominated by mature spinifex (*Triodia* spp.), typically with an overstorey of mallee eucalypts (Verdon et al. 2021 cited in TSSC 2023). The sub-species extent of occurrence was estimated to be 41,200 km^2 (40,000-43,000 km^2 with high reliability), with an area of occurrence estimated to be 2,800 km^2 (1,400-5,600 km^2 with low reliability) (Verdon et al. 2021 cited in TSSC 2023). However, in South Australia the sub-species is noted as having become extremely rare, with only occasional sightings in localities long thought to be reliable and secure (Black pers. comm. September 2022 cited in TSSC 2023). There are no records of the sub-species occurring within the GN1 Project Area and it is considered no suitable habitat occurs within the WF, OTL or OTL-Alt (EBS 2024e), noting these areas are outside of the sub-species' known distribution. Therefore, the sub-species is considered **unlikely to occur**.			
Aphelocephala leucopsis **(Southern Whiteface)**	VU	-	The 2024 PMST output identified that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024). Southern Whiteface was relatively recently listed under the EPBC Act with Conservation Advice issued on 31 March 2023. The species is distributed across most of mainland Australia south of the tropics (Schodde and Mason, 1999; DCCEEW 2023b), and occupies a wide range of open woodlands and shrublands which support an understorey of grasses and/or shrubs, often dominated by *Acacias* or *Eucalypts* on ranges, foothills and lowlands, and plains (Higgins and Peter 2002; DCCEEW 2023b). The species forage at ground level preferring areas with low tree densities and patchy litter cover between understorey, feeding on invertebrates and seeds (Higgins and Peter 2002). No important populations are defined in the Conservation Advice for the species, and the species has no conservation listing in South Australia. Habitat deemed critical for the survival of the species is defined as areas of relatively undisturbed open woodland and shrublands with an understorey of grasses of shrubs, habitat with low tree densities and an herbaceous understorey with litter cover which provides essential foraging habitat, and living and dead trees with hollows and crevices which are essential for roosting and nesting (DCCEEW 2023b). All habitats (i.e. all VAs) within the GN1 Project Area are considered to be potential habitat for this species, with the eastern and southern woodlands	Clearance of potential habitat (including foraging and nesting sites) for proposed infrastructure. Potential disturbance to species during construction. Introduction of invasive weed species during construction resulting in habitat degradation. Introduction of invasive weed species during operation resulting in habitat degradation. Increase feral animal predation and or competition as a result of improved access along new tracks.	Avoidance of any identified areas of low woodland, or higher density and taller shrublands (i.e. potentially preferred areas for the species) where practicable. Flag off any potential habitat identified adjacent to proposed infrastructure areas to ensure no disturbance beyond essential clearance footprint required. Pre-construction weed surveys and controls, post-construction weeds surveys and controls, and ongoing weed survey and control during operation. Post-construction weeds surveys and controls, and ongoing weed survey and control during operation. Develop and implement clear protocols for management of waste during construction to avoid an increase in, or attraction of, feral pest animals to the Project Area.	**Significant impacts are considered possible (critical habitat only)** **A. Unlikely.** No important populations of Southern Whiteface are identified in the recent Conservation Advice for the species (DCCEEW 2023b). 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 45.90 ha in the WF, 48.92 ha along the OTL, and 33.20 ha along the OTL-Alt will be disturbed as a result of the Project, noting much of this disturbance is divided across multiple (16 plus Mallee forest and woodland) VAs, and the Disturbance Footprint itself 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 GN1 Project Area. The species is known to be present within the GN1 Project Area, 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 very narrow nature of the Disturbance Footprint. 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 clearance for access tracks.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			and shrublands considered preferred habitat. The Disturbance Footprint associated with the Project intersects with pockets of documented suitable habitat for the Southern Whiteface, resulting in an estimated potential impact area of: • 45.90 ha in the WF • 48.92 ha along the OTL • 33.20 ha along the OTL-Alt. The remainder of the Disturbance Footprint is considered marginal habitat which may be used irregularly, particularly where it occurs on the margins of preferred woodland and shrubland habitat. Within the WF, the species has been previously recorded in Mallee Woodlands associated with fringing Chenopod Shrublands in the eastern extent of the WF and along the OTL, particularly in the southern and eastern woodlands EBS 2024e) Given the extremely broad distribution of Southern Whiteface across much of Australia, and numerous known records of the species within the GN1 Project Area (EBS 2024a, 2024b), the Southern Whiteface is considered as **known to occur** within the WF and OTL, and is considered **likely to occur** within the OTL-Alt.			**B. Unlikely.** No important populations are defined for the Southern Whiteface in the recent Conservation Advice, and the species is broadly distributed as a continuous population across much of Australia south of the tropics. While the GN1 Project Area is broadly within the extent of occurrence of the species, the Area of Occupancy 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. 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 45.90 ha in the WF, 48.92 ha along the OTL, and 33.20 ha along the OTL-Alt, (i.e. a maximum combined total of either 94.82 ha for WF plus OTL, or 79.10 ha for WF plus OTL-Alt. As the species is confirmed to be present within the WF and OTL, and considered likely within the OTL-Alt, there is a potential that the Project may be considered to incur a small reduction in the Area of Occupancy of this species (with no important populations defined) through direct impacts such as clearance of suitable habitat, or indirect impacts. As noted above, the assumed Area of Occupancy for the species is 70-80,000 km^2 (based on actual records, so potentially much higher given the Extent of Occurrence covers 4,910,000 km^2 across large parts of Australia which would be rarely surveyed) (DCCEEW 2023b). Based on these figures, the clearance of approximately 94.82 ha for WF plus OTL, or 79.10 ha for WF plus OTL-Alt of potentially suitable habitat associated with the Disturbance Footprint represents a marginal reduction (0.0013% or 0.0011% respectively) of the reported Area of Occupancy of the species, and therefore impacts are not considered significant. **C. Unlikely**. Whilst the Project is considered to be within the extent of occurrence of the species, no important populations are defined in the Conservation Advice, 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 does not divide any known population in two. The clearance of approximately 94.82 ha for WF plus OTL, or 79.10 ha for WF plus OTL-Alt of potentially suitable shrub habitat associated with the Disturbance Footprint in areas that may provide suitable habitat for the species, any impacts to potential suitable habitat are considered to be small, and 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. **D. Possible**. Habitat deemed critical to the survival of the species is documented in the Conservation Advice for the species (DCCEEW 2023b) 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 45.90 ha in the WF, 48.92 ha along the OTL, and 33.20 ha along the OTL-Alt will be disturbed as a result of the Project. Noting much of this disturbance

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						is divided across multiple VAs, and the Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. This habitat potentially represents habitat listed as critical to the survival of the species (open woodland and shrubland, living or dead trees with hollows, within the likely or known distribution of the species). As such, there is potential that the Project may be considered to trigger this significant impact criteria as a result of the potential to adversely affect habitat which is documented (DCCEEW 2023b) as critical to the survival of the species, however, a significant impact to the species may be considered improbable given the extensive distribution across much of southern Australia and the small area of habitat removal compared with the reported Area of Occupancy (see above). **E. 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. 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. Additionally, it is considered habitat suitable for the species is extensive in the areas directly adjacent to the WF and OTL. Therefore, the clearance of the aforementioned small areas is not expected to disrupt the breeding cycle of an important population. **F. Unlikely.** As above, the Project 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. **G. and H. Unlikely**. The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the Project Area or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the Project Area is considered unlikely. There are some existing roads and tracks within the Project Area, and the Project is not expected to result in an increase in abundance of feral predator species. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this species. **I. 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 2023b). 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.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
Calidris acuminata (Sharp-tailed Sandpiper)	VU, MW	-	The 2024 PMST output identified that this species or species habitat 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024). This species maintains the migratory wetlands EPBC listing but has also been newly listed as a threatened species (Vulnerable) under the EPBC Act (5 January 2024), and therefore assessed against the threatened species criteria within this report. The Sharp-tailed Sandpiper breeds in Siberia and migrates to New Guinea and Australia during the summer months (Geering et al. 2008, DCCEEW 2024c). During the non-breeding season, the Sharp-tailed Sandpiper migrates south to Australia where it occurs within all states, preferencing the south-east of the country in both inland and coastal localities, including freshwater and saline habitats (DCCEEW 2024c), but it prefers non-tidal fresh or brackish wetlands, damp grasslands, and will also utilise farms dams, wastewater irrigation areas, tidal flats, and beaches (Geering et al. 2008, Menkhorst et al. 2017, ALA 2024, DCCEEW 2024c). The species is considered widespread across the eastern half of South Australia, and may be found as far north as Lake Eyre, extending to areas on the eastern margin of the Nullarbor Plain (Higgins and Davies 1996). Critical habitat includes areas for breeding (outside of Australia), foraging, roosting or dispersal. Important habitat includes those listed in the National Directory of Important Migratory Shorebird Habitat (Weller et al. 2020) (DCCEEW 2024c). A site is considered a nationally important site if >85 individuals regularly occur (DCCEW 2024c). No important populations have been identified. There are no records of the species occurring within the WF, OTL or OTL-Alt, nor any nearby records (EBS 2024e, ALA 2024), and it is considered no suitable habitat occurs within these areas (i.e. no wetland habitat). Therefore, this species is considered **unlikely to occur**.	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.
Calidris ferruginea (Curlew Sandpiper)	CE, MW	E	The 2024 PMST output identified that this species or species habitat 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt Area) (DCCEEW 2024). The Curlew Sandpiper is a migratory wader which breeds outside of Australia (Menkhorst et al. 2017). The species mostly occur on intertidal mudflats in sheltered coastal areas such as estuaries, bays, inlets and lagoons, and around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms (Geering et al. 2008). The species has also been recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand (DCCEEW 2024d). They can occur in both fresh and brackish waters.	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			There are no records of the species occurring within the WF, OTL and OTL-Alt, nor any nearby records (EBS 2024e, ALA 2024), and it is considered no suitable habitat occurs within these areas (i.e. no wetland habitat). Therefore, this species is considered **unlikely to occur**.			
Falco hypoleucos (Grey Falcon)	VU	R	The 2024 PMST output identified that this species or species habitat is 'likely to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Grey Falcon is an elusive species occurring across almost all of Australia but noted in arid and semi-arid Australia including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia (Marchant and Higgins, 1993). Preferred habitat includes timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined watercourses, where they like to forage and breed (Garnett et al. 2011). The species is considered a single monotypic population across Australia with no specific important populations identified (TSSC 2020). Despite numerous fauna surveys, including targeted BBUS (EBS 2024a, 2024b, 2024e), the species has not been recorded within the WF. Further, it is considered no suitable habitat occurs within the WF, OTL or OTL-Alt. Therefore, this species is considered **unlikely to occur**.	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.
Gallinago hardwickii Lantham's Snipe, Japanese Snipe	VU, MW	R	The 2024 PMST output indicates that this species or species habitat 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). This species maintains the migratory wetlands EPBC listing but has also been newly listed as a threatened species under the EPBC Act (5 January 2024), and therefore assessed against the threatened species criteria within this report. Lantham's Snipes breed in selected areas of Japan and nearby Kuril Islands of far eastern Russia (DCCEEW 2024e). Within Australia, the species visits during the non-breeding season (Higgins and Davies 1996), preferring the east coast from Cape York Peninsula to south-eastern Australia, including the Adelaide Plains, Mount Lofty Ranges, and the Eyre Peninsula (DCCEEW 2024e). The species is occasionally recorded at sites outside of the species' core Australian range, including mid-northern South Australia (Barrett et al. 2003). The species prefers tussock grass and low dense sedges surrounding freshwater wetland, permanent and ephemeral wetlands, and can also occur in habitats with saline or brackish water in modified or artificial wetlands. Critical habitat includes areas for breeding (outside of Australia), foraging, roosting or dispersal.	Unlikely to occur, N/A	None required	**No Significant Impacts Expected** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			Important habitat includes those listed in the National Directory of Important Migratory Shorebird Habitat (Weller et. al. 2020) (DCCEEW 2024e). Critical feeding and roosting habitats are associated with freshwater wetlands with dense low vegetation (DCCEEW 2024e). There are no records of the species occurring within the WF, OTL and OTL-Alt, nor any nearby records (EBS 2024e, ALA 2024), and it is considered no suitable habitat occurs within these areas (i.e. no wetland or coastal habitat). Therefore, this species is considered **unlikely to occur**.			
Grantiella picta (Painted Honeyeater)	VU	R	The 2024 PMST output indicates that this species or species habitat 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Painted Honeyeater is nomadic and sparsely distributed from south-eastern Australia to north-western Queensland and eastern Northern Territory and may be a vagrant to South Australia (DotE 2015a). The species occurs in dry open forests and woodlands which contain a high number of mature trees (prefers Acacia woodland / Allocasuarina woodland) and is strongly associated with the presence of mistletoe. The species may also be found along rivers, on plains with scattered trees and on farmland with remnant vegetation. Rare throughout its range (Menkhorst et al. 2017). Key habitats include Boree/Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. There are no records of the species occurring within the WF, OTL and OTL-Alt, nor any nearby records (EBS 2024e, ALA 2024). Whilst a range of mature trees occur throughout the WF, it is noted the WF does not have an abundance of mistletoe. Therefore, this species is considered **unlikely to occur**.	Unlikely to occur, N/A	None required	**No Significant Impacts Expected** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.
Leipoa ocellata (Malleefowl)	VU	V	The 2024 PMST output indicates that this species or species habitat is 'likely to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Malleefowl is a large ground-dwelling bird and is found in semi-arid to arid mallee and/or acacia dominated shrublands and low woodland in the southern half of Australia (Benshemesh 2007). Within South Australia, the majority of records of the species are from the Eyre Peninsula and Murray Darling Basin region, with scattered records across the Yorke Peninsula. Critical habitat needs include a sandy substrate and an abundance of leaf litter within which incubator style nests are built (Benshemesh 2007). Densities of birds are greatest in areas of higher rainfall and on more fertile soils where shrub diversity is greatest (Benshemesh	Unlikely to occur, N/A	None required	**No Significant Impacts Expected** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			2007). No specific important populations have been defined for the species (Benshemesh 2007). A Recovery Plan has been in place for this species since January 2010. There are no records of the species occurring within the WF, OTL and OTL-Alt, nor any nearby records (EBS 2024e, ALA 2024). Potentially suitable mallee vegetation is considered isolated from known populations within Brookfield Conservation Park and east of Morgan. Therefore, this species is considered **unlikely to occur**.			
Lophochroa leadbeateri leadbeateri (Major Mitchell's Cockatoo (eastern), Eastern Major Mitchell's Cockatoo, Pink Cockatoo (eastern))	EN	R (species not sub-species)	The 2024 PMST output indicates that this species or species habitat 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). Major Mitchell's Cockatoo was relatively recently listed under the EPBC Act with Conservation Advice issued on 31 March 2023. Major Mitchell's Cockatoo is a small, white and pink cockatoo, with the sub-species, occurring within the Murray Darling, Eyre and Bulloo River basins. Within South Australia the species has largely disappeared from the Adelaide and Mt Mary Plains (dating back to the 1950s (Boehm 1961 cited in (DCCEEW 2023c)). Critical habitat consists of arid and semi-arid woodlands dominated by mulga (*Acacia aneura*), mallee and box eucalypts, slender cypress pine (*Callitris gracilis*) or belah (*Casuarina cristata*), especially where there are large mature trees with suitable hollows, and in areas with easily accessible water bodies. It is now thought that whilst much of its range remains uncleared rangelands, it is assumed approximately 20-30% is still occupied (Hurley and Garnett 2021 cited in DCCEEW 2023c). There are no records of the species occurring within the WF, OTL and OTL-Alt, nor any nearby records (EBS 2024e, ALA 2024), noting these areas are beyond the species' current expected range. Therefore, this species is considered **unlikely to occur**.	Unlikely to occur, N/A	None required	**No Significant Impacts Expected** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.
Melanodryas cucullata cucullata **(South-eastern Hooded Robin, Hooded Robin (south-eastern))**	EN	R	The 2024 PMST output indicates that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The South-eastern Hooded Robin was relatively recently listed under the EPBC Act with Conservation Advice issued on 31 March 2023. The South-eastern Hooded Robin occurs in south-eastern Australia from far south-east Queensland to the Yorke Peninsula in South Australia. The species is described as shy and largely sedentary, often occurring in pairs or small groups. They forage on insects and small lizards taken from the ground and may also hunt for invertebrates by 'perch and pounce' within grassy clearings in leaf litter. South-	Clearance of potential habitat (including foraging and nesting sites) for proposed infrastructure. Potential disturbance to species during construction. Introduction of invasive weed species resulting in habitat degradation. Increase feral animal predation and or competition caused by opening up access routes in previously undisturbed areas (such as mallee vegetation south of Mimbara CP, where the OTL	Avoidance of any identified areas of low woodland, or higher density and taller shrublands (i.e. potentially preferred areas for the species), where practicable. Flag off any potential habitat identified adjacent to proposed infrastructure areas to ensure no disturbance beyond essential clearance footprint required. Avoid trimming of vegetation in the IMZ and OMZ during breeding	**Significant impacts are considered possible (critical habitat only).** **A. Unlikely.** Preferred habitat for the South-eastern Hooded Robin includes dry eucalypt and acacia woodlands and shrublands remnants with an open understorey, some grassy areas, with structurally diverse habitats. Despite numerous fauna surveys and potentially suitable habitat within the WF the species has not been recorded, however, impacts are still considered herein. Within the OTL there are several (eight) recent records of the species occurring in the far south. An estimated potential impact area of 39.34 ha in the WF (predominantly associated with VA1), 45.97 ha along the OTL alignment (predominantly associated with VA18), and 33.17 ha along the OTL-Alt alignment (predominantly associated with Mallee Forest and woodland) will be disturbed as a result of the Project. The Disturbance Footprint itself is predominantly comprised of

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			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 2023d). Nests are situated in a tree fork or crevice, from less than 1 m to 5 m above the ground (DCCEEW 2023d). Habitat critical to the survival of the species broadly includes 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, as well as structurally diverse habitats. The sub-species is absent from many formerly occupied known sites, particularly in the wetter areas of the south and east. No important populations are defined in the Conservation Advice. The subspecies' extent of occurrence is estimated to be approximately 1,200,000 km^2 (range 1,100,000–1,400,000 km^2) with an area of occupancy of approximately 30,000 km^2 (16,000–50,000 km^2), respectively (Ford et al. 2021 cited in DCCEEW 2023d)). The Disturbance Footprint associated with the Project intersects with suitable habitat for the South-eastern Hooded Robin across the WF, OTL and OTL-Alt, resulting in an estimated potential impact area of: • 39.34 ha in the WF • 45.97 ha along the OTL alignment • 33.17 ha along the OTL-Alt alignment Within the GN1 Project Area, several individuals have been previously recorded in the far south of the OTL during the MBC targeted surveys in association with VA18 Mixed Mallee (inc. *Eucalyptus oleosa* dominant) over Chenopods and native grasses, and opportunistically along Black Peake Road. Therefore, given suitable habitat occurs within the WF and OTL and OTL-Alt, and recent records (EBS 2024e), the species is considered **known to occur** within the OTL, and considered **likely to occur** within the WF and OTL-Alt.	Primary traverses steep and inaccessible terrain).	activities (typically between July and November). Explore alternate construction methods in the OTL and OTL-Alt if feasible and optimise tower and access track placement to avoid identified areas. Pre-construction weed surveys and controls, post-construction weeds surveys and controls, and ongoing weed survey and control during operation. Post-construction weeds surveys and controls, and ongoing weed survey and control during operation. Develop and implement clear protocols for management of waste during construction to avoid an increase in, or attraction of, feral pest animals to the Project Area.	roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. Where the species has been recorded within development areas, 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. Therefore, taking into consideration the OTL alignment has some capacity to be micro sited in some areas, the Project is unlikely to lead to a long-term decrease in the size of a population. **B. Unlikely.** The area of occupancy for the South-eastern Hooded Robin is approximately 30,000 km^2 (16,000–50,000 km^2) (DCCEEW 2023d). Based on these figures the clearance of 39.34 ha in the WF, 45.97 ha along the OTL alignment, and 33.17 ha along the OTL-Alt alignment (i.e. maximum estimated area of 85.31 ha for WF plus OTL, or 72.51 ha for WF plus OTL-Alt) of potentially suitable habitat associated with the Project represents 0.0028% or 0.0024% respectively of the reported Area of Occupancy of the species. Of note, total of 24.24 ha (WF and OTL Primary) is considered the maximum potential permanent clearance of potential Hooded Robin habitat, equating to <1% of the suitable vegetation mapped locally, in the GNREF Project Area (approximately 2,478.57 ha, including EBS and DEW mapped vegetation), noting that extensive additional 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 (noting the OTL-Alt has not previously been surveyed). 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 development areas, 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 and the Project is unlikely to reduce the area of occupancy for this species. **C. Unlikely.** Whilst the WF, OTL and OTL-Alt are considered to be within the extent of occurrence 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 unlikely to fragment an existing population into two or more populations. Where the species has been recorded within development areas, efforts would be made to avoid areas where this species is present and to micro-site roads, tracks and OTL infrastructure where practicable. 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 clearance of approximately 85.31 ha for WF plus OTL, or 72.51 ha for WF plus OTL-Alt of potentially suitable habitat within the GN1 Project Area in areas that may provide suitable habitat for the species, any impacts to potential suitable habitat are considered to be small, isolated patches only within a much broader species distribution. This is considered unlikely to restrict movement of individuals nor restrict gene flow of this species across the landscape (i.e. for mobile species, regularly occupying patches larger than 10 ha (DCCEEW 2023d) the South-eastern Hooded Robin is readily able to traverse narrow or relatively small cleared areas, and therefore the Project is

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						unlikely to fragment any populations 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. **D. Possible.** 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. EBS (2024e) notes impacts associated within the IMZ and OMZ may impact some nesting habitat, however, impacts to the tree stratum may create favourable foraging conditions for this species. As such, there is potential that the Project may be considered to trigger this significant impact criteria as a result of the potential to adversely affect habitat which is documented (DCCEEW 2023d) as critical to the survival of the species, however, a significant impact to the species may be considered improbable given mitigation measures and areas of similar habitat directly adjacent to the GN1 Project 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. Thus, the Project is considered unlikely to significantly impact habitat considered critical for survival of the species. **E. 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 2023d). Nests are situated in a tree fork or crevice, from less than 1 m to 5 m above the ground (DCCEEW 2023d). As above, EBS (2024e) notes impacts associated within the IMZ and OMZ may impact some nesting habitat, however, EBS (2024e) notes there is ample suitable breeding habitat in the contiguous adjacent landscape. Therefore, taking into consideration the OTL alignment has some capacity to be micro sited in some areas, the Project may potentially impact upon the breeding of a few individuals, however, the Project is unlikely to lead to a long-term decrease in the size of a population. **F. 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 85.31 ha for WF plus OTL, or 72.51 ha for WF plus OTL-Alt of potentially suitable habitat within the GN1 Project Area will be impacted, a total of 24.24 ha (GN1 and OTL Primary) is considered the maximum potential permanent clearance of potential Hooded Robin habitat, equating to <1% of the suitable vegetation mapped in the broader GNREF. Mitigation measures will be implemented to reduce impacts to this species. Therefore, the Project is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. **G. and H. Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however,

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						there are no records of Phytophthora within the WF or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the GN1 Project Area is considered unlikely. The Project is not expected to result in an increase in abundance of feral predator species, noting numerous pre-existing agricultural tracks occur within the Project Area. Where the stringing corridor crosses the Hallelujah Hills in steep and inaccessible terrain, lacking existing tracks, additional feral predator control will be implemented to reduce potential for increased access of feral predators through this previously difficult landscape. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this species. **I. 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 2023d). The Project will not substantially interfere with the listed conservation and recovery information 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 2024b). 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 development areas, 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.
***Neophema chrysostoma* (Blue-winged Parrot)**	VU	V	The 2024 PMST output indicates that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Blue-winged Parrot was relatively recently listed under the EPBC Act with Conservation Advice issued on 31 March 2023. Blue-winged Parrots breed predominantly in Tasmania and on mainland Australia only south of the Great Dividing Range in southern Victoria and sometimes in coastal south-eastern South Australia (DCCEEW 2023e). During non-breeding periods (from Autumn to early Spring), they occur from northern Victoria, eastern South Australia, South-western Queensland and western New South Wales (Higgins 1999). They inhabit a range of coastal, sub-coastal and inland areas through to semi-arid zones, favouring grasslands and grassy woodlands and areas near wetlands. The species may also be associated with altered environments such as airfields, golf courses and paddocks. Pairs or small groups may forage mainly near or on the ground for	Loss of potential general foraging habitat. No nesting occurring in this area. Introduction of invasive weed species during construction resulting in habitat degradation. Introduction of invasive weed species during operation resulting in habitat degradation. Increase feral animal predation and or competition as a result of improved access along new tracks.	Avoidance of any identified areas of potentially suitable foraging areas for the species, where practicable. Pre-construction weed surveys and controls, post-construction weeds surveys and controls, and ongoing weed survey and control during operation. Post-construction weeds surveys and controls, and ongoing weed survey and control during operation. Develop and implement clear protocols for management of waste during construction and operation to avoid an increase in, or attraction of, feral pest animals to the Project Area.	**Significant impacts are considered unlikely** **A. Unlikely.** 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 or OTL-Alt Areas. Further, aside from is a single historic record (2001) of a Blue-winged Parrot within Red Banks Conservation Park (over 5 km to the southeast of the WF boundary) (ALA 2024), and despite numerous ecological surveys within the GN1 Project Area, the species has not been recorded within the WF or OTL (noting the OTL-Alt has not been surveyed) (EBS 2024e). Therefore, the Project is unlikely to lead to a long-term decrease in the size of an important population. **B. Unlikely.** The WF and/or OTL and OTL-Alt Areas are unlikely to support a specific important population of this species, noting the species does not breed in inland South Australia. The species estimated extent of occurrence is approximately 170,000 km^2 (range 155,000-190,000 km2, stable trend), with the species area of occupancy estimated to be approximately 11,000 km^2 (range 9,000-19,000 km^2) (DCCEEW 2023e). The Disturbance Footprint associated

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			seeds (including native and introduced grasses, herbs and shrubs (Higgins 1999 cited in DCCEEW 2023e). Blue-winged Parrots form monogamous pairs, and nests are made in hollows, preferably with a vertical opening, and in live or dead trees or stumps (DCCEEW 2023e). No important populations have been defined for this species (DCCEEW 2023e). Habitat critical to the survival of the species includes grasslands, grassy woodlands and semi-arid chenopod shrubland with native and introduced grasses, herbs and shrubs. The Disturbance Footprint associated with the Project intersects with potentially suitable habitat for the Blue-winged Parrot across the WF, OTL and OTL-Alt, resulting in an estimated potential impact area of: • 43.27 ha in the WF • 74.26 ha along the OTL alignment • 115.67 ha along the OTL-Alt alignment There is currently estimated to be approximately 10,000 (range 7,500-15,000) mature Blue-winged Parrots in the wild, with an estimated extent of occurrence of 170,000 km^2 (range 155,000-190,000 km^2, stable trend). However, the species area of occupancy is contracting an is estimated to be approximately 11,000 km^2 (range 9,000-19,000 km^2) (DCCEEW 2023e). There is a single historic record (2001) of a Blue-winged Parrot within Redbanks Conservation Park (ALA 2024), over 5 km to the southeast of the WF boundary and approximately 5 km east of the OTL at its nearest point, but noting the OTL-Alt passes within 500 m of the eastern boundary of the CP. However, despite numerous ecological surveys within the GN1 Project Area the species has not been recently recorded (EBS 2024e). Therefore, this species is conservatively considered as a **possible occurrence** within the WF, OTL and OTL-Alt Areas.			with the Project intersects with potentially suitable foraging habitat for the Blue-winged Parrot across the WF, OTL and OTL-Alt, resulting in an estimated maximum potential impact area of 43.27 ha in the WF, 74.26 ha along the OTL alignment, and 115.67 ha along the OTL-Alt alignment respectively (i.e. maximum estimated area of 117.53 ha for WF plus OTL, or 158.94 ha for WF plus OTL-Alt). Based on these figures, potentially suitable habitat associated with the Project represents 0.010% or 0.014% respectively of the reported Area of Occupancy of the species. However, as above, despite numerous ecological surveys within the GN1 Project Area, the species has not been recorded within the WF or OTL (noting the OTL-Alt has not been surveyed) (EBS 2024e). Therefore, since the species is not known to occur in the Project Area, and it does not breed in the area, the Project is unlikely to reduce the area of occupancy of an important population. **C. Unlikely.** As above, the WF, or OTL and OTL-Alt Areas are unlikely to support a specific important population of this species (noting the OTL-Alt has not been surveyed). Should the species be recorded within development areas, 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 GN1 Project Area and OTL and OTL-Alt, therefore, the Project is 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 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 GN1 Project Area, OTL or OTL-Alt, and the species has yet to be identified in the area. **D. Unlikely**. The WF and/or OTL and OTL-Alt Areas 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 2023e). A total of approximately 3,016.84 ha of potentially suitable habitat in the broader GN1 Project Area has been mapped, of which a maximum of 158.94 ha (within WF and OTL-Alt) is within the Disturbance Footprint equating to a conservative maximum area of 5.27% of the suitable vegetation mapped. However, EBS (2024e) notes much of this disturbance is divided across multiple VAs (eight VAs, chenopod shrubland, and Mallee forest and woodland areas), and potentially suitable habitat is unlikely to be considered preferred habitat for this species. There are no preferred wetland areas within the Project Area, with the closest potentially suitable foraging areas including Red Banks CP and / or Gordon Lagoon (both adjacent the OTL-Alt), but not within notable proximity to the WF or OTL Primary. 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 0.010% or 0.014% respectively of the reported Area of Occupancy of the species. As such, the Project is considered unlikely to significantly impact habitat considered critical for survival of the species.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						E. 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 2023e). The WF, OTL and OTL-Alt are unlikely to support an important population of this species or 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 on one occasion previously with the Red Banks Conservation Park (over 5 km to the southeast of the WF boundary, but within 500 m of the OTL-Alt) (ALA 2024). As the WF and OTL and OTL-Alt are outside of the species breeding areas (i.e. not inland South Australia) (DCCEEW 2023e), the Project is considered unlikely to disrupt the breeding cycle of an important population. **F. Unlikely.** As above, A total of approximately 3,016.84 ha of potentially suitable habitat in the broader GN1 Project Area has been mapped, of which a maximum of 158.94 ha (within WF and OTL-Alt) is within the Disturbance Footprint equating to a conservative maximum area of 5.27% of the suitable vegetation mapped within the GN1 Project Area. However, EBS (2024e) notes much of this disturbance is divided across multiple VAs (eight VAs, chenopod shrubland, and Mallee forest and woodland areas), and potentially suitable 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 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. **G. and H: Unlikely**. Aside from is a single historic record (2001) of a Blue-winged Parrot within Red Banks Conservation Park (over 5 km to the southeast of the GN1 Project Area boundary, but within 500 m of the OTL-Alt) (ALA 2024), and despite numerous ecological surveys within the WF, the species has not been recorded within the WF or OTL (noting the OTL-Alt has not been surveyed) (EBS 2024e). As such, any introduction of weeds is not considered likely to result in establishment and degradation of preferred habitat for the Blue-winged Parrot which would be detrimental to the species. The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the WF or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the GN1 Project Area is considered unlikely. There are some existing roads and tracks within the GN1 Project Area, and the Project is not expected to result in an increase in abundance of feral predator species. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this species. **I. 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 2023e). The Project

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						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 2024b). 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.
Pedionomus torquatus Plains-wanderer	CE	E	The 2024 PMST output indicates that this species or species habitat 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). Plains-wanderer are distributed across north-central Victoria, southern New South Wales, west-central Queensland and across eastern South Australia. The species formerly was found in the south-east of South Australia, however, is considered to potentially be extinct from these areas (DotE 2015b). The species has core sites within New South Wales and Victoria but is known to inhabit Queensland and South Australia where more marginal habitat exists (DotE and DEWNR 2016). The species is rare and elusive, and typically occurs in sparse, treeless and lowland native grasslands with a strong preference to areas that have approximately 50% bare patches, with most vegetation less than 5 cm in height and widely spaced plants up to 30 cm (DotE 2015b). They inhabit sparse grasslands with very low vegetation and cannot persist in an agricultural landscape (Garnet et al 2011, cited in DotE 2015c). Records for the species within South Australia are typically sparse. The closest records (historical) for the species occur near Eudunda (>5 km to the south of the OTL) but are undated and have low spatial accuracy (ALA 2024). There are no records of the species occurring within the WF, OTL and OTL-Alt, nor what is considered any nearby records (EBS 2024e, ALA 2024). Therefore, this species is considered **unlikely to occur**.	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.
Polytelis anthopeplus monarchoides (Regent Parrot (eastern))	VU	V	The 2024 PMST output indicates that this species or species habitat is 'likely to occur' in 'buffer area only' (DCCEEW 2024a). The Regent Parrot (eastern) occurs in inland south-eastern Australia, in the lower Murray-Darling basin region of South Australia, New South Wales and Victoria (Baker-Gabb and Hurley 2011). Relatively little is known about the habitat used by the Regent Parrot (eastern) during the non-breeding season, although the sub-species is thought to remain within the Murray-Darling Basin all year round. The sub-species is considered to be restricted to a single	Unlikely to occur, N/A	N/A	**No significant impacts expected.** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			population, however, within its broad distribution three separate breeding areas are recognised. Within South Australia, breeding occurs in near the lower Murray River, upstream from Swan Reach in South Australia to north-western Victoria (Lindsay Island) (Harper 1989; Smith 2001, 2004 cited in Baker-Gabb and Hurley 2011). Breeding occurs almost entirely in River Red Gum (*Eucalyptus camaldulensis*) forest and woodland, and all known breeding colonies relative to South Australia are located along the Murray River. Habitat deemed critical to the survival of the sub-species contains all known sites for nesting, food resources, water, shelter, essential travel routes, dispersal, and buffer areas, as defined within the sub-species National Recovery Plan (Baker-Gabb and Hurley 2011). The closest record for the species occurs to the south of Bundey (2013, >5 km to the south of the OTL) (ALA 2024). There are no records of the species occurring within the WF, OTL and OTL-Alt, nor what is considered any nearby records (EBS 2024e, ALA 2024). Therefore, this species is considered **unlikely to occur**.			
Rostratula australis Australian Painted Snipe	EN	E	The 2024 PMST output indicates that this species or species habitat 'may occur' in the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Australian Painted Snipe is a stocky wading bird that occurs in shallow freshwater (occasionally brackish) wetlands, and both ephemeral and permanent water bodies including as lakes, swamps, claypans, inundated or waterlogged grassland/saltmarsh, dams, rice crops, sewage farms and bore drains, preferring areas with a cover of grasses, rushes, reeds and low scrub (DSEWPaC 2013). Important areas for this species have previously included south-eastern South Australia, the Murray-Darling Basin in Victoria and New South Wales, Queensland Channel Country, and the Fitzroy Basis of Central Queensland, however, the species is now understood to occur more widely and frequently in remote arid and tropical regions of Australia (Hassell and Rogers, 2002; Jaensch 2003a, 2003b; Jaensch et al., 2004; Black et al., 2010, cited in DSEWPaC 2013). Records for the species within northern South Australia are scarce, with the closest nearby records being two records on the southern edge of Burra (ALA 2024), and one record of the species occurring within the Red Banks Conservation Park close to naturally occurring drainage channels (BDBSA 2024, ALA 2024). Potentially suitable habitat occurs within Red Banks CP, where the existing known record occurs. This is	Unlikely to occur, N/A	None required	**No Significant Impacts Expected** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			nearby to the OTL-Alt, but not within the Disturbance Footprint or Development Envelope, and no other suitable habitat occurs in the WF. There are no records of the species occurring within the WF, OTL and OTL-Alt (noting the OTL-Alt has not yet been surveyed) (EBS 2024e, ALA 2024). Therefore, this species is considered **unlikely to occur**.			
Stagonopleura guttata **(Diamond Firetail)**	VU	V	The 2024 PMST output indicates that this species or species habitat is 'known to occur' in the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Diamond Firetail was relatively recently listed under the EPBC Act with Conservation Advice issued on 31 March 2023. The Diamond Firetail has a broad distribution across south-eastern mainland Australia from south-east Queensland to the Eyre Peninsula in South Australia, but previously extended into north Queensland (inland from Cardwell) and extensively across interior New South Wales (DCCEEW 2023f). Within South Australia the Diamond Firetail appears to have been separated into three isolated subpopulations (i.e. Eyre Peninsula, Mt Lofty to Southern Flinders Ranges, and the south-east) (Higgins et al. 2007 cited in DCCEEW 2023f). The species occurs in eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats (including farmland and grassland with scattered trees), preferring areas with relatively low tree density, few large logs, and little litter cover but high grass cover (Menkhorst et al. 2017, DCCEEW 2023f). They feed predominantly at ground level on ripe and partly ripe grass and herb seeds and green leaves, and on insects. Groups settle into small colonies to breed between August and January, often with nests built into the base of a large stick-nest of a bird of prey or among the prickly foliage of a variety of shrubs (DCCEEW 2023f). Habitat deemed critical to the survival of the species includes Eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, with low tree density, few large logs, and little litter cover but high grass cover for foraging, roosting and breeding (DCCEEW 2023f). Broadly, the species has a large extent of occurrence (estimated at 1,500,000 km^2) and a moderate area of occupancy (estimated at 25,000 km^2) (DCCEEW 2023f). No important populations are defined in the species profile or Conservation Advice for the species (DCCEEW 2024b, 2023f). There are somewhat limited records of the species occurring within or near the GN1 Project Area (EBS 2024e, ALA 2024, BDBSA 2024), noting the WF and OTL and OTL-Alt are on the eastern fringe of the	Clearance of potential habitat (including foraging and nesting sites) for proposed infrastructure. Potential disturbance to species during construction. Introduction of invasive weed species during construction resulting in habitat degradation. Introduction of invasive weed species during operation resulting in habitat degradation. Increase feral animal predation and or competition as a result of improved access along new tracks.	Avoidance of any identified areas of eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, where practicable. This will be done through further design reviews and in construction planning. Flag off any potential habitat identified adjacent to proposed infrastructure areas to ensure no disturbance beyond essential clearance footprint required. Pre-construction weed surveys and controls, post-construction weeds surveys and controls, and ongoing weed survey and control during operation. Post-construction weeds surveys and controls, and ongoing weed survey and control during operation. Develop and implement clear protocols for management of waste during construction and operation to avoid an increase in, or attraction of, feral pest animals to the Project Area.	**Significant impacts are considered unlikely** **A. Unlikely.** Populations of this species are known to occur between the Mount Lofty Ranges and Southern Flinders Ranges, with the WF and OTL and OTL-Alt occurring on the eastern fringe of the species preferred typical distribution for that subpopulation (DCCEEW 2022b; ALA 2024). The species has been previously recorded in the nearby Goyder South Stage 2 Project Area (cited in EBS 2024e), and recently outside of the GN1 Project Area but within the search area during the MBC targeted surveys along Black Peake Road in association with *Eucalyptus porosa* open grassy woodland (VA1), and historically within the GN1 Project Area (11 BDBSA limited records cited in EBS 2024e). There are no important populations defined for the species (DCCEEW 2024b, 2023f). It is considered that suitable habitat occurs within the Disturbance Footprint within the WF and OTL, and the species is considered a possible occurrence within the OTL-Alt, however, the Mallee and shrubland habitats with chenopod understorey mapped within the OTL-Alt is deemed not preferred habitat (EBS 2024e), as it is typically lacking a grassy understorey preferred by the species. Thus, although there is potential preferred habitat within the WF, OTL and OTL-Alt, due to the limited 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. **B. Unlikely.** No important populations of this species are defined, and the species has a broad range across large areas of south-eastern Australia. Known populations of Diamond Firetail occur between the Mount Lofty Ranges and Southern Flinders Ranges, with the WF and OTL and OTL-Alt occurring on the eastern fringe of the species preferred typical distribution for that subpopulation (DCCEEW 2023f, ALA 2024). The species has a large extent of occurrence (estimated at 1,500,000 km^2) and a moderate area of occupancy (estimated at 25,000 km^2) (DCCEEW 2023f). The Disturbance Footprint associated with the Project may impact upon potentially suitable habitat for the Diamond Firetail across the WF, OTL and OTL-Alt, resulting in an estimated maximum potential impact area of 31.52 ha in the WF, 35.76 ha along the OTL alignment, and 31.48 ha along the OTL-Alt alignment respectively (i.e. maximum estimated area of 67.28 ha for WF plus OTL, or 63 ha for WF plus OTL-Alt). A total of 1,227.04 ha of potentially suitable habitat has been mapped in the broader GN1 Project Area (EBS 2024e), of which a maximum potential area of 67.28 ha (or 5.48%) is inside the Disturbance Footprint and potentially impacted by the GN1 Project. However, based on these figures, potentially suitable habitat associated with the Project represents <0.001% respectively of the Diamond Firetails reported Area of Occupancy. Therefore, whilst

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			Mount Lofty to Southern Flinders Ranges subpopulation. EBS (2024e) have recorded the species within the nearby Goyder South Stage 2 Project Area (near to the GN1 Project Area discussed herein) and more recently outside of the GN1 Project Area but within the search area during the MBC targeted surveys along Black Peake Road in association with *Eucalyptus porosa* open grassy woodland (VA1), and there are approximately 11 historical records of the species in the broader area (BDBSA records cited in EBS 2024e). Whilst there are limited records of this species occurring near the WF, OTL and OTL-Alt, this species is considered a **potential occurrence** within the WF and **likely to occur** within the OTL and OTL-Alt.			some potentially suitable habitat may be impacted by the Project, the Project is considered unlikely to reduce the area of occupancy of an important population. **C. Unlikely.** As above, the WF, OTL and OTL-Alt occur on the eastern fringe of the species preferred typical distribution for that subpopulation (DCCEEW 2023f; ALA 2024). Whilst the species has been recorded within the proposed Goyder South Stage 2 Project Area (near to the GN1 Project Area discussed herein) and more recently outside of the GN1 Project Area but within the search area during the MBC targeted surveys along Black Peake Road, and with limited historical records of the species occurring within the GN1 Project Area, any impacts to potential suitable habitat are considered to be small, isolated patches only within a much broader species distribution (i.e. the infrastructure 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 Project is considered unlikely to cause fragmentation of any population into two or more populations. **D. Unlikely.** As above, the WF, OTL and OTL-Alt occur on the eastern fringe of the species preferred typical distribution for that subpopulation (DCCEEW 2023f; ALA 2024). Habitat deemed critical to the survival of the species is outlined in the Conservation Advice (DCCEEWW 2023f) 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, (EBS 2024e). EBS noted 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. VA1 and VA8 (avoided in design) are also likely to provide more open grassy foraging habitat. Impacts within the IMZ and OMZ for this species are likely to be minimal, as they are ground dependent species. Permanent clearance of potential habitat equates to a worst-case scenario of 18.94 ha of impact (arising from WF and OTL), equivalent 1.54% of the broader GN1 Project Area (approximately 1,227.04 ha). The Disturbance Footprint associated with the Project may impact upon potentially suitable habitat for the Diamond Firetail across the WF, OTL and OTL-Alt, resulting in an estimated maximum potential impact area of 31.52 ha in the WF, 35.76 ha along the OTL alignment, and 31.48 ha along the OTL-Alt alignment respectively (i.e. maximum estimated area of 67.28 ha for WF plus OTL, or 63 ha for WF plus OTL-Alt), representing <0.001% respectively of the Diamond Firetails reported Area of Occupancy. 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,

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						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. **E. Unlikely.** As above, there are no defined important populations for the Diamond Firetail, and there are very limited records of the species occurring within or near to the GN1 Project Area. Whilst there is some suitable habitat within the WF and OTL, and potentially within the OTL-Alt, impacts as a result of the Project are 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. **F. Unlikely.** Within the GN1 Project Area 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, and is unlikely to provide preferred habitat for this species (EBS 2024e). Therefore, given the limited number of records in the surrounding area and abundance of similar habitat surrounding the Disturbance Footprint, impacts from the Project areunlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. **G. and H: Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the WF or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the GN1 Project Area is considered unlikely. The Project is not expected to result in an increase in abundance of feral predator species, noting numerous pre-existing agricultural tracks occur within the Project Area. Where the stringing corridor crosses the Hallelujah Hills in steep and inaccessible terrain, lacking existing tracks, additional feral predator control will be implemented to reduce potential for increased access of feral predators through this previously difficult landscape. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this species. **I. Unlikely.** There is no recovery plan in place for the Diamond Firetail, though it is noted that one is required. Recovery actions outlined within the Conservation Advice (DCCEEW 2023d) 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 (i.e. the infrastructure 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). Should the species be recorded within development areas, efforts

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						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.
EPBC Act Threatened Fauna – Reptiles						
Aprasia pseudopulchella **(Flinders Ranges Worm-lizard)**	VU	-	The 2024 PMST output identified that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Flinders Ranges Worm-lizard is a small, slender burrowing legless lizard, typically known from the Flinders Ranges of South Australia, extending south to the western slopes and northern and central Mt Lofty Ranges (Cogger et al. 1993). The species has also been recorded in the northern suburbs of Adelaide, with eight individuals recorded within the Cobbler Creek Recreation Reserve in Salisbury (Mitchell 1992; Cogger et al. 1993 cited in DEWHA 2008c). The species occurs in open woodland, native tussock grassland, riparian habitats and rocky isolates (Cogger et al. 1993), where it prefers stony soils or clay soils with a stony surface. It may also be found sheltering in soil beneath stones and rotting stumps, where it is difficult to observe (Wilson & Knowles 1988; Cogger et al. 1993 cited in DEWHA 2008c). The diet of most *Aprasia* species is understood to be predominantly (95%) that of the larvae and pupae of ants (DEWHA 2008c). The species distribution is known to overlap with several EPBC listed TECs, including the three TECs described herein (excluding the MBC). There is no adopted or made Recovery Plan for this species (not required) (DCCEEW 2024b). Chappel et al. (2017) cites the Area of Occupancy for the Flinders Ranges Worm-lizard as 196 km^2 and Extent of Occurrence as 31,213 km^2. However, there are no recorded important populations for this species, nor any listed habitat critical to the survival of the species. A range of vegetation associations are expected to meet the habitat requirements of the Flinders Ranges Worm-lizard. EBS (2024e) have mapped a total of 11,656.24 ha of potentially suitable habitat in the GN1 Project Area, of which a maximum of 463.08 ha (or 3.97%) is inside the GN1 Project Disturbance Footprint and potentially impacted by the Project. Areas within the IMZ and OMZ are not considered to impact this species, as an entirely ground dwelling species, however, temporary clearance 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. Impacts to the IMZ and OMZ have been excluded from the area calculations.	Clearance of potential habitat for proposed infrastructure. Direct loss of individuals and species habitat during construction. Fragmentation of existing populations and reduced movement of species throughout the site as a result of new access roads. Noise and vibration disturbance during construction. Introduction of invasive weed species during construction resulting in habitat degradation. Introduction of invasive weed species during operation resulting in habitat degradation. Increase feral animal predation and or competition as a result of improved access along new tracks.	Avoidance of any identified areas of rocky surface layers, where practicable. Avoidance of any existing known populations of the species. This will include consideration of alternate construction methods in particular along the OTL, and siting of infrastructure (such as road width minimisation in areas where populations are confirmed), as outlined in the COEMP. Undertake pre-clearance fauna surveys immediately prior to construction to detect and relocate any individuals within the proposed disturbance footprint. Flag off any potential habitat identified adjacent to proposed infrastructure areas to ensure no disturbance beyond essential clearance footprint required. Rehabilitate all temporary clearance areas as much as practicable to ensure remaining permanent access road width is minimised. Include restoration of any previously present rocky surface layer to the temporary clearance areas, as far as practicable. Implement a COEMP to inform workers of the species, and include requirement for reporting procedure any individuals found alive or deceased. Include collection of information such as location and cause of death if known (i.e. vehicle). Flag off any potential habitat identified adjacent to proposed infrastructure areas to ensure no disturbance beyond essential clearance footprint required. Pre-construction weed surveys and controls, post-construction weeds surveys and controls, and ongoing weed survey and control during operation.	**Significant impacts considered unlikely.** **A. Unlikely.** The area surrounding Burra appears to be a stronghold for the Flinders Ranges Worm-lizard, where there are numerous, scattered recent and historical records of the species occurring (ALA 2024, BDBSA 2024), 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 DEW 2008). Knowledge regarding the species ecology and home range is very limited (DEH 2008), however, due to their cryptic nature and small size, it is likely they are more abundant / widespread than records suggest. Regardless, due to the physically very small size of the species, 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 416.80 ha in the WF, 46.28 ha along the OTL alignment, and 31.71 ha along the OTL-Alt alignment respectively may occur as a result of the Project, 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 are likely to be impacted by the Disturbance Footprint, however, many individuals would be expected to remain unimpacted within the broader 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 can be difficult to survey, it is impossible 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 a number of individual Flinders Ranges Worm-lizards will be impacted by the Project (population estimates yet to assessed), impacts are considered unlikely to lead to a long-term decrease in the size of any population (important or otherwise). **B. Unlikely.** As above, no important populations are defined for the Flinders Ranges Worm-lizard (DEWHA 2008c). A range of vegetation associations are expected to meet the habitat requirements of the Flinders Ranges Worm-lizard. EBS (2024e) have mapped a total of 11,656.24 ha of potentially suitable habitat in the GN1 Project Area, of which a maximum of 463.08 (or 3.97%) is inside the GN1 Project Disturbance Footprint and potentially impacted by the Project. The area of occupancy for the Flinders Ranges Worm-Lizard is approximately 19,600 km^2 (Chappel et al. 2017). Based on these figures the clearance of 416.80 ha in the WF, 46.28 ha along the OTL alignment, and 31.71 ha along the OTL-Alt alignment (i.e. maximum estimated area of 463.08 ha for WF plus OTL, or 448.51 ha for WF

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			The Disturbance Footprint associated with the Project intersects with potentially suitable habitat for the Flinders Ranges Worm-lizard across the WF, OTL and OTL-Alt, resulting in an estimated potential impact area of: • 416.80 ha in the WF, • 46.28 ha along the OTL alignment; and • 31.71 ha along the OTL-Alt alignment. Impacts are predominantly associated with VA11. The distribution of this species is likely to be significantly more limited than the above estimates suggest due to the requirement for a rocky surface layer, which is not present across all areas of each of the suitable vegetation associations. No sufficiently accurate mapping is available for rocky surface substrate, and therefore it has not been included as a parameter within these calculations. There are numerous scattered historical records of the species occurring in close proximity to the WF and the northern portions of the OTL and OTL-Alt (ALA 2024, BDBSA 2024). The species has not been recorded during recent ecological surveys (EBS 2024e) however, it is noted ongoing targeted surveys are proposed to occur in Spring 2024 (EBS 2024e). This species is considered **known to occur** within the WF, OTL and OTL-Alt.		Post-construction weeds surveys and controls, and ongoing weed survey and control during operation. Ensure that chemicals or other mechanisms used to eradicate weeds in known population areas do not have a significant adverse effect on the species, on the basis that the species is entirely ground dwelling. Develop and implement clear protocols for management of waste during construction and operation to avoid an increase in, or attraction of, feral pest animals to the Project Area.	plus OTL-Alt) of potentially suitable habitat associated with the Project represents 2.36% or 2.28% respectively of the reported Area of Occupancy of the species. The distribution of this species is likely to be significantly more limited than the above estimates suggest due to the requirement for a rocky surface layer, which is not present across all areas of each of the suitable vegetation associations. 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, many individuals would be expected to remain unimpacted within the broader area. 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 area of occupancy of an important population. **C. Unlikely.** There are numerous, scattered recent and historical records of the species occurring in the area surrounding Burra, including within the WF and northern aspects of the OTL and OTL-Alt (ALA 2024, BDBSA 2024). Whilst the species home range would be expected to be highly localised, the Project is unlikely to fragment an existing important 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 specimens found to be approximately 30 m from possible source populations. It may be suggested that *A. pseudopulchella* populations may also exhibit a similar range of dispersal, noting this is likely the known maximum range of dispersal for an *Aprasia* sp. Therefore, whilst populations may be temporarily fragmented during construction works, following rehabilitation of temporary clearance areas, the species may be reasonably expected to be able to cross remaining permanent tracks (i.e. 11 m width). **D. Unlikely.** The Conservation Advice does not list any habitat as critical to the survival of the species. As above, whilst an estimated maximum area of 416.80 ha in the WF, 46.28 ha along the OTL alignment, and 31.71 ha along the OTL-Alt alignment respectively of habitat suitable to the Flinders Ranges Worm-lizard will be impacted as a result of the Project, which a maximum of 463.08 ha (or 3.97% of broader GN1 Project Area) is inside the GN1 Project Disturbance Footprint, 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 a number of individuals may be affected, many are expected to remain unimpacted. Thus, implications as a result of the Project are unlikely to adversely affect habitat critical to the survival of the species.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						E. Unlikely. Reproduction cycles of the Flinders Ranges Worm-lizard is understood to be highly seasonal, with females producing two eggs per clutch (Hutchinson M. cited in ALA 2024). 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 dispersal capacity. Whilst the Disturbance Footprint will impact approximately 3.97% (maximum) of the mapped potentially suitable habitat for this species, 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 development areas, 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 a few individuals, however, the Project is unlikely to disrupt the breeding cycle of a population (important or otherwise). **F. Unlikely.** EBS (2024e) have mapped a total of 11,656.24 ha of potentially suitable habitat for the Flinders Ranges Worm-lizard in the GN1 Project Area, with a maximum of 463.08 ha (or 3.97%) within Project Disturbance Footprint (predominantly associated with VA11). However, 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, so implications as a result of the Project In addition, the species/ area of occupancy extends well beyond the GN1 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. **G. and H: Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the WF or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the GN1 Project Area is considered unlikely. There are some existing roads and tracks within the GN1 Project Area, and the Project is not expected to result in an increase in abundance of feral predator species. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this species. **I. Unlikely.** As above, whilst Disturbance Footprint associated with the Project intersects with potentially suitable habitat for the Flinders Ranges Worm-lizard across the WF, OTL and OTL-Alt, resulting in an estimated potential impact area of 416.80 ha in the WF, 46.28 ha along the OTL alignment, and 31.71 ha along the OTL-Alt alignment respectively (with impacts predominantly associated with VA11), this is a relatively conservative estimate. The distribution of suitable habitat within the GN1 Project Area is likely to be significantly more limited than the above estimates suggest due to the requirement

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
						for a rocky surface layer, which is not present across all areas of each of the suitable vegetation associations. 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 will be applied to the COEMP. Therefore, it is considered unlikely that the Project would interfere substantially with the recovery of the species.
Tiliqua adelaidensis **(Pygmy Blue-tongue Lizard, Adelaide Blue-tongue Lizard)**	EN	E	The 2024 PMST output identified that this species or species habitat is 'known to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Pygmy Blue-tongue Lizard is the smallest member of the genus *Tiliqua*, and is a moderate-sized skink with a relatively heavy body, growing to a maximum length of 20 cm. The species was considered extinct for a period of time until its rediscovery in 1992, following 33 years of no sightings (DCCEEW 2023g). The species is endemic to the mid-north region of South Australia, with a historical distribution previously extending from the southern region of Adelaide to Mannanarie, a town 220 km to the north of Adelaide (Ehmann 1982 cited in DCCEEW 2023g). The current distribution is known to extend from Peterborough in the north, to Bagot Well and Kapunda in the south, and to South Hummocks in the west (north of Port Wakefield) (Duffy et al. 2012, DCCEEW 2023g). The species has an unusual ecology in that it inhabits vertical burrows dug by spiders, typically between 20-25 mm in diameter and 10-75 mm in depth, and only persist in unploughed areas of open grassland (Milne and Bull, cited in DCCEEW 2023g). The species relies entirely on burrows as refuges, including as protection from high temperatures, predators and fires, as basking sites and as ambush points for hunting invertebrate prey (Milne et al. 2003; Fenner et al. 2007; Fellows et al. 2009, cited in DCCEEW 2023g), and as such can be difficult to observe. They feed predominantly on grasshoppers and other invertebrates that they opportunistically ambush and soft plant material (Duffy et al. 2012, DCCEEW 2023g). Sites that support the species are noted to be predominantly within privately held agricultural land that support remnant patches of native temperate grassland, such as at sites dominated by species including spear grasses (*Austrostipa* spp.), wallaby grasses (*Rytidosperma* spp.), bluebush (*Maireana* spp.), Brush Wire-grass (*Aristida behriana*) and iron grasses (*Lomandra* spp.), and/or in combination with those that have historically been used for sheep grazing (Duffy et al. 2012, DCCEEW 2023g). The species occurs across a range of soil types, however, are found in greater	Direct clearance or disturbance of vegetation, resulting in loss of habitat for the species. Direct injury or mortality to the species as a result of clearance or disturbance of vegetation which represents habitat for the species. Increased risk of injury or direct mortality through vehicle strike during construction. Increased risk of injury or direct mortality along access tracks through vehicle strike during operation. Elevated predation pressure as a result of attraction of pest animals to the construction area. Reduced habitat quality through the introduction of new weed species (or disease), or spread of existing weed species through ground disturbance of transport of organic materials on construction vehicles or machinery. Reduced habitat quality through the 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. Reduced habitat quality through changes to land form resulting in sedimentation around burrow entrances, erosion, dust deposition.	Desktop and extensive targeted field surveys carried out to identify key ecological constraints and population density in Disturbance Footprint, feeding into iterative design process to avoid and minimise interaction with important habitat and known populations as far as reasonably practicable. Follow recommendations in dedicated PBTL Management Plan. Where the construction footprint intersects with, or comes within proximity to, key habitats supporting EPBC species or communities, flagging to be applied to agreed construction footprint boundary to avoid unintentional disturbance outside of defined construction areas. Where flagging is not practicable due to distance, audits of construction footprint boundary to be undertaken post disturbance. Identification of key habitats to be identified by suitably qualified ecologist prior to disturbance. Micro-siting of transmission line towers locations and other infrastructure where possible to avoid important habitat features or known populations. Relocation of any PBTLs known or identified within the Disturbance Footprint that cannot be avoided. Work not to commence until relocations complete. Known PBTL habitat spatial layers and maps to be provided to all contractors as part of COEMP. Awareness training to be provided during site inductions. Presence of, or access to, trained fauna handlers during construction to assist with removal of, and relocation of, any trapped (and/or	**Significant Impacts Considered Likely** **A. Likely.** Targeted field surveys undertaken by EBS in February and March 2024 recorded a total of 138 individuals in the GN1 Disturbance Footprint, and an additional 16 PBTL were detected during subsequent micro siting surveys within the WF, with an estimated maximum number of approximately 298 individuals impacted within the Disturbance Footprint during the construction phase (EBS 2024e). No Pygmy Blue-tongue lizards were recorded along the OTL outside of the WF, and the species is considered unlikely to be present in the OTL-Alt corridor outside of the WF of the GN1 Project Area. A total of approximately 10,914.41 ha of potentially suitable habitat for the species has been mapped in the broader GN1 Project Area, with an estimated maximum area of 459.14 ha (or 4.21%) (based on the GN1 plus OTL) inside the GN1 Disturbance Footprint and potentially impacted by the Project. All known and future identified suitable habitat is considered critical to the survival of the species, and direct impacts to an estimated 154 individuals within the WF would be considered to lead to a long-term decrease in the size of the local population. **B. Likely.** As above, an estimated maximum area of 459.14 ha (or 4.21% of the GN1 Project Area) (based on the GN1 plus OTL) of suitable PBTL habitat is within the GN1 Disturbance Footprint and potentially impacted by the Project. All known and future habitat suitable for PBTLs is considered important, thus impact as a result of the Project is likely to reduce the overall area of occupancy of the species. **C. Possible.** An estimated maximum of 4.21% of suitable PBTL habitat within the GN1 Project Area is within the GN1 Disturbance Footprint and will be impacted by the Project, with the Disturbance Footprint itself predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. PBTLs exhibit limited dispersal (Schofield et al. 2013), with males typically dispersing further than females, and females typically moving distances of less than 20 m from their burrows (with a maximum of 200 m, however, this is understood to be relatively uncommon (Milne 1999; Smith et al. 2009 cited in DCCEEW 2023g)). Project areas such as WTG hardstand areas and some road and tracks may inhibit PBTL movement within the population, therefore, it is conservatively considered that the Project may fragment an existing population into two or more populations. **D. Likely.** All known current and future identified habitat is considered critical to the survival of the species, and critical habitat includes the area of occupancy for all known populations, all areas of the species' historical occurrence, and all areas of potential habitat throughout its geographical and ecological range (DCCEEW 2023g). Impacts listed as temporary, which require the removal of /

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			abundance at sites with more free-draining grey-brown or red calcareous soils, compared with sites of less free-draining red-brown earths, as well as sites with lithosol soils (sandy-type soil developed from in-situ weathering of rock) (Souter 2003 cited in Duffy et al. 2012). All known and future identified habitat is considered critical to the survival of the species, noting the population size is small, and suitable habitat is severely fragmented with limited availability. Critical habitat includes the area of occupancy for all known populations, all areas of the species' historical occurrence, and all areas of potential habitat throughout its geographical and ecological range (DCCEEW 2023g). There is no current estimate available for the national population of the species, however, it has been reported that there is a decreasing trend (Fenner et al. 2018 cited in DCCEEW 2023g). The most recent population estimate is cited as 5,000 individuals made in 2000 and was based upon 10 known populations at the time (Milne et al. 2000 cited in DCCEEW 2023g), however, an additional 20 subpopulations have since been discovered (Duffy et al. 2012, Clayton et al. 2020 cited in DCCEEW 2023g), resulting in populations occurring at a total of 37 disjunct sites. Estimates of population sizes suggest between 100-120 lizards occur per hectare (Clayton et al. cited in DCCEEW 2023). The current extent of occurrence for the species is estimated to be 7,000 km^2 (Delean et al. 2013 cited in DCCEEW 2023g), with an area of occupancy estimated at less than 500 km^2 (Fenner et al. 2018). A total of approximately 10,914.41 ha of potentially suitable habitat in the broader GN1 Project Area has been mapped (EBS 2024e), of which a maximum of 459.14 ha (or 4.21% of the GN1 Project Area) (based on the GN1 plus OTL) is inside the GN1 Disturbance Footprint and potentially impacted by the Project. The south-central portion of the WF is deemed to be of the highest habitat suitability. 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 GN1 Project Area, within the Murray Darling Depression Bioregion is considered unlikely habitat (i.e. OTL and OTL-Alt outside of the WF) (EBS 2024c). Impacts listed as temporary, which require the removal of / disturbance to topsoil are likely to be equivalent in impact to permanent clearance for this species, as ground disturbance is likely to alter soil conditions and preclude development of appropriate spider burrows for the medium to long term. No impacts are expected within the IMZ and OMZ, as the		injured) fauna displaced during habitat clearance. Known PBTL habitat spatial layers and maps to be provided to all contractors as part of CEMP. Awareness training to be provided during site inductions. Restrict travel within the construction corridor to daylight hours, as far as practicable, to avoid potential impacts to this nocturnally active species. Speed restrictions in place within construction corridor. Restriction of travel on access tracks during project operation to daylight hours, as far as practicable, to avoid potential impacts to this nocturnally active species. Speed restrictions in place along access tracks. Include requirement for reporting procedure for any individuals found alive or deceased during construction and operation of the wind farm. Include collection of information such as location and cause of death if known (i.e. vehicle strike). Develop and implement clear protocols for management of waste during construction to avoid an increase in, or attraction of, feral pest animals to the project area. Follow recommendations in dedicated PBTL Management Plan. During construction, implement weed hygiene practices including: vehicle checks and washdowns as required on vehicles or plant entering the construction site. During construction, undertake monthly weed surveillance monitoring targeting WoNS and Declared Weed species, with follow up controls as required for any identified weed outbreaks. During operation, implement weed surveillance and control programs targeting WoNS and Declared Weed species (if weeds identified) on an annual basis.	disturbance to topsoil are likely to be equivalent in impact to permanent clearance for this species, and ground disturbance is likely to alter soil conditions and preclude development of appropriate spider burrows for the medium to long term. Therefore, it is likely the Project will adversely affect habitat critical to the survival of the species, where the species is known, principally within the WF (primarily central and southern areas of the Disturbance Footprint). **E. Possible.** A total of approximately 10,914.41 ha of potentially suitable habitat for the PBTL has been mapped in the broader GN1 Project Area (EBS 2024e), of which a maximum of 459.14 ha (or 4.21% of the GN1 Project Area) (based on the GN1 plus OTL) is inside the GN1 Disturbance Footprint and potentially impacted by the Project. As above, PBTLs exhibit limited dispersal (Schofield et al. 2014), and whilst a large portion of the potentially suitable PBTL habitat will not be affected by the Project, impacts associated with WTG hardstand areas and some roads and tracks may impact upon the species ability to disperse across the landscape in those areas. Therefore, it is possible the Project may disrupt the breeding cycle of the PBTL in localised areas within and adjacent to the Disturbance Footprint. **F. Possible/Unlikely.** As above, a total of approximately 10,914.41 ha of potentially suitable habitat for the PBTL has been mapped in the broader GN1 Project Area (EBS 2024e), with a maximum area of 4.21% of the total GN1 Project Area within the Disturbance Footprint. Further, impacts listed as temporary, which require the removal of / disturbance to topsoil are likely to be equivalent in impact to permanent clearance for this species, and ground disturbance is likely to alter soil conditions and preclude development of appropriate spider burrows for the medium to long term. These impacts are likely to impact the 138 individuals recorded during the February and March 2024 targeted surveys in the GN1 Disturbance Footprint, and the additional 16 PBTL within micro siting surveys within the WF, with an estimated maximum number of approximately 298 individuals impacted within the Disturbance Footprint during the construction phase (EBS 2024e), and potentially other undetected individuals in the area. Thus whilst it is considered that impacts as a result of the Project may modify, destroy and remove habitat for this individuals within the Disturbance Footprint, should mitigation strategies be implemented, such as successful translocations of those aforementioned individuals, 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 is likely to decline. **G. and H: Unlikely.** The Project is in a moderate-risk Phytophthora area based on annual rainfall measurements (DIT 2021), however, there are no records of Phytophthora within the WF or OTL (noting the southern portion of OTL and OTL-Alt are considered low threat areas) (DIT 2021, ALA 2024, BDBSA 2024). Management measures would include weed controls during and post construction as well as vehicle hygiene practices, so establishment of new weed species or diseases in the GN1 Project Area is considered unlikely. There are some existing roads and tracks within the GN1 Project Area, and with the implementation of the proposed mitigation strategies, the

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			grassland habitats that this species is known to occur in are naturally <3 m in height, requiring no ongoing maintenance. A cluster of records for the species are associated with the broader GNREF Project Area (ALA 2024, BDBSA 2024, BDBSA records cited in EBS 2024e). EBS (2024e) reports the species has been recorded across the WF within the GN1 Project Area in grassland and grassy shrubland habitat. Targeted field surveys undertaken in February and March 2024 recorded 138 individuals within the GN1 Disturbance Footprint, however, no individuals were recorded along the OTL outside of the WF. An additional 16 individuals were recorded during subsequent micro siting surveys within the WF. The species is **known to occur** within the WF, including where the OTL and OTL-Alt intersect this boundary is considered a **possible occurrence** within the OTL.		Follow recommendations in the dedicated PBTL Management Plan (EBS 2024f). Implement CEMP to ensure adequate erosion control and dust suppression methods are place during operation.	Project is not expected to result in an increase in abundance of feral predator species. The Project, therefore, is not expected to result in the introduction of invasive species or disease which are harmful to this species. **I. Possible.** Whilst there is no current estimate available for the national population of the species, it is reported that there is decreasing trend (Fenner et al. 2018 cited in DCCEEW 2023g). The most recent population estimate is cited as 5,000 individuals made in 2000 and was based upon 10 known populations at the time (Milne et al. 2000 cited in DCCEEW 2023g), however, an additional 20 subpopulations have since been discovered (Duffy et al. 2012, Clayton et al. 2020 cited in DCCEEW 2023g), resulting in populations occurring at a total of 37 disjunct sites. All known and future habitat is critical to the survival of the species, and critical habitat includes the area of occupancy for all known populations, all areas of the species' historical occurrence, and all areas of potential habitat throughout its geographical and ecological range (DCCEEW 2023g). The species has an unusual ecology, inhabiting spider burrows which in itself require a suite of suitable ecological conditions, and only persist in unploughed areas of open grassland, and/or in combination with those that have historically been used for sheep grazing. In addition, the species exhibits limited dispersal (Schofield et al. 2014), and whilst a large portion of the potentially suitable PBTL habitat will not be affected by the Project, impacts associated with WTG hardstand areas and some roads and tracks may impact upon the species ability to disperse across the landscape in those areas. Survey results indicate there is a high risk of the Project impacting upon the species within the Disturbance Footprint associated with the central and southern WF. It is noted, however, a large portion of the eastern WF area, OTL and OTL-Alt and is considered medium or low risk, due mainly due to habitat that is considered unsuitable and due to a lack of PBTL records. Therefore, impacts to the PBTL as a result of the Project within the WF may possibly interfere with the recovery of the species, pending finalisation of mitigation strategies, and impacts as a result of the Project are considered possible but unlikely within the OTL and OTL-Alt outside of the WF Disturbance Footprint.
EPBC Act Threatened Fauna – Amphibians						
Litoria raniformis (Southern Bell Frog, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog)	VU	V	The 2024 PMST output indicates that this species or species habitat 'may occur' in the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Southern Bell Frog is a large, highly mobile frog that is endemic to south-eastern Australia. Within South Australia there are four separate groupings of records; one in the far south-east of the state adjoining Victorian populations, one along the length of the Murray River, one in the Mt Lofty Ranges and one on the Adelaide Plains, noting the latter two likely non-endemic populations that have since died out (South Australian Museum database cited in (Clemann and Gillespie 2012). Habitat critical to the survival of the Southern Bell Frog differs throughout its range but includes amongst vegetation within or at the edges of permanent	Unlikely to occur, N/A	None required	**No Significant Impacts Expected** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			slow-flowing water bodies such as lagoons, swamps, lakes, ponds, and farm dams. Populations from the north and west occur in swamps dominated by River Red Gums *Eucalyptus camaldulensis*, Lignum and Typha, and Black Box (*Eucalyptus largiflorens*) / Lignum / Nitre Goosefoot (*Chenopodium nitrariaceum*) and will also occur in irrigated rice crops (Wassens 2006 cited in Clemann and Gillespie 2012). There are no records of the species occurring within the WF, OTL or OTL-Alt, nor any suitable wetland habitat, and the GN1 Project Area is outside of the species known range. Therefore, this species is considered **unlikely to occur**.			
EPBC Act Threatened Fauna – Fish						
Galaxias rostratus (Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow)	CE	-	The 2024 PMST output indicates that this species or species habitat 'may occur' in the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The flathead galaxias is a small freshwater fish only known from the southern half of the Murray-Darling Basin system. The species previously had a broader distribution in the middle reaches of the system, usually below an altitude of 150 m, however, the species is known only from isolated records from a lagoon near Bathurst in New South Wales (in the Macquarie River catchment) and from the Lower Murray River in South Australia (Lintermans 2007 cited in TSSC 2016b). The species inhabits a variety of habitats including billabongs, lakes, swamps and rivers, with a preference for still or slow flowing waters, with a preference for schooling in midwater (Allen et al., 2002; Lintermans 2007 cited in TSSC 2016b). There are no records of the species occurring within the WF, OTL or OTL-Alt, nor is there any suitable habitat, noting the WF, OTL and OTL-Alt are outside of the species known range. Therefore, this species is considered **unlikely to occur**.	Unlikely to occur, N/A	None required	**No Significant Impacts Expected** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.
Maccullochella peelii (Murray Cod)	VU	-	The 2024 PMST output indicates that this species or species habitat 'may occur' in the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). Murray Cod is one of the largest purely freshwater fish in the world and is considered an icon species within the Murray-Darling Basin. The species is endemic to the Murray-Darling River system in south-eastern Australia, including South Australia (SA), Victoria, New South Wales (NSW), Australian Capital Territory (ACT) and Queensland (NMCRT 2010). With the exception of some localised extinctions in the upper reaches of tributaries, the species previously occurred throughout almost the entire MDB, and is still through to occur across most of the species historic range (NMCRT 2010). The	Unlikely to occur, N/A	None required	**No Significant Impacts Expected** **Criteria A, B, C, D, E, F, G, H** and **I** not likely to be triggered as species is considered unlikely to occur in the GN1 Project Area, including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			species occurs within a range of habitat types including flowing and standing waters, from small, clear, rocky streams on the inland slopes and uplands of the Great Diving Range, to the large, turbid, meandering slow-flowing rivers, creeks, anabranches, and lakes and larger billabongs, of the inland plains of the MDB (NMCRT 2010). There are no records of the species occurring within the WF, OTL or OTL-Alt, nor is there any suitable habitat, noting the WF, OTL and OTL-Alt are outside of the species known range. Therefore, this species is considered **unlikely to occur**.			
EPBC Act Migratory Species (not considered as threatened species above)						
Migratory Waders (Functional Group)						
Actitis hypoleucos (Common Sandpiper) *Calidris melanotos* (Pectoral Sandpiper)	MW	R R	The 2024 PMST output identified that these species or species 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). These species migrate from the northern hemisphere and are non-breeding visitors to Australia (Geering et al. 2008; DCCEEW 2024b). Habitats preferences vary from predominantly coastal or near-coastal (Pectoral Sandpiper) to shallow water generalists that range between coastal and inland wetted environments (Common Sandpiper) (Geering et al. 2008). There are currently no records of *Actitis hypoleucos* or *Calidris melanotos* occurring within the WF, OTL or OTL-Alt. It is considered that there is no suitable habitat associated with the Project for these wading species, and these species are considered as **unlikely to occur** with the GN1 Project Area.	Unlikely to occur, N/A	None required	**No Significant Impacts Expected** Criteria **A, B** and **C** are not likely to be triggered as these species are considered unlikely to occur the WF., OTL or OTL-Alt
Migratory Terrestrial (Functional Group)						
Motacilla cinerea (Grey Wagtail) *Motacilla flava* (Yellow Wagtail) *Myiagra cyanoleuca (Satin Flycatcher)*	MT MT MT	- - E	The 2024 PMST output identified that these species or species habitats are 'known to occur' or 'may occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Grey and Yellow Wagtails are terrestrial migratory species, both rarely seen, occasional visitors to Australia in their non-breeding seasons (DCCEEW 2024b). The Grey Wagtail prefers higher altitudes, near fast-running water, rocky substrates, lakes and marshes (DotE, 2015c). The Yellow Wagtail prefers lower altitude, well-watered open grassland, fringes and wetlands, and may roost in Mangroves and other dense vegetation (DotE, 2015c). There is no approved Conservation Advice or recovery plans for these species, however, the Draft referral guideline for 14 birds listed as migratory species under the EPBC Act (DotE 2015c) has been adopted. There are no nearby records for these species within the WF, OTL or OTL-Alt, nor any preferred habitat in	Unlikely to occur, N/A	None required	**No Significant Impacts Expected** Criteria **A, B** and **C** are not likely to be triggered as these species are considered unlikely to occur the GN1 Project Area, including the OTL or OTL-Alt.

Species, or Community	EPBC Act[1]	NPW Act[2]	Likelihood of Occurrence in Project Area	Potential Direct and Indirect Impact Pathways (before mitigation measures)	Mitigation Measures	Significant Impact Assessment (residual impacts following mitigation measures)
			proximity to the GN1 Project Area (EBS 2024e). The Grey Wagtail and Yellow Wagtail are considered uncommon migrants and the WF, OTL and OTL-Alt are not within the known migration areas for the Satin Flycatcher. Therefore, all three species are considered **unlikely to occur** in the GN1 Project Area.			
Migratory Marine Avifauna (Functional Group)						
Apus pacificus **(Fork-tailed Swift)**	MM	-	The 2024 PMST output identified that this species or species habitat is 'likely to occur' within the 'feature area' (the WF, OTL or OTL-Alt) (DCCEEW 2024a). The Fork-tailed Swift is a non-breeding visitor to Australia and is almost exclusively an aerial species. In South Australia the species is widespread from the Victorian border west to Spencer Gulf, and also across southern Eyre Peninsula and extending north to Flinders Ranges, the Lake Eyre drainage basin, Lake Eyre south and Marree (DCCEEW 2024b). They occur over mostly dry inland plains, as well as foothills, coastal areas, cliffs and beaches, and populated areas. There is no approved Conservation Advice or recovery plans for these species, however, the Draft referral guideline for 14 birds listed as migratory species under the EPBC Act (DotE 2015c) has been adopted. In South Australia the species is present from October–May but is most common from December–March (DCCEEW 2024b). It does not breed in Australia. There are four BDBSA records of the species occurring within the WF, OTL or OTL-Alt (BDBSA as cited in EBS 2024e). The species has been recorded on a single occasion (Site 12) as a fly-over species during the Summer 2024 BBUS, flying at heights between 1 m and 300 m above the ground, and consequently considered a possible at-risk flight height (50 m relative to the wind turbines) (EBS 2024b, EBS 2024e). Whilst it is possible the species occurs as a fly-over species in the aerial space above all habitats in the GN1 and Disturbance Footprint, it is considered unlikely that the aerial habitats over GN1 represent an important foraging area for this species, principally due to limited records of the species occurring within the broader area. Therefore, this species is **known to occur** as a fly-over species which may potentially be impacted within the WF during operation, and considered a **potential occurrence** fly-over species, over the OTL and OTL-Alt where no impacts for the species are predicted during construction or operation.	Impact pathways possible but unlikely. Aerial species, often flying well over 300 m	None required	**No Significant Impacts Expected** Criteria **A, B** and **C** not likely to be triggered as this species is exclusively aerial, does not breed in Australia, and impacts as a result of the Project are unlikely to disrupt the lifecycle of an ecologically significant proportion of the species population.

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

[2] *National Parks and Wildlife Act 1972* (SA) Status: Endangered (E), Rare (R), Vulnerable (V).

4.6 Summary of SIA Assessment

All ecological MNES raised in the PMST have been assessed for their likelihood of occurrence in the Project Area. Those considered known to occur, likely to occur or as potentially occurring within the WF, OTL or OTL-Alt were subject to a significant impact assessment as per Table 4.6 above. All impacts to MNES were considered direct impacts, with mitigation strategies considered to address any potential residual impacts.

Results of the Project's potential interactions with possibly occurring TECs, or listed flora or fauna are summarised below (Table 4.7).

Table 4.7: Summary of the SIA assessment for MNES considered relevant to the Project

Ecological MNES	SIA Outcome[1]		
	WF	OTL	OTL-Alt[2]
Threatened Ecological Communities			
Iron-grass Natural Temperate Grassland of South Australia	**Significant impacts possible**	**Significant impacts possible**	**Significant impacts possible**
Mallee Bird Community of the Murray Darling Depression Bioregion	N/A[3]	Significant impacts unlikely	**Significant impacts possible**
Threatened Flora Species			
Acacia glandulicarpa (Hairy-pod Wattle)	Significant impacts unlikely	Significant impacts unlikely	**Significant impacts possible**
Acacia spilleriana (Spiller's Wattle)	Significant impacts unlikely	Significant impacts unlikely	**Significant impacts possible**
Codonocarpus pyramidalis (Slender Bell-fruit, Camel Poison)	Significant impacts unlikely	Significant impacts unlikely	**Significant impacts possible**
Dodonaea procumbens (Trailing Hop-bush)	Significant impacts unlikely	Significant impacts unlikely	**Significant impacts possible**
Dodonaea subglandulifera (Peep Hill Hop-bush)	Significant impacts unlikely	Significant impacts unlikely	**Significant impacts possible**
Olearia pannosa subsp. *pannosa* (Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush)	Significant impacts unlikely	Significant impacts unlikely	**Significant impacts possible**
Senecio megaglossus (Superb Groundsel)	Significant impacts unlikely	Significant impacts unlikely	N/A
Threatened Fauna Species			
Aphelocephala leucopsis (Southern Whiteface)	**Significant impacts possible**	**Significant impacts possible**	**Significant impacts possible**
Melanodryas cucullata cucullata (South-eastern Hooded Robin, Hooded Robin (south-eastern))	**Significant impacts possible**	**Significant impacts possible**	**Significant impacts possible**
Neophema chrysostoma (Blue-winged Parrot)	Significant impacts unlikely	Significant impacts unlikely	Significant impacts unlikely
Stagonopleura guttata (Diamond Firetail)	Significant impacts unlikely	Significant impacts unlikely	Significant impacts unlikely

Ecological MNES	SIA Outcome[1]		
	WF	OTL	OTL-Alt[2]
Aprasia pseudopulchella (Flinders Ranges Worm-lizard)	Significant impacts unlikely	Significant impacts unlikely	Significant impacts unlikely
Tiliqua adelaidensis (Pygmy Blue-tongue Lizard, Adelaide Blue-tongue Lizard)	**Significant impacts likely**	Significant impacts unlikely[4]	Significant impacts unlikely[4]

[1] All 'possible' impacts are considered to be direct impacts from disturbance.

[2] Note this area has not yet been surveyed

[3] N/A denotes this TEC or species is considered unlikely to occur in this area

[4] Where the OTL and OTL-Alt occur outside of the overlapping WF Disturbance Footprint

5 Assessment of Additional MNES

5.1 Ramsar Wetlands of International Importance

Approval is required for an Action occurring within or outside a declared Ramsar wetland if the action has, will have, or is likely to have a significant impact on the ecological character of the Ramsar wetland. A declared Ramsar wetland is an area that has been designated under Article 2 of the Ramsar Convention or declared by the minister to be a declared Ramsar wetland under section 16 of the EPBC Act.

5.1.1 Significant Impact Criteria

An Action is likely to have a significant impact on the ecological character of a declared Ramsar wetland if there is a real chance or possibility that it will result in:

- areas of the wetland being destroyed or substantially modified
- a substantial and measurable change in the hydrological regime of the wetland, for example, a substantial change to the volume, timing duration and frequency of ground and surface water flows to and within the wetland
- the habitat or lifecycle of native species, including invertebrate fauna and fish species, dependent upon the wetland being seriously affected
- a substantial and measurable change in the water quality of the wetland – for example, a substantial change in the level of salinity, pollutants, or nutrients in the wetland, or water temperature which may adversely impact on biodiversity, ecological integrity, social amenity or human health, or
- an invasive species that is harmful to the ecological character of the wetland being established (or an existing invasive species being spread) in the wetland.

5.1.2 Assessment

One Wetland of International Importance (Ramsar Wetland) was identified within the PMST report generated on 30 April 2024; the Coorong, and Lakes Alexandrina and Albert Wetland (DCCEEW 2024a). The GN1 is approximately 150-200 km in proximity of this Ramsar Wetland (notably the very northwest portion of the Ramsar site 'proximity polygon' (DCCEEW 2024g). 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 COEMP and associated erosion and sediment control measures. Should localised impacts occur it would be expected these would remain within the GN1 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.

5.2 Commonwealth Marine Areas

An action will require approval if the action is taken in a Commonwealth marine area and the action has, will have, or is likely to have a significant impact on the environment, or if the action is taken outside a Commonwealth marine area and the action has, will have, or is likely to have a significant impact on the environment in a Commonwealth marine area, where a Commonwealth marine area is defined in section 24 of the EPBC Act.

5.2.1 Significant Impact Criteria

An action is likely to have a significant impact on the environment in a Commonwealth marine area if there is a real chance or possibility that the action will:

- result in a known or potential pest species becoming established in the Commonwealth marine area
- modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in a Commonwealth marine area results
- have a substantial adverse effect on a population of a marine species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution
- result in a substantial change in air quality or water quality (including temperature) which may adversely impact on biodiversity, ecological integrity; social amenity or human health
- result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, social amenity or human health may be adversely affected, or
- have a substantial adverse impact on heritage values of the Commonwealth marine area, including damage or destruction of an historic shipwreck.

5.2.2 Assessment

No Commonwealth Marine Areas were identified within the PMST report generated on 30 April 2024. 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 GN1 Project Area (including the OTL or OTL-Alt) adjacent the Coorong and Lower Lakes (Parks Australia 2024). 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.

5.3 World Heritage Properties

Approval under the EPBC Act is required for any action occurring within or outside a declared World Heritage property that has, will have, or is likely to have a significant impact on the World Heritage values of the World Heritage property. A declared World Heritage property is an area that has been included in the World Heritage list or declared by the minister to be a World Heritage property. World Heritage properties are places with natural or cultural heritage values which are recognised to have outstanding universal value.

5.3.1 Significant Impact Criteria

An action is likely to have a significant impact on the World Heritage values of a declared World Heritage property if there is a real chance or possibility that it will cause:

- one or more of the World Heritage values to be lost
- one or more of the World Heritage values to be degraded or damaged, or
- one or more of the World Heritage values to be notably altered, modified, obscured or diminished.

5.3.2 Assessment

No World Heritage Properties were identified within the PMST report generated on 30 April 2024. A review of the World Heritage Properties was undertaken using Australia's World Heritage List (DCCEEW 2024h). 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 GN1 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.

5.4 National Heritage Places

Approval under the EPBC Act is required for any action occurring within, or outside, a National Heritage place that has, will have, or is likely to have a significant impact on the National Heritage values of the National Heritage place. The National Heritage List contains places or groups of places with outstanding heritage value to Australia, whether natural, Indigenous or historic or a combination of these.

5.4.1 Significant Impact Criteria

An action is likely to have a significant impact on the National Heritage values of a National Heritage place if there is a real chance or possibility that it will cause:

- one or more of the National Heritage values to be lost
- one or more of the National Heritage values to be degraded or damaged, or
- one or more of the National Heritage values to be notably altered, modified, obscured or diminished.

5.4.2 Assessment

One National Heritage Place was identified during the PMST report generated on 30 April 2024; the Australian Cornish Mining Sites: Burra (DCCEEW 2024a, DCCEEW 2024i). Whilst the National Heritage Place site is located in the vicinity of the 'feature area' (the WF, OTL or OTL-Alt), 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) undertook

a Heritage Impacts Assessment in regards to the National Heritage site and has provided advice on ways to minimise visual impacts as much as possible on Burra as a result of the Project. 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 mine site as a result of the proposed project would not impact on the understanding of the revolutionary mining technology and as the views from Burra are not specifically cited in the NHL criteria, the proposed Goyder North project 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. Some tree trimming or potential tree removal may be required for the safe and efficient transportation of turbines to the WF Project Area, principally adjacent to the Burra Railway Station Complex along Copperhouse Street in Burra. 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 assessment determined that the proposed project will not have a substantive impact on the National Heritage values of the Australian Cornish Mining Sites (Burra).

5.5 Nuclear Action

A nuclear action will require approval if it has, will have, or is likely to have a significant impact on the environment.

5.5.1 Significant Impact Criteria

All nuclear actions, as detailed in section 22 of the EPBC Act, should be referred DCCEEW for a decision on whether approval is required. These actions are:

- establishing or significantly modifying a nuclear installation or a facility for storing spent nuclear fuel
- transporting spent nuclear fuel or radioactive waste products arising from reprocessing
- establishing or significantly modifying a facility for storing radioactive waste products arising from reprocessing
- mining or milling uranium ore
- establishing or significantly modifying a large-scale disposal facility for radioactive waste
- de-commissioning or rehabilitating any facility or area in which an activity described above has been undertaken, or
- establishing, significantly modifying, decommissioning or rehabilitating a facility where radioactive materials at or above the activity level specified in regulation 2.02 of the Environment Protection

and Biodiversity Conservation Regulations 2000 (EPBC Regulations) are, were, or are proposed to be stored.

5.5.2 Assessment

There are no known radiological characteristics associated with the Project that trigger EPBC criteria.

5.6 The Great Barrier Reef Marine Park

An action will require approval if the action is taken in the Great Barrier Reef Marine Park and the action has, will have, or is likely to have a significant impact on the environment, or if the action is taken outside the Great Barrier Reef Marine Park and the action has, will have, or is likely to have a significant impact on the environment in the Great Barrier Reef Marine Park. The Great Barrier Reef Marine Park is established under the *Great Barrier Reef Marine Park Act 1975* (Cth).

5.6.1 Significant Impact Criteria

An action is likely to have a significant impact on the environment of the Great Barrier Reef Marine Park if there is a real chance or possibility that the action will:

- modify, destroy, fragment, isolate or disturb an important, substantial, sensitive or vulnerable area of habitat or ecosystem component such that an adverse impact on marine ecosystem health, functioning or integrity in the Great Barrier Reef Marine Park results
- have a substantial adverse effect on a population of a species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution
- result in a substantial change in air quality or water quality (including temperature) which may adversely impact on biodiversity, ecological health or integrity or social amenity or human health
- result in a known or potential pest species being introduced or becoming established in the Great Barrier Reef Marine Park
- result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, or social amenity or human health may be adversely affected, or
- have a substantial adverse impact on heritage values of the Great Barrier Reef Marine Park, including damage or destruction of an historic shipwreck.

5.6.2 Assessment

The closest point of the Great Barrier Reef Marine Park is located over 1,600 km north-east of the WF, OTL or OTL-Alt. As a result of the distance between the works and the Great Barrier Reef Marine Park, it is considered that there is no potential impact to this MNES.

5.7 A Water Resource in Relation to Coal Seam Gas Development and Large Coal Mining Development

In 2013 an amendment to the EPBC Act detailed that water resources that relate to coal seam gas and large coal mining development are a protected matter. The water trigger amendment means a comprehensive assessment is undertaken on the impact of water resources from either proposed coal seam gas developments and/or large coal mining developments. Where water resource is defined according to the definition in the *Water Act 2007* (Cth) which states:

- surface water or ground water, or
- a watercourse, lake, wetland or aquifer (whether or not it currently has water in it); and includes all aspects of the water resource (including water, organisms and other components and ecosystems that contribute to the physical state and environmental value of the water resource).

5.7.1 Significant Impact Criteria

An action is likely to have a significant impact on a water resource if it may lead to a change in either the water's hydrology or overall quality. The change needs to be enough to reduce, or risk reducing the current or future use of the water resource. Whether an action is likely to have a significant impact depends upon the sensitivity, value and quality of the environment that's affected and the intensity, duration, magnitude and geographic extent of the effects.

5.7.2 Assessment

The Project is not directly or indirectly associated with a coal seam gas development or large coal mining development. Therefore, it is considered the works do not trigger the MNES and thus do not require an assessment of the potential for significant impacts to the whole of the environment.

5.8 Commonwealth Lands

Approval is required under the EPBC Act for:

- an action taken by any person on Commonwealth land that is likely to have a significant impact on the environment
- an action taken by any person outside of Commonwealth land that is likely to have a significant impact on the environment on Commonwealth land, or
- an action taken by a Commonwealth agency anywhere in the world that is likely to have a significant impact on the environment.

Where Commonwealth Land is defined as per Commonwealth Area in the EPBC Act:

- each of the following, and any part of it, is a Commonwealth Area:
    - land owned by the Commonwealth or a Commonwealth agency and airspace over the land
    - an area of land held under lease by the Commonwealth or a Commonwealth agency and airspace over the land
    - land in:

- an external Territory, or
- the Jervis Bay Territory
- any airspace over the land

- any other area of land, sea or seabed that is included in a Commonwealth reserve.

5.8.1 Significant Impact Criteria

As detailed in the Significant Impact Guidelines 1.2 (DSEWPaC, 2013), considerations include:

- the environmental context
- potential impacts likely to be generated by the action, including indirect consequences of the action
- whether mitigation measures will avoid or reduce these impacts, and
- taking into consideration the above, whether the impacts of the action are likely to be significant.

5.8.2 Assessment

The Protected Matters Search Tool report (DCCEEW 2024a) identified that the GN1 Project Area (including the OTL or OTL-Alt) does not directly intersect with any identified Commonwealth Lands.

6 Summary

A detailed assessment of the GN1 reviewed a total of four TECs, 36 threatened species and nine migratory species against the relevant MNES significant impact criteria, using an extensive library of technical studies and relevant databases to support the assessment. Whilst the assessment indicated that the majority of MNES identified in the PMST output (DCCEEW 2024a) are unlikely to be present, or significantly impacted as a result of the Project, the assessment has demonstrated that the Project has the potential to trigger one or more of significant impact criteria for several ecological MNES. This includes potential impacts upon two TECs (Iron-grass Natural Temperate Grassland of South Australia and the Mallee Bird Community of the Murray Darling Depression Bioregion), six threatened flora species (*Acacia glandulicarpa* (Hairy-pod Wattle), *Acacia spilleriana* (Spiller's Wattle), *Codonocarpus pyramidalis* (Slender Bell-fruit), *Dodonaea procumbens* (Trailing Hop-bush), *Dodonaea subglandulifera* (Peep Hill Hop-bush), and *Olearia pannosa* subsp. *pannosa* (Silver Daisy-bush)), and three fauna species (*Aphelocephala leucopsis* (Southern Whiteface), *Melanodryas cucullata cucullata* (South-eastern Hooded Robin), and *Tiliqua adelaidensis* (Pygmy Blue-tongue Lizard)), noting the majority of these potential impacts are as a result of the current limited on-ground data associated with the OTL-Alt alignment. As such, the Project is being referred under the EPBC Act as further assessment may be warranted for these MNES to better understand the extent of potential impacts (primarily the removal of habitat) on threatened species.

Further assessment would include detailed vegetation and habitat assessments along the entire length of the proposed OTL-Alt alignment (should this alignment warrant progression), in particular within the proposed Disturbance Footprint, along with further assessment of specific areas of habitat and target species assessments to determine potential extent of, and confirm presence of, key threatened species where one or more significant impact criteria were triggered.

Migratory species were discounted during the likelihood of occurrence assessment based upon a lack of suitable habitat within the WF, OTL and OTL-Alt, therefore, the Project is unlikely to impact migratory species based on terrestrial impacts. One migratory species, *Apus pacificus* (Fork-tailed Swift) was considered as a possible aerial/fly-over only species that may have potential to interact with the Project (principally the WTGs), with one individual recorded as flying over the GN1 Project Area. However, this did not trigger the significant impact criteria for migratory species as the sparse / intermittent population occurring in the Project Area is not considered to be ecologically significant.

No non-ecological MNES will be impacted as a result of the Project.

Potential impacts which align with various significant impact criteria to relevant MNES are summarised in further detail in the sections below.

An overview of the assessment against each MNES (ecological and non-ecological) that was subjected to a SIA (following likelihood of occurrence assessment) is presented in Table 6.1. For the two TECs, six threatened flora species and three threatened fauna species where significant impacts may potentially occur as a result of the Project, further information is provided below.

6.1 Potential Impact Summary, Threatened Ecological Communities

6.1.1 Iron-grass Natural Temperate Grassland of South Australia (INTG)

The Iron-grass Natural Temperate Grassland of South Australia is an ecological community listed as Critically Endangered. The INTG has been recorded extensively across the GN1 Project Area, with total area of approximately 1,616.06 ha of *Lomandra* Grassland (VA6) mapped within the GN1 Project Area (particularly in the central and eastern portions), as well as areas with the OTL (EBS 2024d, EBS 2024e), of which approximately 251.67 ha occurs within the Development Envelope. From this total mapped area of INTG, approximately 29.64 ha is known to occur within the Disturbance Footprint (comprising 11.93 ha of permanent disturbance and 17.71 ha of temporary disturbance), representing approximately 1.83% within GN1 and approximately 0.95% of the total area of INTG mapped in the broader GNREF Project Area. Whilst the Disturbance Footprint is relatively small (i.e. 1.83% within the GN1), and Project elements have been proposed to be micro sited to avoid significant impacts, two significant impact criteria are potentially triggered for this TEC; a reduction in the extent of the TEC and fragmentation of the TEC, principally as a result of native vegetation clearance. However, these impacts would not be expected to trigger other significant impact criteria for TECs, such as cause a substantial change in species composition of an occurrence of the TEC, nor cause a substantial reduction in the quality or integrity of an occurrence of the TEC, nor interfere with the recovery of the TEC.

6.1.2 Mallee Bird Community of the Murray Darling Depression Bioregion (MBC)

The Mallee Bird Community of the Murray Darling Depression Bioregion is listed as Endangered and refers to a community of fauna found in the Murray Darling Depression bioregion, comprising an assemblage of 20 species of bird that are all dependent on the mallee vegetation that characterises the bioregion (DAWE 2021a). Only the southern portion of the OTL and some areas within the OTL-Alt overlap with the MBC. Three MBC dependent bird species have been recorded within the southern portion of the OTL, namely *Microeca fascinans* (Jacky Winter), *Nesoptilotis leucotis* (White-eared Honeyeater), and *Ptilotula ornata* (Yellow-plumed Honeyeater), which qualifies suitable mallee vegetation as a TEC. Unsurveyed areas of mallee vegetation along the OTL-Alt is also likely to qualify as MBC (based upon historic records and EBS records, EBS 2024e), with the proposed OTL alignment potentially interacting with an alignment of approximately 9.5 km of MBC associated with the OTL (approximately 2.13 ha), and approximately 34.2 km associated with the OTL-Alt (approximately 30.66 ha). Whilst mitigation strategies include the potential to micro site elements of the OTL alignments respectively, similarly to the INTG, two significant impact criteria are potentially triggered for this TEC; a reduction in the extent of the TEC and fragmentation of the TEC, principally as a result of native vegetation clearance. In regards to the OTL, these impacts would not be expected to trigger significant impact criteria for TECs. In regards to the OTL-Alt, additional significant impact criteria may be triggered as a result of the alignment, and thus this area may warrant further assessment if it continues as part of the Project design, including vegetation assessments along the entire length of the proposed OTL-Alt alignment, habitat and target species assessments to determine potential extent of, and confirm presence of, key threatened species).

6.2 Potential Impact Summary, Threatened Flora

6.2.1 *Acacia glandulicarpa* (Hairy-pod Wattle)

The Hairy-pod Wattle is listed as Vulnerable. Whilst the species has not been recorded within the WF or OTL, it is considered to possibly occur within suitable habitat in the OTL-Alt alignment. Whilst no important populations of this species have been identified, the Conservation Advice for this species recommends that all identified populations and supporting habitat should be considered important to the survival of the species (DCCEEW 2024b). Efforts to further refine design and micro site elements of the OTL alignment will likely mitigate any potential impacts to this species in this area, however, further assessment (including vegetation assessments along the entire length of the proposed OTL-Alt alignment, habitat and target species assessments) to determine the potential presence and extent of this species may be warranted. Therefore, significant impacts are considered unlikely within the WF and OTL, but considered possible within the OTL-Alt due to potentially leading to a long-term decrease in the size of an important population.

6.2.2 *Acacia spilleriana* (Spiller's Wattle)

Spiller's Wattle is listed as Endangered. Individual specimens of Spiller's Wattle (VA7) have been recorded within the Development Envelope on Gum Hill Road and White Hill Road, however, despite numerous vegetation surveys (including a targeted threatened species survey), the species has not been recorded within the proposed Disturbance Footprint within the WF or OTL. The species is considered to potentially occur within the OTL-Alt, with specimens observed during field surveys in areas adjacent to the OTL-Alt. Efforts to input these findings into detailed design and micro site elements of the OTL-Alt alignment will likely mitigate any potential impacts to this species, should it be recorded, noting this area has not yet been surveyed. Further assessment (including vegetation assessments along the entire length of the proposed OTL-Alt alignment, habitat and target species assessments) to determine the potential presence and extent of this species may be warranted. Therefore, significant impacts are considered unlikely within the WF and OTL, but considered possible within the OTL-Alt due to potentially triggering several criteria, including leading to a long-term decrease in the size of an important population, reducing the area of occupancy of an important population, or fragmenting an important population.

6.2.3 *Codonocarpus pyramidalis* (Slender Bell-fruit)

The Slender Bell-fruit is listed as Vulnerable. The species is considered unlikely to occur within the WF or OTL, however, is considered to potentially occur within suitable habitat outside of the Disturbance Footprint but within the Development Envelope of the WF, OTL, and broadly suitable habitat occurs within the OTL-Alt. Potential significant impacts are considered for this species as all known populations are important for the survival and protection of the species (DCCEEW 2024b). Efforts to further refine design and micro site elements of the OTL alignment will likely mitigate any potential impacts to this species in this area, however, further assessment (including vegetation assessments along the entire length of the proposed OTL-Alt alignment, habitat and target species assessments) to determine the potential presence and extent of this species may be warranted. Therefore, significant impacts are considered unlikely within the OTL, but considered possible within the OTL-Alt due to potentially triggering several criteria, including

leading to a long-term decrease in the size of an important population, reducing the area of occupancy of an important population, or fragmenting an important population.

6.2.4 *Dodonaea procumbens* (Trailing Hop-bush)

The Trailing Hop-bush is listed as Vulnerable. To date, the species has been recorded within the Project's Development Envelope within the Mokota Conservation Park, where it is protected from herbivore grazing, however, has not been recorded within the Disturbance Footprint associated with GN1 Project Area or OTL. The species is considered likely to be present within the OTL-Alt and any unsurveyed areas within the WF and OTL Development Envelope, noting the species has been recorded within 5 km of the OTL-Alt in 2021, and suitable habitat is present within the area in association with *Austrostipa* spp. Grassland. Whilst efforts to refine design and micro site elements of the proposed OTL-Alt alignment may mitigate potential impacts to this species in this area, it is likely further assessment is warranted (including vegetation assessments along the entire length of the proposed OTL-Alt alignment, habitat and target species assessments) to determine the potential presence and extent of this species. Therefore, significant impacts are considered possible within the OTL-Alt, due to potentially triggering several criteria, including leading to a long-term decrease in the size of an important population, or reducing the area of occupancy of an important population.

6.2.5 *Dodonaea subglandulifera* (Peep Hill Hop-bush)

The Peep-Hill Hop Bush is listed as Vulnerable. To date, the species has not been recorded within the Disturbance Footprint of the WF or OTL. EBS (2024e) noted it is highly likely the species may be present within suitable habitat adjacent to the OTL and within and OTL-Alt, noting the species has been recorded within 10 km of the OTL-Alt and suitable habitat is likely present in the area (Low Open Shrubland and Mid Mallee Woodland). Efforts to further refine design and micro site elements of the OTL alignment will likely mitigate any potential impacts to this species in this area, however, further assessment (including vegetation assessments along the entire length of the proposed OTL-Alt alignment, habitat and target species assessments) to determine the potential presence and extent of this species may be warranted. Therefore, significant impacts are considered unlikely within the Disturbance Footprint of the WF and OTL, but considered possible within the OTL-Alt due to potentially leading to a long-term decrease in the size of an important population, potentially reducing the area of occupancy of an important population.

6.2.6 *Olearia pannosa* subsp. *pannosa* (Silver Daisy-bush)

The Silver Daisy-bush is listed as Vulnerable. Whilst the species has not been recorded within the WF or OTL, it is considered to possibly occur within suitable habitat in the OTL-Alt alignment (within potential Mid Mallee Woodland areas). Whilst no important populations of this species have been identified, the Conservation Advice for this species recommends that all identified populations and supporting habitat should be considered important to the survival of the species (DCCEEW 2024b). Efforts to further refine design and micro site elements of the OTL alignment will likely mitigate any potential impacts to this species in this area, however, further assessment (including vegetation assessments along the entire length of the proposed OTL-Alt alignment, habitat and target species assessments) to determine the potential presence and extent of this species may be warranted. Therefore, significant impacts are

considered unlikely within the WF and OTL, but considered possible within the OTL-Alt due to potentially leading to a long-term decrease in the size of an important population.

6.3 Potential Impact Summary, Threatened Fauna

6.3.1 *Aphelocephala leucopsis* (Southern Whiteface)

The Southern Whiteface is listed as Vulnerable. The species has a wide distribution across most of mainland Australia south of the tropics, and occupies a wide range of open woodlands and shrublands. Whilst no important populations have been defined within the Conservation Advice for the species, some habitat deemed critical for the survival of the species may be impacted as a result of the Project. An estimated potential impact to suitable habitat for the species of 45.90 ha in the WF, 48.92 ha along the OTL, and 33.20 ha along the OTL-Alt will be disturbed as a result of the Project, noting much of this disturbance is divided across multiple (16 plus Mallee forest and woodland) VAs, and the Disturbance Footprint itself is predominantly comprised of roads and tracks, WTG hardstand areas, and OTL towers, rather than large, continuous areas. Significant impacts as a result of the Project are considered to be possible, due to potentially triggering one criteria; adversely affecting habitat critical to the survival of the species. However, based on these figures, the clearance of approximately 94.82 ha for WF plus OTL, or 79.10 ha for WF plus OTL-Alt of potentially suitable habitat associated with the Disturbance Footprint represents a marginal reduction (0.0013% or 0.0011% respectively) of the reported Area of Occupancy of the species. Significant impacts as a result of the Project are considered to be possible, due to potentially triggering one criteria; adversely affecting habitat critical to the survival of the species, however, materially this area is very small in the context of the species reported Area of Occupancy.

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

The South-eastern Hooded Robin is listed as Endangered. The species occurs in south-eastern Australia from far south-east Queensland to the Yorke Peninsula in South Australia, and is described as shy and largely sedentary, often occurring in pairs or small groups (DCCEEW 2023d). They forage on insects and small lizards taken from the ground and may also hunt for invertebrates by 'perch and pounce' within grassy clearings in leaf litter. The species generally forms 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 2023d). 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. Within the GN1 Project Area, several individuals have been previously recorded in the far south of the OTL during the MBC targeted surveys in association with VA18 Mixed Mallee (inc. *Eucalyptus oleosa* dominant) over Chenopods and native grasses, and opportunistically along Black Peake Road. An estimated potential impact area of 39.34 ha in the WF (predominantly associated with VA1), 45.97 ha along the OTL alignment (predominantly associated with VA18), and 33.17 ha along the OTL-Alt alignment (predominantly associated with Mallee Forest and woodland) will be disturbed as a result of the Project. i.e. a maximum estimated area of 85.31 ha for WF plus OTL, or 72.51 ha for WF plus OTL-Alt of potentially suitable habitat associated with the Project represents 0.0028% or 0.0024% respectively of the reported Area of Occupancy of the species. Of note, total of 24.24 ha (WF and OTL

Primary) is considered the maximum potential permanent clearance of potential Hooded Robin habitat, equating to <1% of the suitable vegetation mapped locally, in the GNREF Project Area. Significant impacts as a result of the Project are considered to be possible, due to potentially triggering one criteria; adversely affecting habitat critical to the survival of the species, however, materially this area is very small in the context of the species reported Area of Occupancy.

6.3.3 *Tiliqua adelaidensis* (Pygmy Blue-tongue Lizard)

The Pygmy Blue-tongue lizard is listed as Endangered. The species has an unusual ecology in that it inhabits vertical burrows dug by spiders, and only persist in unploughed areas of open grassland (Milne and Bull cited in DCCEEW 2023g), with the burrows acting as refuges, including as protection from high temperatures, predators and fires, as basking sites and as ambush points for hunting invertebrate prey. A cluster of records for the species are associated with the broader GNREF Project Area (ALA 2024, BDBSA 2024, BDBSA records cited in EBS 2024e). EBS (2024e) reports the species has been recorded across the WF within GN1 in grassland and grassy shrubland habitat. Targeted field surveys undertaken by EBS in February and March 2024 recorded a total of 138 individuals in the GN1 Disturbance Footprint, and an additional 16 PBTL were detected during subsequent micro siting surveys within the WF. Based on the density of PTBL recorded in each vegetation association, and the approximate search area, an estimated maximum number of approximately 298 individuals may be impacted within the Disturbance Footprint during the construction phase (EBS 2024e). No Pygmy Blue-tongue lizards were recorded along the OTL outside of the WF, and the species is considered unlikely to be present in the OTL or OTL-Alt corridor outside of the WF boundary of the GN1 Project Area.

There is no current estimate available for the national population of the species, however, it has been reported that there is decreasing trend (Fenner et al. 2018 cited in DCCEEW 2023g). The most recent population estimate is cited as 5,000 individuals made in 2000 and was based upon 10 known populations at the time (Milne et al. 2000 cited in DCCEEW 2023g), however, an additional 20 subpopulations have since been discovered (Duffy et al. 2012, Clayton et al. 2020 cited in DCCEEW 2023g), resulting in populations occurring at a total of 37 disjunct sites. Estimates of population sizes suggest between 100-120 lizards occur per hectare (Clayton et al. cited in DCCEEW 2023). The current extent of occurrence for the species is estimated to be 7,000 km^2 (Delean et al. 2013 cited in DCCEEW 2023g), with an area of occupancy estimated at less than 500 km^2 (Fenner et al. 2018). All known and future habitat is critical to the survival of the species, and critical habitat includes the area of occupancy for all known populations, all areas of the species' historical occurrence, and all areas of potential habitat throughout its geographical and ecological range (DCCEEW 2023g). Impacts listed as temporary, which require the removal of / disturbance to topsoil are likely to be equivalent in impact to permanent clearance for this species, as ground disturbance is likely to alter soil conditions and preclude development of appropriate spider burrows for the medium to long term.

A total of approximately 10,914.41 ha of potentially suitable habitat has been mapped in the broader GN1 Project Area (EBS 2024e), of which a maximum of 459.14 ha (or 4.21% of the GN1 Project Area) (based on the WF plus OTL) is inside the GN1 Disturbance Footprint and potentially impacted by the Project, noting the south-central portion of the GN1 Project Area is deemed to be of the highest habitat suitability. 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 GN1 Project Area, within the Murray Darling Depression Bioregion is

also considered unlikely habitat (i.e. the OTL and OTL-Alt outside of the WF but within the MDD). Impacts to the PBTL as a result of the Project within the WF of the GN1 Project Area potentially trigger several criteria, including leading to a long-term decrease in the size of a population, reducing the area of occupancy of a population, fragmenting a population into two or more populations, adversely affecting habitat critical to the survival of a species, disrupting the breeding cycle of a population, modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, and interfere with the recovery of a species. Pending finalisation of mitigation strategies, impacts as a result of the Project are considered likely within the WF, but unlikely within the OTL and OTL-Alt outside of the WF Disturbance Footprint.

6.4 Significant Impact Assessment Overview

An overview of the significant impact assessment for the Project against all MNES is presented in Table 6.1.

Table 6.1: Significant impact assessment overview

MNES	Section	Assessment Outcome	Significant Impact to MNES
Threatened ecological communities	4.5	The Project is likely to interact with two TECs: • Iron-grass Natural Temperate Grassland of South Australia where two significant impact criteria are potentially triggered for this TEC; a reduction in the extent of the TEC and fragmentation of the TEC, principally as a result of native vegetation clearance. • Mallee Bird Community of the Murray Darling Depression Bioregion (MBC) where two significant impact criteria are potentially triggered for this TEC; a reduction in the extent of the TEC and fragmentation of the TEC, principally as a result of native vegetation clearance.	Possible
Listed threatened species	4.5	The majority of species reviewed in the overall assessment are considered unlikely to be present within the Project Area, or unlikely to be significantly impacted by the Project. A summary of species known to be present, or which are considered potential occurrences within the Project Area include: • *Acacia glandulicarpa* (Hairy-pod Wattle) • *Acacia spilleriana* (Spiller's Wattle) • *Codonocarpus pyramidalis* (Slender Bell-fruit, Camel Poison) • *Dodonaea procumbens* (Trailing Hop-bush) • *Dodonaea subglandulifera* (Peep Hill Hop-bush) • *Olearia pannosa* subsp. *pannosa* (Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush) • *Senecio megaglossus* (Superb Groundsel) • *Aphelocephala leucopsis* (Southern Whiteface) • *Melanodryas cucullata cucullata* (South-eastern Hooded Robin, Hooded Robin (south-eastern)) • *Neophema chrysostoma* (Blue-winged Parrot) • *Stagonopleura guttata* (Diamond Firetail) • *Aprasia pseudopulchella* (Flinders Ranges Worm-lizard) • *Tiliqua adelaidensis* (Pygmy Blue-tongue Lizard, Adelaide Blue-tongue Lizard) Whilst potential impacts resulting from the Project are not considered to be ecologically meaningful from an overall population or species perspective for most ecological MNES, there is potential that a small number of individual significant impact criteria may be triggered when considered against the available data, principally associated with the OTL-Alt area which has not yet been surveyed.	Possible within OTL-Alt Possible within OTL-Alt Possible within OTL-Alt Possible within OTL-Alt Possible within OTL-Alt Possible within OTL-Alt Unlikely Possible (critical habitat only) Possible (critical habitat only) Unlikely Unlikely Unlikely Likely within GN1 Project Area (principally WF)
Migratory species protected under international agreements	4.5	The Project Area is not considered important habitat for these species, thus significant impact criteria are not triggered.	No
Ramsar wetlands of international importance	5.1	The Project Area is approximately 150-200 km in proximity to one Ramsar wetland; the Coorong, and Lakes Alexandrina and Albert, however, the Project Area only overlaps the very northwest potion of the Ramsar site 'proximity polygon'. As a result of the distance between the OTL and the Ramsar wetlands, no impacts to this MNES are predicted related to the Project.	No
Commonwealth marine areas	5.2	The Project Area is not in proximity to Commonwealth marine areas	No
World heritage properties	5.3	The Project Area is not in proximity to World Heritage properties	No
National heritage places	5.4	The Project Area is in proximity to one National Heritage place; the Australian Cornish Mining Site: Burra, however, its relevance to the Project is in association with visual amenity regarding the Project on the National Heritage place and in relation to some tree trimming or removal that may be required along the transport route required for the wind turbines construction phase. A report prepared by Biosis (2024) addressed minimising the visual impacts of the Project, and determined that the proposed project would not impact on the NHL criteria, and therefore would not have a significant impact as defined by the EPBC Act.	No
Nuclear actions (including uranium mining)	5.5	There are no known radiological characteristics associated with the Project that trigger EPBC criteria.	No
The Great Barrier Reef Marine Park	5.6	The Project Area is not in proximity to the Great Barrier Reef Marine Park	No
A water resource in relation to coal seam gas or large coal mining development.	5.7	The Project is not coal seam gas or coal.	No
Commonwealth lands	5.8	The Project does not interact with any identified Commonwealth Lands.	No

7 References

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8 Definitions and abbreviations

8.1 Definition of acronym

Acronym	Expansion
ALA	Atlas of Living Australia
BAM	Bushland Assessment Method
BBUS	Bird and bat utlisation survey
BDBSA	Biological Database of South Australia
BESS	Battery Energy Storage System
CE	Critically Endangered
CP	Conservation Park
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DE	Development Envelope
DF	Disturbance Footprint
DIT	Department of Infrastructure and Transport
EBS	EBS Ecology
EN	Endangered
FLB	Flinders Lofty Block
GN1 Project	The Goyder North Stage 1 Project
GN2 Project	Subsequent Stages of GNREF also referred to for simplicity as the Goyder North Stage 2 Project
GNREF	Goyder North Renewable Energy Facility incorporating GN1, GN2, OTL Primary and OTL Alternate.
GRZ	Goyder Renewables Zone
Ha	Hectare
IBRA	Interim Biogeographic Regionalisation for Australia
INTG	Iron-grass Natural Temperate Grassland
MBC	Mallee Bird Community
MDD	Murray Darling Depression
Met	Meteorological Masts
MM	Migratory Marine
MNES	Matters of National Environmental Significance
MP	management plan
MT	Migratory Terrestrial
MW	Migratory Wetland
N&Y	Northern and Yorke
NVC	Native Vegetation Council
OTL	Overhead Transmission Line (Primary)
OTL-Alt	Alternate Overhead Transmission Line

Acronym	Expansion
PBTL	Pygmy Blue-tongue Lizard
PEC	Project EnergyConnect
PMST	Protected Matters Search Tool
REF	Renewable Energy Facility
SIA	Significant impact assessment
SPC	State Planning Commission
STAM	Scattered Tree Assessment Method
TECs	Threatened Ecological Communities
VA	Vegetation Association
VU	Vulnerable
WF	Boundary surrounding the Wind Farm Generation Components
WTGs	Wind Turbine Generator

APPENDICES

Appendix A. Protected Matters Search Report

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 30-Apr-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	36
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	14
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	13
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Historic			
Australian Cornish Mining Sites: Burra	SA	Listed place	In feature area

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
The coorong, and lakes alexandrina and albert wetland	100 - 150km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area	In feature area
Iron-grass Natural Temperate Grassland of South Australia	Critically Endangered	Community likely to occur within area	In feature area
Mallee Bird Community of the Murray Darling Depression Bioregion	Endangered	Community likely to occur within area	In feature area
Peppermint Box (Eucalyptus odorata) Grassy Woodland of South Australia	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Amytornis striatus howei			
Murray Mallee Striated Grasswren, Striated Grasswren (sandplain) [91648]	Endangered	Species or species habitat may occur within area	In buffer area only
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area
[Grantiella picta](#) Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
[Leipoa ocellata](#) Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Lophochroa leadbeateri leadbeateri](#) Major Mitchell's Cockatoo (eastern), Eastern Major Mitchell's Cockatoo, Pink Cockatoo (eastern) [82926]	Endangered	Species or species habitat may occur within area	In feature area
[Melanodryas cucullata cucullata](#) South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat known to occur within area	In feature area
[Neophema chrysostoma](#) Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Pedionomus torquatus](#) Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Polytelis anthopeplus monarchoides](#) Regent Parrot (eastern) [59612]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
[Stagonopleura guttata](#) Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
[Galaxias rostratus](#) Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In feature area
FROG			
[Litoria raniformis](#) Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In feature area
PLANT			
[Acacia glandulicarpa](#) Hairy-pod Wattle [8838]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Acacia menzelii](#) Menzel's Wattle [9218]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Acacia spilleriana](#) Spiller's Wattle [34123]	Endangered	Species or species habitat known to occur within area	In feature area
[Caladenia tensa](#) Greencomb Spider-orchid, Rigid Spider-orchid [24390]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Codonocarpus pyramidalis Slender Bell-fruit, Camel Poison [19507]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dodonaea subglandulifera Peep Hill Hop-bush [11956]	Endangered	Species or species habitat known to occur within area	In feature area
Euphrasia collina subsp. osbornii Osborn's Eyebright [3684]	Endangered	Species or species habitat may occur within area	In buffer area only
Lachnagrostis limitanea Spalding Blown Grass, Spalding Blowngrass [78119]	Endangered	Species or species habitat may occur within area	In buffer area only
Olearia pannosa subsp. pannosa Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush [12348]	Vulnerable	Species or species habitat known to occur within area	In feature area
Prasophyllum pallidum Pale Leek-orchid [20351]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterostylis xerophila Desert Greenhood [7997]	Vulnerable	Species or species habitat may occur within area	In feature area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Senecio megaglossus Superb Groundsel [13374]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Swainsona pyrophila Yellow Swainson-pea [56344]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Aprasia pseudopulchella			
Flinders Ranges Worm-lizard [1666]	Vulnerable	Species or species habitat known to occur within area	In feature area
Tiliqua adelaidensis			
Pygmy Blue-tongue Lizard, Adelaide Blue-tongue Lizard [1270]	Endangered	Species or species habitat known to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalcites osculans as Chrysococcyx osculans			
Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster			
White-bellied Sea-Eagle [943]		Species or species habitat may occur within area	In feature area
Merops ornatus			
Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma			
Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Hopkins Creek	Conservation Park	SA	In buffer area only
Mimbara	Conservation Park	SA	In feature area
Mokota	Conservation Park	SA	In feature area
Red Banks	Conservation Park	SA	In buffer area only
Tiliqua	Private Nature Reserve	SA	In feature area
Unnamed (No.HA1221)	Heritage Agreement	SA	In buffer area only
Unnamed (No.HA1264)	Heritage Agreement	SA	In feature area
Unnamed (No.HA1294)	Heritage Agreement	SA	In buffer area only
Unnamed (No.HA1511)	Heritage Agreement	SA	In buffer area only
Unnamed (No.HA1520)	Heritage Agreement	SA	In buffer area only
Unnamed (No.HA1562)	Heritage Agreement	SA	In feature area
Unnamed (No.HA656)	Heritage Agreement	SA	In buffer area only
Unnamed (No.HA707)	Heritage Agreement	SA	In buffer area only
Unnamed (No.HA727)	Heritage Agreement	SA	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Goyder South Hybrid Renewable Energy Facility - OTL and Substation, Worlds End	2021/8959		Post-Approval	In feature area
Goyder South Hybrid Renewable Energy Facility - Wind Farm 1b, 5km south Burra	2021/8957		Post-Approval	In buffer area only
Controlled action				
Electricity Transmission Line	2001/380	Controlled Action	Completed	In buffer area only
SA-NSW Electricity Interconnector, Monash-Robertstown Section	2002/726	Controlled Action	Completed	In feature area
SA-NSW Energy Interconnector, Robertstown to NSW Border, SA	2019/8468	Controlled Action	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Stony Gap Wind Farm	2012/6340	Controlled Action	Completed	In buffer area only
Not controlled action				
Hallett Wind Farm	2004/1715	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Substation for Hallet Hill Wind Farm	2007/3535	Not Controlled Action	Completed	In buffer area only
wind farm and associated infrastructure	2006/2764	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Wind Farm and Transmission Line, Mt Bryan, SA	2009/5025	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 30-Apr-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	35
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	10
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	10
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Historic			
Australian Cornish Mining Sites: Burra	SA	Listed place	In feature area

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
The coorong, and lakes alexandrina and albert wetland	100 - 150km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area	In feature area
Iron-grass Natural Temperate Grassland of South Australia	Critically Endangered	Community likely to occur within area	In feature area
Mallee Bird Community of the Murray Darling Depression Bioregion	Endangered	Community likely to occur within area	In feature area
Peppermint Box (Eucalyptus odorata) Grassy Woodland of South Australia	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Amytornis striatus howei			
Murray Mallee Striated Grasswren, Striated Grasswren (sandplain) [91648]	Endangered	Species or species habitat may occur within area	In feature area
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area
[Grantiella picta](#) Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
[Leipoa ocellata](#) Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Lophochroa leadbeateri leadbeateri](#) Major Mitchell's Cockatoo (eastern), Eastern Major Mitchell's Cockatoo, Pink Cockatoo (eastern) [82926]	Endangered	Species or species habitat may occur within area	In feature area
[Melanodryas cucullata cucullata](#) South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat known to occur within area	In feature area
[Neophema chrysostoma](#) Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Pedionomus torquatus](#) Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Polytelis anthopeplus monarchoides](#) Regent Parrot (eastern) [59612]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
[Stagonopleura guttata](#) Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
[Galaxias rostratus](#) Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In feature area
FROG			
[Litoria raniformis](#) Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In feature area
PLANT			
[Acacia glandulicarpa](#) Hairy-pod Wattle [8838]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Acacia menzelii](#) Menzel's Wattle [9218]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Acacia spilleriana](#) Spiller's Wattle [34123]	Endangered	Species or species habitat likely to occur within area	In feature area
[Caladenia tensa](#) Greencomb Spider-orchid, Rigid Spider-orchid [24390]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Codonocarpus pyramidalis Slender Bell-fruit, Camel Poison [19507]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dodonaea subglandulifera Peep Hill Hop-bush [11956]	Endangered	Species or species habitat likely to occur within area	In feature area
Euphrasia collina subsp. osbornii Osborn's Eyebright [3684]	Endangered	Species or species habitat may occur within area	In buffer area only
Olearia pannosa subsp. pannosa Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush [12348]	Vulnerable	Species or species habitat known to occur within area	In feature area
Prasophyllum pallidum Pale Leek-orchid [20351]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterostylis xerophila Desert Greenhood [7997]	Vulnerable	Species or species habitat may occur within area	In feature area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Senecio megaglossus Superb Groundsel [13374]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Swainsona pyrophila Yellow Swainson-pea [56344]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Aprasia pseudopulchella Flinders Ranges Worm-lizard [1666]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tiliqua adelaidensis](#) Pygmy Blue-tongue Lizard, Adelaide Blue-tongue Lizard [1270]	Endangered	Species or species habitat known to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Mokota	Conservation Park	SA	In feature area
Red Banks	Conservation Park	SA	In feature area
Tiliqua	Private Nature Reserve	SA	In feature area
Unnamed (No.HA1221)	Heritage Agreement	SA	In buffer area only
Unnamed (No.HA1264)	Heritage Agreement	SA	In feature area
Unnamed (No.HA1511)	Heritage Agreement	SA	In buffer area only
Unnamed (No.HA1562)	Heritage Agreement	SA	In feature area

Protected Area Name	Reserve Type	State	Buffer Status
Unnamed (No.HA656)	Heritage Agreement	SA	In buffer area only
Unnamed (No.HA707)	Heritage Agreement	SA	In buffer area only
Unnamed (No.HA727)	Heritage Agreement	SA	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Electricity Transmission Line	2001/380	Controlled Action	Completed	In buffer area only
SA-NSW Electricity Interconnector, Monash-Robertstown Section	2002/726	Controlled Action	Completed	In feature area
SA-NSW Energy Interconnector, Robertstown to NSW Border, SA	2019/8468	Controlled Action	Post-Approval	In feature area
Stony Gap Wind Farm	2012/6340	Controlled Action	Completed	In buffer area only
Not controlled action				
Hallett Wind Farm	2004/1715	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Substation for Hallet Hill Wind Farm	2007/3535	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Wind Farm and Transmission Line, Mt Bryan, SA	2009/5025	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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