Silverton Wind Farm
Operational Biodiversity Adaptive Management Plan 2018-2021

FINAL REPORT

Prepared for GE Renewable Energy

20 December 2018

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Biosis staff involved in this project were:

- Steve Mueck & Sarah Hilliar (Field survey)
- Julian Turner, Andrew Longmire, Gareth Davies & James Shepherd, (Mapping)
- Sarah Hilliar & Clare McCutcheon (Reporting)

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1 Introduction

1.1 Project history

The Silverton Wind Farm study area is located approximately five kilometres north of Silverton and 25 kilometres northwest of Broken Hill in the far west of NSW (Figure 1).

In May 2009, the Silverton Wind Farm project was granted approval under the now repealed Part 3A of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act) by the then NSW Minister for Planning. Approval was granted for the construction of 282 wind turbines and associated infrastructure. This included Concept Approval for the construction, operation and decommissioning of up to 598 wind turbines and associated infrastructure. The wind farm was declared a critical infrastructure project under the EP&A Act, as an energy generating development with the capacity to generate at least 250MW.

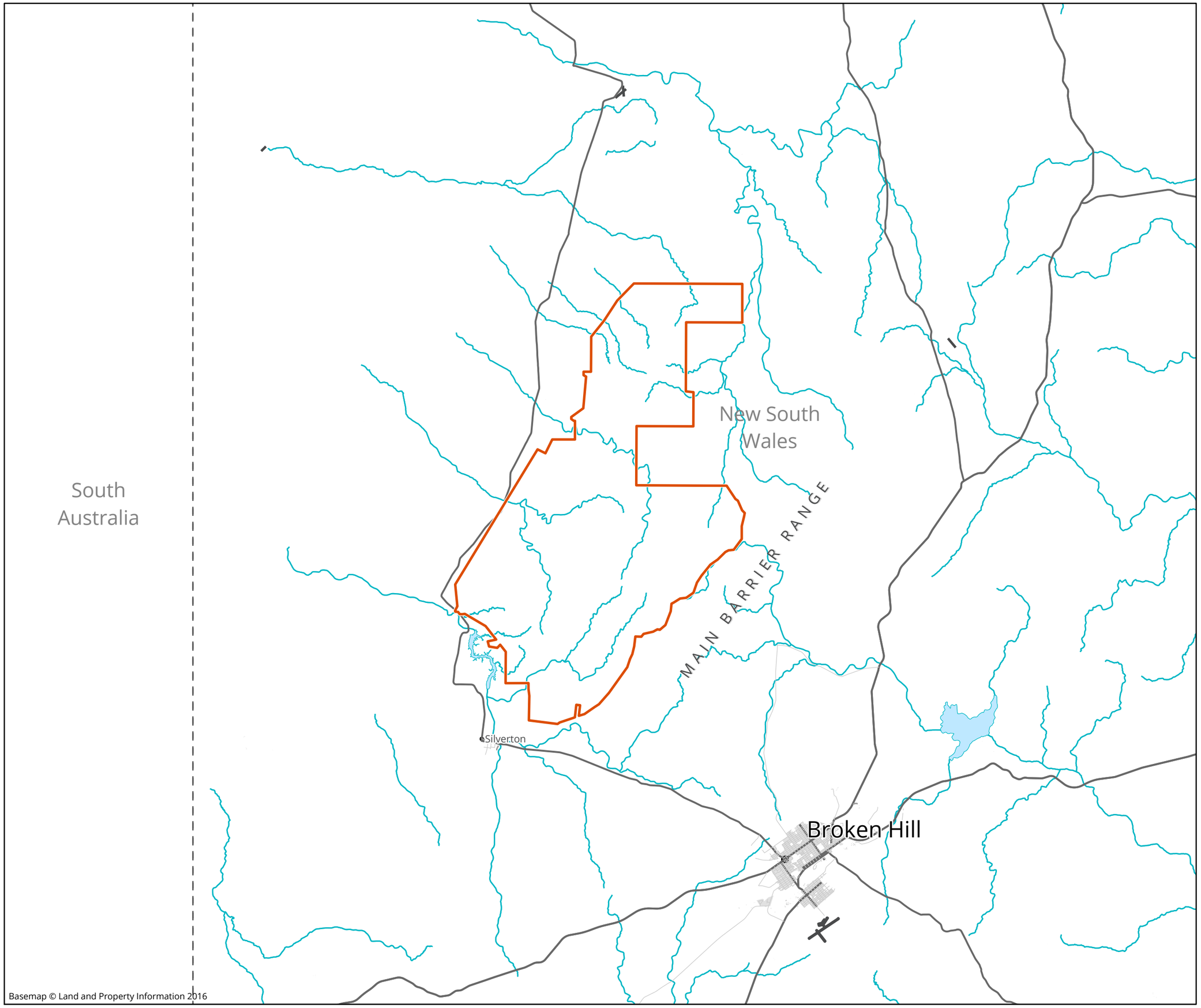
Uncertainty regarding the Federal Government's 2020 Renewable Energy Target (RET) Scheme led to delays in the project. Three modifications have since been approved. Approvals were received to extend the commencement date of construction under Modification 1 (11 April 2011) and Modification 2 (3 June 2016).

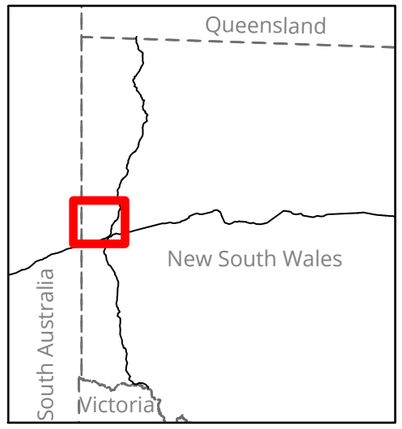
Further modification (Modification 3) was approved by the NSW Planning and Assessment Commission (PAC) on 22 December 2016 in accordance with Clause 8J(8) of the *Environmental Planning and Assessment Regulation 2000* and the transitional arrangements of the EP&A Act. Due to advances in technology since the initial proposal in 2009, Modification 3 sought to decrease the maximum number of turbines to 167, while increasing the dimensions and capacity of each turbine. The current project involves the development of 58 of these turbines. Approval was granted for the modifications to the project approval (08_022 MOD 3) and concept approval (08_0022MOD2) subject to the conditions set out in the instrument of approval.

The Silverton Wind Farm project is being undertaken by the Powering Australian Renewables Fund (PARF), a partnership between AGL, QIC and Future Fund. PARF have engaged GE-CATCON (a consortium led by GE Electric International (hereafter referred to as GE) and Civil and Allied Technical Construction Pty Ltd (hereafter referred to as CATCON) under an Engineer, Procure and Construct (EPC) Contract to deliver the Silverton Wind Farm works. TransGrid (Network Service Provider – NSW) has been engaged under the Project Agreement to deliver the connection works.

Condition 18 of the Project Approval requires that prior to the commencement of construction, the Proponent must prepare a Biodiversity Management Plan for the project. A Construction Biodiversity Management Plan (CBMP) prepared by Ecology and Heritage Partners (EHP 2018) is in place for the construction phase of the Silverton Wind Farm works, and this Biodiversity Adaptive Management Plan has been developed to satisfy that condition for the operational phase of Silverton Wind Farm works.

On 22 December 2017 approval was granted to commence construction in Area 7. Further revisions to the design to minimise heritage and biodiversity impacts were ongoing and have now been finalised. Changes to the construction footprint have been assessed in this final report. Clearance impacts on vegetation have been calculated using the final 'as constructed' survey data provided by GE/Catcon on 2 October 2018, combined with data captured by Biosis during on-site monitoring of construction in Area 7.





Legend

Study area

Figure 1 – Location of the study area

0 5 10

Kilometres

Scale: 1:1:250,000@ A3
Coordinate System: GDA 1994 MGA Zone 54

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Basemap © Land and Property Information 2016

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1.2 Approval conditions

Approval conditions were issued 22 December 2016 for Modification 3 of the Silverton Wind Farm. The Environmental Conditions that relate to biodiversity (Conditions 17, 18 and 19) are presented in Appendix 2. The conditions require the provision of a number of management plans including a Bird and Bat Adaptive Management Plan (Biosis 2018b), this Biodiversity Management Plan and the associated management plans outlined further in Section 1.3.

Responses to conditions and how they have been met across all the plans, including the Construction Biodiversity Management Plan CBMP (EHP 2018), can also be found in Appendix 2.

1.3 Relationship to other documents

This document addresses the management activities associated with the operation of Silverton Wind Farm. In addition, it provides an update to the CBMP (EHP 2018), particularly in relation to revised construction impacts on vegetation as outlined in Section 3.1. The purpose of this document is to incorporate the methods, actions, monitoring and reporting identified within the Operational Management Plans for the wind farm into a cohesive document. In particular, it will detail the implementation activities for the:

- Barrier Range Dragon Management Plan (BRDMP) (Biosis 2018a)
- Goat Management Plan (GMP) (Biosis 2018c)
- Recovery Plan for Porcupine Grass Sparse Woodland (PGSWRP) (Biosis 2018d)
- Vegetation Management Plan (VMP) (Biosis 2018e).

This allows for a unified approach to on-ground monitoring and management of biodiversity at the Silverton Wind Farm site. This Biodiversity Adaptive Management Plan is to be read in conjunction with the BRDMP, PGSWRP, GMP and VMP.

The Bird and Bat Adaptive Management Plan (BBAMP) (Biosis 2018b) is a stand alone document that aims to ensure the wind farm does not have a significant impact on the viability of the population of any bird or bat species. The required monitoring and reporting actions are detailed separately in that plan.

1.4 Purpose

This document provides an overview of the biodiversity values across the Silverton Wind Farm and has been prepared by suitably qualified experts from Biosis. It describes the specific monitoring and management measures to be undertaken during the operational phase of the wind farm to protect and enhance the biodiversity values of the study area.

As outlined in this document, the baseline data collected in spring 2018 will be followed by annual monitoring for three years. Management actions will be revised following each annual monitoring period to continually improve on-ground management and ecological outcomes. A comprehensive review of monitoring and management will be undertaken after three years to ensure there is a net gain in the conservation value of this community, being after surveys in spring 2021.

The aim of this report is to comply with condition 18 of the conditions of consent for Modification 3, and to document project compliance with Biodiversity conditions 17, 18 and 19 as summarised in Appendix 2.

1.5 Consultation

An initial meeting regarding the content and objectives of the BAMP and associated management plans was held with the Department of Planning and Environment (DPE), Office of Environment and Heritage (OEH) and GE on 14 December 2017. The plans have been circulated with GE, AGL, Jacobs, DPE and OEH for review and feedback prior to preparing the final reports.

2 The study area

2.1 Site overview

Silverton Wind Farm is being constructed north of the township of Silverton on the rocky hills of the Umberumberka Range (Figure 1). Situated within the Barrier Range Complex Bioregion, the landscape is characterised by rocky hills to 200 metres above sea level with skeletal aeolian red sandy loam soils.

2.2 Flora

A total of 209 flora species have been recorded from the Silverton Wind Farm, comprising 173 native and 36 introduced plant species. A list detailing these species is provided in Appendix 2 of the VMP.

2.2.1 Plant Community Types (PCTs)

As identified in the VMP, the study area contains 11 plant communities including nine recognised Plant Community Types (PCTs) (Benson 2008, OEH 2017) and two undescribed vegetation types (VEGs) as documented in NGH Environmental (2008a, 2008b) and mapped by NGH Environmental (2016):

- Black Bluebush low open shrubland of the alluvial plains and sand plains of the arid and semi-arid zones (PCT153)
- Black Oak – Western Rosewood – Blue Bush/Saltbush (PCT60)
- Bluebush shrubland on stony rises and downs of the arid zone (PCT155)
- Chenopod Shrubland (PCT 156)
- Chenopod – Red Mallee woodland/shrubland (VEG2)
- Mulga/Red Mallee Shrubland (VEG1)
- Mulga-Dead Finish on stony hills mainly of the Channel Country and Broken Hill Complex Bioregions (PCT123)
- Porcupine Grass - Red Mallee - Gum Coolibah hummock grassland / low sparse woodland on metamorphic ranges on the Barrier Range, Broken Hill Complex Bioregion (PCT359)
- Prickly Wattle open shrubland of drainage lines on stony rises and plains of the arid climate zone (PCT136)
- River Red Gum Woodland of rocky creeks in the ranges of the arid climate zone (PCT234)
- River Red Gum open woodland of intermittent watercourses mainly of the arid climate zone (PCT41).

Plant Community Types are mapped in Figure 2. The delineation of Vegetation Management Zones (MZ) was based on these PCTs to tailor rehabilitation/restoration measures and weed and pest animal management approaches within a vegetation community as outlined in the VMP.

The plant community type known as Porcupine Grass – Red Mallee – Gum Coolibah hummock grassland/low sparse woodland in the Broken Hill Complex Bioregion (PCT359) (Benson, hereafter referred to as Porcupine Grass Sparse Woodland (PGSW) is a Critically Endangered Ecological Community (CEEC) under the NSW *Threatened Species Conservation Act 1995* (replaced by the *Biodiversity Conservation Act 2016* (BC Act). Further detail regarding this community and the actions to address ongoing impacts and threats to the community are

outlined in the PGSWRP. Management actions are summarised in Section 5 of this report, monitoring the condition of PGSW is outlined in Section 6 and all actions are incorporated in Appendix 3.

2.2.2 Exotic flora species

Introduced plant species previously documented within the study area are detailed in Appendix 2 of the VMP. The remote location and harsh conditions of the study area have generally resulted in a low incidence of weeds to date. These species are likely to be present in greater numbers following high autumn-winter rainfall. These exotic species have potential to disperse throughout the study area, particularly within areas of soil disturbance resulting from construction.

The weed management and monitoring approach for the operational phase of the wind farm is detailed in the VMP. The management actions are summarised in Section 5.4, the weed monitoring approach is summarised in Section 6.5 and all actions are incorporated in Appendix 3.

2.2.3 Threatened flora

As detailed in Section 2.2.4 of the VMP, two species of regional significance have been recorded within the study area. There are an additional three threatened plant species listed under either the BC Act or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that have been identified as having the potential to be affected by the Silverton Wind Farm works. There are unconfirmed records of Purple Wood Wattle *Acacia carneorum* on the flats of the Mundi Mundi sandplain surrounding Silverton Wind Farm (Blore 2008). It has not been found on the hills. This species is listed as vulnerable under both the BC Act and the EPBC Act.

Information on these species will be included in site inductions as per Section 4.1.1.

2.3 Fauna

2.3.1 Native fauna

Fauna surveys undertaken by NGH Environmental (2008a, 2008b, 2018) documented a combined total of 148 vertebrate fauna species. Detailed lists of the species are contained in the cited reports. They include 20 species of mammals; 101 birds; 26 reptiles and one frog. Six of the recorded mammals are introduced species.

2.3.2 Endangered fauna

Twenty-three species of threatened vertebrate fauna have been recorded at the site or are considered likely to occur there. The threatened fauna species are set out in Table 2-1 of the VMP. Key issues related to potential effects of the wind farm on significant fauna and management aimed at minimising impacts are addressed in detail in Silverton Wind Farm: Barrier Range Dragon Management Plan (Biosis 2018a) and Silverton Wind Farm: Bird and Bat Adaptive Management Plan (BBAMP) (Biosis 2018b).

2.3.3 Exotic fauna species

Six species of introduced fauna species occur at the site and are likely to be impacting the native flora and fauna. They are listed in Table 2-2 of the VMP.

In particular, Feral Goats *Capra hircus* were found to be abundant and widespread, and evidence of their grazing was found within areas of PGSW and the broader area by NGH Environmental (2008a). Competition and habitat degradation by feral and unmanaged goats is listed as a key threatening process under the BC Act and the EPBC Act. . The issues and conflicts associated with Feral Goat management at the Silverton Wind Farm are discussed further in the Silverton Wind Farm Goat Management Plan (Biosis 2018c). Actions to improve management of Feral Goats are summarised in Section 5.2, monitoring herbivore abundance is outlined in Section 6.4 and all actions are incorporated in Appendix 3.

2.4 Current land management

The Silverton Wind Farm has been constructed on NSW Crown Land offered as leasehold under the authority of the *Western Lands Act 1901*. The land is currently used by four independent lessees for grazing purposes, including grazing by Feral Goats, under four separate General Purpose Leases. A wind farm lease (Special Purpose Lease) was assigned to PARF as part of financial close on the Silverton Wind Farm project.

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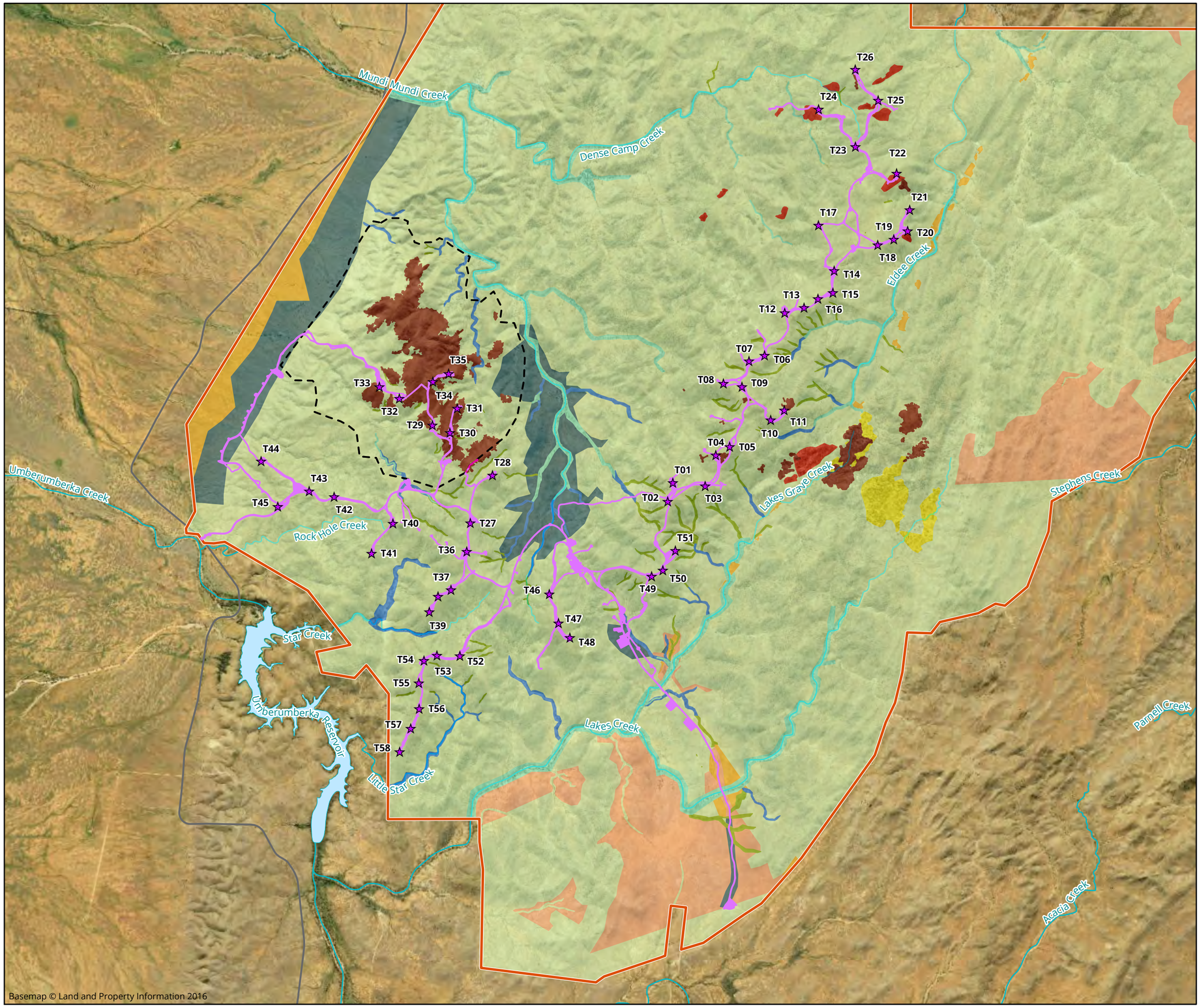

Legend

- VMP area
- Goat fence
- Infrastructure
- Pre-existing road
- Turbine

Management zone / Vegetation community

- MZ1: Black Bluebush Shrubland (PCT153)
- MZ2: Black Oak – Western Rosewood – Blue Bush/Saltbush (PCT60)
- MZ3: Bluebush shrubland (PCT155)
- MZ4: Chenopod shrubland (PCT156)
- MZ5: Chenopod – Red Mallee Woodland/shrubland (VEG2)
- MZ6: Mulga-Dead Finish (PCT123)
- MZ7: Mulga/Red Mallee Shrubland (VEG1)
- MZ8: Porcupine Grass Sparse Woodland (PGSW) (PCT359)
- MZ9: Prickly Wattle open shrubland (PCT136)
- MZ10: River Red Gum Woodland of rocky creeks (PCT234)
- MZ11: River Red Gum Open Woodland of intermittent watercourses (PCT41)

Figure 2 – Infrastructure, vegetation and management zones

0 1 2

Kilometers

Scale: 1:1:62,500@ A3

Coordinate System: GDA 1994 MGA Zone 54

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3 Silverton Wind Farm development

3.1 Construction impacts

From the 167 turbine locations permitted under the MOD 3 project approval, the current Stage of the Silverton Wind Farm involves the installation and maintenance of 58 GE 3.4 megawatt 130 metre rotor wind turbines, a 220 kilovolt substation and the required associated asset and supporting infrastructure (AGL 2017). A summary of the impact of all infrastructure associated with the wind farm (Figure 2) is summarised in Table 3-1.

3.1.1 Limitations and assumptions

Clearance impacts on vegetation have been calculated using the final 'as constructed' survey data provided by GE/Catcon on the 2 October 2018, combined with data captured during on-site monitoring of construction in Area 7 by Biosis.

Table 3-1 Construction impacts – October 2018

Vegetation type (PCT)	Area in hectares (ha)	Area of wind farm works impact in hectares (ha)	Number of Turbines
Black Bluebush low open shrubland (PCT153)	273.1	**0.0 (0.02)**	0
Black Oak – Western Rosewood – Blue Bush/Saltbush (PCT60)	17.9	**0.0**	0
Bluebush shrubland (PCT155)	881.3	**18.2**	0
Chenopod shrubland (PCT156)	2254.2	**1.7**	0
Chenopod – Red Mallee Woodland,/shrubland (VEG2)	121.4	**0.0**	0
Mulga-Dead Finish (PCT123)	27437.8	**147.1**	54
Mulga/Red Mallee Shrubland (VEG1)	57.0	**0.9**	0
PGSW (PCT359)	347.9	**6.4**	4
Prickly Wattle open shrubland (PCT136)	102.6	**1.0**	0
River Red Gum of rocky creeks (PCT234)	125.7	**1.4**	0
River Red Gum Open Woodland of intermittent watercourses (PCT41)	471.3	**0.4**	0

Clearance impacts on vegetation have been calculated using the final data provided by GE-CATCON on 2 October 2018.

3.2 Operational impacts

The operational phase of Silverton Wind Farm includes servicing and maintenance of the 58 GE wind turbines and associated infrastructure. This includes the repair or replacement of other assets such as access roads, electrical reticulation via overhead and underground cabling and the electricity substation.

The operational phase of the wind farm begins upon energisation of the first turbine. The key service and maintenance actives are outlined in the Operations Environmental Strategy (OEMS) (EHP 2017) and include

- Regular servicing of wind turbines and associated infrastructure
- Unscheduled service of current infrastructure
- Site access for environmental monitoring and reporting
- Urgent or major construction activities

Vegetation clearance and maintenance specifications relating to wind farm assets and infrastructure are detailed in Table 4-1 of the VMP, which includes Asset Protection Zone (APZ) requirements.

4 Compliance and reporting

4.1 Roles and responsibility for management and reporting

Implementation of this Operational BAMP and the associated Management Plans is the responsibility of GE who have been contracted by PARF to deliver the operational works for Silverton Wind Farm. GE will also retain overall responsibility for ensuring the results of the monitoring program are appropriately considered, particularly with regard to the management of PGSW, Barrier Range Dragon and Feral Goats.

All GE Renewable Energy staff and contractors are responsible for working in accordance with this BAMP and are required to report and raise any issues that may have an impact on biodiversity.

Suitably experienced and qualified specialists will be responsible for completing aspects of the monitoring program, specifically those related to ecological monitoring and weed management.

4.2 Site inductions

All employees and contractors working at Silverton Wind Farm will undergo site induction training relating to biodiversity management issues. In particular, inductions must include:

- Information on vegetation communities detailed in the VMP. This will include general vegetation descriptions.
- Information on the presence and localities of threatened species habitat and significant vegetation communities communities as detailed in the VMP
- Fact sheets highlighting NSW DPI priority weed species
- Information on the need for strict hygiene protocols to reduce the potential introduction and/or spread of invasive flora and fauna species (detailed further in section 4.1.2)
- Information on speed restrictions to reduce mortality of Barrier Range Dragons
- Information on the management of Feral Goats
- Details of fire response plans.

An example site induction checklist is included as Appendix 4.

All GE contract and subcontractor staff are responsible for working in accordance with this BAMP and are required to identify potential environmental impacts and implement and maintain control measures, procedures and constraints accordingly. These will be documented in accordance with Appendix 3.

Spatial data identifying threatened species/habitat and significant vegetation communities is to be provided to all personnel undertaking maintenance works. Spatial data will be updated as new information arises.

4.3 Reporting

Progress on the implementation of management measures outlined in Appendix 3 and the results and analysis of monitoring described within Section 6 of this Operational BAMP will be reported annually to relevant stakeholders including OEH and DPE.

The annual report will focus particular attention on management measures and monitoring of PGSW, BRD and Feral Goats but will encompass all aspects of the BAMP including:

- Management measures commenced and completed during the reporting period
- Changes in management measures and rationale for changes
- Detailed description of monitoring program implemented during the reporting period
- Results and analysis of monitoring data
- Discussion of monitoring results
- Commitments to changes to management and/or additional monitoring.

All monitoring results and spatial datasets relating to herbivore monitoring, threatened species, threatened species management assets, and extent and condition of the Porcupine Grass Sparse Woodland CEEC must be submitted to the OEH in digital format (MS Office compatible, ESRI- compatible for GIS data) with the annual report (inclusive of BBAMP).

Spatial data on threatened species/priority weed locations and temporary disturbance areas will be updated as new information arises and shared with all relevant personnel (OEH, GE, Project Ecologist, and Vegetation Management Contractors).

Annual monitoring and reporting will be followed by a review of the management approach by the Project Ecologist in consultation with GE Renewable Energy and the Vegetation Management Contractors, to evaluate the performance of management actions and to inform potential adaptive management responses. The aim of these reviews is to continually improve on-ground management and ecological outcomes. A comprehensive review of monitoring and management will be undertaken after three years, following surveys in spring 2021 to ensure there is a net gain in the conservation value of this community.

4.4 Data management

The qualified ecologist undertaking ecological components of the monitoring program will retain all monitoring data in an appropriate database format. Spatial data will be maintained within an appropriate GIS file format (e.g. ESRI shape file). All flora and fauna records will be submitted to OEH as per the requirements of relevant licenses.

GE operational staff will ensure all records of inductions, inspections and monitoring as outlined in Appendix 3 are stored safely and are readily accessible for auditing. Types of records relevant to this BAMP include:

- All monitoring, inspection and compliance reports
- Induction and training records
- Correspondence with public authorities
- Reports on incidents impacting on biodiversity values and follow-up action
- Spatial data.

4.5 BAMP update and amendment

This plan will be reviewed annually and updated periodically and will need to be revised whenever the scope or methods of operational management of the wind farm change, or whenever the recommended biodiversity management actions are found to be ineffective. Any new versions will be submitted to the OEH and Secretary of

the DPE for approval and subsequently issued as part of ongoing revisions to the BAMP. Spatial data will be provided to OEH in digital format (MS Office compatible, ESRI- compatible for GIS data) with the annual report (inclusive of BBAMP).

A comprehensive review of monitoring and management will be undertaken after three years after surveys in spring 2021 to ensure there is a net gain in the conservation value of this community. This review will update management recommendations if required. The plans will be reviewed in consultation with OEH and DPE.

5 Management actions

Management actions required during the operational phase of the wind farm are detailed below, and all activities are collated in Appendix 3.

All weed management, site rehabilitation and revegetation works are to be undertaken by a suitably qualified and experienced bush regeneration contractor.

5.1 Maintenance of existing goat management infrastructure

Exclusion fencing was erected around the majority of the PGSW by leaseholder Blore in May 2014 as part of the Mundi Mundi Conservation Project funded by the Total Grazing Pressure Program, Western Local Land Services (LLS). The fence was erected to temporarily exclude and manage goats for the purposes of protecting PGSW and endangered Barrier Range Dragon. Under the funding agreement, PGSW fencing maintenance is the responsibility of the leaseholder but no timeframes are specified.

The integrity of fencing to control Feral Goats (Figure 2) is to be monitored quarterly and after severe weather events (considered to be any rainfall event greater than 25 millimetres). GE will notify the Leaseholder of any required maintenance. GE will work with the leaseholder to ensure fences are maintained and any damage is repaired within two weeks of notification. If the breach of fencing occurs during the exclusion period (Section 5.2) then active management of Feral Goats will be required. This could include removal of goats from trapped watering points or initiation of active mustering, depending on seasonal conditions described in the GMP.

5.2 Feral Goat management

Grazing by Feral Goats will primarily be reduced within PGSW through the implementation of exclusion periods (utilising the existing goat fence), trapping at existing water points and mustering as outlined in the GMP.

Goats will be excluded from the fenced PGSW area from June to January (inclusive) each year for the next three years, at which time the BAMP will be reviewed (Biosis 2018a) unless climatic conditions are such that ground cover increases significantly. If there is greater than 40 % ground cover of annual species, the leaseholder will allow seed production to occur, and then reserves the right to utilise the vegetation as feed. Goats will be excluded when the cover of these annual species falls to less than 40 %.

If grazing is to be initiated during the exclusion period:

- Leaseholder Blore will notify GE operational staff/project ecologist that ground cover is greater than 40 % and seeding of ephemeral species has occurred.
- Photopoint monitoring will be initiated and submitted to the project ecologist on a fortnightly basis to confirm the level of vegetation cover is maintained above 40%.

Further exclusion of goats will be needed if the results of on-going monitoring indicate that the PGSW is not recovering to the desired level, or if the climatic conditions are poor (e.g. low rainfall). On-going mustering will also need to occur in the fenced PGSW area to actively remove any stray goats during the exclusion period.

In the unlikely event that the price for goats drops significantly there may be no incentive for leaseholders across the Silverton Wind Farm site to actively control the Feral Goats. If this occurs, the leaseholder will identify this financial trigger point and notify GE operational staff that trapping and mustering activities will cease and an alternative arrangement will be negotiated with GE. Road and asset maintenance

GE Renewable Energy will monitor the grazing and mustering of goats in the Porcupine Grass Sparse Woodland in conjunction with the leaseholder's reporting obligations and as part of the Weekly Monitoring Checklist. GE discussed this issue with the Leaseholder and the Leas eholder has indicated to GE that he will comply (to the extent possible) with GE requests concerning exclusion periods and mustering. The Leaseholder noted during discussions with GE that in accordance with the terms of the Crown Lease, holds an unequivocal and unrestricted right to graze and muster livestock including goats over the lands.

Should GE determine that the agreed exclusion periods and mustering methods are not being met by the Leaseholder or if the review of goat management in 2021 indicates that the reduction of grazing is insufficient to achieve a net gain, GE will request The Crown (DI Lands) and DPE provide clarification whether the Project Approval (08_022 MOD 3) or The Crown lease conditions should take precedence.

5.3 Road and asset maintenance

Inspections of roads and supporting drainage assets are to be undertaken on a six - monthly basis in accordance with Section 4.1.5 of the VMP and any necessary maintenance will be implemented within two weeks following these guidelines. Road upgrade and maintenance activities are to include the servicing of supporting road side drainage assets.

Additional inspections will be undertaken after significant rain events (> 25 millimetres), farmers' works that affect or alter the roads and significant traffic movements.

For all areas uphill of or adjacent to PGSW (Figure 3), or in rocky outcrops or artificial Barrier Range Dragon habitats as mapped in the BRDMP, tracks will be inspected by GE staff monthly and after significant rainfall events (>25 millimetres) or weekly in areas where construction is continuing.

Vegetation clearance and maintenance specifications relating to wind farm assets and infrastructure are detailed in Section 4.1.4 of the VMP.

5.4 Exotic weed control actions

Weed management and monitoring will be implemented in accordance with the VMP, which details:

- site inductions (VMP Section 4.1.1)
- hygiene protocols (VMP Section 4.1.2)
- control / management actions (VMP Section 4.3)
- monitoring and reporting (VMP Section 4.4).

All weeds treated as per Appendix 3 of the VMP and inspections are to be as described in Section 6.5 of this plan. All NSW DPI priority weeds are to be controlled in line with the NSW *Biosecurity Act 2015* (Biosecurity Act), and all other priority weeds are to be contained to current cover levels.

5.5 Vegetation clearance and maintenance

Vegetation clearance and maintenance activities, including Asset Protection Zone (APZ) requirements are to be undertaken as per the specifications described in the VMP in Table 4-1 and the objectives outlined in Section 4.1.4.

All native biomass generated by vegetation clearing and maintenance activities is to be placed in areas of low regeneration potential and parts of the study area prone to localised surface erosion and scouring.

Vegetation clearance and maintenance zones are to be inspected by a Project Ecologist on a twice yearly basis and one and three months after significant rain events (> 25 millimetres), to ensure the extent of works are confined to the defined areas and to check for the presence of threatened species and NSW Priority/environmental weeds species.

5.6 Drainage

Stormwater drains will be inspected annually and maintenance or repair activities will be conducted in accordance with Section 4.1.6 of the VMP.

5.7 Restoration of temporary disturbance areas

Rehabilitation works required as part of the construction approvals will be completed by CATCON as detailed in the Silverton Wind Farm Site Rehabilitation Plan (Appendix 6 of VMP). Once construction rehabilitation works have been completed by CATCON and written approval that works have been complete provide by Jacobs, ongoing monitoring of areas rehabilitated as part of the Silverton Wind Farm Works will be the responsibility of GE.

The location of all temporary disturbance areas arising from the Silverton Wind Farm Works will be provided to GE by CATCON. GE will implement documented and monitoring and documentation implemented as detailed below.

At a minimum, for the first three years following temporary disturbance rehabilitation of temporary disturbance, the site will be monitored by the Project Ecologist on a twice-yearly basis (every six months) and 1 and 3 months after significant rain events (>25 millimetres) to assess regeneration success and soil stability. Subsequent monitoring will be as per the BAMP. As detailed in Section 4.2 of the VMP, a restoration plan will be developed and implemented for disturbed areas where natural regeneration fails or is likely to require additional support. This will occur where erosion or grazing pressures require mitigation, or where regeneration is limited by microsite conditions, seed availability due to loss or mixing of topsoil, or lack of sufficient seed supply. Revegetation will use seed collected from the local area (as detailed in Section 4.2.4) appropriate to the vegetation community. Due to the infrequency of rainfall within the study area and skeletal soils, seeding is will be used as a revegetation measure (over planting). Seeding with local species adapted to the climatic conditions should allow for regeneration to occur when conditions for germination and establishment are climatically appropriate. Hydro seeding will be used for all slopes <10%. For slopes ≥10%, hydro mulch will be used. . Follow up watering will be implemented if required. Details on plant species selection and timing of rehabilitation works will be included in the site restoration plan.

Weed management will be implemented at all sites in accordance with Section 4.3 of the VMP.

Where soil stabilisation is required to assist revegetation, brush matting biomass will be considered in accordance with Section 4.2.2 of the VMP. Where brush matting is not available or not adequate, other measures (e.g. weed free mulch, or geotextiles) will be considered.

Where pest animals including Feral Goats are found to be impeding restoration works, additional control measures including fencing of restoration areas will be considered in accordance with section 4.1.3 of the VMP and the GMP. Additional Goat control measures, if required, will be undertaken in accordance with the GMP.

All rehabilitation and revegetation works are to be undertaken by a suitably qualified and experienced bush regeneration contractor.

5.8 Fire management

As noted in the PGSWRP, given the very small area of occupancy of PGSW community, the use of prescribed fire is not recommended, due to the potential or possibility for it to consume a large proportion of the community.

A strategy of fighting wildfires will allow the occasional establishment of recently burnt areas and ensure the development and retention of areas of medium to long-unburnt vegetation (Giljohann et al. 2015). As discussed in the PGSWRP, any strategic use of prescribed fire in the surrounding vegetation types as a 'fire-break' to reduce the risk of wildfire involves a trade-off and must be carefully considered before being implemented.

Fire suppression guidelines appropriate for the local conditions at Silverton Wind Farm are to be developed with the Project Ecologist and the Rural Fire Service (RFS).

Following fire, grazing pressures exerted by several different herbivores can accelerate seedling mortality. Feral Goats are to be excluded from PGSW for at least three years following fire.

5.9 Feral predator control

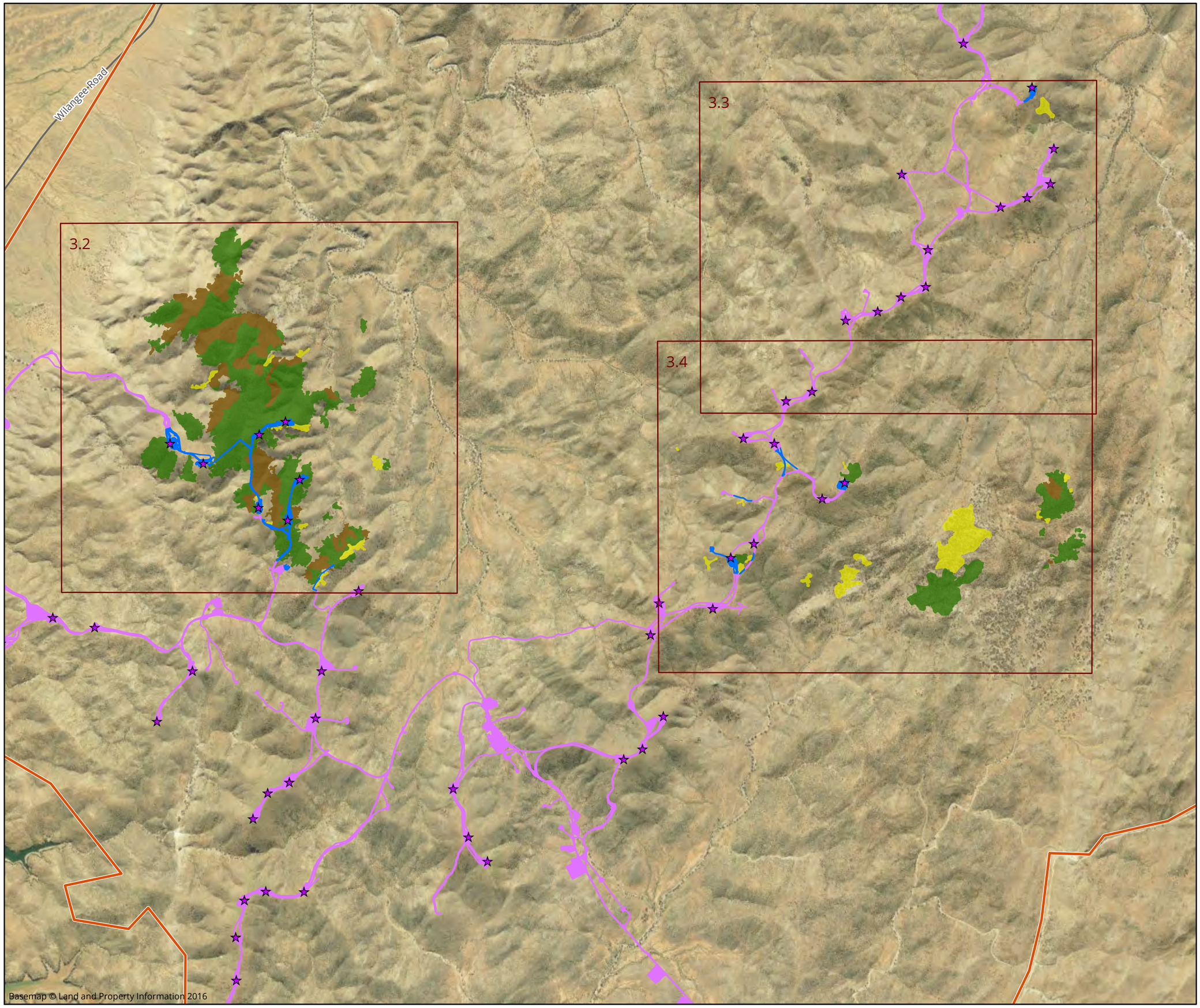
As outlined in the BRDMP and PGSWRP, the NSW Government gazetted the *Local Land Services (European Red Fox) Pest Control Order* in 2014, making foxes a declared pest species under the *Local Land Services Act 2013*. Under the Act all land managers in NSW, whether on public or private land, have an obligation to control declared pest species on their land, which includes foxes under the Pest Control Order.

A feral pest management program will be prepared in association with leaseholders by March 2019.

5.10 Traffic management

As outlined in the BRDMP (Section 4.3.2), low vehicle speed has been demonstrated to provide one of the most effective means to reduce mortality of wildlife on roads.Vehicle speed will be restricted to 25 km per hour along all sections of road with roadside habitat for Barrier Range Dragons, as mapped in the BRDMP.

For convenience, this speed restriction can be applied to cover a number of nearby road sections with mapped roadside habitat. Permanent speed restriction signs will be positioned at each end of relevant portions of the roads. The speed restrictions and the reason for them will be included in site inductions for all personnel driving at the site.



Legend

- Study area
- Turbine
- Infrastructure with no PGSW downslope
- Infrastructure with PGSW downslope

PGSW structural variants

- Porcupine grass with eucalypts
- Porcupine grass only
- Eucalypts only

Figure 3.1 – Infrastructure with PGSW downslope - overview

0 1,000 2,000

Metres

Scale 1:37,500 @ A3

Coordinate System: GDA 1994 MGA Zone 54

N

Matter 26380
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Last edited by jturner on 12 December 2018
Location:
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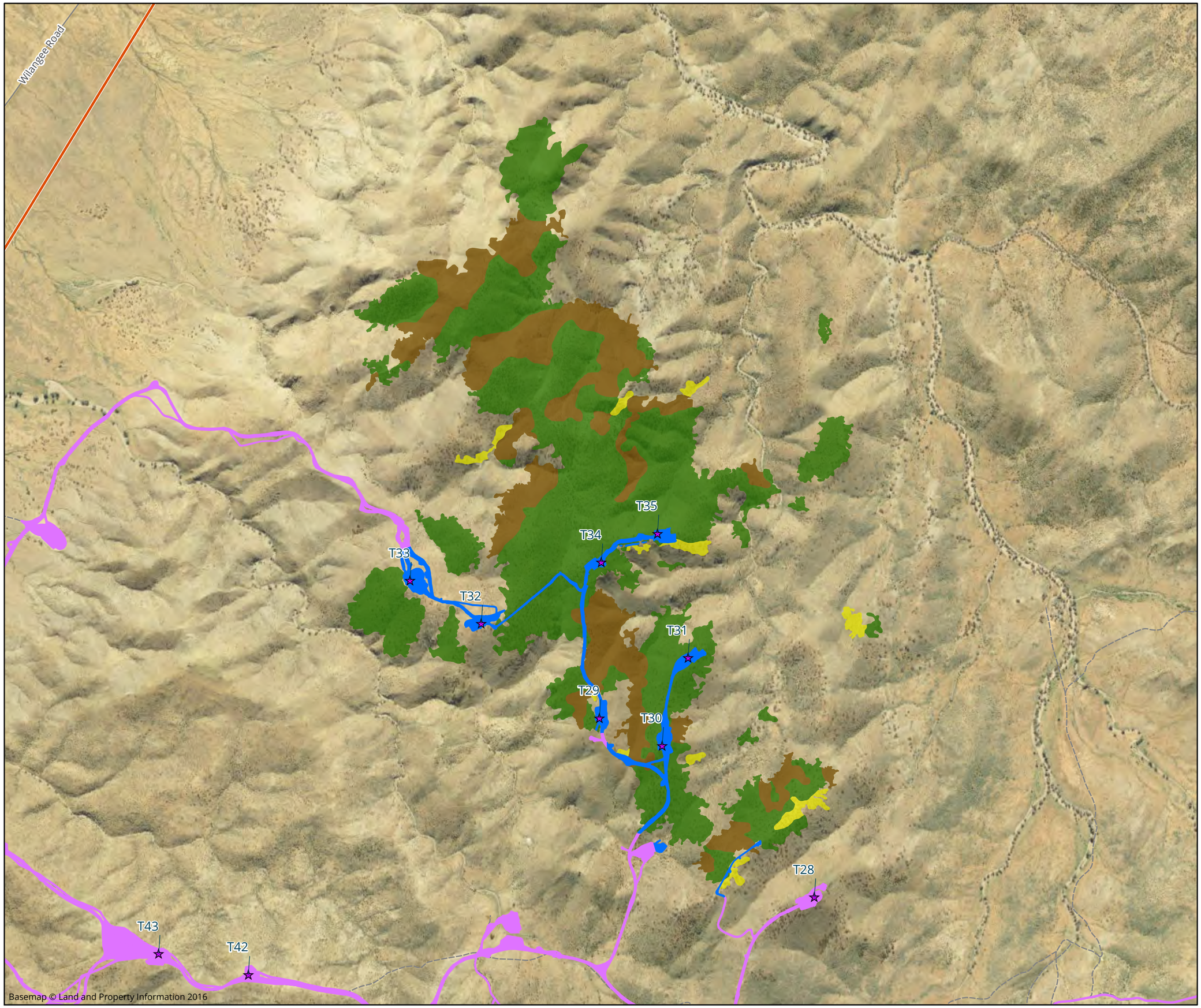

Legend

- Study area
- Turbine
- Infrastructure with no PGSW downslope
- Infrastructure with PGSW downslope

PGSW structural variants

- Porcupine grass with eucalypts
- Porcupine grass only
- Eucalypts only

Figure 3.2 – Infrastructure with PGSW downslope - west

0 1,000

Metres

Scale 1:17,500 @ A3

Coordinate System: GDA 1994 MGA Zone 54

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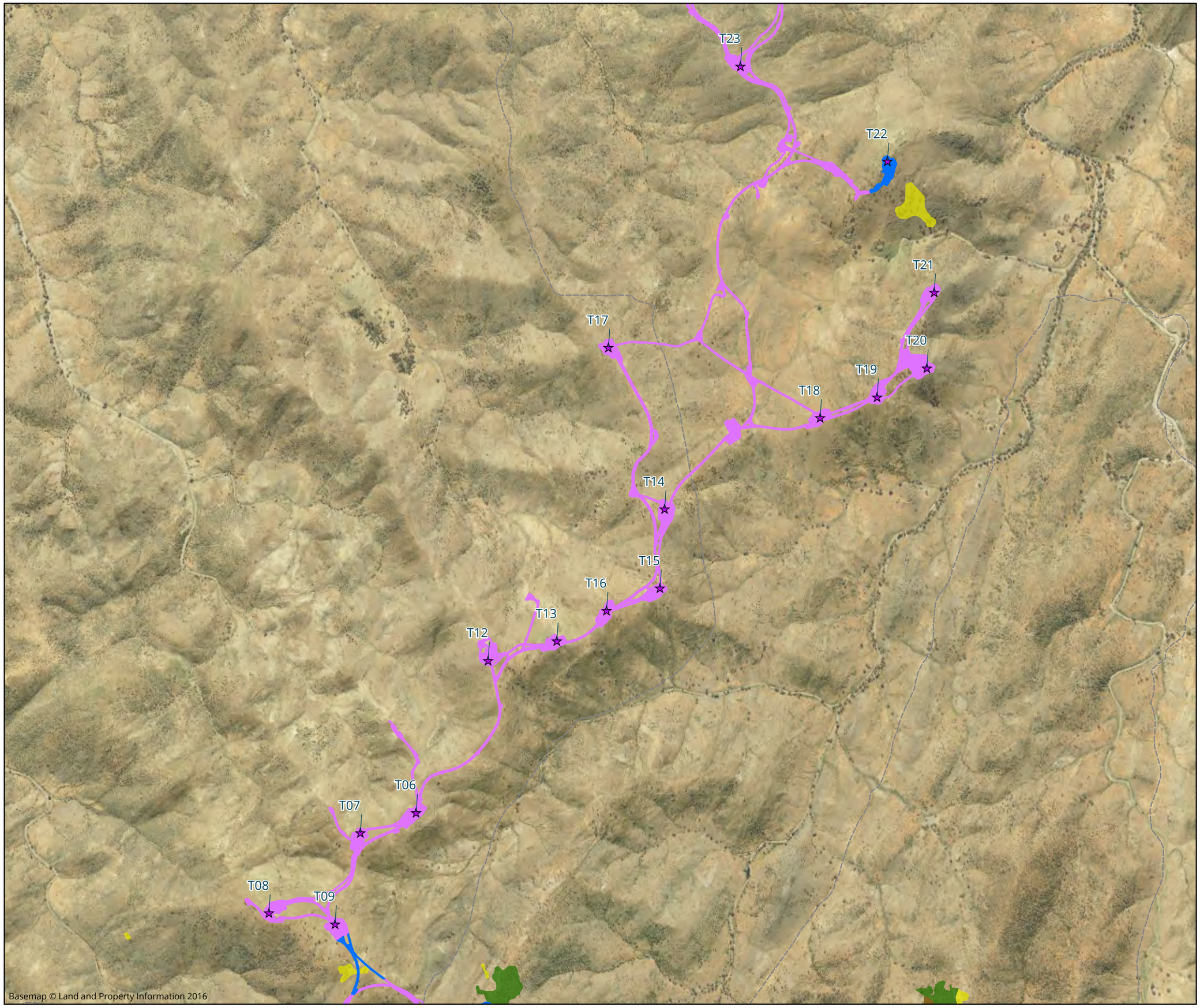

Legend

- Study area
- Turbine
- Infrastructure with no PGSW downslope
- Infrastructure with PGSW downslope

PGSW structural variants

- Porcupine grass with eucalypts
- Porcupine grass only
- Eucalypts only

Figure 3.3 – Infrastructure with PGSW downslope - north-east

0 1,000

Metres

Scale 1:17,500 @ A3

Coordinate System: GDA 1994 MGA Zone 54

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Location:
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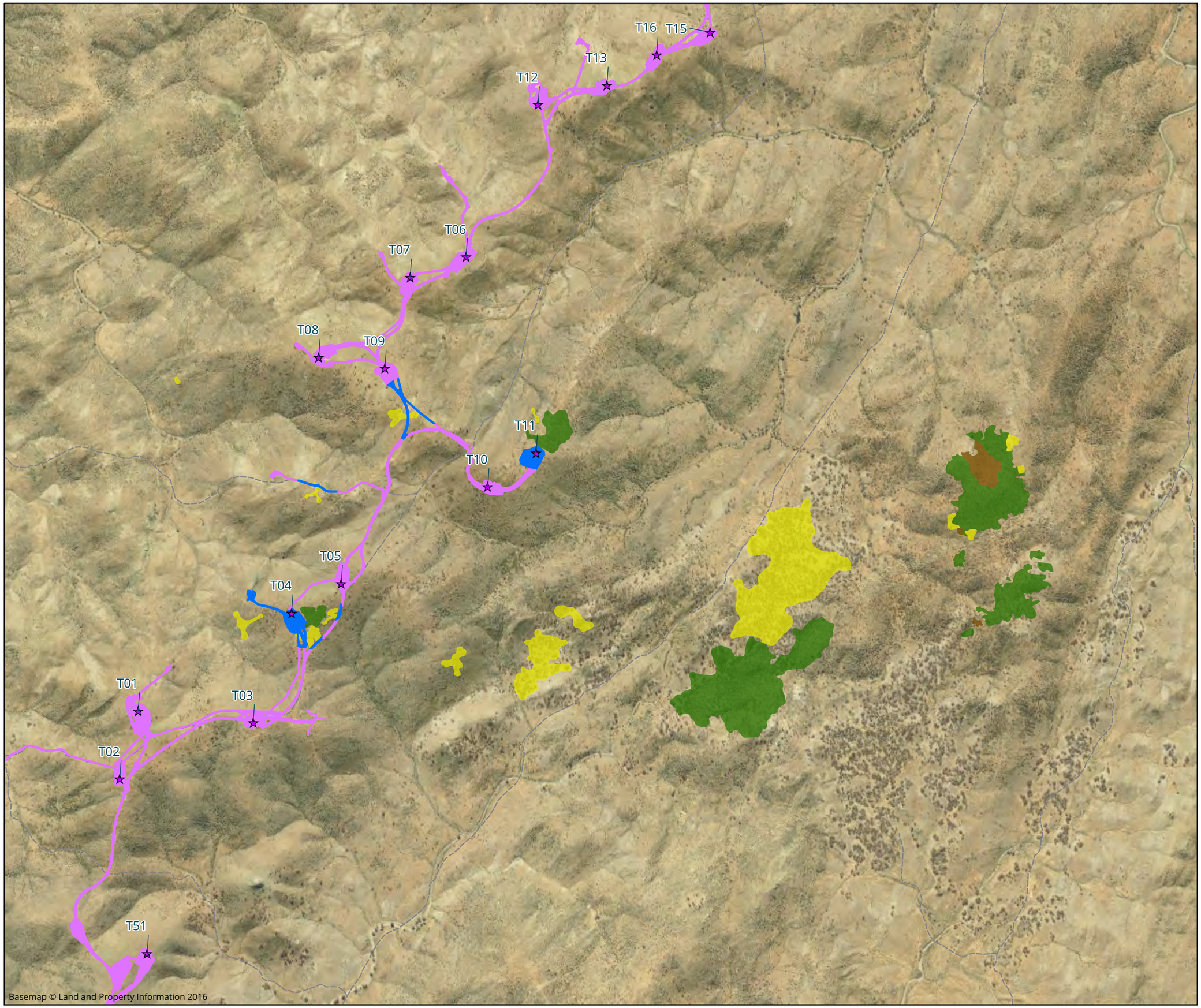

Legend

- Study area
- Turbine
- Infrastructure with no PGSW downslope
- Infrastructure with PGSW downslope

PGSW structural variants

- Porcupine grass with eucalypts
- Porcupine grass only
- Eucalypts only

Figure 3.4 – Infrastructure with PGSW downslope - south-east

0 1,000

Metres
Scale 1:17,500 @ A3
Coordinate System: GDA 1994 MGA Zone 54

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Location:
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6 Monitoring program

Monitoring began with baseline data collection in October 2018 and will be followed by a program of management, regular monitoring and subsequent adaptive response to monitoring results.

Baseline activities are actions required in the early stages of the implementation of the operational management plans and will provide important reference points against which to measure future success and/or guide adaptive management. Baseline activities are summarised in Table A.5.

Ongoing monitoring will provide robust data for assessing the effectiveness of management activities to improve the biodiversity values of the study area. This data will inform the refinement management actions where appropriate.

6.1 Climate data

Monthly climate data for the duration of the monitoring program will be downloaded from the Bureau of Meteorology website http://www.bom.gov.au. Data from the weather station at Broken Hill Airport will be used as it is the nearest to the study area.

Climate data to collate:

- Monthly rainfall total
- Monthly minimum and maximum temperature
- Average rainfall by month
- Average minimum and maximum temperature.

Silverton Wind Farm will also use meteorological masts (met masts) throughout the wind farm to collect data on wind speed, wind direction, ambient temperature, humidity and atmospheric pressure. This data will contribute to understanding local weather conditions.

6.1.1 Dynamic nature of arid lands

The Silverton Wind Farm is located in the arid zone, where the climate is noted not only for low average rainfall, but high variability in rainfall between years. Extended drought periods are interspersed by rainfall events of varying magnitude, stimulating the growth of flora from dormant seedbanks. Large infrequent rainfall events also provide cues for the recruitment of long-lived perennial plants through flushes of biomass, fruits and seeds (Keith and Tozer 2012). This increased plant growth also triggers population increases in associated fauna species, as resources become abundant.

This inherent variability makes it difficult to detect true change resulting from management actions, particularly in the short term. Having climate data at hand will assist in monitoring the interrelatedness of seasonal weather events and management activities.

6.2 Goat management infrastructure

A goat-proof fence was established on the site in May 2014. A map of the fence layout as it was proposed to be built is provided in Figure 2. The final position of the existing fence, its condition and associated infrastructure will be accurately mapped by March 2019.

The condition of goat control fencing and associated infrastructure will be inspected quarterly and after severe weather events and GE operational staff will work with the leaseholder to ensure any damage is repaired within two weeks of notification.

6.3 Vegetation condition - PGSW

The following section details the methods for establishing the monitoring program designed to measure the condition of PGSW over time. These measures of diversity, structure and function will assist in site management decision-making and provide evidence to demonstrate the attainment of a net improvement in vegetation health and condition.

Following baseline survey, vegetation condition will be measured annually for three years in the 20 quadrats and associated subplots as outlined below

6.3.1 Site selection

A goat-proof fence was erected to protect the majority of the PGSW in May 2014 (Figure 2). There are only small patches of the community outside the fence. Therefore, monitoring a management response in the vegetation will primarily be achieved through measuring an improvement in 'condition state' from a baseline set of observations.

Twenty survey sites (quadrats and associated subplots) have been stratified proportionally within the three known variants of the community according to area (Table 6-1), described within the PGSWRP Section 2.1.3. All sites have been located randomly within the vegetation zones with consideration of access for monitoring and are shown in Figure 4. Sites were located in a minimum patch size of 0.5 hectares, at least 30 metres apart and at least 30 metres from the edge of a polygon. They were also located within one kilometre of existing access tracks where possible, which only occurred within the goat fence.

Fifteen sites were located inside the goat fence, with five sites located outside of the goat fence. This will allow for assessment of the impacts of management of goats on vegetation, as well as the success of management actions. Plots were established during baseline survey in October 2018 and locations are detailed in Table 6-2.

Table 6-1 Stratification of monitoring plots

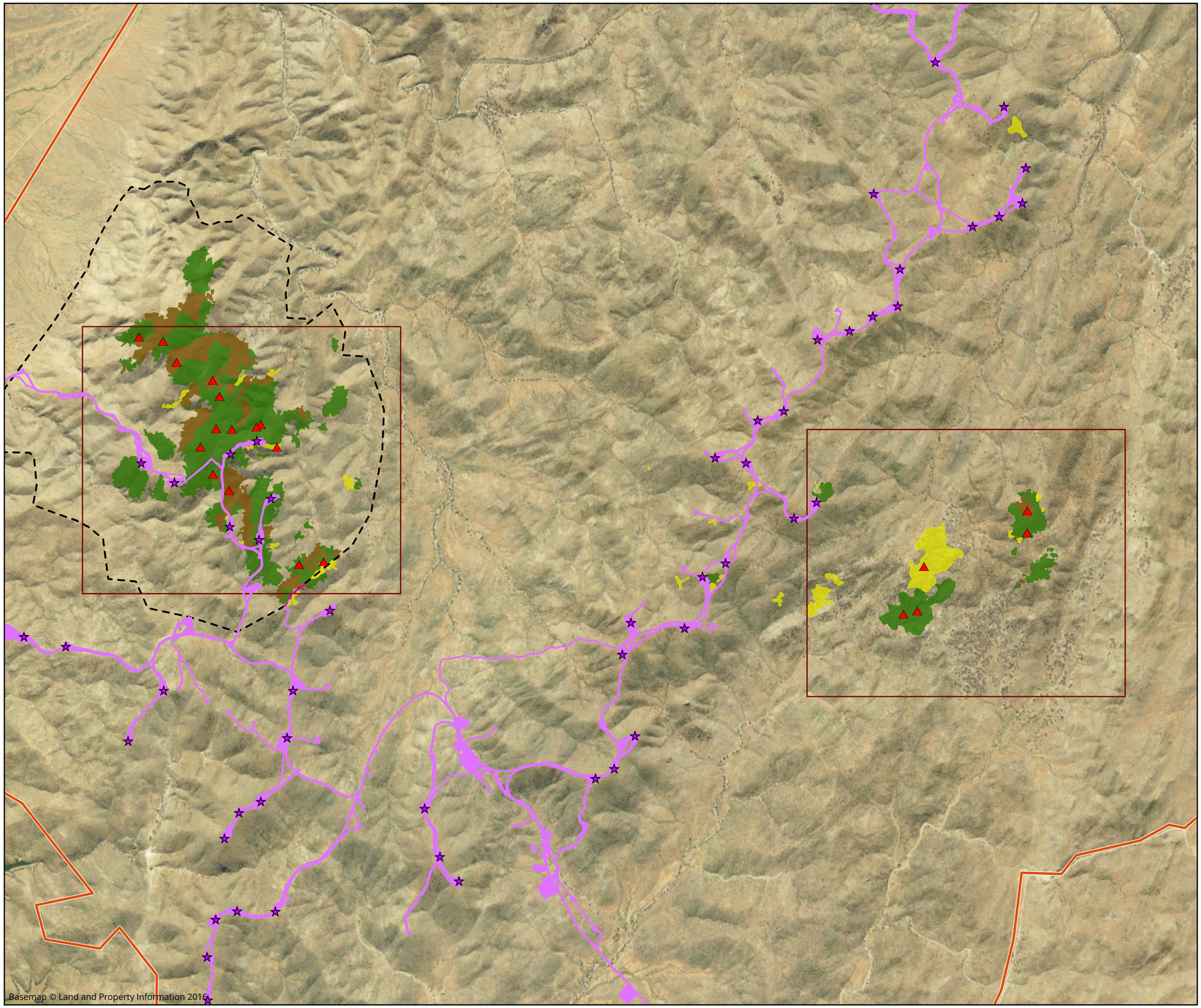
PGSW variant	Area (ha) in GF*	Sites in GF*	Area (ha) outside GF*	Sites out of GF*	Area (ha) total	Total sites
Porcupine Grass with eucalypts	216.5	11	41.4	3	257.9	14
Eucalypts only	5.0	1	33.5	1	38.5	2
Porcupine grass only	71.2	3	2.5	1	73.7	4
TOTAL	**292.7**	**15**	**77.3**	**5**	**370.1**	**20**

**GF – Goat fence*

Note: figures in table may not sum to totals, any difference is due to rounding.

Table 6-2 Location of monitoring plots

Site Number	Zone	Easting	Northing
1	54	8754143	4649361
2	54	8754401	4649325
3	54	8754559	4649102
4	54	8754924	4648931
5	54	8755044	4648782
6	54	8754852	4648231
7	54	8755011	4648429
8	54	8755182	4648435
9	54	8755441	4648473
10	54	8755487	4648506
11	54	8755671	4648272
12	54	8755061	4647988
13	54	8755201	4647774
14	54	8755979	4647043
15	54	8756233	4647089
16	54	8762394	4646889
17	54	8762536	4646933
18	54	8762580	4647408
19	54	8763650	4647826
20	54	8763639	4648058



Legend

- Study area
- Goat fence
- Infrastructure
- Pre-existing road
- Vegetation monitoring quadrat
- Turbine

PGSW structural variants

- Porcupine grass with eucalypts
- Porcupine grass only
- Eucalypts only

Fig. 4.1
Vegetation monitoring quadrats - overview

0 500 1,000
Metres
Scale 1:37,500 @ A3
Coordinate System: GDA 1994 MGA Zone 54

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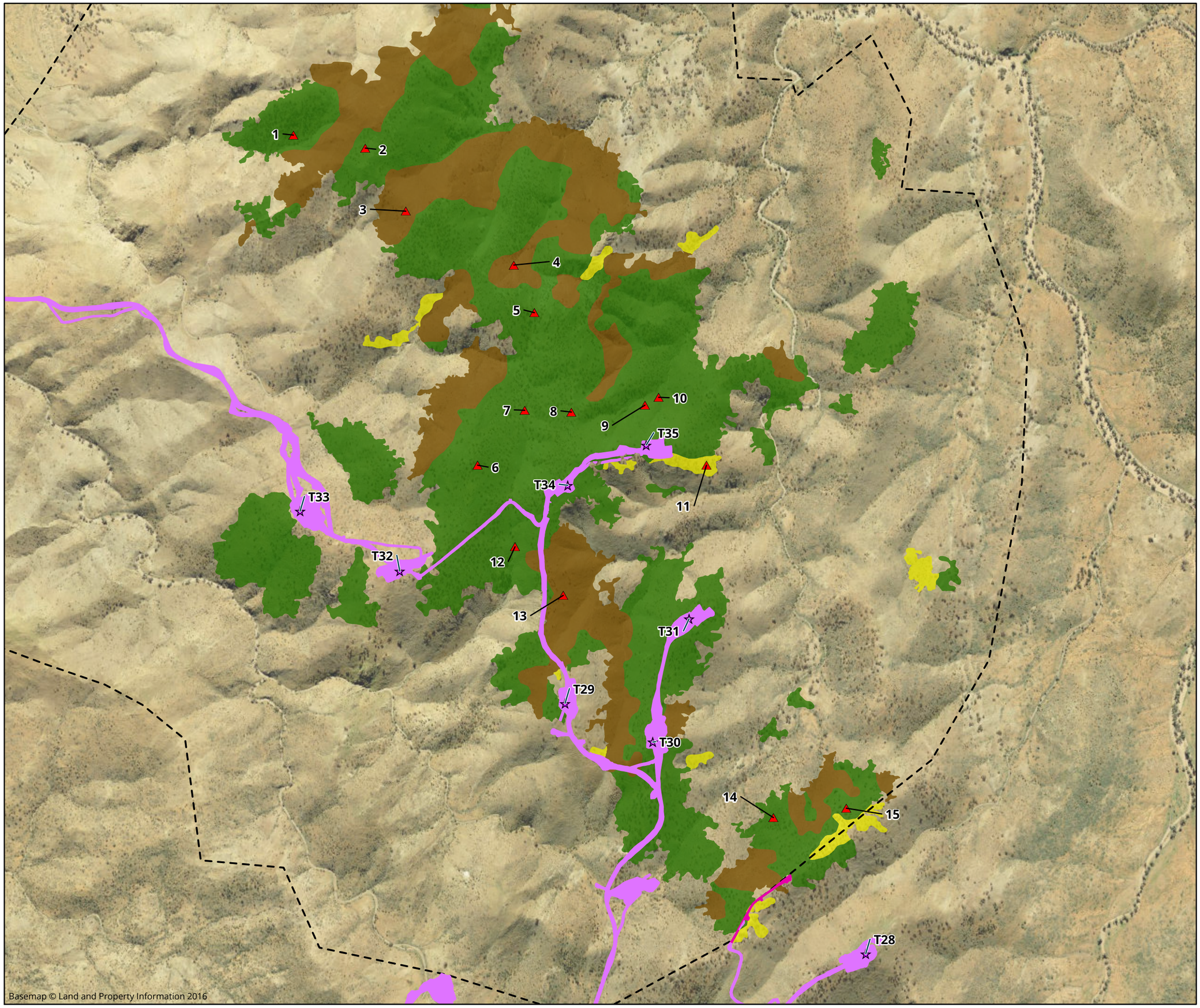

Legend

- Study area
- Goat fence
- Infrastructure
- Pre-existing road
- Vegetation monitoring quadrat
- Turbine

PGSW structural variants

- Porcupine grass with eucalypts
- Porcupine grass only
- Eucalypts only

Fig. 4.2
Vegetation monitoring quadrats - goat fence / west

0 500
Metres
Scale 1:12,500 @ A3
Coordinate System: GDA 1994 MGA Zone 54

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T06
T11
T10
20
19
18
16
17

Legend

- Study area
- Goat fence
- Infrastructure
- Vegetation monitoring quadrat
- Turbine

PGSW structural variants

- Porcupine grass with eucalypts
- Porcupine grass only
- Eucalypts only

Fig. 4.3
Vegetation monitoring quadrats - outside goat fence / east

0 500
Metres
Scale 1:12,500 @ A3
Coordinate System: GDA 1994 MGA Zone 54

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6.3.2 Quadrats -vegetation condition and health

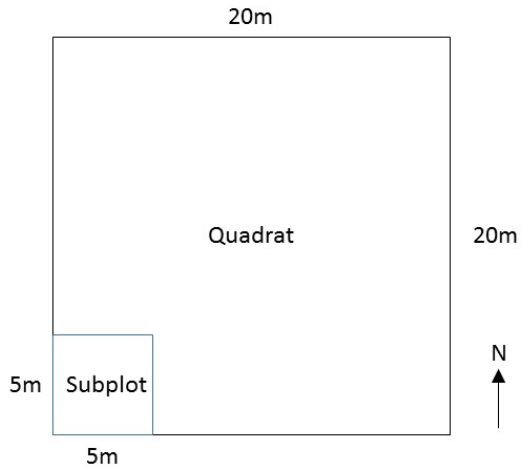
Vegetation condition (floristics and structure) will be measured in the 20 permanent quadrats, each measuring 20 x 20 metres and using a simplified form of the NSW vegetation survey standards (Sivertson 2009). Abundance of all flora species will be recorded in a nested 5 x 5 metre subplot (Section 6.3.4). Plot layout is shown in Figure 5.

Quadrat location is to be recorded in the SW corner, and the quadrat is to be aligned with two sides from the SW corner following magnetic north and east. Within these quadrats the following variables will be recorded:

- Structure of vegetation (vegetation strata type, height, dominant species and percent cover of strata), including percent cover of litter, cryptograms, rock and bare ground
- Projective Foliage Cover (PFC) of all plant species assessed as a relative percentage cover
- Lineal metres of coarse woody debris (CWD) >10 centimetres diameter
- Woody stem sizes
- Tree health (observations of canopy intactness, insect damage, mistletoe load, epicormic/lignotuber growth etc)
- Whether regeneration is observed for each woody species
- Disturbance notes

Photopoints will be positioned in the field and their location and direction recorded. A reference specimen will be collected for all species.

Figure 5 Monitoring plot layout



6.3.3 Quadrats -grazing pressure

Woody species occur in low abundance within the community. Therefore an assessment of all woody individuals within the 20 x 20 metre quadrats will be undertaken with an adaptation of the method used by AREA Environmental Consultants and Communication (2017) to assess the browsing impacts of goats in Mutawintji NP (Appendix 5).

For all woody species (or selected key woody species) within each quadrat the following will be documented:

- Height, width at widest point, height of browse line for plants > 2 metres tall

- Condition above browse line:
  - Good = No dead wood
  - Dead Wood Fair = Trees with <50% dead wood
  - Dead Wood Poor = Trees with >50% dead wood.
- Condition below browse line including all plants less than 2 metres in height:
  - Unbrowsed
  - Low-Moderate browsing
  - High-Intense browsing
  - Totally browsed (no living growth below browse line).
- A condition state of each woody plant to show the current browse state (AREA 2017):
  - **Uninterrupted** - Fresh new growth with no or very little sign of browsing. Plant growing periodically in relation to natural growth stimuli (rainfall and temperature).
  - **Arrested** - Plant in hedged or topiarised form due to intense browsing. New growth continuously eaten and not extending beyond previous browse levels preventing the plant from growing to its natural potential.
  - **Retrogressed** - Death of all or some stems previously browsed with new growth occurring from the lower stems. Stem death arises from stresses induced by browse.
  - **Released** - New growth from browsed stem not browsed due to temporary or permanent relaxation of browse pressure or plant grown beyond browse line.

6.3.4 Nested subplots

Nesting of additional smaller subplots is required for measuring fine scale responses of annual plant abundance, which will improve the ability to identify individual species responses to management actions.

Twenty 5 x 5 metre subplots will be established using the same SW corner as the 20 x 20 metre quadrats. Within these subplots, absolute abundances of all flora species will be recorded.

6.4 Herbivore abundance

6.4.1 Scat counts

Abundance and grazing activity by herbivores, including goats, are regularly estimated by scat counts. These have been shown to correlate with actual densities of animals (Russell et al. 2011).

The scats of large macropods likely to occur on the site (e.g. Red Kangaroo *Macropus rufus*, Eastern Grey Kangaroo *M. giganteus*, Western Grey Kangaroo *M. fuliginosus* and Euro *M. robustus*) cannot not be reliably differentiated and so the results for these species will be pooled (Russell et al. 2011).

Macropod, goat and rabbit scats will be counted in all 5 x 5 metre subplots as an approximate measure of herbivore activity. In the baseline surveys, these will be categorised into two classes to provide an indication of past and current grazing pressure – old/dry (grey) and recent/fresh (black). Counts will be absolute for statistical assessment on a continuous scale.

In the ongoing monitoring only recent/fresh scats will be counted to estimate current herbivore activity.

6.4.2 Landholder estimates of goat populations

Data on goat populations will be requested from leaseholders within the project area on a regular basis. Timing is to be determined in consultation with the GE operational staff and leaseholders.

6.5 Exotic weed species

6.5.1 Baseline mapping

Locations of all known populations of exotic flora, particularly NSW DPI priority weeds (Table A2-1 in Appendix 2 of the VMP), will be recorded and collated into a GIS shapefile to facilitate ongoing management. This includes collating spatial data on populations of weeds from all consultants involved with the Silverton Wind Farm project. Baseline mapping of the known locations is to be completed by March 2019.

In addition to existing weed mapping data for the study area, any additional records arising from the spring vegetation survey program and ongoing monthly monitoring during the operational phase of the wind farm will be mapped.

6.5.2 Ongoing monitoring

Monitoring and subsequent management of exotic weed species as summarised in Section 5.4 will focus on three key areas:

- existing weed populations
- areas of construction disturbance
- opportunistic observations of new populations documented during the monitoring program.

Inspections of known weed populations and potential areas of new incursions will occur every three months post construction for the first 12 months and then twice-yearly at:

- mapped priority weed locations
- temporary disturbance areas including biomass and spoil derived during road, batter and drain maintenance
- restoration areas
- all other asset/infrastructure maintenance areas.

Inspections will occur more frequently as required, particularly at one and three months following significant rain events (> 25 millimetres) to ensure no new incursions have established, or if required following maintenance inspections.

Locations of populations of exotic species observed during ongoing site management by GE operational staff, the future site manager or during ecological monitoring programs are to be provided to the Project Ecologist who will map and include them in the annual weed management program.

Site inspection checklists are to be completed each site visit by GE staff, Vegetation Management Contractors and the Project Ecologists. In addition, annual reports will be prepared by the Vegetation Management Contractors and Project Ecologist as outlined in Table 5.2 of the VMP.

6.6 Barrier Range Dragon

6.6.1 Baseline surveys 2018

Characteristics of habitat for the threatened Barrier Range Dragon were documented by NGH Environmental (2008c) and Biosis (2018a). Baseline monitoring of the presence and abundance of the species was carried out in February 2018. Late summer was chosen as the species is active and individuals can be readily observed.

Sixteen survey sites were selected during an initial on-site inspection. Sites were chosen to represent a sample of the following:

- Natural rock outcrops with a complex of exposed bedrocks and loose fractured boulders of varying sizes that offered multiple potential basking and refuge microsites.
- A mixture of naturally outcropping rocks and rocks that have been artificially moved, aggregated or turned out of the ground during wind farm construction.
- Entirely artificial aggregations of rocks such as batters of roads and turbine hardstands created during wind farm construction.

All sites were adjacent to wind farm roads, both for ease of access and to permit monitoring of the potential effects of roads on the species. The GPS location of each survey site was recorded for the purposes of future monitoring. The locations of all survey sites are detailed in Biosis (2018a).

Thirteen survey sites were outside of the goat fence and three were inside the fence. The dominant vegetation community within the goat fence is PGSW. Goat density is planned to be managed within the fenced area with a view to protecting that community as described in the PGSWRP and the GMP. A small number of survey sites for Barrier Range Dragons were chosen within that area to permit the effects of goat management on the species to be monitored.

The basic habitat type (according to the three types of rocky environments outlined above) and whether they are inside or outside of the goat fence was documented for each site (Biosis 2018a). In addition, the presence and abundance of goat scats was documented for each site. This was not quantified but was recorded as a relative and qualitative value (low / medium / high) allowing comparison between survey sites. Weather data was documented for each survey.

Surveys took the form of standardised timed counts of dragons. Each survey was carried out by two experienced herpetologists. Each count was for 25 minutes (50 person-minutes). For safety reasons the two team members remained within visual distance of each other during counts, but each took a separate random path such that they were not likely to observe the same individual Barrier Range Dragon. During the surveys, observers paused frequently and used binoculars to scan habitat for dragons. The survey design using timed random meander was chosen rather than using defined area surveys because the habitat for the species was not continuous at all sites and because, while all habitat could be scanned from a distance, at some sites it was precipitous and too dangerous to access directly.

During five days of surveys each site was surveyed on four occasions. This permitted the mean number of dragons observed at each site over the duration of the entire survey to be determined. The timing of counts at each site was varied and all sites were counted during morning and afternoon. Surveys were not commenced during the hottest part of the day between 1300 and 1500 hrs when surface temperatures of many rocks exceeded 50°C and it was evident that dragons were less active and less observable.

In each count the total number of adult Barrier Range Dragons of each sex and the number of juveniles, were documented. Adult males and females are readily distinguished on the basis of very different colouration. Juveniles were distinguished from adults based on their smaller size.

6.6.2 Ongoing monitoring

Future monitoring of the population of Barrier Range Dragons at Silverton Wind Farm will be vital to understanding potential effects of the operation wind farm on the species. It will also inform understanding of the on-going values of management actions to be implemented on behalf of the species. In turn, this will allow adaptive management to be based on good empirical evidence of responses by the species.

Monitoring the species will be carried out over an initial three-years of operation of the wind farm. In order for results to be comparable and to determine the values of management actions, operational monitoring will use the methodology and sites used in the 2018 surveys. The locations (GPS co-ordinates) of all survey sites are tabulated in Biosis (2018a).

Future monitoring will be undertaken annually in late summer for the first three years of wind farm operation. Following monitoring in each year a report will be prepared and submitted to OEH. The report will compare the results of each year with the cumulative results from previous years and will note any significant changes in numbers and distribution of Barrier Range Dragons. All efforts will be made to ascertain and report on the likely causes of any such changes.

At the conclusion of the first three years of monitoring, results of the investigations will be thoroughly reviewed to ascertain the status of the Barrier Range Dragon population and the nature of its responses to operation of the wind farm and to prescribed management actions

Potential impacts on the species have been identified and include:

- Loss of habitat
- mortalities due to road traffic
- degradation of microhabitat by goats
- effects of feral predators
- wildfire
- various management actions implemented by site personnel.

Management measures detailed in the BRDP (Biosis 2018a) include:

- The use of rocks excavated for wind farm construction to create artificial rock structures to increase available habitat for Barrier Range Dragons
- enforcement of vehicle speed restrictions to prevent or reduce the incidence of Barrier Range Dragon mortalities due to traffic
- management of Feral Goats
- control of feral predators
- measures to ensure site personnel are aware of the species and take measures to minimise impacts on it.

The annual and three-year reviews will be used to guide any potential adaptive management actions for the species. to ensure there is a net gain in the conservation value of this community. Requirements for any further monitoring will be determined in the light of results of the review.

Adaptive management, potentially including further monitoring, will also be considered in order to determine the effects of any significant new or altered management regime, such as a major campaign against feral predations or following fire within the wind farm site.

7 Predicted response

The anticipated responses to the management activities are described below.

7.1 Climate data

The collation of BOM weather data will enable an analysis of the monitoring data with consideration of seasonal variability. As mentioned in Section 6.1.1, this variability could make it difficult to detect the effects of management activities, particularly in the short term. However, it is anticipated that the monitoring program will provide sufficient data to inform ongoing biodiversity management of the wind farm.

7.2 Goat management infrastructure

The implementation of regular monitoring of infrastructure for Feral Goat management will ensure timely repair of the Feral Goat fence to protect the significant PGSW vegetation it contains.

7.3 Vegetation condition

7.3.1 Species diversity and abundance

It is anticipated that improved management of goats will result in increased plant species diversity, abundance and cover within the goat fence as species have increased opportunities for recruitment, survival and growth (Keith and Tozer 2012). This response could fluctuate according to climatic conditions.

7.3.2 Condition of woody species

A significant reduction in the density of Feral Goats should result in a significant reduction in browsing pressure. Under suitable seasonal conditions this should be reflected in increased growth of the woody species currently subject to browsing pressure (McDonald 2009). With successful goat control, Arrested and Retrogressed forms (described in Section 6.3.3) should not occur (AREA 2017).

Reduced browsing pressure should result in growth of the heavily browsed shrubs. In the short -term, a change in condition classes from Arrested form to Released form for most woody individuals within the goat fence would be a measure of reduction in browsing pressure (AREA 2017).

Macropus robustus diets are restricted mainly to graminoid species except in the most dire of seasons, so any browse on shrub species, would be attributed to Feral Goats only (McDonald 2009).

7.3.3 Litter and bare ground

Goats are generalist, browsing herbivores that can feed on low nutrient fibrous vegetation (including litter), allowing them to continue to feed under adverse environmental conditions. Increased litter therefore is the first stage in recovery from goat impacts. Russell et al. (2011) found that where goats are excluded, the amount of litter increased at the treatment sites and there was an associated decrease in bare ground.

An increase in litter can be viewed as the first stage in recovery from goat impacts. It should provide better seed germination conditions than bare ground nutrient capture and retention, leading to increased vegetation cover in the medium to long term (Russell et al 2011).

7.4 Herbivore abundance

Improved management of goats within the enclosure will result in a reduction in goat abundance, and therefore an associated decline in fresh scat abundance. Reduced scat numbers at designated long-term monitoring sites have been directly correlated with lower numbers of Feral Goats captured during herding and trapping exercises (Sluiter 2015).

A study of goat management in rangelands found that the number of goat scats per transect significantly decreased at the sites where goats were excluded by fencing, but did not change at non-treatment sites (Russell et al. 2011). This study also found that the goat-proof fences did not affect kangaroo numbers.

7.5 Exotic weed species

Implementation of the weed management and monitoring measures as described will ensure that:

- all NSW DPI Priority Weeds are controlled to current levels or less
- all other priority weeds will be limited to current levels
- any new weed incursions that are identified within the study area (particularly areas of construction disturbance) will be eliminated.

7.6 Fire

Wildfire represents a substantial risk for infrastructure of Silverton Wind Farm. The development of fire suppression guidelines similar to those developed for the Mumbida Wind Farm (SWFS 2013, GEW&W 2007) will include a strategy of fighting wildfires with consideration of the unique biodiversity values of Silverton Wind Farm. The existence of the wind farm with permanent staff and equipment on-site is likely to add capacity to prevent or suppress wildfires.

Promptly supressing wildfires is likely to reduce or limit the extent of wildfires. This will allow the occasional establishment of recently burnt areas whilst ensuring the retention of long-unburnt vegetation, which provides important habitat for many flora and fauna species (Haslem et al. 2011), including Barrier Range Dragon (Biosis 2018a).

As discussed in the PGSWRP, maintaining some vegetation in early post-fire condition as a 'fire –break' may prevent extensive wildfires, however any strategic use of prescribed fire to reduce the risk of wildfire must be carefully considered before implementation (Giljohann et al. 2015).

Young post-fire plant growth may be more palatable to herbivores than older biomass, due to reduced chemical and physical defences and higher nutritional content (Keith & Tozer 2012). Therefore, Feral Goats are to be excluded from PGSW for at least three years following fire to allow recovery of the community. On-going mustering will also need to occur in the fenced area to actively remove any stray goats during the exclusion period. Resumption of grazing would be subject to the results of ongoing monitoring of the recovery of the vegetation.

Long term monitoring of PGSW and the response of the community to any wildfire events will allow a greater understanding of the response of the community to fire. As mentioned in the PGSWRP, ongoing research in similar mallee communities is likely to provide insight into optimal fire management strategies.

7.7 Barrier Range Dragon

Barrier Range Dragons were present at all 16 survey sites in 2018 and the mean and range of their abundance was ascertained for each site. Additionally, Barrier Range Dragons were found at a number of other locations where they were observed incidentally. Results of the 2018 surveys suggest that the species was more widespread at the site than was indicated by the NGH Environmental (2008c) surveys for the species. Barrier Range Dragons were also found to be using rocky microhabitats, such as road and turbine hardstand batters created for the wind farm. The mean number of dragons detected over four surveys at each site was determined (Biosis 2018a) and provides a measure against which to compare the results of future monitoring during the operational phase of the wind farm.

Given that the 2018 results indicate that they are locally widespread and relatively abundant within the wind farm site, the principal indicators for future management will be that a decline does not occur. Results detailed in (Biosis 2018a) provide measures against which to compare the results of future monitoring as a means to determine the local population trend.

7.8 Feral predator control

Under the *Local Land Services Act 2013* all land managers in NSW, whether on public or private land, have an obligation to control declared pest species on their land, which includes foxes under the Pest Control Order. Declared pest species, including foxes, will be controlled in accordance with NSW legislation, policy and strategies administered by the NSW Department of Primary Industries.

The feral pest management program will be implemented in association with leaseholders on an on-going basis.

8 Contingency actions

In the event that monitoring shows that PGSW, Barrier Range Dragon, or habitat for other threatened flora and fauna has been or is being impacted by the construction or operation of the Silverton Wind Farm, GE Capital will undertake the following contingency actions:

- Notify DPE and OEH
- If required, undertake additional surveys and monitoring in consultation with OEH to accurately quantify the severity and extent of the suspected or identified impacts using agreed methodologies.

As discussed in Section 3.4.1 of the GMP Feral Goats will also need to be excluded from the fenced area in accordance with the GMP at other times if the results of on-going monitoring indicate that the PGSW is not recovering to the desired level or if climatic conditions are poor (e.g. low rainfall).

Additionally, as outlined in Section 5.2.5 of the PGSWRP and Section 7.6 of this report, the combined impact of a fire with subsequent grazing can accelerate seedling mortality. If total grazing pressure is contained following fire, recruitment can occur and improvement in vegetation condition would be expected. Therefore, grazing by Feral Goats will be completely excluded from PGSW for at least three years following fire, with resumption of grazing only to be undertaken based on advice from the Project Ecologist and following an assessment of ongoing vegetation monitoring data.

9 Adaptive management

It is expected that management of the Silverton Wind Farm can be modified, if and as necessary, to achieve the desired biodiversity objectives in response to the monitoring program. This cycle of 'do, monitor, evaluate and respond' is the foundation of adaptive management and is widely applied to terrestrial and aquatic ecosystem management (Kingsford et al. 2011). Consistent with adaptive management, monitoring results will be reviewed and actions revised from time to time where documented, improved knowledge of ecosystem management becomes available, or where on ground evidence supports a change in management trajectory.

Adaptive management for this site primarily relates to maintenance and improvement of vegetation extent and health to achieve a net gain in condition based on the following activities and related monitoring results:

- Management of grazing pressure from goat populations and impacts on episodic recruitment events and vegetation health
- Weed management based on weed threat and population extent, or new invasive species
- Fire management related to adapting to planned and unplanned fire.

Adaptive management requires an agreed monitoring, evaluation, reporting and improvement cycle (MERI). As the various management plans and strategies for the site contain a range of objectives, activities and monitoring programs, a framework for MERI is provided below and will be further developed with the site manager:

Monitoring – activities and programs outlined in this plan and others to measure biodiversity condition and achievement of objectives.

Evaluation – collation of results by the site manager (or their agents) and assessment of trajectory towards desired objectives.

Reporting – internal and external reporting cycles that document results, general observations and suggest changes or maintenance of the *status quo*.

Improvement – the actual changes to management, and attendant monitoring programs, to ensure they remain relevant as conditions change or management challenges arise.

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Appendices

Appendix 1 Consultancy endorsement by OEH

Appendix 2 Condition compliance

Table A.1 Project Approval (Schedule 3 Biodiversity) – Conditions of consent

ID	Condition of Consent	Addressed in:	Location
17	**Operating Conditions** The proponent must:		
a)	ensure that no more than • 0.81 hectares of Porcupine Grass Sparse Woodland CEEC; and • 0.54 hectares of the Mulga/Red Mallee Shrubland and Chenopod – Red MalleeWoodland/Shrubland; is cleared for the project, unless the Secretary agrees otherwise	Conditional approval granted to clear 6.81 ha PGSW Mulga / Red Mallee Shrubland and Chenopod – Red MalleeWoodland / Shrubland was avoided in the final layout	Appendix 6 Figure 2 pg 12
b)	ensure wind turbines are located as far as possible, but at least 200 metres, from raptor nests unless the Secretary agrees otherwise	BBAMP	Section 5.1 pg 27
c)	ensure no development occurs in mapped Barrier Range Dragon habitat hotspots	CBMP (EHP 2018)	Section 4.1 pg 9
d)	locate wind turbines as far as practicable away from treed vegetation, rocky outcrops, caves or disused mine shafts/sites	CBMP (EHP 2018)	Section 4.1 pg 9-10
e)	minimise: • impacts on the Barrier Range Dragon; • impacts on threatened bird and bat populations; • the clearing of native woodland vegetation and fauna habitat, in particular spinifex habitat, standing dead trees and woody habitat and high biodiversity value vegetation communities	GMP (ensuring goat numbers do not exceed the carrying capacity of the Wind Farm site)	GMP pg. 14

ID	Condition of Consent	Addressed in:	Location
f)	Enhance the Porcupine Grass Sparse Woodland CEEC on site to ensure there is a net gain in the conservation value of this community.	PGSWRP	Section 5 pg 42
18	**Biodiversity Management Plan** Prior to the commencement of construction, the Proponent must prepare a Biodiversity Management Plan for the project in consultation with OEH, DI Lands and local leaseholders on site, and to the satisfaction of the Secretary. This plan must:		
a)	include updated baseline mapping of the vegetation communities and key fauna habitat onsite;	CBMP (EHP 2018) VMP	Section 3 pg 8 Figure 2 pg 12
b)	clearly identify the areas on site that would be disturbed;	This report	Section 3 pg 13
c)	include a: • description of the measures that would be implemented for: – minimising the amount of clearing within the approved project footprint – minimising the loss of key fauna habitat – minimising the impacts on fauna on site, including undertaking pre-clearance surveys – rehabilitating and revegetating temporary disturbance areas – protecting vegetation and fauna habitat outside the approved disturbance area – maximising the salvage of resources within the approved disturbance area - including rocks, vegetation and soil resources - for beneficial reuse (including revegetation and fauna habitat enhancement) on site – collecting and propagating seed (where relevant) – controlling weeds and feral pests	CBMP (EHP 2018)	Section 5 pg 12 Tables 2 - 12

ID	Condition of Consent	Addressed in:	Location
	– controlling erosion – controlling access – bushfire management.		
c)	• Recovery Plan for enhancing the conservation value of the Porcupine Grass Sparse Woodland CEEC on site, that includes: – baseline data on the vegetation and fauna habitat within the community – detailed performance and completion criteria for evaluating the performance of the enhancement activities	PGSWRP PGSWRP Monitoring as per this report	Whole document Section 2 pg 10 Section 6 pg 26
c)	• Barrier Range Dragon Management Plan for minimising any impacts on the species on site and enhancing the potential habitat for this species	BRDMP	Whole report
c)	• Goat Management Plan for the site	GMP	GMP
c)	• Vegetation Management Plan for restoring vegetation and habitat in the temporary disturbance areas and clearing vegetation for transmission line maintenance	VMP	Whole report
c)	• Include a detailed program to monitor and report on the performance of these measures.	This report	Section 4.3 pg 15
19	**Bird and Bat Adaptive Management Plan** Prior to the construction of any wind turbines, the Proponent must prepare a Bird and Bat Adaptive Management Plan for the project in consultation with OEH to the satisfaction of the Secretary. This program must include:	BBAMP	Whole report
a)	Baseline data on threatened and 'at risk' bird and bat species and populations in the locality that could potentially be affected by the project;	BBAMP	Section 3 pg 6

ID	Condition of Consent	Addressed in:	Location
b)	A detailed description of the measures that would be implemented on site for minimising bird and bat strike during the project, including: • locating turbines as far as possible away from any raptor nests • minimising the availability of raptor perches • prompt carcass removal • controlling pests • using best practice methods for bat deterrence • adaptive management of turbines to reduce mortality.	BBAMP	Section 5 pg 27
c)	Trigger levels for further investigation of the potential impacts of the project on particular bird or bat species or populations, and the potential implementation of measures to enhance or protect these species or populations in the locality	BBAMP	Section 3.2 pg 11
d)	A detailed program to monitor and report on the effectiveness of these measures, and any bird or bat strikes on site.	BBAMP	Section 4 pg 15

Table A.2 Additional Requirements (OEH 24/03/2017)

ID	Additional Reqirements	Addressed in:	Location
AR1	The BMP must be prepared before construction starts and needs to clearly identify the development footprint and vegetation that will be cleared	VMP This report	Section 3.2 pg 16 Section 3 pg 13
AR2	The final micro-siting needs to be consistent with the conditions of approval, and the impacts of roads also needs to be minimised in the PGSW and Barrier Range Dragon habitat	CBMP (EHP 2018) PGSWRP	Section 5 pg 12 Section 4.2.5 pg 27 Section 4.2.6 pg 39
AR3	The BMP needs comprehensive detailed vegetation and/or threatened species habitat mapping of the entire site, with all sensitive environmental features, nest sites and habitat resources of at-risk species clearly identified and quantified against the development footprint	CBMP (EHP 2018) VMP This report BABMP	Section 3 pg 8 Section 3 Pg 16 Section 3 Pg 13 Section 5.2 pg 27
AR4	The BMP does not include any survey or monitoring strategies that are adequate for assessing and managing impacts of the wind farm on biodiversity, including the impact of goat management	Now in this report	Section 6 pg 26
AR5	There is strong justification in the previous EA documentation for goat management at the proposal site. The GMP presented will not result in effective goat management. If implemented in its current form, OEH would require a clearly identified process to mitigate the impact of the clearing associated with the project, which may include an additional area of vegetation management fenced to exclude goats	GMP This report	Section 3 pg 10 Section 5.2 pg 18
AR6	In the long term, the plans need to cover the entire footprint as identified in the consolidated Conditions of Approval following Modification 3	Final reports cover all impacts of planneddevelopment for 58 turbines.	All final reports submitted.

ID	Additional Reqirements	Addressed in:	Location
		Any expansion of the windfarm will be subject to further assessment	

Table A.3 Additional Requirements (DPE 2/11/2017)

ID	Additional Requirements	Addressed in:	Location
The (PGSW and GMP) plans must:			
AR7	Be prepared by a suitably qualified expert (preferably with experience in the preparation of relevant plans) endorsed by OEH	GMP PGSWRP This report	Section 1.2 pg. 3 Section 1.2 pg 8 Appendix 1
AR8	Include figures and tables detailing the final clearing footprint, infrastructure layout, environmental constraints and areas of EEC (PGSW)	PGSWRP	Section 4.2.5 pg 27 Figure 10 pg 35 Table 7 pg 27
AR9	The Recovery Plan should also clearly identify the final clearing footprint including how much EEC is proposed to be avoided through micro-siting of the access tracks (i.e. a table comparing the original EA, approved and amended layout calculations)	PGSWRP	Section 4.2 pg 25
AR10	Identify clear objectives, targets and performance indicators	GMP PGSWRP This report	Section 4 pg. 14 Section 5 p 42 Section 7 pg 38
AR11	Detail baseline conditions, including pre-construction goat numbers and the results of updated mapping and analysis of EEC across the site	PGSWRP	Section 2 pg 10 Section 5.2.3 p 42 Section 3.5 p23
AR12	Describe how the objectives, targets and performance measures to be achieved (including timeframes)	GMP PGSWRP	Section 4 pg. 14 Section 5.4 pg 50

ID	Additional Requirements	Addressed in:	Location
		This report	Appendix 3
AR13	Describe the management measures proposed to control goats and address the increased clearing impacts on the EEC	GMP PGSWRP This report	Section 3 pg. 10 Section 5 pg 42 Section 5.2 pg 18
AR14	Describe the proposed quantitative monitoring that will be used to measure whether the proposed actions are achieving the objectives, targets and performance indicators	PGSWRP This report	PGSWRP p42 Section 6 pg 26
AR15	Include a contingency plan (both proactive and reactive) that would be undertaken if the proposed actions are not achieving the objectives, targets and performance indicators	This report	Section 8 p 41

Table A.4 Statement of Commitments – Biodiversity

	Statement of commitments	Project Phase	Addressed in:
SOC 17	Design infrastructure layout to minimise clearing. Confine works wherever practical to cleared or sparsely vegetated areas.	Construction	CBMP (EHP 2018) Section 5.1 pg 13 Table 2
SOC 18 (mod)	Use existing clearings wherever practical for materials lay down, stockpiling and the deposition and retrieval of spoil. Stockpiles would be located appropriately, to minimise impacts on native vegetation, soils and land forms and drainage lines. They would preferentially to be placed in existing areas of disturbance or poor quality vegetation and would be stabilised.	Construction Decommissioning	CBMP (EHP 2018) Section 5.1 pg 14 Table 2 Not yet required
SOC 19 (mod)	Implement weed and sediment erosion controls to minimise onsite habitat degradation resulting from the proposed works. This would include a weed hygiene process.	Construction Operation Decommissioning	CBMP (EHP 2018) Section 5.2 pg 14 Table 3 Section 5.8 pg 19 Table 9 This report Section 5.4, 5.5, 5.6, 5.7. Not yet required
SOC 20 (mod) (new mod)	Site stabilisation and rehabilitation would be undertaken as work progresses, as detailed in a site restoration plan developed in conjunction with Department of Planning and Department of Environment and Climate Change. This plan to include protocols for restoration works such as: – Site preparation – Site stabilisation – Measures to encourage native vegetation recruitment	Construction	CBMP (EHP 2018) Section 5.4 pg 17 Table 5 This report Section 5.7 pg 20

	Statement of commitments	Project Phase	Addressed in:
	– Monitoring – Identification of areas to be rehabilitated – Overall goal of the rehabilitation – Methodology for implementing rehabilitation – Monitoring to determine success – If necessary, alternative plans if rehabilitation is not successful.		
SOC 21 (add)	Laydown sites for excavated spoil, equipment and construction materials would be selected as being weed free sites or treated for weed if required, prior to their use.	Construction	CBMP (EHP 2018) Section 5.8 pg 19 Table 9
SOC 22 (add) (new mod)	Infrastructure placement would avoid areas of high biodiversity value as identified in Map set 6 of the Biodiversity Addendum, where possible and would be minimised as detailed in Map 4-6 if the Biodiversity assessment.	Construction	CBMP (EHP 2018) Section 5.1 pg 13 Table 2
SOC 23 (add)	Beyond use required for the construction of transmission line and road widening of an existing track, the undescribed vegetation communities identified (Mulga/Red Mallee shrubland on rocky slopes of the Barrier Range, and Chenopod- Red Mallee woodland/shrubland on gravelly lower slopes) would be protected from other impacts including use for materials/equipment laydown.	Construction	This report Figure 2 pg 1212 Conditional approval granted to clear 6.81 ha PGSW (Appendix 5) Mulga / Red Mallee Shrubland and Chenopod – Red MalleeWoodland / Shrubland was avoided in the final layout

	Statement of commitments	Project Phase	Addressed in:
SOC 24 (add)	Contractors and staff would be inducted on the significance and sensitivity of the two significant vegetation communities present in the Stage 1b and 1c study areas (Mulga/Red Mallee shrubland on rocky slopes of the Barrier Range, and Chenopod-Red Mallee woodland/shrubland on gravelly lower slopes)	Construction	This report Section 4.2 pg 15
SOC 25 (add) (new mod)	All construction works and associated infrastructure must avoid identified Tawny Rock Dragon hotspots. People, equipment, infrastructure or materials should not impact directly or indirectly on any mapped hotspots (map 3-4 and 3- 5) of the Tawny Rock Dragon Report. For example, where track construction flanks hotspots, no spoil or sedimentation from these activities are permitted to enter the hotspot	Construction	CBMP – BRDMP (EHP 2018) Section 3 pg 6 Table 1
SOC 26 (add)	Road management zones (RMZ) would be included in the final design and enforced during construction and maintenance activities between 1 October and 30 March inclusive when Tawny Rock Dragons are most active. Recommended maximum speed limits would also be applied	Construction Operation	CBMP (EHP 2018) Section 3 pg 6 Table 1 This report Section 5.10 pg 21
SOC 27 (add)	Habitat creation would be undertaken when excavating turbine footings and vehicular tracks by utilising any excess rock (rock not utilised during construction). In order of priority, suitably sized excess rock waste should be placed into rock piles in the vicinity of: – Turbines – Hotspots (not within the hotspot, but adjacent to) – Vehicular tracks As a general guide, rock piles should be between 0.5 – 1 meters in height and cover an area as large as 4 x 4 meters in area. Multiple rock piles can be provided if excess rock waste allows. Soil should not be mixed in with or placed onto these rock piles	Construction	CBMP (EHP 2018) Section 5.6 pg 18 Table 7

	Statement of commitments	Project Phase	Addressed in:
SOC 28 (add)	Excavated soil would not be placed on top of any existing 'rocky outcrops'	Construction	CBMP (EHP 2018) Section 5.2 pg 14 Table 3
SOC 29 (add)	All pre, during and post construction staff should be made aware of the significance of the Tawny Rock Dragon in the study area, through education and awareness and their obligations in regard to hotspots and road management zones	Construction Operation Decommissioning	CBMP- BRDMP (EHP 2018) Section 3 pg 6 Table 1 This report Section 4.2 pg 15 Not yet required
SOC 30 (SOC 21)	Minimise works where practical during and immediately following heavy rainfall events to protect soils and vegetation	Construction Decommissioning	 Not yet required
SOC 31 (SOC 22)	Store excavated topsoil, subsoil and weathered rock on site and replace in a manner that approximates the original ground profile	Construction	
SOC 32 (SOC 23)	Replace at least 20 centimetres of cement-free fill as the top layer where cement is included in cable trench backfill	Construction	
SOC 33 (SOC 24) (mod)	Source imported materials such as sand and gravel from certified sources, free from noxious weeds and Phytophthora infection	Construction	CBMP (EHP 2018) Section 5.8 pg 19 Table 9
SOC 34 (SOC 25)	Undertake post-construction weed monitoring after the first significant rainfall event to ensure that no weed infestations have resulted from the works	Construction	CBMP (EHP 2018) Section 5.8 pg 19 Table 9

	Statement of commitments	Project Phase	Addressed in:
		This report Decommissioning	Section 6.5 pg 34 Not yet required
SOC 35 (SOC 26)	Procure an appropriately qualified ecologist to assist in locating tracks, cabling routes and other infrastructure so as to minimise the impact on threatened species and the Porcupine Grass – Red Mallee – Gum Coolibah hummock grassland identified on site	Construction	Biosis staff supervised construction activities in Area 7 in accordance with approval from Mike Young, 22/12/2017
SOC 36 (SOC 27)	Make contractors and staff aware of type and location of threatened species that occur within the site	Construction Operation Decommissioning	This report Section 4.2 pg 15 Not yet required
SOC 37 (SOC 28)	Minimise track width through Porcupine Grass -Red Mallee - Gum Coolibah hummock grassland where practical. Strategies would include avoiding routes that require extensive cut and fill, and maximising the use of single lane access tracks. Establish clear demarcation (including signage) of the Porcupine Grass - Red Mallee - Gum Coolibah hummock grassland to minimise work and access within this community	Construction	PGSWRP Section 4.2.5 pg 27
SOC 38 (SOC 29)	Prepare and implement recovery plan for the Porcupine Grass - Red Mallee - Gum Coolibah hummock grassland vegetation community which occurs onsite and the threatened reptile fauna which rely on it. This plan would aim to achieve a net gain within this ecological community	Operation	PGSWRP Whole Report
SOC 39 (SOC 30) (mod)	Prepare and implement a goat management plan across vegetation in the stage one area with a particular focus on porcupine grass/red mallee/gum coolibah/hummock grassland. The goat management plan shall be developed with input from the Department of Planning, Department of Environment and Climate Change, Western Catchment Management Authority, Department of Primary Industries, Broken Hill Rural Lands Protection Board and relevant landholders	Operation	GMP Whole Report

	Statement of commitments	Project Phase	Addressed in:
SOC 40 (SOC 31)	Carry out further field work to ground validate the extent and condition of vegetation of conservation significance and threatened fauna in the Stage 2 site area and Stage 2 transmission corridor	Construction	
SOC 41 (SOC 32)	Carry out additional evaluation of the potential for impact on all flora and fauna species listed as threatened with potential to occur within the Stage 2 site area and Stage 2 transmission corridor	Construction	
SOC 42 (SOC 33)	Peg or otherwise delineate the boundaries of EECs in good condition and flora species listed as threatened which are in the vicinity of proposed works to minimise direct and indirect impacts in these areas	Construction Decommissioning	CBMP (EHP 2018) Section 5.1 pg 13 Table 2 Not yet required
SOC 43 (SOC 34)	Design transmission lines to minimise EEC impact. Strategies may include ensuring that the height of the transmission structure over EECs is sufficient to allow minimal impact on these communities, and making use of the existing cleared transmission easement to reduce the clearing required for the new line	Construction	PGSWRP Section 4.2.5 pg 27
SOC 44 (SOC 35) (mod)	Establish a Vegetation Management Plan to ensure that the ongoing maintenance of the transmission easement has minimal impact on the integrity of any EEC vegetation within the easement. The Vegetation Management Plan shall be developed with input from the Department of Planning, Department of Environment and Climate Change, and the relevant Catchment Management Authorities	Operation	This report and associated PGSWRP, VMP and GMP Whole report
SOC 45 (SOC 36)	Maintain access tracks to minimise ongoing erosion and sedimentation impacts	Operation	VMP Section 4.1.5 pg 23
SOC 46 (SOC 37)	Confine maintenance access to existing tracks, hardstand or heavily disturbed areas	Operation	VMP Section 4.1.5 pg 23
SOC 47 (SOC 38)	Design site substations to ensure that the transformers are adequately bunded against any spill	Construction	

	Statement of commitments	Project Phase	Addressed in:
SOC 48 (SOC 39)	Discuss options to reduce grazing pressures on EEC identified to be in good condition with existing landholders	Operation	This report and associated PGSWRP, and GMP Whole report
SOC 49 (SOC 40)	Avoid significant clusters of rocks and boulders where these provide shelter to threatened fauna. Where rocks and boulders cannot be avoided, they should be placed directly adjacent to the works area to preserve the availability of refuge	Construction	CBMP (EHP 2018) Section 5.3 pg 15 Table 4
SOC 50 (SOC 41)	Avoid standing dead trees and woody debris where practical. Where they require removal to allow for the tracks and hardstand areas, they should be placed adjacent to the impact areas, to retain these refuges in the immediate area	Construction	CBMP (EHP 2018) Section 5.1 pg 13 Table 2
SOC 51 (SOC 42)	Open trenches required for the installation of cabling for the minimal period practical. Check trenches at first light and remove any trapped fauna	Construction	CBMP (EHP 2018) Section 5.3 pg 15 Table 4
SOC 52 (SOC 43)	Apply a buffer to mature hollow-bearing trees where practical to minimise indirect impacts (such as noise and dust)	Construction	CBMP (EHP 2018) Section 5.1 pg 13 Table 2
SOC 53 (SOC 44)	Apply an appropriate buffer (50 meters) to identified Tawny Rock Dragon habitat to ensure that it is not adversely affected	Construction	CBMP (EHP 2018) Section 3 pg 6 Table 1
SOC 54 (SOC 45)	Design power poles to minimise perching and roosting opportunities where practical. Design power poles and overhead powerlines to reduce impacts to birds (for example by using flags or marker balls, large wire size, wire insulation, wire and conductor spacing) in areas of elevated risk of bird strike	Construction	BBAMP Section 5.2 pg 27

	Statement of commitments	Project Phase	Addressed in:
SOC 55 (SOC 46)	Design and implement an adaptive management monitoring program to document bird and bat mortalities, remove carcasses and assess the effectiveness of controls. If the results of the assessment demonstrate that further mitigation is required, further turbine ridge habitat modification and enhancement of off-site habitats would be undertaken	Operation	BBAMP Sections 4 and 5 from pg 15
SOC 56 (SOC 47)	Undertake an appropriate fauna assessment, pertinent to applicable legislation at the time of decommissioning	Decommissioning	Not yet required

Appendix 3 Management actions and monitoring

Table A.5 Baseline performance criteria

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
1.1	**Mapping of PSGW**	Finalise mapping of full extent of PSGW including areas of occurrence within the proposed Silverton Wind Farm	Map prepared of PGSW, including delineation of three observed variants of the community	Shapefile prepared and provided to OEH	Biosis	Shape files prepared, still to be provided to OEH
1.2	**Mapping of existing goat management infrastructure**	Position of existing goat control fencing and associated infrastructure to control access to water and facilitate mustering will be accurately mapped	Updated map of goat management infrastructure prepared	Shapefiles prepared showing fencing and associated infrastructure and submitted to OEH	Project Ecologist or GE operational staff	March 2018
1.3	**Estimate Feral Goat populations**	Collection of landholder population estimates	All four landholders contacted to gather baseline information about goat populations and management	Records from landowner discussions to be documented	Project Ecologist or GE operational staff	March 2018
1.4	**Baseline vegetation monitoring**	Establishment of 20 permanent plots to monitor PGSW vegetation condition and grazing pressure	Data capture method developed Vegetation monitoring quadrats established and baseline survey completed in spring 2018	Datasheets prepared Annual monitoring report submitted to OEH	GE/ Project Ecologist	Field work completed October 2018 Monitoring report to be prepared by March 2019
1.5	**Baseline Barrier Range Dragon**	Baseline monitoring of the presence and abundance of the	Complete baseline monitoring	Baseline monitoring report	GE/ Project Ecologist	Completed BRDMP Whole report

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
	monitoring	species and characterise habitat.		completed and submitted to OEH		
1.6	**Site inductions**	Biodiversity information will be included as part of the site induction for all contract and subcontract staff working within the study area. Up to date spatial data identifying threatened species/habitat and significant vegetation communities will be provided to all personnel undertaking maintenance works.	Inductions completed for all contract and subcontract staff Staff aware of key vegetation values and issues as per Section 4.2	Induction sheets and associated support materials developed	GE operational staff/Project Ecologist	Initial site inductions conducted December 2018
1.7	**Hygiene protocols**	Strict hygiene protocols implemented to reduce the potential introduction or spread of invasive flora and fauna species as per the VMP.	No new invasive species introduced.	Inspection checklists submitted.	Project Manager / all site personnel	Ongoing
1.8	**Baseline weed mapping**	Documenting weed populations as per the VMP	Locations of all known occurrences of exotic flora, particularly NSW DPI priority weeds, will be recorded and collated into a mapping shapefile. Shapefiles will be distributed to GE and Vegetation Management Contractors.	Mapping shapefile prepared	Vegetation management contractor/ Project Ecologist	March 2019
1.9	**Fire preparedness**	Develop fire suppression guidelines	Fire suppression guidelines will be prepared in consultation with Project Ecologist, using Mumbida Wind Farm documentation as a template (SWFS 2013 and GEP&W 2007)	Guidelines submitted	GE operational staff / Project Ecologist	In preparation, due February 2019

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
1.10	**Feral predator control**	Develop feral pest management program	Feral pest management program will be prepared in association with leaseholders	Pest management program submitted to OEH	GE operational staff / Project Ecologist / Leaseholders	March 2019
1.11	**Traffic management**	Designation of low vehicle speed areas	Permanent speed restriction signs will be positioned near BRD habitat as per Section 5.11	Signs in place	GE operational staff	January 2019
1.12	**Baseline temporary disturbance area mapping**	Temporary disturbance areas documented as per VMP.	Locations of all temporary disturbance areas will be provided by CATCON Shapefiles will be distributed to GE and Vegetation Management Contractors.	Mapping shapefile distributed.	Project Ecologist	February 2019

Table A.6 Ongoing performance criteria

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
2.1	**Site inductions**	Biodiversity information will be included as part of the site inductions	Inductions completed for all contract and subcontract staff Staff aware of key vegetation values and issues as per Section 4.2.	Signed induction sheets completed and submitted	GE operational staff	Ongoing
2.2.1	**Monitor fencing and work with General Purpose leaseholder to maintain**	Fence lines will be inspected quarterly and documented via inspection checklist. Fences will be maintained through agreement with the leasholder	Fences are maintained and any damage repaired within two weeks of notification. Vegetation protected.	Inspection checklists submitted. Document completion of fencing	GE operational staff / General Purpose leaseholders/ fencing contractor	Fence lines will be inspected quarterly and documented via inspection checklist. Repairs will be made within 2 weeks.

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
	fencing to exclude Feral Goats					
2.2.2	**Implement any required additional fencing to exclude Feral Goats**	Additional fencing implemented for areas of sensitive vegetation as required where restoration measures implemented under the VMP are impeded (e.g. by Feral Goat grazing pressure/trampling) as per Section 4.1.3. Monitoring implemented.	Sensitive restoration areas protected from Feral Goat pressures as required.	Maintenance activity records submitted. Inspection checklists submitted.	GE operational staff / fencing contractor	New fences will be implemented as required. Fence lines will be inspected quarterly and documented via inspection checklist.
2.3	**Maintain WF sub station and Operational and Maintenance facility security fences, gates and locks**	Security fences, gates and locks inspected.	Security fences, gates and locks maintained.	Inspection checklists submitted.	GE operational staff / leaseholders	Wind farm substation and operation and maintenance facility fences and gates inspected 6-monthly.
2.4	**Feral Goat exclusion**	Goats excluded in PGSW area	No Feral Goats within the exclusion fencing from June to January unless cover of ephemeral flora species is greater than 40% • Goat fenced closed	Inspection report submitted.	Project Ecologist (monitoring) Leaseholder Blore (goat exclusion and mustering)	Surveillance monitoring of exclosure at monthly intervals

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
			• All goats removed via trapped watering points • Active mustering as required If there is greater than 40 % ground cover of annual species, the leaseholder will allow seed production to occur, and then reserves the right to utilise the vegetation as feed. Goats will again be excluded when the cover of these annual species falls to less than 40 %. If monitoring shows signs of grazing pressure during exclusion period – initiate active on ground mustering to eliminate goats within PGSW area		GE Operational Staff	
2.5.1	**Ensure reduced stocking of Feral Goats**	Feral Goat population within goat fence to be reduced	Achieved maximum stocking rate of approximately 0.26 weaner goats per hectare as per GMP • Active trapping at trapped watering points • Initiate mustering when observed goat numbers exceed 100.	Surveillance monitoring of exclosure at monthly intervals Inspection report submitted.	Leaseholder Blore (goat exclusion and mustering)	February to May (inclusive) each year
2.5.2	**Ensure reduced stocking of Feral Goats**	Alternative Feral Goat management	Feral Goat control managed by GE contract staff if leaseholder Blore ceases management	Surveillance monitoring of exclosure at monthly intervals Inspection report submitted.	GE contract staff / GE operational staff	When notified by leaseholder Blore that mustering is not financially viable

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
2.5.3	**Clarity on lease precedence**	If adequate management of Feral Goats cannot be achieved through negotiation, GE will request The Crown (DI Lands) and DPE provide clarification whether the Project Approval (08_022 MOD 3) or The Crown lease conditions should take precedence.	Clarification on Project Approval (08_022 MOD 3) or The Crown lease conditions provided	Clarification provided by The Crown (DI Lands) and DPE	GE	If agreement on Feral Goat management cannot be achieved with the leaseholder
2.6	**Feral Goat population monitoring**	Collection of leaseholder population estimates	All four leaseholders contacted to gather baseline information about goat abundance and harvesting activities	Records from landowner discussions to be submitted	Project Ecologist or GE operational staff	Annually in line with spring survey
2.7	**Feral Goat population monitoring**	Scat counts in subplots as per Section 6.4.1	Decrease in goat scat abundance	Annual monitoring report submitted to OEH	Project Ecologist	Annually in spring 2019-2021
2.8.1	**Vegetation clearance, maintenance**	Vegetation clearance and maintenance activities will be undertaken as per the specifications described in the VMP.	Vegetation clearance confined to defined specifications. Vegetation Management Contractors and Project Ecologist notified of works.	Clearance and maintenance dates documented.	GE / Essential Energy	Inspections on 6-12 monthly basis pending seasonal requirements
2.8.2	**Vegetation clearance biomass placement**	All removed native vegetation and biomass will be placed in areas likely to be prone to localised surface erosion and scouring as per the VMP	All native biomass produced by clearance activities placed in appropriate area. GE and Project Ecologist will be notified of works and spatial locations supplied.	Works Sheets Submitted. Spatial files supplied.	Vegetation management contractor	Within 1 month of clearance and maintenance activities.

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
2.8.3	**Vegetation clearance, monitoring**	Monitoring of vegetation clearance areas and biomass placement areas for compliance, presence of threatened species and priority weeds as per the VMP.	Vegetation clearance confirmed to be confined to defined specifications. Biomass placement appropriate. Any populations of threatened species or priority weeds identified and targeted for future management.	Ecological inspection checklists submitted. Spatial files for any threatened species/priority weeds supplied to GE and Vegetation Management Contractors.	Project Ecologist	Within 1 month of notification of works and following the completion of any biomass redistribution Biomass distribution areas subsequently monitored twice-yearly for first 3 years, also 1 and 3 months after significant rain events (> 25 millimetres).
2.9	**Monitoring of roads and drainage**	Inspection of all managed road assets and supporting roadside drainage facilities as per the VMP.	Road assets and supporting roadside drainage maintained. No impact to PGSW or Barrier Range Dragon habitat. No impact to threatened species.	Inspection checklists submitted.	GE operational staff	Sites will be inspected twice-yearly for first 3 years, also 1 and 3 months after significant rain events (> 25 millimetres). Areas uphill of or adjacent to PGSW, or in rocky outcrops or artificial Barrier Range Dragon habitats will be inspected monthly and after significant rainfall events or weekly in areas where construction is continuing.

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
2.10.1	**Monitoring of road and road side drainage maintenance activities.**	Monitoring of road and roadside drainage for maintenance compliance, presence of threatened species and priority weeds as per the VMP	Works confirmed to be confined to defined specifications. Sediment/silt placement appropriate. Any populations of threatened species or priority weeds identified and targeted for future management.	Ecological inspection checklists submitted. Spatial files for any threatened species/priority weeds supplied to GE and Vegetation Management Contractors.	Project Ecologist	Twice-yearly for first 3 years, also 1 and 3 months after significant rain events (> 25 millimetres).
2.10.2	**Management of road and road side drainage maintenance**	Any damage to road assets and supporting drainages to will repaired to construction standards as per the VMP Silt removed as part of road and drainage works is locally stored on disturbed ground (bunded where required) and not distributed throughout the site.	Road assets and supporting roadside drainage maintained. No impact to PGSW or Barrier Range Dragon habitat. Silt / Spoil appropriately sited and location provided to Vegetation Management contractors and Project Ecologist.	Maintenance activity records submitted.	GE operational staff	Ongoing as required.
2.11.1	**Monitoring of tracks and hardstands above PGSW**	Increased visual monitoring of track and hardstand areas in areas uphill of or adjacent to PGSW (Figure	Works confirmed to be confined to defined specifications. Sediment/silt placement appropriate.	Ecological inspection checklists submitted.	Project Ecologist	Twice-yearly for first 3 years, also 1 and 3 months after significant rain events (> 25 millimetres).

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
						Within 1 month following any maintenance activities.
2.11.2	**Management of road and road side drainage maintenance above PGSW and in BRD habitat**	Stockpiles and excavated material including sediment removed from tracks and drains for maintenance activities will not be placed uphill of or adjacent to areas of PGSW or in rocky outcrops or artificial Barrier Range Dragon habitats.	Road assets and supporting roadside drainage maintained. No impact to PGSW or Barrier Range Dragon habitat. Silt / Spoil appropriately sited and location provided to Vegetation Management contractors and Project Ecologist.	Maintenance activity records submitted.	GE operational staff	Ongoing as required.
2.12	**Hygiene protocols**	Strict hygiene protocols implemented to reduce the potential introduction or spread of invasive flora and fauna species as per the VMP.	Hygiene implemented. No new invasive species introduced.	Inspection checklists submitted.	Project Manager / all site personnel	Ongoing
2.13	**Weed monitoring**	Inspections of • mapped priority weed locations • temporary disturbance areas • restoration areas • all other asset/infrastructure maintenance areas.	Any new weed incursions mapped for inclusion in weed management program Spatial data will be updated with any new infestations/priority weed locations and distributed between GE, Vegetation Management Contractor and Project Ecologist.	Site inspection checklists submitted. Mapping shapefile prepared and shared between GE / Project Ecologist / Vegetation	GE operational staff/ Project Ecologist	Ongoing observations by GE staff. Twice-yearly site inspections by the Project Ecologist or more frequently as required e.g. 1and 3 months after significant rain events (>25 mm) or if required

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
				Management Contractor. Annual monitoring report submitted		following maintenance inspections
2.14	**Weed control**	Weed control works will be implemented in accordance with the VMP	Priority weeds limited to current cover levels as per the VMP. New weeds identified and treated.	Weed management operational checklists submitted. Weed Control Works Sheets submitted.	Vegetation management contractor/ Project Ecologist	Ongoing.
2.15	**Monitoring of temporary disturbance areas**	Temporary disturbance areas monitored for regeneration success and soil stability.	Assess regeneration success and soil stability. Implement restoration (No. 2.16) as detailed below as required.	Site inspection checklists submitted. Annual monitoring report submitted.	Project Ecologist	Sites will be inspected twice-yearly for first 3 years, also 1 and 3 months after significant rain events
2.16	**Restoration including rehabilitation and revegetation**	Site rehabilitation will be implemented in accordance with the VMP Disturbance areas rehabilitated with topsoil reinstated where possible and landform stabilised as soon as possible following disturbance.	Initial rehabilitation implemented. Restoration Plan implemented as required. Site restored.	Site inspection checklists submitted. Restoration actions and outcomes documented in Annual Report.	Project Ecologist with input from Vegetation Management Contractors and GE staff as required.	Ongoing as required. Sites will be inspected twice-yearly for first 3 years, also 1 and 3 months after significant rain events

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
		Additional restoration implemented as required.				
2.17	**Vegetation monitoring**	Monitoring of vegetation condition and grazing pressure in accordance with Section 6.3	Predicted responses as per Section 7.3 (given seasonal constraints discussed in Section 6.1.1): • Increased litter cover • Increased abundance of native species • Increased cover of native species • 'Release' of woody species from grazing pressure • Evidence of recruitment of woody species If vegetation monitoring shows no reduction in grazing pressure during exclusion period – initiate active on ground mustering to eliminate goats within PGSW area in accordance with GMP.	Annual monitoring report submitted to OEH	Project Ecologist	Annually in spring 2019-2021
2.18	**Barrier Range Dragon Monitoring**	Monitor presence and abundance of BRD as per the BRDMP	Compare the results of each year with the cumulative results from previous years. Note any significant changes in numbers and distribution of Barrier Range Dragons	Annual monitoring report submitted to OEH	Project Ecologist	Annually in late summer 2019-2021
2.19	**Fire preparedness**	Review fire preparedness	Check fire response plans and equipment twice yearly	Inspection checklists submitted.	GE Operational Staff	September and January each year
2.20	**Fire exclusion**	Extinguish any wildfire as soon as practical as per fire suppression guidelines	Fire events responded to in accordance with fire suppression guidelines	Shapefile of fire extent prepared	Within one monthe of fire event	As required

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
			Investigate cause and review response timetable Implement any necessary corrective measures			
2.21	**Feral predator control**	Implementation of feral pest management program	Feral pest management program implemented in association with leaseholders	Pest management works reports submitted.	GE operational staff / Leaseholders	Ongoing
2.22	**Traffic management**	Enforcement of low vehicle speed areas	Permanent speed restriction signs positioned near BRD habitat as per Section 5.11	Signs in place Speeds enforced	GE operational staff	Ongoing
2.23	**Creation of artificial habitat**	Substantial artificial habitat has been created incidental to construction of the wind farm. No additional artificial habitat is considered to be required	Monitor usage as part of annual Barrier Range Dragon monitoring program	Annual monitoring report submitted to OEH	Project Ecologist	Annually in late summer 2019-2021
2.24	**BRD habitat protection**	Any future construction, earthworks, road and other infrastructure maintenance to ensure protection of habitat as per specifics set out in 5.1.6	Monitoring to ensure any future earthworks and erosion do not impact upon Barrier Range Dragon habitat	BRD habitat protected	GE operational staff / all relevant contractors	Ongoing when works required
2.25	**Review of VMP management actions.**	Annual review of VMP management actions as per Section 4.4.	Review annual reports. Update management actions as appropriate	Annual works plan prepared.	Project Ecologist in consultation with GE and Vegetation Management Contractor	Annually

No.	Management Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
2.26	Review of BAMP	Comprehensive review of BAMP and supporting management plans	Review all monitoring data and assess the response of biodiversity values to modified site management. Update management recommendations as appropriate in consultation with OEH to ensure there is a net gain in the conservation value of PGSW,	Reviewed BAMP and supporting plans submitted to OEH	GE/ Project Ecologist	January 2022

Table A.7 Contingency actions

No.	Managemt Action	Task / Performance Criteria	Measure / Target	Evidence of Completion	Responsibility	Timing
3.1	Lack of vegetation recovery	If vegetation monitoring shows no reduction in grazing pressure during exclusion period – initiate active on ground mustering to eliminate goats within PGSW area in accordance with GMP to ensure there is a net gain in the conservation value of this community.	No Feral Goats within the exclusion fencing • Goat fenced closed • All goats removed via trapped watering points • Active mustering as required	Surveillance monitoring of exclosure at monthly intervals Inspection report submitted.	Leaseholder Blore/ GE operational staff	Following annual review of annual monitoring data or at 3 year review
3.2	Post-fire management	Feral Goats are to be excluded from PGSW for at least three years following fire as per Section 7.6	No Feral Goats within the exclusion fencing • Goat fenced closed • All goats removed via trapped watering points • Active mustering as required	Surveillance monitoring of exclosure at monthly intervals Inspection report submitted.	Leaseholder Blore / GE operational staff	At least three years post fire, resumption of grazing subject to the results of ongoing monitoring

Appendix 4 Induction checklist

SITE INDUCTION - NEW PERSONNEL

PLEASE PRINT:

NAME: _____ SITE INDUCTION # _____

COMPLETE HOME ADDRESS: _____ HOME PHONE: _____

MOBILE PHONE # _____

EMERGENCY CONTACT NAME & PHONE #: _____ MEDICAL CONDITIONS (OPTIONAL): _____

SITE/LOCATION: _____

SITE MANAGER /SUPERVISOR: _____ SITE SAFETY OFFICER: _____

☐ NEW HIRE ☐ SUBCONTRACT ☐ TRANSFER - From: _____ ☐ OTHER: _____

DATE OF THIS SITE ASSIGNMENT: _____ SUBCONTRACTOR DETAILS: _____

CHECK EACH ITEM AS IT IS EXPLAINED TO YOU:

I. SITE LOGISTICS

☐ Schedule: Shift, Start/End & Break Times ☐ Site Access/Speed ☐ Phones &/or Radios ☐ Work Uniform/Footwear

☐ Sanitary Facilities - Restrooms & Water ☐ Site Access/Parking ☐ Supervision Requirements ☐ Smoking/Drinking Policy

☐ Eating Areas - Food Storage/Recycling ☐ Site Access/Security ☐ Procedures for waste storage, segregation and removal on stie

II. INITIAL TRAINING ON THE HEALTH AND SAFETY PROGRAM INCLUDING:

☐ Reporting safety concerns and the right to ask any question, or report any safety hazard, either directly OR ANONYMOUSLY without any fear of reprisal.

☐ Disciplinary procedures that may be used to ensure compliance with safe work practices.

☐ The location of HSE Alerts, Safety Notices, Toolbox Minutes etc

☐ Access to the GEII Safety Committee. Site Representative: _____

☐ Pre-Task Planning Forms (Pre-starts, JSEAs etc)

☐ Reporting Occupational Incidents - Injuries, Illnesses, Vehicle or Equipment Damage, Near Miss events and Hazardous Observations

☐ Emergency Contact Phone Numbers. To summon Emergency Medical Response, Call: _____

☐ Toolbox Meetings / Safety Meetings ☐ Hailo Lift E-Learning

III. HAZARD COMMUNICATION TRAINING

☐ The potential occupational hazards in the work area and **safe work practices and/or personal protective equipment** required for my job title/assigned tasks:

- ◯ Bloodborne Pathogens - **Universal Precautions**
- ◯ Cranes & Forklifts - **Trained Operators**
- ◯ Work Hazards - **Ergonomics & Manual Lifting**
- ◯ Electrical Hazards - **LOTO, RCDs & Grounding**
- ◯ Confined Space - **Permits & Training**
- ◯ Poisoning/Spills - **HSE Systems Training**
- ◯ Fall From Heights - **Fall Protection Training/PPE**
- ◯ Excavations - **Barricades & Bridges**
- ◯ Site Hazards - **Animals / Temperature / Noise**
- ◯ Vehicle Accidents - **Local Animals / Hazards**
- ◯ Slip/Trip/Fall - **Housekeeping**
- ◯ Weather - **ERPs / Temperature**
- ◯ Site Gates - **Ensure gates are closed** _____
- ◯ Hailo - **Lifts** _____
- ◯ _____

☐ The hazards of any chemicals to which I may be exposed, and my right to review the information contained on the Material Safety Data Sheets.

☐ The labeling and hazard warnings for containers of hazardous chemicals.

☐ The location and availability of Material Safety Data Sheets (MSDS's) & the VWS Black List.

☐ The Person Responsible for maintaining the Material Safety Data Sheets (MSDS's) and the site Chemical Inventory List.

IV. BIODIVERSITY ISSUES TRAINING / INFO:

☐ Threatened Vegetation Communities ☐ Threatened Fauna ☐ Vehicle Speed Restrictions ☐ Bird & Bat

☐ Priority Weeds ☐ Hygiene Protocols ☐ Feral Goats ☐ Fire Response Plan

V. OTHER SAFETY TRAINING / INFO:

☐ HSE Policy ☐ Fall Arrest System Inspection ☐ Service Vehicle Inspection ☐ Emergency Response Plan

☐ Rehabilitation Policy ☐ PPE Issue & Storage ☐ HSE Alert Review

VI. EMPLOYEE QUALIFICATIONS/DATE (MUST TAKE PHOTOCOPIES)

☐	Load Shifting: _____	☐	First Aid/CPR: _____
☐	Crane Operator: _____	☐	Workplace Fire: _____
☐	Safe Work at Heights: _____	☐	Vertical Rescue: _____
☐	Confined Space Entry: _____	☐	Construction Induction: _____
☐	Scaffolding / Rigging: _____	☐	Pre-Employ Medical: _____
☐	Crane / Hoist: _____	☐	Drivers Licence: _____
☐	Trade Certificate: _____	☐	Other: _____

I fully understand the above items and agree to comply with safe work practices in my work area at all times.
I understand that my actions can affect the health and safety of others.
I understand that Disciplinary Action, up to and including termination, may result from failure to follow procedure.
I also understand that every individual is ultimately responsible for his/her own safety.

EMPLOYEE SIGNATURE: _____ DATE: _____

I, (Inductors Name/Job Title:) _____
hereby certify that this employee has been inducted on the items checked on this form.

INDUCTOR SIGNATURE: _____ DATE: _____

**When complete, file report in Site Induction Register*

Notes:

Appendix 5 Browsing condition – from AREA 2017

2.1.2 Belt transects (Appendix 1)

The length and width of belt transects were determined to ensure an accurate representation of the overall plant density and diversity was captured within each habitat.

Belt transects were either 50 or 100 metres in length except for the vegetation exclosure which was 20 metres in length and either 2, 4 or 10 metres wide (**Table 2-1**).

Within each belt transect all trees and shrubs were identified (samples taken) and details recorded included:

- Height, width at widest point, height of browse line for plants > 2m.
- Condition above browse line:
    - Good = No dead wood.
    - Dead Wood Fair = Trees with < 50% dead wood.
    - Dead Wood Poor = Trees with > 50% dead wood).
- Condition below browse line including all plants less than 2m in height:
    - Unbrowsed.
    - Low-Moderate browsing.
    - High-Intense browsing.
    - Totally browsed (no living growth below browse line).
- Presence or absence of regeneration.
- A condition state to show the current state of plants.

2.1.3 Condition state (Appendix 1)

Condition states were based on McDonald, J. (2009) and assessed as follows:

- **Uninterrupted** - Fresh new growth with no or very little sign of browsing. Plant growing periodically in relation to natural growth stimuli (rainfall and temperature) (see **Table 2-2** Fig 1 and Fig 2)
- **Arrested** - Plant in hedged or topiarised form due to intense browsing. (see **Table 2-2** Fig 3 and Fig 4) New growth continuously eaten and not extending beyond previous browse levels preventing the plant from growing to its natural potential.
- **Retrogressed** - Death of all or some stems previously browsed with new growth occurring from the lower stems. (see **Table 2-2** Fig 5 and Fig 6). Stem death arises from stresses induced by browse.
- **Released** - New growth from browsed stem not browsed due to temporary or permanent relaxation of browse pressure. or Plant grown beyond browse line. (**Table 2-2** Fig 7 and 8)

Examples of how these relate to plants seen in the field are provided on **Table 2-2.**

Table 2-2: Condition states based on McDonald, J. (2009)

Uninterrupted Note: All stems and foliage intact from the base upwards		
	Fig 1. Acacia aneura (Mulga) uninterrupted at 3m	**Fig 2.** Dodonea viscose sub spatulata uninterrupted at 3 m

Arrested Note: Plants have been intensely browsed and the growth form is hedged with plants unable to grow to full potential		
	Fig 3. Dodonea viscose sub spatulata severely arrested	**Fig 4.** Marieana pyramidata arrested

Retrogressed

Note: Plants re-sprouting from the lower part of the plant and many previously browsed stems are dead

Fig 5. Acacia aneura (Mulga) retrogressed

Fig 6. Marieana pyramidata retrogressed

Released

Note: Plants are established trees or have managed to grow beyond a distinct browse line.

Fig 7. Acacia aneura (Mulga) released

Fig 8. Flindersia maculosa (Leopard wood) released

Appendix 6 Approval to clear PGSW

NSW GOVERNMENT | Planning & Environment

Resource Assessments
Contact: Stephen Shoesmith
Phone: 9274 6164
Email: stephen.shoesmith@planning.nsw.gov.au

Davorin Jelaca
Senior Project Manager
Silverton Wind Farm

Via Email to: Catherine.Powers12@ge.com

Dear Mr Jelaca

Silverton Wind Farm (08_0022)
Construction Activities in Area 7

I refer to your email dated 19 and 22 November 2017, seeking approval to commence construction in Area 7 at the Silverton Wind Farm.

The Department has reviewed the information you provided, in consultation with the Office of Environment and Heritage (OEH) and notes that the total clearing area of Porcupine Grass Sparse Woodland CEEC (Porcupine Grass) is confirmed as 6.81 hectares and significant improvements has been made in the development of the Porcupine Grass Sparse Woodland Recovery Plan (PGSWRP) and Goat Management Plan (GMP).

I note that the Silverton Wind Farm must undertake the construction activities in Area 7 in accordance with the approved Construction Biodiversity Management Plan, with supervision of an ecologist from Biosis and full demarcation of the disturbance footprint.

On this basis, the Department is satisfied that construction can commence in Area 7.

If you require further information, please contact Stephen Shoesmith on 9274 6164 or by email to stephen.shoesmith@planning.nsw.gov.au.

Yours sincerely

Mike Young
Director
Resource Assessments
as nominee of the Secretary

22/12/17.