

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Smoky Creek Solar Power Station

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4

REPORT

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ACRONYMS AND ABBREVIATIONS

| Abbreviation | Definition |
|------------------|--|
| ACHA | <i>Aboriginal Cultural Heritage Act 2003</i> |
| AHD | Australian Height Datum |
| BPESC | Best Practice Erosion and Sediment Control |
| BSC | Banana Shire Council |
| EMP | Environmental Management Plan |
| CHMA | Cultural Heritage Management Agreement |
| CHMFP | Cultural Heritage Management and Finds Plan |
| DCCEEW | Department of Climate Change, Energy, the Environment and Water |
| DETSI | Department of Environment, Tourism, Science and Innovation |
| EPBC Act | <i>Environment Protection and Biodiversity Conservation Act 1999</i> |
| ERP | Emergency Response Plan |
| EP Act | <i>Environmental Protection Act 1994</i> |
| ESCP | Erosion and Sediment Control Plan |
| GGSPS | Guthries Gap Solar Power Station |
| Ha | Hectare |
| HSE | Health, Safety and Environment |
| IECA | International Erosion Control Association |
| MNES | Matters of National Environmental Significance |
| PPE | Personal Protective Equipment |
| Planning Act | <i>Planning Act 2016</i> |
| QFES | Queensland Fire and Emergency Services |
| QLD Heritage Act | <i>Queensland Heritage Act 1992</i> |
| SCSPS | Smoky Creek Solar Power Station |
| SDS | Safety Data Sheet |
| SP Act | <i>State Planning Act 2016</i> |
| SPP | <i>State Planning Policy 2017</i> |
| SWMP | Storm Water Management Plan |
| VM Act | <i>Vegetation Management Act 1999</i> |
| WMP | Waste Management Plan |

1 INTRODUCTION

RPS AAP Consulting (RPS) has been engaged by Edify Energy to prepare an Environmental Management Plan (EMP) for the development of a hybrid solar and battery energy storage power station. The Smoky Creek Project (the Project) is a 600MW hybrid solar and battery energy storage power station comprising 720MWp solar PV and 2,400MWh of battery storage, which is located approximately 42 km north of Biloela, Queensland. The Project consists of two independent and adjacent 300MW generating units called Smoky Creek Solar Power Station (SCSPS) and Guthrie’s Gap Solar Power Station (GGSPS), both connected to the Powerlink network at 275kV. The site is accessed via Tomlins Road, within the Banana Shire Council Local Government Area, herein referred to as “the Project”. The Project will be developed on land described as:

- Lot 39 on RN395;
- Part of Lot 37 on RN1147.
- Lot 29 on RN210;
- Lot 32 on RN194; and
- Lot 33 on RN210.

The EMP has been prepared for construction, operation and decommissioning activities at the site.

The locality and general layout of the Project are provided in **Figure 1** and at **Appendix A**.

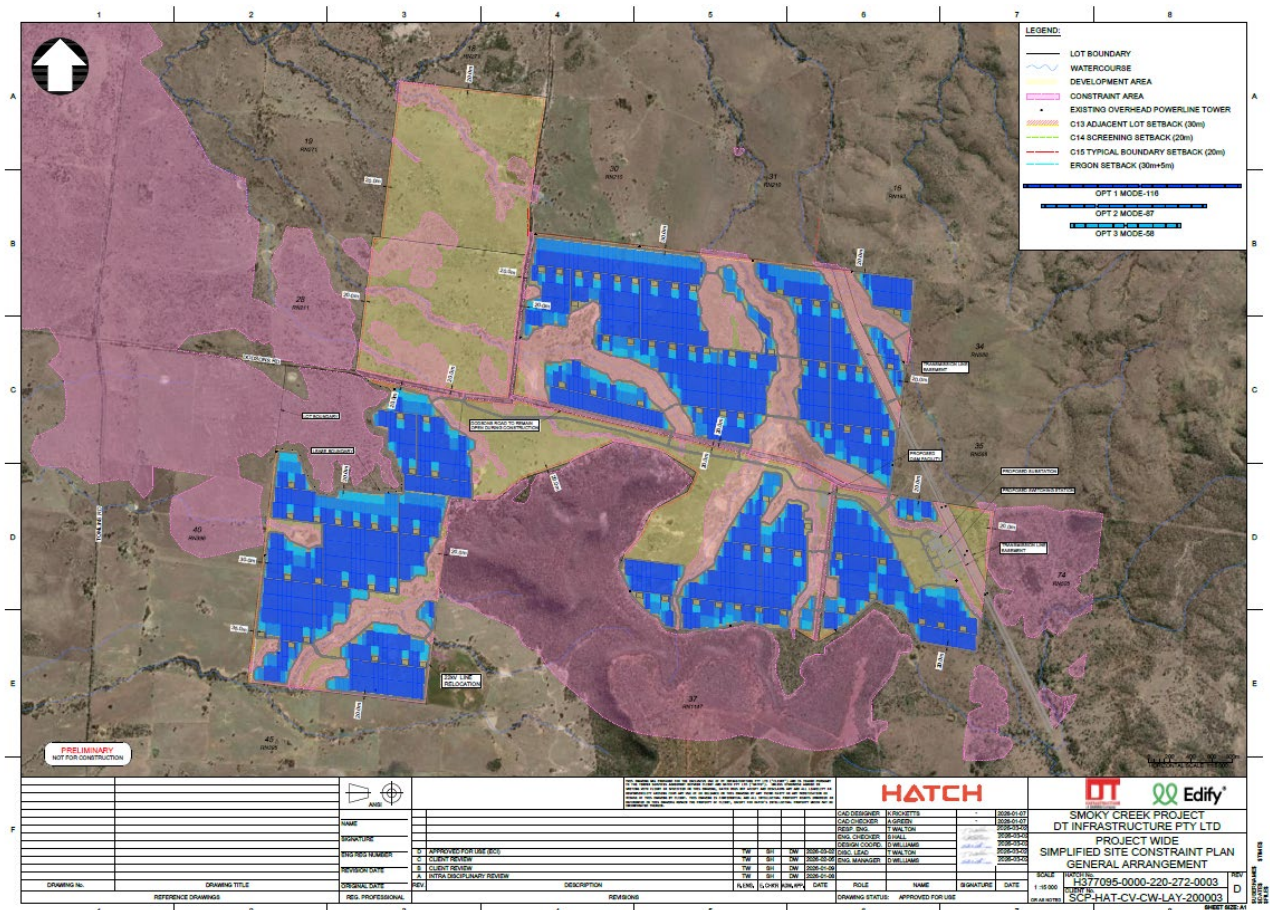


Figure 1 Site Location and Preliminary Layout

1.1 Project Stages

1.1.1 Operation

The Project will operate as an integrated solar photovoltaic and battery energy storage facility, with solar PV modules converting solar irradiance into electricity and the battery energy storage system allowing energy to be stored, dispatched and managed in response to grid, market and operational requirements. The BESS will form part of the Project's integrated electrical system, including battery enclosures, power conversion equipment, inverters, transformers, switchgear, cabling, control systems, fire detection and protection systems, access tracks and associated hardstand areas.

The facility will be remotely monitored on a continuous basis, with periodic attendance by suitably qualified personnel to undertake inspections, preventative maintenance, fault response, environmental checks and compliance activities. During operation, activities will generally be limited to routine inspection, monitoring, maintenance and repair of the solar arrays, BESS equipment, inverters, transformers, internal access tracks, security fencing, drainage infrastructure, vegetation management areas and other ancillary infrastructure. The solar farm and BESS will operate within the approved development footprint, with any operational attendance generally occurring on existing access tracks and hardstand areas. Ground disturbance during operation is expected to be minimal and largely limited to maintenance activities, equipment replacement, cable repairs, drainage maintenance or other works required to ensure safe and reliable operation of the facility.

Vegetation within the operational areas will be managed to maintain safe access, protect electrical infrastructure, reduce bushfire risk and support the Project's environmental management objectives. This will include maintaining appropriate groundcover beneath and around solar arrays, managing vegetation-free or low-fuel areas around BESS, inverter and transformer infrastructure, controlling declared weeds and pest species, and protecting retained vegetation, habitat features, drainage lines and environmentally sensitive areas. Any vegetation management around the BESS will be undertaken having regard to bushfire management, fire safety, operational access and manufacturer or fire engineering requirements.

Environmental management during operation will be implemented through the Project's approved management framework, including relevant operational, vegetation, weed and pest, erosion and sediment control, stormwater, bushfire, fire safety and biodiversity management measures. The operator will maintain clear internal responsibilities for environmental compliance, incident response, emergency response coordination, monitoring, reporting and corrective actions. BESS-specific operational controls will include routine inspection of battery units and power conversion equipment, thermal and electrical monitoring, maintenance of fire detection, emergency access maintenance, and implementation of procedures for the safe management of damaged, defective or end-of-life battery components.

Any operational activity with the potential to result in additional environmental disturbance, such as replacement of major electrical equipment, battery augmentation, repair of underground cabling, modification of drainage infrastructure, or replacement of solar modules or battery units, will be subject to appropriate internal environmental review before works commence. Where required, such works will be undertaken in accordance with relevant approval conditions, environmental management plans, fire safety procedures, waste management requirements and any applicable consultation or notification obligations.

1.1.2 Decommissioning

At the end of the Project's operational life, the facility will either be repowered, extended subject to any necessary approvals, or decommissioned. Where decommissioning is required, the objective will be to remove above-ground solar and BESS infrastructure and return the site to a condition that is safe, stable, non-polluting and suitable for the agreed post-project land use. Decommissioning will be planned and implemented progressively where practicable and will be undertaken in accordance with applicable legislative requirements, landholder agreements, approval conditions and any decommissioning or rehabilitation plan required for the Project.

Decommissioning activities are expected to include the disconnection and safe isolation of electrical infrastructure, followed by the removal of solar modules, mounting structures, tracking systems, inverters, transformers, BESS enclosures, battery units, power conversion equipment, switchgear, control systems, security fencing, ancillary buildings and other above-ground infrastructure.

The BESS will be decommissioned by suitably qualified contractors in accordance with manufacturer requirements, electrical safety procedures, dangerous goods and fire safety requirements, and relevant waste management legislation. Battery units and associated electrical components will be handled, transported, reused, recycled or lawfully disposed of at appropriately licensed facilities.

Materials recovered during decommissioning will be reused or recycled where commercially and technically feasible, with preference given to recovery of solar modules, steel mounting structures, aluminium, copper cabling, electrical equipment and battery components. Any hazardous or regulated wastes, including battery modules, coolants, oils, fire suppression materials, contaminated soils, damaged electrical components or other regulated materials, will be segregated, stored, transported and disposed of by appropriately licensed contractors. Waste management during decommissioning will be undertaken to avoid contamination, uncontrolled discharge, fire risk or other environmental harm.

Following infrastructure removal, disturbed areas will be stabilised and rehabilitated to support the agreed final land use, which is anticipated to include return to agricultural use or another lawful use agreed with the landholder and relevant authorities. Rehabilitation may include removal or retention of internal access tracks where appropriate, decompaction of hardstand areas, removal or treatment of foundations where required, replacement of topsoil, erosion and sediment control, revegetation with suitable pasture or native species, and ongoing weed management until the site is stable. Any underground infrastructure, such as cabling or footings, would only remain in situ where this is safe, environmentally preferable, agreed with the landholder, and consistent with applicable regulatory requirements.

Overall, the operational and decommissioning phases of the integrated solar farm and BESS are expected to involve substantially lower levels of disturbance than the construction phase. The Project will be managed to ensure that operational impacts remain within the assessed disturbance footprint, that BESS-specific safety and environmental risks are appropriately controlled, that retained environmental values are protected, and that decommissioning is undertaken in a planned and responsible manner that avoids ongoing environmental harm.

1.2 Purpose

The purpose of this EMP is to provide a structured approach to environmental management for the construction, operation and decommissioning of the solar power station to minimise the risk of environmental harm as far as practicable.

The EMP stipulates monitoring, reporting and operational requirements to be followed to ensure the General Environmental Duty of Care under the *Environmental Protection Act 1994* (EP Act) Qld and associated Regulations.

This management plan was written in accordance with the 'Environmental Management Plan Guidelines, Commonwealth of Australia 2014'. The EMP is a key deliverable to meet a number of the Project compliance conditions stated within the Project Development Approval (COM002- 18/19) (**Appendix B**).

1.3 Objectives

The objectives of this EMP are to provide planning and management systems to:

- Facilitate achievement of environmental standards;
- Ensure compliance with environmental approvals;
- Ensure prevention and mitigation of environmental harm which may occur during the construction, operation and decommissioning phases;
- Facilitate appropriate and timely responses to equipment failure, emergencies or other unusual conditions that may cause environmental harm;
- Facilitate documentation, communication and implementation of contingency plans;
- Ensure that all personnel responsible for the construction, operation and decommissioning of the solar power station are aware of their environmental responsibilities;
- Ensure that environmental monitoring and review occurs to manage the construction, operation and decommissioning of the solar power station and to ensure continual improvement of the EMP;

- Ensure that relevant information is retained and is communicated throughout the organisation; and
- Ensure communication with the Banana Shire Council, Department of Environment, Tourism, Science and Innovation (DETSI) and Department of Climate Change, Energy, the Environment and Water (DCCEEW) or other authority as required by legislation.

1.4 Application

This EMP applies to all personnel (staff and contractors) and activities associated with the construction, operation and decommissioning of the solar power station.

Edify Energy’s appointed Contractor, DT Infrastructure (DTI) is responsible for authorising this EMP and monitoring its implementation at the site. The Site Supervisor is responsible for implementation of the EMP and shall ensure that all persons employed or sub-contracted to the project are made aware of their environmental responsibilities as determined by the EMP and as legislated by the *Environmental Protection Act 1994* (EP Act).

Environmental duties of all personnel include the following:

- General Environmental Duty – whereby a person in the performance of their duties shall not do so in a manner which will cause, or is likely to cause, environmental harm unless the person takes all reasonable and practical measures to prevent or minimise the harm; and
- Duty to Notify Environmental Harm – whereby if a person in the performance of their duties becomes aware that serious or material environmental harm is caused or threatened, then the person must immediately contact the Site Supervisor who in turn must immediately notify the relevant authorities.
- Duty to Restore - where an incident has resulted in unlawful environmental harm, the individuals or organisation responsible for contamination resulting in environmental harm must take measures to rehabilitate or restore the environment to its condition before the harm occurred.

1.5 Statutory Obligations and Approvals

Licences, permits and approvals required for this project are summarised in **Table 1**. Edify Energy have ensured that any licences, permits and approvals have been or will be obtained prior to work commencing.

Table 1 Summary of Licences, Permits and Approvals

| Regulatory Authority | Licence / Permit / Approval Type | Status | Summary of Key Conditions and Monitoring Required |
|------------------------------|---|--------------------------|---|
| Banana Shire Council | Development Approval Application (reference: COM002- 18/19) | Approved with Conditions | <i>Material Change of Use for a Public Facility – Other (Solar PV Power Station (Solar Farm) and Associated Facility Switchyard and Electrical Transmission Line) Reconfiguring a Lot for Subdivision by Agreement (10 Lease Areas)</i> |
| DCCEEW | Controlled action (reference: 2021/9030). | Approved with Conditions | <i>Required to establish an Offset Area Management Plan for clearing of up to 5 ha of Brigalow Threatened Ecological Community.</i> |
| Gaangulu Nation People (GNP) | Cultural Heritage Investigation Management Agreement | Executed | <i>Areas of cultural sensitivity coinciding with watercourses and other exclusion zones identified.</i> |

The Contractor and their Project Manager shall comply with all relevant federal, state and local legal requirements. Personnel working on the project shall be made aware of all compliance requirements through inductions, specific training, and regular communication.

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The key environmental legislation, sub-ordinate policies, and other compliance requirements relevant to the project are described in Table 2.

Table 2 Applicable Legislation and Policy

| Legislation/Plan/Policy | Objectives | Relevance |
|---|--|--|
| Commonwealth Legislation | | |
| <i>Environmental Protection Biodiversity Conservation Act 1999 (EPBC Act)</i> | The <i>EPBC Act</i> provides a legal framework to protect and manage Matters of National Environmental Significance (MNES) including nationally and internationally important flora, fauna, ecological communities, heritage places and water resources. | The proposed activity has been deemed a controlled action under the <i>EPBC Act</i> . |
| State Legislation | | |
| <i>Aboriginal Cultural Heritage Act 2003 (ACH Act)</i> | The ACH Act requires developers to identify reasonable and practicable measures for ensuring the activities are managed to avoid or minimise harm to Aboriginal cultural heritage in a way that meets the duty of care requirements under <i>Section 23</i> of the ACH Act. | A Cultural Heritage Management and Finds Plan (CHMFP) will be in place prior to activities commencing. |
| <i>Queensland Heritage Act 1992</i> | The object of this Act is to provide for the conservation of Queensland's cultural heritage for the benefit of the community and future generations. | Applies to incidental finds. |
| <i>Waste Reduction and Recycling Act 2011</i> <i>Waste Reduction and Recycling Regulation 2011</i> | The <i>Waste Reduction and Recycling Act</i> aims to promote waste avoidance and reduction, and resource recovery and efficiency actions. It seeks to reduce the consumption of natural resources and minimise the disposal of waste by encouraging waste avoidance and the recovery, re-use, and recycling of waste. | A Waste Management Plan provides requirements for the Project's waste generation, storage, transport and disposal. |
| <i>Water Act 2000</i> <i>Water Regulation 2016</i> | The <i>Water Act 2000 (Water Act)</i> provides for the sustainable management of water and other resources, a regulatory framework for water sewerage services, and the establishment and operation of water authorities. The <i>Water Act</i> governs the construction, control and management of works with respect to water conservation and protection, irrigation, drainage, water supply, flood control and prevention. The <i>Water Act</i> regulates the destruction/ disturbance of freshwater riverine vegetation in the bed and banks of Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (NRMMRRD) watercourses. In accordance with the <i>Water Act</i> , watercourses are determined as watercourses by the NRMMRRD through topographical mapping, aerial imagery and a possible onsite assessment. | Various activities are regulated under the <i>Water Act</i> and are incorporated into the DA approval system via the Planning Act 2016. To trigger the <i>Water Act</i> however, the watercourse needs to meet the definition of a watercourse under the Act. Watercourses within the project area are not identified on the Watercourse identification map, with the closest defined watercourse being Don River, approximately 3.8 km to the north. |

| Legislation/Plan/Policy | Objectives | Relevance |
|---|---|---|
| <p><i>Biosecurity Act 2014</i> <i>Biosecurity Regulation 2016</i></p> | <p>The <i>Biosecurity Act 2014</i> aims to provide comprehensive measures to protect Queensland’s economy, agriculture, tourism, environment, and public health from biosecurity risks.</p> | <p>Management of pests and invasive species across the Project will be required by all parties. All personnel have a General Biosecurity Obligation.</p> |
| <p><i>Fisheries Act 1994</i></p> | <p>The <i>Fisheries Act 1994</i> (Fisheries Act) provides for the use, conservation and enhancement of the community's fisheries resources and fish habitat by providing for, amongst other things, the protection of fish habitats.</p> <p>The <i>Fisheries Act</i> has been integrated into the <i>Sustainable Planning Act 2009</i> (SP Act) so that development permits under the SP Act are required for certain operational works that are assessable development under the SP Act.</p> <p>Operational works that are assessable development under the SP Act include waterway barrier works and works in a declared fish habitat.</p> | <p>The <i>Fisheries Act 1994</i> primarily applies to waterways which are classified as waterways for the purpose of waterway barrier works located throughout the Project.</p> <p>In total, 12 waterways intersect the project area, 9 are classified as low risk and 3 as moderate risk</p> |
| <p><i>Nature Conservation Act 1992</i> <i>Nature Conservation (Animals) Regulation 2020</i> <i>Nature Conservation (Plants) Regulation 2020</i></p> | <p>The <i>Nature Conservation Act 1992</i> (NCA) aims to conserve nature through strategies such as dedicating and declaring protected areas for those parts of Queensland with outstanding biological diversity, natural features and wilderness values. The NCA provides for the protection of near threatened, vulnerable and endangered animals and plants.</p> <p>In support of the purpose and the provisions of the NCA, the Nature Conservation (Animals) Regulation 2020 and the Nature Conservation (Plants) Regulation lists all flora and fauna species which are considered to be 'extinct in the wild', 'endangered', 'Vulnerable', 'Near Threatened' and 'Least Concern' wildlife.</p> | <p>Relevant for the activities impacting vegetation, animals and their habitat. The Project is to comply with the NCA through implementation of this EMP and other management plans as relevant.</p> <p>The Project site is predominantly mapped as containing Category X (non-remnant) vegetation. Category R regrowth vegetation is associated with several watercourses which traverse the project area.</p> |
| <p><i>Vegetation Management Act 1999</i> <i>Vegetation Management Regulation 2012</i></p> | <p>The <i>Vegetation Management Act 1999</i> (VM Act) regulates the conservation and management of woody vegetation communities, providing protection for the following:</p> <ul style="list-style-type: none"> • Regional Ecosystems (REs) classified as 'endangered' or 'of concern' (including remnant and high-value regrowth); • REs classified as 'least concern' associated with mapped waterways; • Mapped 'essential habitat' for threatened flora and fauna species listed under the NC Act; and • Specific wetlands as mapped under the VM Act. | <p>Applies to clearing of vegetation associated with the Project. The Project is to comply with this EMP and other management plans as relevant.</p> <p>The VM Act watercourse mapping identifies watercourses that support regulated vegetation under the VM Act. As the entire project area is located within a non-remnant area, the action will not impact on regulated vegetation associated with a water course.</p> <p>Category R regrowth vegetation is associated with several watercourses which traverse the project area.</p> |
| <p><i>Planning Act 2016</i> <i>Planning Regulation 2017</i></p> | <p>The <i>Planning Act</i> aims to establish an efficient and sustainable land use planning system that promotes ecological sustainability and the well-being of communities in Queensland.</p> | <p>Relevant for all activities. Certain accepted or assessable requirements are to be met, as described further in this EMP.</p> |

| Legislation/Plan/Policy | Objectives | Relevance |
|---|---|---|
| | | The Project site is predominantly mapped as containing Category X (non-remnant) vegetation. |
| <i>Environmental Protection Act 1994 (EP Act)</i> | The <i>Environmental Protection Act</i> (the EPA) protects environmental values through development and implementation of environmental protection policies and regulates environmentally relevant activities prescribed in the Environmental Protection Regulation 1998 (EP Reg). | For all activities the General Environmental Duty is required. |
| <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019 (EPP Water and Wetland Biodiversity)</i> | The <i>EPP (Water and Wetland Biodiversity)</i> aims to protect water environmental while allowing for development that is ecologically sustainable. It established environmental values (EVs) and water quality objectives (WQO) for Queensland waters, which are progressively determined for the protection of aquatic ecosystems and for human uses. | Defines water quality objectives and environmental values for waters impacted by the project. The Policy is to be met by implementation of this EMP and other management plans. |
| <i>Environmental Protection (Air) Policy 2019 (EPP (Air))</i> | The <i>EPP (Air)</i> aims to enhance and protect the air environment in Queensland. It identifies environmental values to be enhanced or protected, sets air quality objectives, and provides a framework for informed decisions regarding air quality. It is consistent with the objectives of the Environmental Protection Act 1994 which focusses on sustainable development while maintaining ecological processes. | Defines environmental values for air quality and provides the framework for environmental decision making related to air quality impacted by the project. The Policy is to be met by implementation of this EMP and other management plans. |
| <i>Environmental Protection (Noise) Policy 2019 (EPP Noise)</i> | The <i>EPP (Noise)</i> aims to manage and protect the acoustic environment in Queensland, ensuring that noise levels are maintained to safeguard community amenity and environmental values. | Defines environmental values for noise and vibration and provides an environmental decision-making framework for noise. The Policy is to be met by implementation of this EMP and other management plans. |
| <i>Environmental Protection (Waste Management) Policy 2000 (EPP Waste)</i> | The <i>EPP Waste</i> promotes the efficient use of non-renewable resources and the use of waste as a resource. The hierarchy of waste management is outlined in this Policy and includes a list of waste management practices in the preferred order of adoption. | Implements requirements for waste management including waste avoidance, reuse, recycling, energy recovery and disposal. The Policy is to be met by implementation of this EMP and other management plans, such as the Waste Management Plan. |

1.5.1 Conditions of Development Approval

The Smoky Creek Solar Power Station Development Approval (COM002-18/19) (**Appendix B**) conditions require specific items to be addressed within the Project EMP. Specifically, the Development Approval Conditions state:

“The applicant must prepare a separate detailed Construction Phase Environmental Management Plan (CPEMP) for each stage of the development identifying environmental management measures to be implemented during all construction works associated with the solar farm facility.”

These minimum requirements are listed and mapped to the relevant sections of this EMP in **Table 3**.

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Table 3 Development Approval Compliance

| Development Approval Conditions Requirement | Location of EMP or reference document that stated requirement addressed |
|--|---|
| Erosion and Sediment Control | Section 6.1 |
| Stormwater Management / Water Quality and Surface Water Runoff (interim drainage plan during construction) | Section 6.2 |
| Water Management | Section 6.3 |
| Air Quality Management (dust suppression) | Section 6.4 |
| Noise and Vibration Management | Section 6.5 |
| Management of light spill and on-site lighting | Section 6.6 |
| Land Contamination (storage / use of fuel and chemicals) | Section 6.7 |
| Biosecurity Management (animal and plant pests) | Section 6.8 |
| Waste Management | Section 6.9 |
| Flora and Fauna Impact Management | Section 6.10 |
| Storage and handling of fuel and other hazardous goods | Section 8.1 |
| Emergency Management | Section 7 |
| Environmental monitoring and reporting | Section 6 |
| Management of works near existing ground and underground infrastructure | Section 6.12 |
| Hazard Management | Section 8 |
| Complaints handling and management | Section 9 |
| Statutory obligations and approvals | Section 1.5 |

In addition to meeting the minimum requirements listed in **Table 3**, the EMP must:

- a. Be prepared and certified by a suitably qualified person;
- b. Clearly identify mitigation and management measures to be adopted during the construction phase;
- c. Provide recommendations based on criteria and environmental data relevant to the site and surrounding area and construction works proposed;
- d. Be prepared in accordance with the relevant standards; and
- e. Contain all recommendations of the approved Land Condition Assessment prepared by Range Environmental Consultants (**Appendix H**).

1.5.2 Conditions of EPBC Approval

The Smoky Creek Power Station EPBC Approval (Ref: 2021/9030) (**Appendix C**) requires specific items to be addressed. Specifically, Condition 4 states:

“To avoid and mitigate harm to protected matters, the approval holder must submit to the department for the Minister’s written approval an Environmental Management Plan (EMP) developed by a suitably qualified expert. The approval holder must not commence the Action unless the Minister has approved the EMP in writing. The approval holder must implement the EMP as approved by the Minister in writing, from when it is approved until the expiry date of this approval.”

These minimum requirements are listed and mapped to the relevant sections of this EMP (**Table4**).

Table 4 EPBC Approval Compliance

| EPBC Approval Condition | EPBC Approval Conditions Requirements | Location of EMP or reference document that stated requirement addressed |
|---|--|---|
| 5) By implementing the EMP required under condition 4, the approval holder must achieve the following environmental objectives: | a. any avoidable harm to protected matters is prevented, and unavoidable and accidental harm to protected matters is mitigated. | Section 6.10 |
| | b. the Action, including associated clearing activities, does not contribute to an increase in sediments in any waterway within the Action area or downstream of the Action area. | Section 6.1 |
| | c. fencing does not obstruct the movement of Ornamental Snake individuals within the Action area or into and out of the Action area. | Section 6.10 |
| | d. there is no increase in weed infestation within the Action area and no new introduction of weed species to the Action area. | Section 6.8 |
| | e. all vehicles use only designated internal roads and access tracks to minimise harm to protected matters within the Action area. | Section 6.10 |
| | f. harm to protected matters is prevented by clearly labelling avoidance areas and watercourses with clear and maintained signage during the construction phase and decommissioning phase. | Section 6.10 |
| 6) The EMP required under condition 4 must be consistent with the Environmental Management Plan Guidelines, and must include: | a. details of the relevant protected matters and a reference to EPBC Act approval conditions to which the EMP refers. | Section 3.2, Appendix C |
| | b. description of all components of the Action, including construction, operation and decommissioning. | Section 1.1 |
| | c. commitments, capable of ensuring that the environmental objectives are achieved based on supporting evidence | Section 6 |
| | d. reference to protected matter Conservation Advice, Recovery Plan/s and Threat Abatement Plan/s where commitments to environmental objectives are made in the EMP | Section 6.8, Section 6.10 |
| | e. a table of commitments made in the EMP to achieve the environmental objectives, and a reference to exactly where these commitments are detailed in the EMP | Appendix D |
| | f. an explanation of how proposed commitments are consistent with relevant protected matter Conservation Advice, Recovery Plan/s and Threat Abatement Plan/s, | Section 6.8, Section 6.10 |
| | g. impact avoidance, mitigation and/or repair measures, and the timing of those measures | Appendix D |
| | h. an assessment of risks relating to achieving the environmental objectives and risk management strategies and/or mitigation measures that will be applied to address identified risks | Section 5 |
| | i. reporting and review mechanisms to demonstrate compliance with the commitments and environmental objectives made in the EMP | Appendix D |
| | j. a monitoring program capable of detecting any possible failure to achieve the environmental objectives, which must include. <ul style="list-style-type: none"> • measurable performance indicators, • trigger values for corrective actions, • the timing and frequency of monitoring, ensuring monitoring is capable of detecting trigger values and changes in the performance indicators, and | Appendix D |

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| EPBC Approval Condition | EPBC Approval Conditions Requirements | Location of EMP or reference document that stated requirement addressed |
|-------------------------|--|---|
| | <ul style="list-style-type: none">proposed corrective actions if trigger values are reached. | |
| | k. procedures for prompt notification to the department and details of investigation that will be undertaken if monitoring detects an increase in sediments. | Section 6.2 |
| | l. references demonstrating the relationship between the EMP and other relevant plans or conditions of approval. | Section 1.6, Section 6 |

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The Conditions of EPBC Approval providing clearing threshold are provided in the table below with the Project's proposed clearing quantities.

Table 5 EPBC Condition clearing thresholds and proposed clearing quantities

| EPBC Condition | Matter of National Environmental Significance | Type | Proposed impacts per Design Version dated 03-Mar-2026 | Must not clear |
|----------------|---|-------------------|--|--------------------|
| 2a | Brigalow TEC | Watercourse 1 | 0.13 ha represents anticipated clearing rates. Please refer below for proposed value and supporting justification. [0.4ha is the proposed conservative estimate, based on 30% design as of 04/03/2026. In any case, Edify reiterates its firm commitment that clearing of the Brigalow Threatened Ecological Community (TEC) within Watercourse 1 will not exceed 3 hectares. | 2a |
| 2a | Brigalow TEC | Watercourse 2 | 0.33 ha – refer below for proposed value 1.0ha is currently the proposed conservative estimate, based on 30% design. In any case, Edify reiterates its firm commitment that clearing of the Brigalow Threatened Ecological Community (TEC) within Watercourse 2 will not exceed 2 hectares. | 2a |
| 2b | Squatter Pigeon foraging habitat | Foraging Habitat | 9.0 ha | more than 20.85 ha |
| 2c | Squatter Pigeon foraging habitat | Dispersal Habitat | 8.85 ha | more than 21.85 ha |
| 2d | Solanum habitat | | 0.3 ha | more than 2 ha |
| 2e | Squatter Pigeon breeding habitat | | 0 ha | Any |
| 2f | Ornamental Snake habitat | | 0 ha | Any |

Note: The watercourse 1/2 impacts will need to be increased compared to the figures above, to suit additional disturbance associated with working in the watercourse environment, scour protection and potential design development impacts. Given the buffer compared to the respective upper limits, we suggest 3x the modelled impact. This would result in:

- Watercourse 1 = 0.4ha
- Watercourse 2 = 1.0ha

Detailed design will continue to be refined throughout the pre-construction and early construction phases. Accordingly, a fully finalised 100% Issue for Construction (IFC) design, which would definitively confirm the final EPBC clearing footprint, cannot be completed prior to Financial Close. At this stage, design development is based on detailed layouts and engineering iteration which remains ongoing, and therefore the estimates provided represent conservative parameters to ensure the Project remains compliant with the approved EPBC clearing thresholds. Edify respectfully requests that DCCEEW consider these conservative estimates for the purposes of enabling construction to commence, noting that the final IFC design will be developed in accordance with the approved limits and provided to DCCEEW at the appropriate time.

1.5.2.1 Compliance Reporting

In addition to meeting the minimum requirements listed in **Table 4**, Condition 26 states:

“The approval holder must prepare a compliance report for each 12-month period following the date of the commencement of the action, or as otherwise agreed to in writing by the Minister.”

Further, Condition 27 states:

“Each compliance report must be consistent with the Annual Compliance Report Guidelines, Commonwealth of Australia 2014.”

The minimum requirements for compliance reporting are listed in **Table 6**.

Table 6 EPBC Approval Compliance Reporting

| EPBC Compliance Reporting Conditions | EPBC Compliance Reporting Requirements |
|--|--|
| 28) Each compliance report must include: | <ul style="list-style-type: none"> a. Accurate and complete details of compliance and any non-compliance with the conditions and the plans, and any incidents. b. One or more shapefile showing all clearing of protected matters, and/or their habitat, undertaken within the 12-month period at the end of which that compliance report is prepared. c. A schedule of all plans in existence in relation to these conditions and accurate and complete details of how each plan is being implemented. |
| 29) The approval holder must: | <ul style="list-style-type: none"> a. Publish each compliance report on the website within 60 business days following the end of the 12-month period for which that compliance report is required. b. Notify the department electronically, within 5 business days of the date of publication that a compliance report has been published on the website. c. Provide the weblink for the compliance report in the notification to the department. d. Keep all published compliance reports required by these conditions on the website until the expiry date of this approval. e. Exclude or redact sensitive ecological data from compliance reports published on the website or otherwise provided to a member of the public. f. If sensitive ecological data is excluded or redacted from the published version, submit the full compliance report to the department within 5 business days of its publication on the website and notify the department in writing what exclusions and redactions have been made in the version published on the website. |

1.6 Related Documents

The EMP is one of several plans that outline environmental management measures and controls for the Project. Other plans include a Waste Management Plan, Offset Management Plan, Stormwater Management Plan, Erosion and Sediment Control Plan and Cultural Heritage Finds and Monitoring Plan.

The EMP and associated management plans provide an overarching management system to ensure that the Contractor and their Project Manager establish and maintain consistent, best practice controls to manage potential environmental impacts during the construction, operation and decommissioning phases of the Project.

1.7 Proponent Details

The proponent details are outline in **Table 7**.

Table 7 Proponent Details

| Proponent Details | |
|---|--|
| Organization name (as registered for ABN/CAN) | Edify Energy Pty Ltd |
| ABN | 85 606 684 995 |
| Business address | Level 4, 22 Darley St, Manly NSW 2095 |
| Primary contact | Lead Construction Manager: Kris Fulton |

2 SITE CONTEXT

2.1 Location

The Project site is located approximately 42km north-northwest of the Biloela township in the state of Queensland and is located within the Banana Shire Local Government Area.



Figure 2 Project Location

2.2 Land Use and Ownership

The Project site is located on approximately 3,602ha of broadacre agricultural land, of which approximately 2,021ha is developable. The land is currently used for cattle grazing and is owned by three separate landowners, where the Project holds secure land tenure rights.

A high voltage transmission line passes immediately adjacent to the Project area through lot 33 on RN210 and lot 37 on RN1147 in a north-west/south-east direction (**Figure 1**).

The land management history of the Project area includes clearing for pasture improvement and cattle grazing to the extent that the area now contains isolated trees and small, highly fragmented stands. Areas of remnant vegetation have been retained on low-lying areas of the Project site. Habitat for native species is now highly modified, fragmented and heavily impacted by cattle grazing.

2.3 Topography and Climate

The Project site is located within the Brigalow Belt South bioregion which features a variety of landscapes derived from basalt and quartz soils. The Project site is predominantly within the Callide Creek Downs sub-region of the Brigalow Belt South bioregion, and a small section occurs within the Mount Morgan Ranges sub-region.

The topography within the Project area is relatively flat, with elevations ranging from 200m AHD to 230m AHD. The area is characterised by flat to undulating plains of stony brown clay loam that evidently supported brigalow and semievergreen vine thicket prior to clearing (RPS, 2018). The Project site is intersected by several drainage lines.

Land degradation, mainly in the form of erosion, is noted across the Project site. Soil characteristics including dispersive soils, highly acidic soils, and moderately saline soils were documented during land assessments (Range Environmental Consultants, 2019).

Typically, the area receives mid-range precipitation levels, with approximately 570mm annually. Regional climate shows significant variation throughout the year, with the highest rainfall in February (average 108mm) and lowest rainfall in September (average 24mm) (Goovigen, BOM Station Number 39048).

3 PROJECT DESCRIPTION

3.1 Site Layout

The site layout plan has been provided for reference refer to **Appendix A**.

The site areas, infrastructure and equipment include the following:

- Solar photovoltaic panels;
- Single-axis tracking systems;
- Battery energy storage systems;
- Power conversion units;
- Sub-station;
- New overhead powerline;
- Transmission infrastructure;
- Site building and storage areas;
- Security perimeter fencing;
- Laydown and construction compound; and
- Access tracks.

3.2 Sensitive Receptors

This section summarised the environmental features which have been identified as potential sensitive receptors for this project, refer to **Table 8** below.

Table 8 Sensitive Receptors

| Receptor | Environmental Features |
|-----------|--|
| Community | <ul style="list-style-type: none"> • The site is located in a very sparsely populated area. There is one (associated) dwelling (homestead) located within the development footprint that will cease to be utilised following the commencement of construction. The nearest non-associated dwelling is located approximately 110m north of the Lot 29 on RN210 property boundary, with the project infrastructure setback a further 30m from the property boundary (per Condition 13 of the Development Approval), with vegetation buffer landscaping to be planted (per Condition 14 and 62 of the Development Approval). • The site is within the Gaangulu Nation People Native Title claim area. Discussions and agreements with this group have been established by Edify Energy to address use of land and management of cultural heritage. |
| Ecology | <p>Flora</p> <ul style="list-style-type: none"> • Category R regrowth vegetation is associated with several watercourses which traverse the project area, namely, a stream order one watercourse on Lot 29 on RN210, a stream order one and two on Lot 32 on RN194 and a stream order one located in Lot 33 on RN210. All category R regrowth vegetation and associated protection area (i.e. stream order 1 or 2 - 10 m) have been excised from the overall project area • Approximately 78.7 ha of brigalow woodland occurs within the Project area (Terra Solutions, 2023). A complete assessment of the diagnostic characteristics and condition thresholds was not undertaken to confirm classification as the Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant) listed threatened ecological community under the EPBC Act as the development footprint avoids these woodlands. Consequently, it is assumed that all brigalow woodlands identified are the TEC. Further, <i>Solanum dissectum</i> (EPBC - endangered) and <i>Solanum johnsonianum</i> (EPBC - endangered) which grow in Brigalow woodland, was identified near waterway-fringed watercourses (RPS, 2018). Targeted surveys conducted in 2023 successfully confirmed the presence of <i>Solanum johnsonianum</i> as an isolated population of 72 plants located in the southern extent of Lot 39 on RN396 (Terra Solutions, 2023). See Appendix F for full Ecological Assessments. |

| Receptor | Environmental Features |
|-------------------|---|
| | <p>Fauna</p> <ul style="list-style-type: none"> Potential habitat for the Squatter pigeon <i>Geophaps scripta scripta</i> (EPBC – Vulnerable) and Ornamental snake <i>Denisoniam maculate</i> (EPBC – Vulnerable) was identified (RPS, 2018). Targeted surveys in 2023 detected five (5) ornamental snake individuals and three (3) Squatter Pigeons were identified during field assessments (Terra Solutions, 2023). See Appendix F Error! Reference source not found. for full Ecological Assessments. |
| Water Resources | <ul style="list-style-type: none"> A total of 12 watercourses intersect the project area (RPS, 2018). Access to groundwater resources is not part of the project. While rainfall levels are mid-range, episodic storms can bring heavy rainfall (particularly during summer). |
| Soils and Geology | <ul style="list-style-type: none"> The area is characterised by stony brown clay loam (RPS, 2018). The geology of the general area comprises Eocene aged arenite-mud rock of the Biloela Formation. Isolated contaminated soils were identified on site at cow dips (Range Environmental Consultants, 2019). Active erosion in the form of gully erosion, sheet erosion, exposed subsoil, vegetation clearing and erosion of banks of watercourses, is noted across the project area (Range Environmental Consultants, 2019). See Appendix H for full Land Assessment. |

3.3 Exclusion Zones

The site has a number of exclusion zones, such as the Powerlink easement, watercourses and some areas of environmental sensitivity. Preliminary site layouts have been developed to account for these exclusions (**Figure 1**). The principal areas of exclusion, as identified through the Local Government development approval process and the Australian Government Environment Protection and Biodiversity Conservation (EPBC) Act process, include:

- Brigalow Threatened Ecological Communities (TECs);
- Watercourses;
- *Solanum johnsonianum* and *Solanum dissectum* habitat;
- Ornamental snake habitat; and
- Squatter Pidgeon habitat.

3.4 Construction Timeframe and Duration

The construction phase is expected to commence in March 2026 and due to the scale of the project the completion date is expected to be December 2028.

3.5 Working Hours

Construction activities are expected to be undertaken between the hours of 6:30am and 6:30pm, Monday – Saturday, however some construction activities may occur outside these hours where the works cannot be interrupted (e.g. Large concrete pours).

Audible out-of-hours works will only be undertaken where necessary due to safety, traffic, utility, environmental or critical path constraints and will not proceed without prior Council approval (unless emergency works are required).

A formal request to Council will include justification, predicted noise levels, mitigation measures and a community notification strategy.

4 ROLES AND RESPONSIBILITIES

4.1 Site Management

Edify Energy will oversee the Project as the Principal. The Contractor’s appointed Project Manager and Site Supervisor will be responsible for site management during the construction works.

4.1.1 Environmental Reporting Structure

The responsibilities and reporting structure for key environmental management roles at the site have been broadly described in **Table 9**.

Table 9 Site Reporting Structure

| Position | Responsibilities |
|------------------------|--|
| The Client (Principal) | <ul style="list-style-type: none"> • Obtaining state and Commonwealth statutory approvals; • Reviewing contractors’ construction, operation and decommissioning phase plans and submittals for executing works; • Monitor and inspect Contractor’s construction, operation and decommissioning activities for Health Safety and Environment (HSE) and Quality compliance; • Monitor progress of site work to verify that the Contractors are executing works in accordance with their contract requirements; and • Undertake environmental and cultural heritage audits to verify compliance with this EMP. |
| Contractors | |
| Project Manager | <ul style="list-style-type: none"> • Preparation of construction, operation and decommissioning specific management plans, quality plans and HSE plans; • Ensuring that the project environmental performance meets client requirements; • Responsible for the integrity of the work and commercial performance of the Project; • Ensure all environmental requirements are implemented in accordance with the project approvals, client requirements, the specification, the contract requirements and legislative obligations; • Ensure complaints are managed in accordance with the procedure outlined in this EMP; • Ensure preparedness for possible emergencies by implementing the Emergency Management procedure outlined in this EMP, including nominating the members of the Emergency Response Team (ERT); • Reviewing and implementing this EMP; • Communicating requirements of this EMP to the Project team, and ensuring compliance; • Ensuring Project environmental documentation records are maintained and provided to the client and their representatives as necessary; • Engage qualified and experienced staff and provide management support to ensure all activities relating to environmental performance are undertaken by trained and competent personnel and in accordance with the contract; and • Select subcontractors and suppliers based on an evaluation of their ability to meet the specified requirements including those for environmental and ensure compliance. |
| Site Supervisor | <ul style="list-style-type: none"> • Ensure all environmental requirements are implemented in accordance with the project approvals, client requirements, the specification, the contract requirements and legislative obligations; • Monitor the effectiveness of the environmental controls implementation and escalate issues for rectification to the Project manager; • Monitor the subcontractors and suppliers based on an evaluation of their ability to meet the specified requirements including those for environmental and ensure compliance; • Ensure complaints are notified to the Project Manager for handling as per the procedure outlined in this EMP; • Ensure that all personnel are aware of the Emergency Management procedures and plan as outlined in this EMP and as a member of the Emergency Response Team (ERT); • Manage the development of construction methods, ensuring that complex of specific processes for safety, environment or quality aspects for the portion of the works are completed in accordance with construction codes of best practice, legislative requirements, client specifications and in coordination with the Project Manager and HSE Advisor; • Ensure that all personnel are inducted in their roles and responsibilities; • Establish and maintain a list of current contact names and telephone numbers for all personnel relevant to environmental matters. This list will include (but not limited to): |

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| Position | Responsibilities |
|------------------------|---|
| | <ul style="list-style-type: none"> • Principle's Representative; • Contractor's Site Supervisors; • HSE Manager; and • Pollution Hotline (PH 1300 130 372). • Conduct daily visual inspections and weekly site checklists. |
| Contractor HSE Manager | <ul style="list-style-type: none"> • Ensure all workers are aware of the EMP requirements related to their scope of work; • Establish and plan the controls for environmental compliance for the Project; and • Maintain the Project non-conformance system. |
| All personnel | |
| | <ul style="list-style-type: none"> • Follow the requirements and carry out work in accordance with this EMP and those of the Site Supervisor; • Report any potential environmental issues to the site supervisor, including: <ul style="list-style-type: none"> ○ Dust generation; ○ Non-conformance to noise and vibration; ○ Light spills; ○ Non-conformance to air quality; ○ Non-conformance to water quality; ○ Pest and weed incursions; ○ Injury to protected fauna; ○ Damage to protected flora; ○ Uncontrolled waste storage; • Exercise due care, skill and judgement when carrying out tasks; • Implement corrective actions which have been approved by the appointed site supervisor; • Adhere to site instructions relating to exclusion zones at the site and the management and access of these areas including: <ul style="list-style-type: none"> ○ Brigalow threatened communities (TEC); ○ Low to medium risk waterways; ○ Ornamental Snake habitat; and ○ Squatter Pidgeon habitat. • Comply with all relevant environmental laws associated with the delivery of the Project |

4.2 Site Contacts

Relevant site contacts are detailed in **Table 10**.

Table 10 Site Contact Details (subject to change pending Contractor onboarding)

| Issue | Organisation | Person | Position | Contact Details |
|---|----------------|-----------------|-----------------|-----------------|
| Implementation and management of the EMP. | DTI Contractor | Jason Todd | Project Manager | 0447 787414 |
| Implementation of the Emergency Response procedure and coordination of the Emergency Response Team | DTI Contractor | Jason Todd | Project Manager | 0447 787 414 |
| Receiving the following reports: monitoring, remedial action, environmental complaints and emergencies. | DTI Contractor | Shaun McDonnell | Site Supervisor | 0499 846 448 |
| Ensuring measures/action plans are implemented. | DTI Contractor | Mark Stanieg | HSEO | 0400 716 200 |
| Reporting and auditing. | DTI Contractor | Mark Stanieg | HSEO | 0400 716 200 |

5 ENVIRONMENTAL VALUES AND RISK ASSESSMENT

RPS has undertaken a detailed desktop assessment to identify potential environmental values that maybe impacted on by the Project. The following sections provide an overview of the environmental values within and adjacent to the site. An assessment of the potential impacts to these values is provided, with detailed management measures to be implemented to minimise the risk of environmental harm provided in **Section 6**.

5.1 Environmental Values

An assessment of potential environmental values is summarised in **Table 11**.

Table 11 Environmental Values

| Environmental Value | Description | Risk Assessment Required |
|---------------------|--|--------------------------|
| Air | Air quality is an environmental value of the surrounding environment that must be protected. | Yes |
| Water | The receiving water environment has community and ecological environmental values that must be protected. | Yes |
| Noise | Noise is a potential impact to nearby sensitive receptors. | Yes |
| Land | Land values of native vegetation, wildlife habitat, soil quality and natural landforms exist on the site and will be impacted by current and proposed activities. | Yes |
| Cultural Heritage | Archaeological occurrences or skeletal human remains may be located during construction, operation and decommissioning activities. | Yes |
| Flora & Fauna | Species and/or species habitat may be impacted by the construction, operation and decommissioning of the solar power station. Weed infestations may occur due to construction, operation and decommissioning activities. | Yes |

5.2 Environmental Impacts and Risks`

The following section describes risks to environmental values and likely magnitude of the impacts generated by the existing operations and proposed expansion.

5.2.1 Risk Assessment Synopsis

The risk assessment adopted is a qualitative risk-based approach designed to assess risk based on the likelihood of an environmental impact or event occurring (**Table 12**), and the consequences of the occurrence on the surrounding environmental values (**Table 13**).

The likelihood and consequences are scored between 1 and 5 for each potential impact or event. The risk assessment has been formulated considering potential for impact without control measures put in place to manage potential risk. The consequence and likelihood scores are then plotted on the risk assessment matrix (**Table 14**).

Table 12 Definitions of Likelihood

| Rating | Descriptor | Score |
|----------------|---|-------|
| Rare | May occur only in exceptional circumstances | 1 |
| Unlikely | Could occur but doubtful | 2 |
| Possible | Might occur at some point in the future | 3 |
| Likely | Will probably occur | 4 |
| Almost Certain | expected to occur in most circumstances | 5 |

Table 13 Definitions of Consequence

| Rating | Descriptor | Score |
|--------------|--|-------|
| Negligible | Impacts not requiring any treatment or management action | 1 |
| Minor | Nuisance or insignificant environmental harm requiring minor management actions | 2 |
| Moderate | Serious environmental impacts, readily manageable at low cost | 3 |
| Major | Substantial environmental impacts, manageable but at considerable cost and some disruption | 4 |
| Catastrophic | Severe environmental impacts with major consequent disruption and heavy cost | 5 |

Table 14 Risk Assessment Matrix

| Likelihood of an Environmental Impact | | Consequence of Said Impact | | | | |
|---------------------------------------|---|----------------------------|-------------|-------------|---------------|---------------|
| | | Negligible | Minor | Moderate | Major | Catastrophic |
| | | 1 | 2 | 3 | 4 | 5 |
| Almost Certain | 5 | 5 Medium | 10 High | 15 High | 20 Extreme | 25 Extreme |
| Likely | 4 | 4 Low | 8 Medium | 12 High | 16 High | 20 Extreme |
| Possible | 3 | 3 Low | 6 Medium | 9 Medium | 12 High | 15 High |
| Unlikely | 2 | 2 Low | 4 Low | 6 Medium | 8 Medium | 10 High |
| Rare | 1 | 1 Low | 2 Low | 3 Low | 4 Low | 5 Medium |

The final risk level assigned is thus a product of the likelihood and consequence scores. The higher the risk score, the higher the priority is for management. **Table 15** describes the possible actions required for each risk assessment rating.

Table 15 Indicative Management Option for Risk Assessment Ratings

| Risk Rating | Risk Rating Scores | Indicative Management Option |
|-------------|--------------------|---|
| Extreme | 16 - 25 | Manage by implementing site management and emergency procedures, plant design controls and regular monitoring. |
| High | 10 - 15 | Manage by implementing site management procedures, specific monitoring, and may require some operation/plant design controls. |
| Medium | 5 – 9 | Manage by implementing specific monitoring or response procedures. |
| Low | 1 - 4 | Manage by routine procedures, unlikely to need specific application of resources. |

5.2.2 Potential Environmental Impacts

Activities associated with the construction, operation and decommissioning of the solar power station which have the potential to cause environmental harm and/or nuisance have been outlined in **Table 16**.

Table 16 Identification of Potential Impacts

| Activity | Potential Impacts Environmental Values Impacted | | | | | |
|--|--|-------|-------|------|-----------------|-------------------|
| | Air | Water | Noise | Land | Flora and Fauna | Cultural Heritage |
| Stockpiling and backfill | ✓ | | ✓ | | | |
| Excavation and Bulk Earth Works | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Import, placement and compaction of fill | ✓ | | ✓ | ✓ | | |
| Heavy machinery movement and loading | ✓ | | ✓ | ✓ | ✓ | |
| Light vehicle movement | ✓ | | ✓ | ✓ | ✓ | |
| Waste storage | | ✓ | | ✓ | | |
| Release of contaminants | | ✓ | | ✓ | | |
| Vegetation Clearance and Topsoil Stripping | | ✓ | | ✓ | ✓ | ✓ |
| Sourcing and distributing construction water | | ✓ | | | | |
| On-site ablution facilities | ✓ | ✓ | | ✓ | | |

Site activities have been presented against environmental values to determine the risk and likely magnitude of impacts and to provide a focus for management strategies (Table 17).

Table 17 Assessment of Environmental Impacts

| Activity | Potential Impacts Environmental Values Impacted | | | | | |
|--|--|-------|-------|------|-----------------|-------------------|
| | Air | Water | Noise | Land | Flora and Fauna | Cultural Heritage |
| Excavation and Bulk Earth Works | High | - | High | High | High | Medium |
| Construction, operation and decommissioning works including importing, | High | - | High | High | - | - |

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| Activity | Potential Impacts Environmental Values Impacted | | | | | |
|--|--|-------|--------|--------|-----------------|-------------------|
| | Air | Water | Noise | Land | Flora and Fauna | Cultural Heritage |
| placement and compaction of fill and construction of solar power station | | | | | | |
| Heavy machinery movement and loading | High | - | High | | High | - |
| Light vehicle movement | Medium | - | Medium | - | High | - |
| Waste Storage | - | High | - | High | - | - |
| Vegetation Clearance and Topsoil Stripping | - | High | - | High | High | Medium |
| Construction and operation of on-site ablution facilities | Medium | Low | - | Medium | - | - |

6 ENVIRONMENTAL MANAGEMENT MEASURES

The management measures set out in **Section 6** have been informed by the identification of potential environmental impacts and associated risks in **Section 5** and the following studies and plans:

- Land Assessment Report (Range Environmental, 2018),
- Ecological Assessment Report (RPS, 2019)
- Smoky Creek Solar Power Station Response To Information Request by Preliminary Documentation (Terra Solutions, 2023)
- Smoky Creek Solar Power Station Habitat Assessment and Targeted Survey (Terra Solutions, 2023)
- Erosion and Sediment Control Management Plan (RPS, 2026)
- Cultural Heritage Finds and Monitoring Plan (RPS, 2026)
- Waste Management Plan (RPS, 2026)
- Landscaping Plan (Spiire, 2025)
- Site Rehabilitation Plan
- Stormwater Management Plan
- Operational Environmental Management Plan
- Bushfire Management Plan
- Sewage Management Plan

At the time of developing the EMP, several management plans are yet to be finalised. The above list will be updated by the Contractor.

6.1 Erosion and Sediment Control

Aim

To minimise the risk of erosion by implementing erosion and sediment controls on site in order to safeguard soil loss and in turn sedimentation and potential water quality impacts.

Success Criteria

- No visual signs of erosion occurring onsite as a result of the construction, operation and decommissioning of the solar power station.
- No erosion or sediment build up off-site of the Project area.
- No further erosion or sedimentation of waterways.

Legislation Requirements

Compliance with:

Legislation (as per **Section 1.5**), specifically:

- *Fisheries Act 1994*
- *Environmental Protection Act 1994*
- *Water Act 2000*

Development requirements or guidelines including, but not limited to:

- Accepted development requirements for Code for self-assessable development Minor waterway barrier works Part 4: bed level crossings (DAF, 2013)
- Best Practice Erosion and Sediment Control (IECA, 2008).
- List of exempt clearing work under the Vegetation Management framework, Queensland Government, (2026) available here: [List of exempt clearing work under the Vegetation Management framework](#)
- Permits, approvals and licence conditions.

| Management Actions | Responsibility | Frequency |
|---|--------------------------|-----------------------|
| An Erosion and Sediment Control Plan (ESCP) to manage the site during the construction, operation and decommissioning phases has been prepared. The ESCP is in accordance with Best Practice Erosion and Sediment Control (Aust IECA 2008). | Environmental consultant | Prior to Commencement |
| Erosion and sediment control devices are to be installed and monitored as per the approved ESCP. | Site Supervisor | At all Times |
| All necessary sediment and erosion control devices will in place prior to installation of solar power station infrastructure at a site as per the ESCP and staged throughout the project | Site Supervisor | Prior to Commencement |
| All personnel will be made aware that portions of the Project area have dispersive soils prone to erosion. | All Staff | Prior to Commencement |
| Erosion and sediment control structures will be maintained at all times during the construction, operation and decommissioning phases, and checked, repaired or replaced as required after each major rain event. | Site Supervisor | At all Times |
| Surface disturbances will be kept to the minimum necessary to undertake the works. | All Staff | At all Times |
| The area and duration of exposed soil will be kept to the minimum during construction, operation and decommissioning activities. | All Staff | At all Times |

REPORT

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| Soils rated as having 'moderate' or worse erosion potential will require specific management during the construction, operation and decommissioning phases, and will not be left exposed for any significant period of time without stabilisation as per the ESCP. | Site Supervisor | At all Times |
| Accumulated sediment from erosion and sediment controls will be cleaned out as soon as possible as per ESCP. Sediment will be placed in a disposal area or, if appropriate, mixed with dry soil onsite. Sediment will be deposited in a manner that will not create an erosion hazard. | Site Supervisor | Weekly |
| During grading, topsoil and subsoil will be stockpiled separately, and topsoil later reused where feasible. | All Staff | As Required |
| Soil stockpile heights will be appropriate to prevent excessive windblown dust and will not be in close proximity to watercourses. | Site Supervisor | At all Times |
| Stockpiles and areas of bare soil or earth that are likely to become eroded during the construction, operation and decommissioning phases are to be adequately protected by upslope surface water diversion, downslope sediment fencing and/or temporary surface coverings as per the ESCP. | Site Supervisor | At all Times |
| Long-term stockpiles will be suitably stabilised with appropriate erosion preventative measures (e.g. covers) as per the ESCP. | Site Supervisor | At all Times |
| Do not drive equipment off established tracks or create unnecessary compacted soils. | All Staff | At all Times |
| Implementing strict measures to prevent sediment-laden runoff from construction sites from entering downstream gullies, seasonal swamps, and drainage fans. | Site Supervisor | At all Times |
| Any land disturbed due to construction, operation and decommissioning of the solar power station will be rehabilitated to its previous condition where practicable as per the ESCP. | Site Supervisor | As Required |
| Routine Monitoring Program | Responsibility | Frequency |
| Inspections and monitoring will be undertaken in accordance with the ESCP. Daily environmental inspections will be undertaken by the Site Supervisor, during construction, operation and decommissioning to ensure environmental management is implemented in accordance with this control plan and will include: <ul style="list-style-type: none"> • Inspection of erosion and sediment controls at implementation and performance, weekly, and before and after rain to verify their correct function as per the ESCP. • Occurrence of excessive sediment deposition (whether on-site or off-site) • Site discharge points • Visual inspections for turbidity • Monitoring of weather conditions and forecasts • Checking for areas of potential erosion • Daily checks of weather forecasts – pre-and post-major rainfall inspections | Site Supervisor | Daily |
| Inspections and monitoring will be undertaken in accordance with the ESCP. Weekly environmental inspections will be undertaken by the Site Supervisor, during construction, operation and decommissioning to ensure environmental management is implemented in accordance with this control plan and will include: <ul style="list-style-type: none"> • Monitoring Project area boundaries, waterways and sensitive areas for erosion and the deposition of sediment • All drainage, erosion and sediment control measures; • Occurrence of excessive sediment deposition (whether on-site or off-site); | Site Supervisor | Weekly |

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| <ul style="list-style-type: none"> • Occurrence of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movement; • Litter and waste receptors; • Oil, fuel and chemical storage facilities. | | |
| Environmental audits will be undertaken by Edify in accordance with the ESCP. | Project Manager | As per the ESCP |

Corrective Actions

Review and update of the ESCP if the current controls are not performing including:

- Reinstalling or maintaining existing controls and identifying new or additional controls.
- Procedures to maintain the controls.

Other corrective actions may include:

- Employ rock mulching or graveling to reduce erosion occurring onsite.
- Excavate and recontour any temporary drainage that becomes sediment laden.
- Erosion control mats can be considered as they may assist with seed germination and provide protection from raindrop impact erosion. The mats are not intended for use in high-flow velocity areas.
- If concentrated flows occur over dispersive soils (if found), then appropriate management must occur, including use of an impermeable lining option, such as black plastic.

| Reporting | Responsibility | Frequency |
|---|-----------------|-------------|
| Record inspection notes, observations, actions and notifications in diary. | Site Supervisor | Daily |
| Failures of the ESCPs should be reported as required. This is relevant for the design of the plan, implementation, or maintenance of controls | Site Supervisor | As Required |
| Record incidents using Incident Report Form | Site Supervisor | As Required |

6.2 Stormwater Management/Water Quality and Surface Water Runoff

| Aim | | |
|---|---------------------------------|-----------------------|
| To minimise the adverse impacts of stormwater on the receiving environment by implementing stormwater management systems on site. | | |
| Success Criteria | | |
| <ul style="list-style-type: none"> No uncontrolled water discharges on site. No adverse effects on the environment due to unplanned releases or discharges of contaminants to water. Water quality within and downstream of the site is maintained | | |
| Legislation Requirements | | |
| Compliance with: Legislation (as per Section 1.5), specifically: <ul style="list-style-type: none"> <i>Fisheries Act 1994</i> <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019</i> <i>Environmental Protection Act 1994</i> Development requirements or guidelines: <ul style="list-style-type: none"> Accepted development requirements for Code for self-assessable development Minor waterway barrier works Part 4: bed level crossings (DAF, 2013) State Planning Policy 2017, The Queensland Urban Drainage Manual 2016 Permits, approvals and licence conditions. | | |
| Management Actions | Responsibility | Frequency |
| A Stormwater Management Plan (SWMP) to manage stormwater runoff during the construction, operation and decommissioning phases has been prepared (Hatch Pty, 2026) | Environmental consultant | Prior to Commencement |
| Stormwater management systems are to be installed and monitored as per the approved SWMP. | Project Manager/Site Supervisor | Prior to Commencement |
| If heavy rainfall or flooding is forecast for the area, the Site Supervisor shall prepare the site by: <ul style="list-style-type: none"> Relocating any mobile plant or equipment to higher parts of the site. Removing potential contaminants from site ensuring that potential contaminants are protected from rainfall or stormwater flows. Ensuring all erosion and sediment control measures have been maintained and are in place. | Site Supervisor | Prior to rain event |
| Sediment and dust loss from stockpiles will be minimised by stormwater flow diversions around stockpiles, stabilisation or covering of the stockpile surface, and downstream sediment containment devices where run-off is expected. | Site Supervisor | During rain event |
| Temporary drains or bunds will be constructed where necessary to direct run-off and any overland flow from upslope of excavations, away from the construction footprint. | Site Supervisor | Prior to Commencement |

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| No equipment or materials will be stored across flow paths. | All Staff | At all times |
| Earthworks activities will be sequenced, so that water runoff feeds into established drainage channels with minimal or no scouring. | Site Supervisor | At all times |
| Ensure topsoil stockpiles are not located near drainage lines or areas of low topography, with stormwater diverted around these areas. | Site Supervisor | At all times |
| Sequence earthworks activities, so that stormwater runoff feeds into established drainage channels with minimal or no scouring. | Site Supervisor | At all times |
| Implement control measures (such as silt fencing and coir logs) to mitigate the risk of contaminated stormwater (sediment and hydrocarbons) entering surface water features or running off the project boundary. | Site Supervisor | At all times |
| Adequate cover will be placed on all disturbed areas prior to the removal of stormwater runoff controls. | Site Supervisor | As Required |
| Temporary stormwater and sediment control devices will be removed only once groundcover is established. | Site Supervisor | Once groundcover is established. |
| Routine Monitoring Program | Responsibility | Frequency |
| Inspections and monitoring will be undertaken in accordance with the SWMP. | Site Supervisor | As Required |
| Corrective Actions | | |
| Review and update of the SWMP if the current controls are not performing including: | | |
| <ul style="list-style-type: none"> Existing systems and identifying new or additional systems. Procedures to maintain the systems. | | |
| Reporting | Responsibility | Frequency |
| Record inspection notes, observations, actions and notifications in diary. | Project Manager | As Required |
| Record incidents using Incident Report Form | Project Manager | As Required |

6.3 Water Management

| Aim | | |
|---|-----------------|--------------|
| To minimise the risk of adverse impacts to surface or groundwater quality by implementing appropriate water pollution controls at the site. | | |
| Success Criteria | | |
| <ul style="list-style-type: none"> No adverse impacts on local environment, aquifers or watercourses from construction, operation and decommissioning activities. | | |
| Legislation Requirements | | |
| Compliance with: Legislation (as per Section 1.5), specifically: <ul style="list-style-type: none"> <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019</i> <i>Water Act 2000</i> <i>Water Regulation 2016</i> Development Requirements or guidelines <ul style="list-style-type: none"> Best Practice Erosion and Sediment Control (IECA, 2008) Permits, approvals and licence conditions | | |
| Management Actions | Responsibility | Frequency |
| <ul style="list-style-type: none"> Equipment – Stationary equipment will be located above flood levels and checked for oil and hydraulic leaks – complete urgent & minor repairs using temporary bunding as required to prevent potential stormwater contamination. Waste - all generated waste is disposed into skip bins and ensure bins are regularly emptied. Fuel Storage – install and maintain bunded storage area to AS1940 above flood levels. Offices/minor services – locate above flood levels. | Site Supervisor | At all Times |
| Ensure water is sourced from approved sources. | Site Supervisor | As Required |
| All new taps and plumbing fixtures on the site are to be installed and maintained with approved water saving devise in accordance with current legislative and Council requirements (AAA rating or better). | Site Supervisor | At all Times |
| Ensure onsite appliances that use water meet current water efficiency standards, e.g. washing machines, dishwashers. | Site Supervisor | At all Times |
| Water disposed of at site only as approved and using appropriate control measures. | All staff | At all Times |
| Construction materials shall not be placed or stored in drainage lines. | All Staff | At all Times |
| Wastewater (wash-down water, basin water, hydrotesting water) is not to be discharged to the environment. | All Staff | At all Times |

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| All oil, waste oil, paints and chemicals kept on site are stored within a bund or otherwise in a manner that will prevent spills onto land or into stormwater. | Site Supervisor | At all Times |
| Building and construction materials and waste, including bitumen, brick, cement, concrete and plaster, are prescribed water contaminants and as such must not be stored or disposed of in a water course, stormwater drain, roadside gutter or where they may be expected to wash into such places. | Site Supervisor | At all Times |
| Machinery maintenance activities on site include limited/small repairs of light vehicles; regular servicing and major repairs of heavy vehicles/rebuild on a sealed bunded pad. | Site Supervisor | At all Times |
| Spill kits, oil collection trolley or containers, mobile drip trays shall be available and in place during servicing to contain any leaks or spills. | All staff | As Required |
| Chemicals and fuels in containers greater than 15L to be stored within a secondary containment system. | All Staff | At all Times |
| All spills shall be reported and cleaned up to minimise land or water contamination. Preference to dry methods of cleaning up spills to be given where possible. | All Staff | At all Times |
| The ablation facility is to be inspected regularly to ensure there are no leaking taps and cisterns. | Site Supervisor | Daily |
| Should groundwater be encountered during construction, operation and decommissioning activities, works will cease until further examination occurs. | All Staff | As Required |
| Routine Monitoring | Responsibility | Frequency |
| Monitor and report volume of construction water utilised. | Site Supervisor | Daily |
| Leaking pipes, taps, cisterns shall be regularly inspected and rectified. | Site Supervisor | Daily |
| Monitor receiving surface water – no sheen or slick on surface, no turbidity plume. | Site Supervisor | Daily |
| Corrective Actions | | |
| <ul style="list-style-type: none"> Any contaminated areas resulting from poor water quality will be remediated and reinstated. | | |
| Reporting | Responsibility | Frequency |
| Record inspection notes, observations, actions and notifications in diary. | Site Supervisor | Daily as Required |
| Record all uncontrolled spills and water quality sampling results. | Site Supervisor | As Required |

6.4 Air Quality Management (Dust Suppression)

Aim

To minimise the air quality impacts arising from the Project during construction, operation and decommissioning of the solar power station.

Success Criteria

- Dust deposition does not exceed 120 mg/m²/day at a nuisance sensitive or commercial place, and dust less than 10 micrometres (PM₁₀) suspended in the air does not exceed 150 µg/m³ over a 24-hour average downwind of site at a nuisance sensitive or commercial place. Both monitoring methods are to be in accordance with the Australian Standard AS (3580.9.6 of 2003) or more recent edition.
- No dust and/or odour complaints received from adjoining operations, nearby sensitive places or from statutory authorities.

Legislation Compliance

Compliance with:

Legislation (as per **Section 1.5**), specifically:

- *Environmental Protection (Air) Policy 2019.*
- *National Greenhouse and Energy Reporting Act 2007.*
- Permits, approvals and licence conditions.

| Management Actions | Responsibility | Frequency |
|--|-----------------|--------------|
| Adhere to 40km/h speed limit across site. | All Staff | At all Times |
| Report any dusty conditions to Site Supervisor. | All Staff | Daily |
| Cover or keep moist all long term (greater than 3 months) stockpiles. | Site Supervisor | At all Times |
| Increase frequency of water cart use on internal roads and stockpile areas as required to suppress dust. | Site Supervisor | As Required |
| Vehicle movement will be restricted to defined areas. | All Staff | At all Times |
| Ensure truck loads are covered. | All Staff | At all Times |
| Ensure machinery or plant is not left running idle when not in use. | All Staff | At all Times |
| All plant and equipment (e.g. haulage trucks, loading machinery) will be maintained and operated in accordance with Australian Design Rules and manufacture's specification. | All Staff | At all Times |
| Limit dust generating activities during windy or stormy conditions to prevent environmental nuisance at a sensitive receptor. | All Staff | As Required |

REPORT

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| Burning of waste is not to occur on site. | Site Supervisor | At all Times |
| Routine Monitoring | Responsibility | Frequency |
| Visually inspect site, operations and effectiveness of dust controls. | Site Supervisor | Daily |
| Proactive dust deposition monitoring if required. | Environmental Consultant | As Required |

Corrective Actions

When requested by the administrating authority, dust and particulate monitoring must be undertaken to investigate any complaints of environmental nuisance caused by dust and/or particulate matter. The results of monitoring are to be passed to Banana Shire Council within 14 days of completing the monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place and at upwind control sites and must include:

- For a complaint alleging dust nuisance, dust deposition monitoring shall be in accordance with AS3580.10.1 2003 (or more recent editions).
- For a complaint alleging adverse health effects caused by dust, the PM₁₀ concentration suspended in the atmosphere over a 24hr averaging time shall be monitored in accordance with AS3580.9.6 2003 (or more recent editions).

Edify Energy is responsible for engaging a suitably qualified and experienced air quality consultant to undertake monitoring.

All monitoring equipment used must be calibrated and appropriately operated and maintained.

In the event of an odour complaint being submitted, measures must be undertaken as soon as practicable to minimise the release of the odour beyond the boundaries of the licensed place.

| | | |
|---|--------------------------|--|
| Reporting | Responsibility | Frequency |
| Record inspection notes, observations, actions and notifications from staff in diary. | Site Supervisor | Daily |
| Results from complaint monitoring shall be forwarded to the Banana Shire Council. | Environmental Consultant | Within 14 days of the completion of monitoring |

6.5 Noise and Vibration Management

Aim

To manage the construction, operation and decommissioning of the solar power station in a way that minimises the impact of noise and vibration on the receiving environment.

Success Criteria

- Noise emissions do not exceed acoustic quality objectives stated in the *Environmental Protection (Noise) Policy 2008*.
- Noise emissions do not cause nuisance at any sensitive receptors.
- No noise complaint/s have been received.
- No unintended environmental impacts due to vibration during construction, operation and decommissioning.

Legislation Requirements

Compliance with:

Legislation (as per **Section 1.5**), specifically:

- *Environmental Protection (Noise) Policy 2019*

Development Requirements or guidelines

- Noise Measurement Manual (DETSI, 2020)
- AS1055: Acoustics – Description and Measurement of Environmental Noise
- Permits, approvals and licence conditions

| Management Actions | Responsibility | Frequency |
|--|--|-------------------------------------|
| Equipment will be maintained in good working order and maintained as required. If required, noise suppressors will be installed to prevent environmental nuisance at a sensitive receptor. | Site Supervisor to schedule equipment maintenance. | As per manufacturers specifications |
| Appropriate route for light and heavy vehicles selected to minimise disturbance. | Site Supervisor | Prior to commencement |
| Traffic must use agreed access roads to travel to and from the site. Approved areas for parking will be identified. | All Staff | At all Times |
| No unnecessary use of horns or other audible signals on mobile plant or equipment. Use of directional low frequency reversing beepers. | All Staff | At all Times |
| No unnecessary revving or idling of engines on mobile and stationary machines and shut down any equipment not in use. | All Staff | At all Times |
| Loading/unloading will be performed with consideration to any nearby sensitive receptors such as residential properties. | All Staff | At all Times |
| Adhere to speed limits. | All Staff | At all Times |

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| Inform neighbours prior to creating excessive noise. | Site Supervisor | As Required |
| Work will take place during nominated work hours only. | All Staff | At all Times |
| Noise monitoring undertaken if required upon receipt of complaint. | Environmental Consultant | As required |
| Minimise the drop heights of materials. | All Staff | At all Times |
| Routine Monitoring | Responsibility | Frequency |
| Inspect site in relation to noise emissions, noise controls and operations. | Site Supervisor | Daily |
| Corrective Actions | | |
| Corrective actions may include: | | |
| <ul style="list-style-type: none"> Review the use of any audible signals. Investigate feasible additional noise attenuation devices for equipment. | | |
| Reporting | Responsibility | Frequency |
| Record inspection notes, observations, actions and notifications from staff in diary. | Site Supervisor | Weekly |
| Results from complaint monitoring shall be forwarded to the Banana Shire Council. | Site Supervisor | Within 14 days of the completion of monitoring. |

6.6 Management of Light Spills and On-Site Lighting

| | | |
|---|-----------------------|-----------------------|
| Aim | | |
| To minimise adverse impacts from artificial lighting on the receiving environment that arise during construction, operation and decommissioning of the solar power station. | | |
| Success Criteria | | |
| <ul style="list-style-type: none"> No artificial light complaint/s have been received. Light emissions do not cause nuisance at any sensitive receptors. | | |
| Legislation Requirements | | |
| Compliance with: Legislation (as per Section 1.5), specifically: <ul style="list-style-type: none"> <i>Environmental Protection Act 1994</i> | | |
| Management Actions | Responsibility | Frequency |
| Works are to be undertaken during daylight hours only, unless otherwise approved and required under limited and exceptional circumstances, in which case any night works will be undertaken in accordance with applicable legislation, relevant guidelines and permit conditions, and subject to appropriate mitigation measures being implemented. | All Staff | At all Times |
| Security and flood lighting is to be directed away from adjacent residential receivers to minimise the protrusion of light outside the site. | Site Supervisor | At all Times |
| Use the lowest level of lighting required, mindful of surface conditions that may reflect more light. | Site Supervisor | At all Times |
| Lighting must not illuminate or direct light onto areas of conservation including conservation areas, wetlands, waterways and habitat for nocturnal fauna and migratory birds. | Site Supervisor | At all Times |
| Site lighting must be designed and used to minimise impacts on surrounding land uses | Site Supervisor | Prior to commencement |
| Routine Monitoring Program | Responsibility | Frequency |
| Inspect site in relation to light spills and onsite lighting. . | Site Supervisor | Daily |
| Corrective Actions | | |
| Corrective Actions may include: <ul style="list-style-type: none"> Review the use of any onsite lighting requirements. Consider limiting shorter wavelength lighting (blue-violet) to the least amount needed. | | |

REPORT

| Reporting | Responsibility | Frequency |
|---|-----------------|---|
| Record inspection notes, observations, actions and notifications from staff in diary. | Site Supervisor | Weekly |
| Results from complaint monitoring shall be forwarded to the Banana Shire Council. | Site Supervisor | Within 14 days of the completion of complaint monitoring. |

6.7 Land Contamination (Storage/Use of Fuel and Chemicals)

| Aim | | |
|--|-----------------|--------------|
| To minimise the risk of land contamination through the appropriate storage of wastes and potential contaminants such as diesel and oil, and to minimise the risk of any worsening of existing land degradation or the creation of new land degradation issues. | | |
| Success Criteria | | |
| <ul style="list-style-type: none"> No release of contaminants to land. No worsening to existing land degradation. No creation of new land degradation issues. | | |
| Legislation Requirements | | |
| Compliance with: Legislation (as per Section 1.5), specifically: <ul style="list-style-type: none"> <i>Environmental Protection Act 1994</i> <i>Environmental Protection Regulation 2019</i> Development Requirements or guidelines: <ul style="list-style-type: none"> AS1940: The storage and handling of flammable and combustible liquids. Permits, approvals and licence conditions. | | |
| Management Actions | Responsibility | Frequency |
| All maintenance activities for machinery are undertaken offsite. | All Staff | At all Times |
| Vehicle washdown shall only be undertaken outside of the riparian buffers and conservation areas in a nominated wash down area. | All Staff | At all Times |
| All equipment is to be inspected at daily start up for fluid, oil or fuel leaks. | All Staff | At all Times |
| In the event that contaminated soils are encountered near cattle dips, the soil will be managed appropriately to prevent exposure, mobilisation and redistribution of potential contaminants by: <ul style="list-style-type: none"> Cessation of ground disturbance at the location and within the immediate vicinity; and Assessment of the site contamination and determination of appropriate remedial action in consultation with relevant authorities where required. | Project Manager | At all Times |
| Contaminated soils from spills to be immediately cleaned-up and stored in bunded area or bin prior to disposal at an approved facility. | All Staff | At all Times |
| Handling of storage of combustible and flammable liquids is to be done in accordance with AS1940:2017. | All Staff | At all Times |
| Fuel, oil and chemical storage and handling are to be in accordance with Australian Standards. | Site Supervisor | At all Times |

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| Spill kits shall be provided and maintained. | Site Supervisor | Replenish as required following use. |
| Accidental leaks of oils etc (e.g. burst hydraulic hoses) will be cleaned up immediately using an on-site spill kit to minimise water contamination. | All Staff | At all Times |
| Staff are to be made aware of spill response procedure and reporting requirements. | Site Supervisors | Prior to clearing and construction |
| Equipment is to be regularly monitored and checked for spills and breakages. | All Staff | At all Times |
| Concrete trucks shall be washed out in designated bunded areas. | All Staff | At all Times |
| Routine Monitoring Program | Responsibility | Frequency |
| Monitor site operations and work practices. | Site Supervisor | Daily |
| Corrective Actions | | |
| Corrective actions may include: | | |
| <ul style="list-style-type: none"> • Remove any contaminants from outside the site limits. • If erosion occurs, carry out maintenance and/or repair. • Review maintenance activities undertaken on site and ensure that they are undertaken in approved areas only. | | |
| Reporting | Responsibility | Frequency |
| Record site observations, actions and notifications in daily diary. | Site Supervisor | As Required |
| Results from complaint monitoring shall be forwarded to the Banana Shire Council. | Site Supervisor | Within 14 days of the completion of complaint monitoring. |

6.8 Biosecurity Management

Aim

To protect the integrity of native flora and fauna values by minimising pest and weed dispersal throughout the Project area.

Success Criteria

- No spreading of weeds or pests as a result of construction, operation and decommissioning of the solar power station.
- No new introduction of weed species within the Project site.
- Control of site weeds and pests.

Legislation Requirements

Compliance with:

Legislation (as per **Section 1.5**), specifically:

- *Biosecurity Act 2014*,
- *Biosecurity Regulation 2016*.

Development Requirements or guidelines:

- General biosecurity obligation
- Vehicle and Machinery Clean down Procedures (DAF, 2019),
- Vehicle and Machinery Inspection Procedure,
- Biosecurity Queensland Checklists (DAF, 2013).

Permits, approvals and licence conditions:

- Landowners' requirements,
- MCU development permits.

| Management Actions | Responsibility | Frequency |
|--|-----------------|-----------------------|
| Develop a property pest management plan (PMP) which includes; <ul style="list-style-type: none"> • Vehicle and Machinery Clean down Procedures, inspection procedures, reporting and weed declarations protocols • Identifies all existing pests within the property, how they will be controlled, scheduling and reporting • Surveillance and ongoing surveys timing and frequency, which measure success targets and update new and emerging pest threats | Project Manager | Prior to Commencement |
| All personnel will be instructed on their responsibilities relating to avoiding and minimising the introduction/attraction to the site of feral animals. | Project Manager | Prior to Commencement |
| Minimise vegetation and soil disturbance to reduce the rate of weed invasion. | Project Manager | At all Times |
| Minimise bare ground with mulch and revegetation to reduce or prevent the rate of weed invasion. | Project Manager | At all Times |
| Where clearing activities involve disturbing topsoil from known weed infestation areas, this soil material should be quarantined and not used in rehabilitation. The soil contaminated with weed seeds can be buried to a depth of at least 1 m below ground surface. | Project Manager | At all Times |

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| Conserve and stockpile topsoil containing native seed-bearing vegetation for use in rehabilitation. | Project Manager | At all Times |
| Any materials brought onto site (such as gravel and soil) will be certified as weed and disease free. | Project Manager | At all Times |
| Monitoring and weed inspections particularly in response to reported outbreaks or complaints from adjacent property owners. | Project Manager | As Required |
| Implement control strategies outlined in the Department of Agriculture and Fisheries (DAF) weed and pest animal fact sheets and other relevant government biosecurity management strategies. | Project Manager | As Required |
| The site is required to be appropriately drained so that water is not allowed to accumulate or pond in a way that may allow mosquito breeding, as required under the Public Health Regulation 2005. | Project Manager | At all Times |
| Prior to entering or leaving the site, all vehicles and equipment involved in clearing and weed removal works should be cleaned down to remove soil and plant material to prevent spreading of soil borne disease and weed seeds or plant material. | Project Manager | Prior to entering or leaving the site |
| If water is used to clean equipment and vehicles the wastewater is to be treated by physical or chemical means to ensure weeds and declared plants are not discharged from the site. These clean down areas are to be bunded. | Project Manager | As required |
| All food wastes or waste that would attract animals, such as feral cats (<i>Felis catus</i>) and foxes (<i>Vulpes vulpes</i>) which prey on the Squatter Pigeon, will be kept in containers/bins/skips which have lids and do not allow the access of animals. Lunch and meals will be designated to crib rooms or sheds which animals cannot enter. | All Staff | At all Times |
| All putrescible waste will be stored in secure temporary holding containers and transported off site to a licensed waste management facility. | All Staff | At all Times |
| All personnel will not bring domestic animals to the Project area. | All Staff | At all Times |
| Routine Monitoring | Responsibility | Frequency |
| Undertake regular weed monitoring and assess invasion by any new weed species not previously recorded. | Project Manager | As per PMP |
| Site supervisor to monitor weed removal and ensure management strategies are adhered to. | Project Manager | As Required |
| Corrective Actions | | |
| Corrective actions may include: | | |
| <ul style="list-style-type: none"> • Weed control with herbicides as required. • Review of the PMP and annual updates. • Post initial site clearing works where plant that may collect weed/seeds will remain on site until clearing is complete; any plant or vehicles noted as bearing weed-affected material that cannot be adequately cleaned at site (e.g.: via compressed air blow-down or water/detergent wash-down) will be either quarantined on site for later wash-down or immediately sent offsite for wash-down. • Implement requirements as per the washdown procedure and provide weed seed cleaning report/weed declaration. | | |
| Reporting | Responsibility | Frequency |
| Record inspection notes, observations, actions and notifications in diary. | Project Manager | Daily |
| Record incidents using Incident Report Form. | Project Manager | As Required |
| Keep site vehicle maintenance records. | Project Operators | Daily |

6.9 Waste Management

| Aim | | |
|--|--------------------------|-----------------------|
| To reduce the amount of waste produced during the construction, operation and decommissioning of the solar power station and to maximise recycling and reuse opportunities and to manage waste generated in a manner that minimises the risk of it negatively impacting on the surrounding environment. | | |
| Success Criteria | | |
| <ul style="list-style-type: none"> No adverse impacts on the surrounding environment or human health from the management of waste during the construction, operation and decommissioning phases. Waste management hierarchy implemented to managing waste through avoiding the generation of waste; maximising re-use and recycling of all materials where possible and treating and disposing all those materials that are unable to be re-used or recycled in accordance with relevant legislation and guidelines. | | |
| Legislation Criteria | | |
| Compliance with: Legislation (as per Section 1.5), specifically: <ul style="list-style-type: none"> <i>Environmental Protection Regulation 2019</i>, <i>Waste Reduction and Recycling Act 2011</i>, <i>Waste Reduction and Recycling Regulation 2011</i>. Development Requirements or guidelines <ul style="list-style-type: none"> AS1940: The storage and handling of flammable and combustible liquids. Permits, approvals and licence conditions | | |
| Management Actions | Responsibility | Frequency |
| Prior to construction commencing, a Waste Management Plan (WMP) will be prepared to manage waste at the site during the construction, operation and decommissioning phases. | Environmental Consultant | Prior to commencement |
| Personnel will be inducted in the requirements for waste management at the commencement of construction. | All Staff | Prior to commencement |
| Characterise all waste streams and develop measures to: <ul style="list-style-type: none"> Minimise site water generation; Segregate waste groups; and Direct all recyclable/reusable wastes away from landfill wherever possible | All Staff | At all times |
| All waste oils/fuels or other liquid waste will be stored in a sealed bunded area according to AS 1940 – Storage and Handling of Flammable and Combustible Liquids (bund volume to exceed volume of largest container plus 10%). | Site Operators | At all times |
| Appropriate space will be provided for the temporary storage of general refuse, recyclable and compostable waste to ensure separation of waste products. | Site Operators | At all times |
| Waste will be managed in the preferred order of avoid, re-use, recycle, recover, treat and dispose within the <i>Waste Reduction and Recycling Act 2011</i> (Qld). | Site Operators | At all times |

REPORT

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|---|-----------------------|--------------------------------------|
| Site sewage disposed offsite to approved facility via licensed carrier. The associated Waste Management Plan notes that for temporary works during construction, the proposed wastewater and effluent/sewage systems considered by the project works will be self-contained and pump-out systems. | Site Supervisor | As Required |
| If litter is blown or washed off site, it is to be retrieved and ensure it is disposed of in the appropriate manner and additional measures to prevent a recurrence (e.g. litter screens) are to be undertaken. | All staff | At all times |
| All regulated wastes are removed by a licensed waste management company. Examples of regulated wastes include tyres and waste oils. | Site Supervisor | As required |
| Regulated waste (including asbestos) is only to be disposed of at an appropriately licensed and approved waste facility, as agreed with Banana Shire Council and other relevant authorities as required. Where required, all necessary application forms and approvals must be obtained prior to disposal, in accordance with regulatory requirements and the receiving facility's acceptance criteria. | Site Supervisor | As required |
| All general wastes shall be stored in covered bins. | All staff | At all times |
| General wastes are disposed of in accordance with local council directions and regulations at their nominated facilities. | Site Supervisor | At all Times |
| No commercial waste is to be deposited at other Banana Shire landfills or transfer stations without prior written approval from Council. | All Staff | At all Times |
| Maintain spill kits and ensure clean up equipment is available at site office (240L wheelie bin) and that mobile kits are carried in each vehicle. Carry out annual inspections of the spill kits. | Site Supervisor | Replenish as required following use. |
| Routine Monitoring Program | Responsibility | Frequency |
| Monitor waste storage, handling and disposal practices. | Site Supervisor | Daily |
| Maintain records and receipts of sewage removed off site by licensed contractor. | Site Supervisor | As Required |
| Daily inspections to ensure the site is free of uncontrolled rubbish, tidy and all wastes are appropriately stored and managed. | Site Supervisor | At all Times |

Corrective Actions

Corrective actions may include:

- Retrain staff in correct waste management and disposal procedures.
- Ensure appropriate storage facilities are available for regulated and general waste.
- Investigate incidents and incorporate findings into training and management resources to achieve continual improvement.
- Increase recycling and reuse where possible.
- Increase storage capacity or increase frequency of offsite disposal if necessary.
- Repair or replace receptacles if they do not meet the requirements of the Waste Management Plan.
- Incorporate additional waste minimisation measures as identified during reviews

REPORT

| Reporting | Responsibility | Frequency |
|---|-----------------|-------------|
| Record site observations, actions and notifications in daily diary. | Site Supervisor | Daily |
| Record incidents using Incident Report Form | Site Supervisor | As Required |

6.10 Flora and Fauna Impact Management (MNES and MSES)

Aim

To meet all conditions as outlined in the Notification of approval, Smoky Creek Solar Farm, Queensland (EPBC ref 2021/9030) (Approval notice 2021/9030).

Objectives

- Prevent impacts to EPBC Act listed species (MNES and MSES) as detailed in the Notification of Approval notice 2021/903
- Prevent loss of individuals or populations of significant species or their critical habitats.
- Prevent loss or reductions in breeding and foraging habitats for significant species.
- Prevent the fragmentation of habitats, loss of connectivity or migration pathways.
- Implement a rehabilitation program of all temporarily cleared areas within 5 years following the completion of construction.

Success Criteria

- No vegetation clearing within significant species' breeding habitat during the breeding season, or exclusion zones and buffer zones.
- No reduction in MNES habitat area or quality as a result of implementing the project
- No reduction in the number of individuals of the listed species populations confirmed within the Project footprint.
- No injury or death of significant species as a result of implementing the Project.
- No vegetation clearing outside the approved development footprint.
- Within 10 years of the rehabilitation plan's implementation, vegetation within the temporarily cleared area has reached an equals or higher benchmark bio condition habitat quality than in pre-construction baseline surveys.

Legislation Requirements

Compliance with:

Legislation (as per **Section 1.5**), specifically:

- *Fisheries Act 1994* (regarding waterway barrier works / fish passage)
- *Nature Conservation Act 1992*
- *Nature Conservation (Animals) Regulation 2020*
- *Vegetation Management Act 1999*
- *Vegetation Management Regulation 2012*
- *Environment Protection and Biodiversity Conservation Act 1999*:
 - Approved conservation advice for *Denisonia maculate* (Ornamental Snake) 2014,
 - Threatened Species Scientific Committee Conservation Advice *Solanum johnsonianum* (2016),
 - Threatened Species Scientific Committee Conservation Advice *Solanum dissectum* (2016),
 - Threatened Species Scientific Committee Conservation Advice *Geophaps scripta scripta* (2015)

Development Requirements or guidelines:

- Species Management Programs (SMP's), as outlined in the *Nature Conservation (Animals) Regulation 2020*
- Accepted development requirements for Code for self-assessable development Minor waterway barrier works Part 4: bed level crossings (DAF, 2013)
- Permits, approvals and licence conditions

| Management Actions | Responsibility | Frequency |
|---|------------------------|---|
| <p>Implement the Vegetation Management Plan, which;</p> <ul style="list-style-type: none"> • Clearly identifies all significant species habitats, Brigalow TECs, Cat R, riparian, breeding, forage and dispersal habitat for squatter pigeon and ornamental snake, significant species populations and exclusion zones where all clearing and project activities will occur and are specifically excluded. • Exclusion areas must include; <ul style="list-style-type: none"> ○ Brigalow and significant species habitat as confirmed and detailed in “Smoky Creek Solar Power Station Habitat Assessment and Targeted Survey Report ”, including all areas as shown in Figures 6 and 7 of the report (Terra Solutions 2023) Appendix I ○ Known population of <i>Solanum johnsonianum</i> within the watercourses in the southern extent of lot 39 (Figure 7, Appendix I) and will include a minimum 50m exclusion buffer around all known individuals to protect the microclimate and reduce the "edge effect" that facilitates weed spread. ○ All Ornamental snake habitats ○ All Squatter pigeon breeding habitats ○ All avoidance areas ○ Include all excluded activities such as; <ul style="list-style-type: none"> ▪ No stock grazing within squatter pigeon breeding habitats during the breeding season for this species ▪ No active fires within fire-sensitive riparian and Brigalow habitats or squatter pigeon breeding habitats during the breeding season ▪ Soil disturbance within ornamental snake habitats ▪ No alteration of gilgai habitats on low-laying areas with cracking clay soils • Include all Riparian buffers and setback limits which comply with maximum impact limits as detailed in the VMA 1999 and the Approval notice 2021/9030. • Outlines all maximum impact limits and how they will be maintained (Approval notice 2021/9030), specifically, the approval holder must not clear; <ul style="list-style-type: none"> ○ more than 5 hectares (ha) of Brigalow TEC, comprising no more than: <ul style="list-style-type: none"> ▪ 3 ha in watercourse 1. ▪ 2 ha in watercourse 2 ○ Clearing of squatter pigeon forage habitat must not exceed 20.85 ha ○ Clearing of squatter pigeon dispersal habitat must not exceed 21.85 ha ○ Clearing of <i>Solanum</i> spp must not exceed 2 ha. • Details how all areas where vegetation clearing or habitat disturbance will occur will be clearly marked and delineated to ensure no clearing and disturbance limits are exceeded, to demonstrate compliance with all approval conditions • Exclusion areas are clearly marked to prevent and mitigate impacts to MNES, and significant habitats are retained. • Clearly mark and delineate all exclusion and restricted areas with clearly visible signage and flagging to prevent accidental cleaning | <p>Site Supervisor</p> | <p>Prior to the commencement of any vegetation clearing</p> |

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| <ul style="list-style-type: none"> Describes how regeneration and revegetation would be carried out post-construction, including to pre-disturbance condition and within approval timelines as set out in Approval notice 2021/9030 | | |
| <p>Implement a Pest Management Plan which;</p> <ul style="list-style-type: none"> Identifies all pest species and emerging pest threats within the project area Details how pests will be controlled prior to, during and post-construction and throughout ongoing maintenance for the life of all approval conditions Include specific action for reducing the threat to significant species based on known threats and threat abatement plans, guidelines and best practices; specifically; <ul style="list-style-type: none"> Manage exotic grass (buffel, Rhodes, green panic, sabi grass) cover below 40% of the total ground cover. Prevent the establishment of new pest species. Management programs to target feral cats, foxes and rabbits. Prioritise target species, management actions and timing to; <ul style="list-style-type: none"> Reducing predation of squatter pigeons during the critical breeding and dispersal season <p>Reducing exotic grass cover within ornamental snake habitats, critical breeding and foraging habitats for squatter pigeons, Brigalow, and riparian habitats.</p> | <p>Site Supervisor</p> | <p>During the site mobilisation phase once construction commences (May 2026)</p> |
| <p>Implement actions aligned with the Significant Species Management Plan (SSMP) for MNES species, including;</p> <ul style="list-style-type: none"> Exclusion Zones: Establishing 50m buffers around populations of <i>Solanum johnsonianum</i> with clearly visible signage and flagging to prevent accidental clearing. Sequential Clearing: In Squatter Pigeon habitats, the habitat must be cleared sequentially toward refuge areas outside the project footprint to allow birds to relocate. Prohibiting levelling or deep ripping in cracking clay areas to preserve the gilgai mounds and depressions where snakes shelter and frogs (prey) breed. Exclude fire within Brigalow, squatter pigeon breeding and <i>Solanum</i> spp habitats Prevent exotic grasses from exceeding a maximum ground cover of 40% within critical breeding habitats for squatter pigeons, <i>Solanum johnsonianum</i> populations, and buffer zones Exclude stock from critical brigalow habitats, <i>Solanum</i> spp. populations, ornamental snake habitats and squatter pigeon breeding habitats during breeding seasons No relocation is approved for any: <ul style="list-style-type: none"> <i>Solanum johnsonianum</i> individuals. <i>Solanum dissectum</i> individuals. | <p>Site Supervisor</p> | <p>Prior to Commencement</p> |
| <p>Ensure that all external and internal fencing designs meet construction specifications, which include a minimum ground clearance of 100mm, to prevent obstructing the movement of ornamental snakes, into or out of the project area during and post-construction</p> | <p>Site Supervisor</p> | <p>At all Times</p> |
| <p>Implementing strict ESC measures to prevent sediment-laden runoff from construction sites from entering downstream gilgais, seasonal swamps, and drainage fans.</p> | <p>Site Supervisor</p> | <p>At all Times</p> |

REPORT

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| Keep natural drainage lines and fencing free of debris to allow ornamental snakes to move between foraging and shelter habitats during seasonal and event flooding. | Site Supervisor | At all Times |
| If an ornamental snake or Squatter Pigeon is discovered within the construction footprint, all construction works will be immediately suspended and will not recommence until the fauna spotter canter has safely relocated the fauna and approves recommencement of work, or an exclusion area has been established. | Site Supervisor | As Reported |
| Native fauna to be relocated will be moved to suitable adjacent habitat and will be handled only by a suitably qualified fauna spotter-catcher. | Site Supervisor | As Required |
| Records of all relocations must be retained in accordance with all reporting requirements outlined in the EPBC Act approval conditions and this EMP. | Site Supervisor | At all Times |
| Establish a signage network throughout the project area and construction site that clearly identifies all exclusion zones, speed limits, and significant flora and fauna interaction zones, and environmental buffer areas to mitigate risk of impacts to significant flora and fauna in the area. | Site Supervisor | At all Times |
| Speed limits of 40km/h will be enforced for all vehicles and machinery within the project site to mitigate and minimise the risk of significant fauna injury or death, and to minimise dust and vehicle noise. | Site Supervisor | At all Times |
| Site inductions will include information on the identification of protected flora and fauna species and habitat i.e. squatter pigeon, ornamental snake, brigalow threatened ecological community, <i>Solanum dissectum</i> and <i>Solanum johnsonianum</i> . | Site Supervisor | Prior to Commencement |
| A spotter-catcher will be present during vegetation clearing within the project site. | Site Supervisor | During clearing activities |
| A pre-clearance survey will be conducted 24 hours prior to any vegetation clearing, and a pre-clearance report will be retained for inclusion in the annual compliance report. | Site Supervisor | Prior to clearing activities |
| Where significant habitat trees are identified (e.g. hollow-bearing trees), construction works will be scheduled to avoid the breeding season of the hollow-roosting species. | Site Supervisor | As Required |
| Where significant habitat trees are identified as occupied, all works must be suspended till a suitably qualified fauna spotter catcher has relocated the fauna and gives clearance for work to recommence. | Site Supervisor | As Required |
| In the days prior to potential habitat trees being removed, these trees should be subjected to a series of bangs, knocks and other loud noises to encourage any wildlife to seek shelter elsewhere. | Site Supervisor | As Required |
| Any wildlife found injured and sick as a result of the Project should be taken immediately to a wildlife veterinarian or qualified wildlife carer for treatment/rehabilitation. | Site Supervisor | As Required |
| All vehicles use only designated internal roads and access tracks to minimise harm to MNES. | All Staff | At all Times |
| No domestic animals are permitted on-site. | All Staff | At all Times |
| Routine Monitoring | Responsibility | Frequency |
| Monitor vegetation clearing and ensure compliance with clearing limits and VMP | Site Supervisor | During clearing activities |
| Fauna Strikes: Number of recorded fauna deaths/injuries | Site Supervisor | As reported |

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|---|-----------------|-------------------------------------|
| Speed: GPS logs of site vehicles. | Site Supervisor | Monthly incidence audits |
| Compliant with approved ESCP and water quality trigger NTU. | Site Supervisor | Dailling during rain events (>10mm) |
| ESC devices/fences inspections. | Site Supervisor | Weekly |
| Exotic grasses and weed threats (photo point and quadrat monitoring). | Site Supervisor | Annually |
| Vertebrate pest control. | Site Supervisor | Post control actions |
| Compliance with exclusion zones. | Site Supervisor | Prior to clearing activities |
| Known population of <i>Solanum johnsonianum</i> . | Site Supervisor | Annually |
| Fencing boundary and internal. | Site Supervisor | Weekly |

Corrective Actions

Corrective actions may include:

- Reviewing the effectiveness of the EMP and proposed mitigation measures for flora and fauna.
- Use non-conformance register to document incidents involved flora and fauna.

| Reporting | Responsibility | Frequency |
|--|-----------------|-------------|
| Record inspection notes, observations, actions and notifications in diary. | Project Manager | Daily |
| Record incidents using Incident Report Form. | Project Manager | As Required |

Tables included in the Appendix:

- Adaptive Monitoring: Implementing programs with [measurable performance indicators](#) and trigger values for corrective actions if impacts exceed predicted levels.
- Flora Protection: For the *Solanum* species, management requires keeping exotic grass cover below 40%, as these plants are highly vulnerable to invasion by species like Rhodes grass.
- Protection measures for significant species populations, breeding and foraging habitat must be included in all site inductions, prestart meetings and toolbox talks to highlight all exclusion areas and signage .
- Includes mitigation action to prevent and mitigate clearing activities that pose a risk of potentially increasing sedimentation of waterways within the project area or downstream environments.

6.11 Cultural Heritage Management

| Aim | | |
|--|--------------------------|-----------------------|
| No cultural heritage is harmed during construction, operation and decommissioning of the solar power station. | | |
| Compliance with: Legislation (as per Section 1.5), specifically: <ul style="list-style-type: none"> Native Title Act 1993 Aboriginal Cultural Heritage Act 2003 Aboriginal Cultural Heritage Act 2003 – Duty of Care Guidelines Queensland Heritage Act 1992 Development Requirements or guidelines: <ul style="list-style-type: none"> Cultural heritage management agreement. Permits, approvals and licence conditions | | |
| Success Criteria | | |
| <ul style="list-style-type: none"> Specified areas of potential cultural heritage to be protected from damage (note there are currently no specified areas identified). No unauthorised entry to or disturbance to specified areas of potential cultural heritage. | | |
| Management Actions | Responsibility | Frequency |
| Prior to construction commencing, a Cultural Heritage Finds and Monitoring Plan (CHFMP) will be prepared to manage all cultural heritage found at the site during the construction, operation and decommissioning phases. | Environmental Consultant | Prior to Commencement |
| Site inductions for all staff are to include education sessions regarding Cultural Heritage. | All Staff | At all Times |
| Identification of artefacts or remains during soil disturbance activities are to be reported to Project Manager and to appropriate Aboriginal organisations, namely the GNP. | All Staff | At all Times |
| Routine Monitoring | Responsibility | Frequency |
| Project personnel will be advised of the potential for cultural heritage at the Project site and informed of the protocols to follow in the event of a suspected find as per the CHFMP. | Project Manager | As required |
| Corrective Actions | | |
| Should any suspected archaeological occurrences or skeletal human remains be located during construction, operation and decommissioning, all work is to cease that may negatively impact on the sites integrity until it has been assessed by an appropriately qualified cultural heritage professional with representation from the Indigenous recognised Aboriginal stakeholders and police if dealing with potential skeletal human remains. | | |
| Reporting | Responsibility | Frequency |
| Record inspection notes, observations, actions and notifications in diary. | Project Manager | Daily as Required |
| Record incidents using Incident Report Form. | Project Manager | As Required |

6.12 Management of Works Near Existing Above Ground and Underground Infrastructure

A high voltage transmission line passes immediately adjacent to the Project area through lot 33 on RN210 and lot 37 on RN1147 in a north-west/south-east direction. Powerlink easements have been excluded from the construction footprint (**Figure 1**).

The statutory clearances set out in the *Electrical Safety Regulation 2013* must be maintained during construction to ensure the *Electrical Safety Act 2002* is achieved and electrical safety requirements are met. The exclusion zone for untrained persons and for operating plant operated by untrained persons is 6 metres from the 275,000-volt wires and exposed electrical parts. No encroachment within the statutory clearance is permitted. Should any doubt exist in maintaining the prescribed clearance to the conductors and electrical infrastructure, then the Project Manager is obliged under this Act to seek advice from Powerlink Queensland.

In addition to the provisions of the *Electrical Safety Act 2002*, *Electrical Safety Regulation 2013* and the Terms and Conditions of Registered Easements, Powerlink have compiled a list of generic conditions to assist persons intending to undertake work within the vicinity of high-voltage electrical installations and infrastructure. See **Appendix L** for full list of conditions.

7 EMERGENCY MANAGEMENT

This section provides an overview of response requirements for emergencies that could potentially occur at the site. **Section 7** outlines the necessary contact details of the relevant person/agency in the event of an incident or emergency.

The Emergency Management Plan (EMP) includes the evacuation process for the site in the event of fire, including bush fire, gas, smoke, flooding or structure collapse, each of which may have environmental consequences. If this occurs, appropriate emergency services will be alerted, rather than engaging site personnel in the control of the situation.

If a major environmental incident with these consequences occurs on or adjacent to the site the site evacuation emergency management plan is to be applied, to ensure the safety of personnel.

Essential emergency information will be communicated to all personnel via the site-specific induction. A full list of emergency contacts, including the emergency warden and first aider(s) will be posted at the site notice boards and provided during the induction process.

Emergency response training needs shall be assessed during the project risk register workshop and provided to nominated wardens who have been assigned specific responsibilities in relation to the coordination of emergency responses as soon as practicably possible.

7.1 Emergency Contact Numbers

Emergency communication is via Ultra High Frequency (UHF) radio using a dedicated emergency channel or on-site phone system as listed in **Table 18**. A list of on-site emergency contacts is provided in **Table 19**. A list of external emergency contacts is provided in **Table 20**.

Table 18 Onsite Emergency Channel/Phone no.

| Radio Channel | Phone Ext |
|---------------|-----------|
| UHF (TBA) | Ext TBA |

Table 19 Onsite Emergency Contacts (subject to change pending Contractor onboarding)

| Emergency Response Team | Name | Phone Number |
|-------------------------|-------------------|--------------|
| Fire Warden | Emma McDonald | TBA |
| First Aid Officer | Trent Prendergast | 0438 652 012 |
| WHS Officer | Mark Stanieg | 0400 716 200 |
| Security Office | TBA | TBA |
| Reception | TBA | TBA |
| Project Manager | Jason Todd | 0447 787 414 |
| Site Manager | Shaun McDonnell | 0499 846 448 |

Table 20 Offsite Emergency Contacts

| Contact | Phone Number |
|---------------------------------------|---|
| Emergency Service | |
| Ambulance, Fire or Police | 000 or 112 |
| Poisons Information | 13 11 26 |
| Utilities | |
| Water | 132 203 |
| Electricity | 132 090 |
| Gas | 131 388 |
| Telephone | 131 909 |
| Dial Before You Dig | 1100 |
| DETSI (24-hour pollution line) | 1300 130 372 or email: pollutionhotline@detsi.qld.gov.au |

7.2 Emergency Response Team

Team members will be added to the Emergency Response Team (ERT) as the contractors begin working on site. The emergency response process is managed by the site ERT which will consist of trained staff and a Co-ordinator. All personnel within the ERT are to undergo regular training and participate in regular mock and desktop scenario exercises. The ERT includes members who are currently situated on site, a summary of the roles and responsibilities are provided in **Table 21**.

Table 21 Emergency Response Team Responsibilities

| Emergency Team Position | Responsibilities |
|---|--|
| Emergency Response Team Coordinator (ERT Coordinator) | <p>Responsible for the implementation of the ERMP and Emergency Team.</p> <p>The ERT Coordinator will:</p> <ul style="list-style-type: none"> • Ensure sufficiently trained resources are available onsite to deal with potential and actual emergency situations; • Monitor site radio communications for emergency situations; • Communicate with Emergency Response Team Members and/or Field Team Members; • Implement the ERMP and capture all information relating to the situation; • Provide the 'All Clear' over UHF and to Muster Points; • Undertake and/or manage investigations into emergency situations or remedial works; • Maintain up to date Emergency Response Team members rosters and associated contact details; • Provide training to Emergency Response Team members; • Provide summary of incidents, actions and responses to the Occupational Health and Safety (OHS) Manager; • Provide toolbox talks as required to summarise emergency responses and details of any historical and/or industry specific incidents which have occurred, and management measures used; • Review and approve modifications to the ERMP annually and/or after an emergency situation; and • Liaise with external emergency response organisations regularly, share information and establish and maintain professional relationships |
| Emergency Response Team (ERT) | <p>Will often be the first response for the majority of emergency situations. The ERT responsibilities include:</p> <ul style="list-style-type: none"> • Participate regularly in all ERT training exercises • First response coordinator to capture emergency and/or commence response. • Communicate with ERT Coordinator; • Provision of first aid to injured site personnel; • Safety of all site personnel (including employees, subcontractors and visitors) within their areas; • Undertaking a roll call at Muster Points; and • Provide accurate updates on emergency incidents to all site personnel. |
| Medical Services Provider (MSP) | <p>Will provide immediate first aid as required and establish additional measures required (i.e. external emergency response).</p> <p>The MSP will provide toolbox talks on topical issues as required.</p> |
| Field Team Member | <p>All site personnel including employees, subcontractors and visitors are responsible for:</p> <ul style="list-style-type: none"> • Complying with Site Induction requirements and Emergency Response Team instructions; • Ceasing activities and leaving work areas in a safe condition as required; and • Reporting to local Muster Points and returning to work when the 'all clear' instruction is provided |

7.3 Evacuation Protocol

- Alarm
 - Manually and automatically activated alarms will be installed across the site to facilitate the management of emergencies.
- UHF Radio/Phone
 - Raise the alarm through dedicated Project emergency UHF Channel stating the following:
 - Your name;

- Location of the incident;
- Description of the incident scene; and
- Best route to be used to approach the incident location.

Evacuate the location and assemble to Muster Point(s) or to a safe location if appropriate for the situation.

Phone external emergency response as required.

7.3.1 Muster Points

During emergencies and emergency training exercises, Project personnel will be required to evacuate to a place of safety. Designated areas (muster points) will be established across the site based on being the least hazardous location in the event of an emergency. In the event of an evacuation, all personnel will cease work immediately if it is safe to do so and leave all equipment in a safe condition, before proceeding calmly and quickly toward the nearest muster point. The ERT will undertake a roll call to verify that all personnel are present.

7.3.2 Assess Incident

Incidents are to be assess as detailed in **Section 10**. In general, each work area is to have a dedicated ERT member who is appropriately trained to assess incidents and undertake required protocols in accordance with this plan. In the event of an emergency external to the immediate project area the ERT Co-ordinator is to provide assistance, co-ordinate response and report.

7.3.3 All Clear

The ERT coordinator is responsible for closing out incidents and providing the 'All Clear' radio call to all site personnel and Muster Points effected. If interrupted by an emergency, works may require the Job Hazard Analysis (JHA) to be re-signed before beginning again

7.3.4 Re-Entry

Once the 'all-clear' signal has been given, personnel may return to their work areas. In most situations a debrief is to be held following the incident.

7.3.5 Debrief

The ERT coordinator is to schedule and undertake a debrief meeting following the incident. The meeting shall include the ERT and site personnel directly involved with the incident and appropriate area manager or others if warranted dependant on the scale or type of emergency. The debrief meeting will be undertaken to:

- Assess response times and effectiveness;
- Undertake a step-by-step assessment of individuals actions and appropriateness; and
- Identify additional management measures and/or responses for future incidents.
- The ERT coordinator is to update the ERMP and provide a briefing to Project Management Team.

7.3.6 Safety Alerts

Following any significant incident at the Project (including near misses) a safety alert is to be produced and issued by the Site Supervisor with assistance from OHS team member. The safety alert is to include a picture of the incident (where relevant), summary of events leading up to the incident root cause and future management measures or recommendations.

7.3.7 Toolbox Talks

The ERT Coordinator is to provide/facilitate toolbox talks to each area as required. The toolbox talks are to summarise emergency responses and details of any historical and/or industry specific incidents which have occurred, and management/control measures used.

7.3.8 Task-Specific Procedures and Job Safety Analysis

Personnel are to be trained in area-specific procedures and Job Safety Analysis (JSA) to ensure appropriate management/emergency response requirements for tasks are identified e.g. work at heights, confined space entry. Procedure and JSA training are to also include aspects of emergency response.

8 HAZARD MANAGEMENT

8.1 Storage and Handling of Fuel and Other Hazardous Goods

Hazardous chemicals will be documented on a Project Hazardous Chemicals (HazChem) register. They will be accompanied by the appropriate Safety Data Sheet (SDS), and all SDS must be current and up to date (within 5 years).

Where required, licences and permits will be obtained for storage of hydrocarbons or chemicals, including hazardous substances.

Hydrocarbons and chemicals, including waste, are to be stored within a bunded area. Empty or used hydrocarbon and chemical containers must also be stored within a bund at all times. Bunds must contain 110% of the volume of the largest container, or 25% of the total volume of all containers in the bund, whichever is greater.

Bulk fuel storage tanks must be aboveground and double skinned (self-contained). Adequate crash protection – such as bollards or windrows – must be in place to prevent penetration from vehicle collision. Hydrocarbon and chemical storage vessels and bulk fuel tanks are required to be labelled. Fire extinguishers and spill kits must be available at these storage areas.

All personnel working with hazardous chemicals will be provided with information regarding the safe use of these substances through SDS access, training, and information sessions. Adequate labelling must be maintained on all chemical containers until final disposal of the container at an approved facility. Decanting of chemicals into unlabelled or inappropriate containers is strictly prohibited.

Chemicals must be used in accordance with the manufacturer's instructions. Personnel must wear the Personal Protective Equipment (PPE) specified on the Safety Data Sheet (SDS) as a minimum requirement, along with any additional PPE required for the task. Chemicals must be stored in a hazardous storage cabinet compliant with AS1940:2017.

8.2 Spill Response

If a spill threatens the safety or health of people, creates a fire hazard or has the potential to cause or causes serious environmental harm then the site emergency procedure shall be followed.

Where a chemical spill occurs, consult the SDS for spill procedures. The following steps should also be considered:

Stop the source and spread of the spill if safe to do so:

- **Check for danger** (see note).
- Prevent the spill from getting larger (turn off valves, block damaged tanks or pipes, roll 44-gallon drums so that the opening is at the top).
- Use any suitable material or equipment to confine the spill by "damming it off" (e.g. use available spill response equipment such as booms or absorbent or if unavailable then use soil or other suitable material).

Clean up the spill

- Once the spill has been contained, retrieve as much of the spilled liquid as possible and place in an appropriate container (e.g. 20L drum or 1000L IBC). The liquid should then be appropriately disposed of off-site to a facility licensed to receive such waste. The spill is to be cleaned up with preference to dry methods of cleaning up.
- Absorb remaining spill with absorbent material and place used absorbent in the appropriate waste bin.
- Treat areas of contaminated soil in accordance with **Figure 3** below.

- Where applicable, replenish equipment used from Spill Response Kit.
- **Report the spill**
 - Report and investigate all spills in accordance with Incident Reporting and Analysis (**Refer to Section 10**).

Note: If a significant hazardous chemical spill occurs, and no SDS exists due to nature of the circumstance then the spill may need to be immediately notified to environmental and emergency response authorities before clean-up can commence. Specialised PPE or equipment may also be required.

8.2.1 Spill Kits

Spill kits and/or spill clean-up equipment will be available at the Site Office/Workshop. Equipment contained in spill response kits shall be replenished upon use, equal to the specified list contained within the kit. The Project Manager will be responsible for the regular inspection of the Spill Response Kit and for replenishing missing/used items when necessary.

Spill kits and/or spill clean-up equipment will be available at the Site Office/Workshop. Equipment contained in spill response kits shall be replenished upon use, equal to the specified list contained within the kit. The Project Manager will be responsible for the regular inspection of the Spill Response Kit and for replenishing missing/used items when necessary.

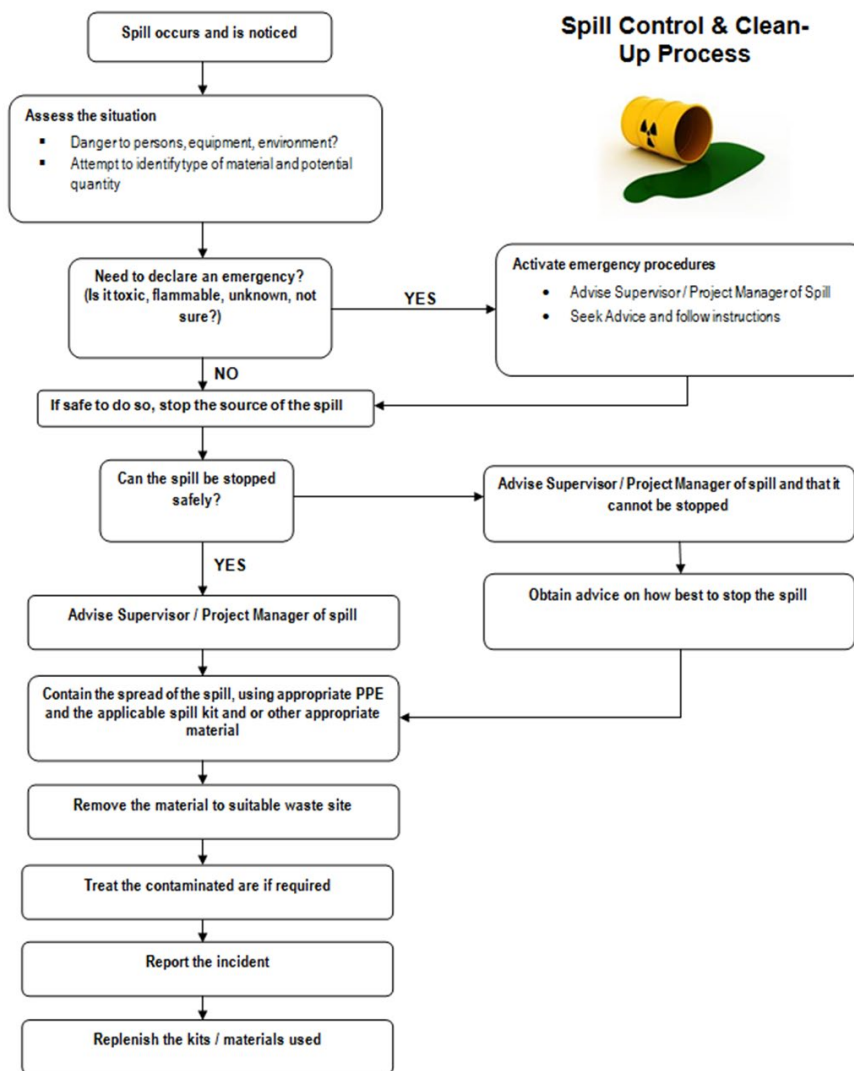


Figure 3 Spill Control and Clean-Up Process

8.3 Fire Management

8.3.1 Potential Sources

Fire scenarios on the site could potentially arise from:

- Electrical failures.
- Refuelling incidents.
- Waste combustion.
- Machine failure.

8.3.2 Risk Management

To minimise these risks the following measures have been adopted for the site:

- Fire Extinguishers must be installed beside refuelling areas.
- Maintaining accessible Fire Extinguishers at all times.
- Regular slashing of grassed or vegetated areas around the site.
- No unauthorised burning on the site.
- No stockpiling of vegetation on the site.
- The water truck used for dust prevention may also be used as an initial firefighting resource.
- Risk assessment on the co-storage of chemicals.
- Clear access for fire-fighting vehicles.

Specific recommendations can be obtained by requesting an inspection by the local fire service.

8.3.3 Fire Response

In the event of a small fire at the site, a portable fire extinguisher or water truck may be used to attempt to extinguish the fire. If this is unsuccessful or the fire is large, Queensland Fire and Rescue Service shall be contacted immediately. An emergency should be declared on site and all personnel should directly assemble at the site evacuation point for roll call.



9 COMPLAINTS HANDLING AND MANAGEMENT

The Contractor will nominate the Project Manager as the single point of contact for general project enquiries during the construction, operation and decommissioning phases. The Contractor will establish a dedicated project email address to receive community enquiries and complaints, including a clearly identified “complaints” contact. Complaints may be submitted directly via this email address.

All complaints and enquiries will be recorded in a Complaints Register maintained by the Project’s Stakeholder and Communications Team. The register will document the nature of the complaint, date received, actions undertaken, response provided, and date of resolution.

The Contractor, in coordination with Edify, will ensure that:

- Acknowledgement of receipt is provided in a timely manner;
- A response is issued to the complainant addressing the matter raised, including supporting information where relevant;
- Appropriate corrective or mitigation actions are implemented where required; and
- Matters are escalated internally where resolution requires higher-level review or intervention.

Records of all correspondence and actions will be retained for auditing and compliance purposes.

The following details must be recorded for all complaints received:

1. Time, date, name and contact details of the complainant.
2. Reasons for complaint.
3. Any investigations undertaken.
4. Conclusions formed.
5. Any actions taken.

The complaints log must be provided to the Banana Shire Council on request.

9.1.1 Compliance with Condition 68 – Site Signage

To ensure compliance with Condition 68, the Contractor will install and maintain project signage at required locations prior to commencement of construction activities. Signage will remain visible and legible for the duration of construction, operation and decommissioning phases and will include contact details for project enquiries and complaints.

While a final signage concept design is not available at the time of preparing this EMP, it will be developed and submitted once available, ensuring it meets the requirements of the relevant condition.

9.1.2 Edify Contact Channels

In addition to the Contractor’s complaints process, Edify has established a dedicated project email address (smokycreek@edifyenergy.com) for all community and project-related correspondence. The Project website also includes a “Feedback, Comments and Complaints” form accessible via:

<https://edifyenergy.com/project/smoky-creek-guthries-gap/>

Both Edify and the Contractor will maintain coordinated records of enquiries and complaints and will collaborate to ensure consistent, transparent, and timely responses are provided to all stakeholders throughout the construction, operation and decommissioning phase.

9.1.3 Complaints Procedure

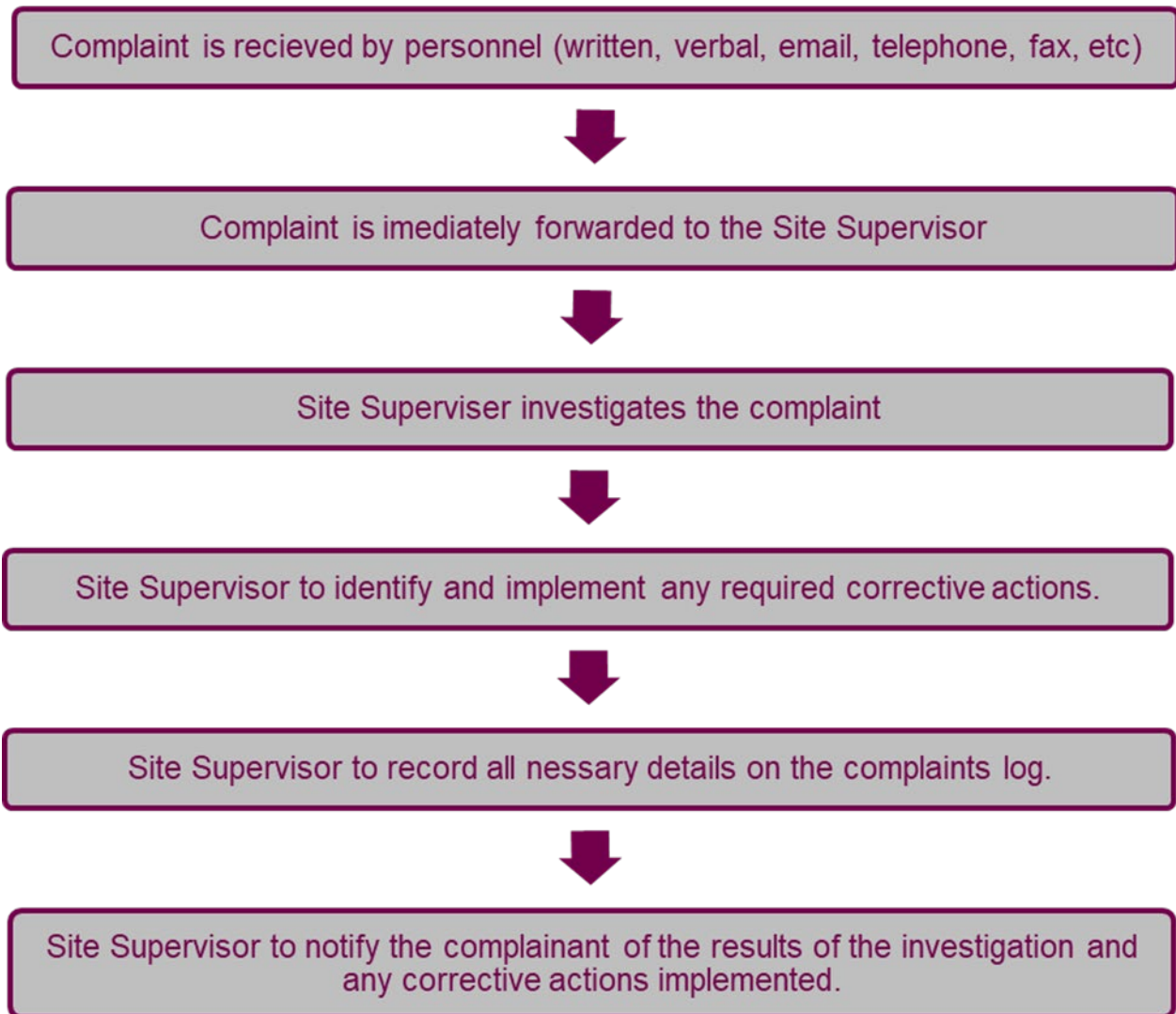


Figure 4 Complaints Procedure

10 INCIDENT MANAGEMENT

10.1 What is an Incident

An incident is any non-compliance with this EMP. This may include but is not limited to:

- Spills from vehicle maintenance or refuelling outside bunded areas.
- Complaints regarding the facility.
- Contaminated water leaving the site during high rainfall events/floods.
- Spilling of products.
- Damage to site bunds or chemical storage infrastructure.
- Damage to stormwater diversions and ESC.
- Dusty, odorous or noisy conditions.
- Unauthorised waste disposal.

10.2 Incident Investigation

All incidents shall be investigated by the Project Manager to determine:

- Nature, type, location and extent of the incident and the affected area.
- Actual and/or potential environmental impacts of the incident (see below).
- Suspected cause of the incident.
- Measures required to mitigate any further environmental harm.
- Remedial measures required to correct any environmental harm.
- Measures to be implemented to prevent a recurrence of the incident.

The requirements for the environmental assessment of impacts of an incident shall be determined by an Environmental Consultant. The assessment may include environmental monitoring of contaminant releases in relation to land, water, noise, air and light (in addition to routine monitoring requirements). Based on the nature and type of the incident, the Environmental Consultant shall determine:

- Sampling and analytical requirements.
- Applicable guidelines or levels to apply to data for assessing compliance and level of impact.
- Reporting requirements.

Any monitoring shall be undertaken by a competent person, and all monitoring equipment shall be appropriately maintained, calibrated and operated. Monitoring will be designed in consultation with Edify Energy, BSC and DCCEEW as required.

10.3 Incident Reporting

In accordance with the *Environmental Protection Act 1994* (EP Act), serious or material environmental harm (Material harm defined as greater than \$5,000 to clean up and/or restore environment, Serious harm defined as greater than \$50,000 to clean up and/or restore environment) shall be reported by the Project Manager to DETSI within 24 hours of becoming aware of the event in accordance with the Duty to Notify (refer to Section 320 of the EP Act). Minor incidents (e.g. hydraulic oil leaks less than 20L) are to be reported in the site diary and cleaned up / remediated.

All personnel are responsible for reporting all incidents to the Project Manager. All incidents are to be recorded on the Incident Report Form provided in **Appendix J**.

The Project Manager shall telephone DETSI as soon as practical after becoming aware of any release of contaminants that has the potential for environmental harm. Following this, a written notice detailing the following information must be provided to within 14 days of the initial notification:

- The name of the operator, including their approval / registration number.
- The name and telephone number of a designated contact person.
- Quantity and substance released.
- Vehicle and registration details.

- Person/s involved (driver and any others).
- The location and time of the release.
- The suspected cause of the release.
- A description of the effects of the release.
- The results of any sampling performed in relation to the release.
- Actions taken to mitigate any environmental harm caused by the release.
- Proposed actions to prevent a recurrence of the release.

DETSI Pollution Hotline – 1300 130 372

10.4 Incident Prevention

- To increase site safety the appropriate personal protective equipment is required at all times.
- Analysis of past incidents and potential future incidents is required to identify and minimise reoccurrences.
- Training and environmental awareness information.
- Liaison with environmental consultants and DETSI officers.

11 TRAINING, RECORDS, AND REVIEW

11.1 Training

All personnel employed on the site to have completed a site induction by the Project Manager. The induction training will include the following:

- Familiarisation with the requirements of this EMP.
- Familiarisation with site environmental controls.
- Process for management of environmental incidents.
- Legislations applicable to the concrete batching plant industry such as permits, approvals, and licences.
- Environmental duty of care and duty to notify.
- Cultural heritage duty of care and duty to notify.
- Summary of potential emergency situations;
- Details of muster points;
- Spill kit use and response.
- Guidelines on waste management and chemicals.
- Identification and source separation of recyclable materials.
- Equipment, maintenance, refuelling procedures.
- Dust control measures.
- Stormwater management measures.
- Fire management.

11.2 Emergency Response Team Training

ERT members are to undertake regular training covering key emergency situations such as fire, vehicle incidents, height rescue, hazardous substances and advanced first aid or medical treatment associated with emergency situations that may occur at or near the Project. The ERT Coordinator is responsible for scheduling training and ensuring ERT members meet minimum competency requirements. Desktop and mock scenario exercises must be conducted to test ERMP procedures, processes, capability and personnel roles. Desktop exercises should be carried out regularly with a significant mock exercise carried out annually.

11.3 Records Management

A copy of the EMP will always be kept in the Contractor's site office.

Any record or document required as an outcome of this EMP or requested by a regulatory authority must be kept at the site for a period of 5 years.

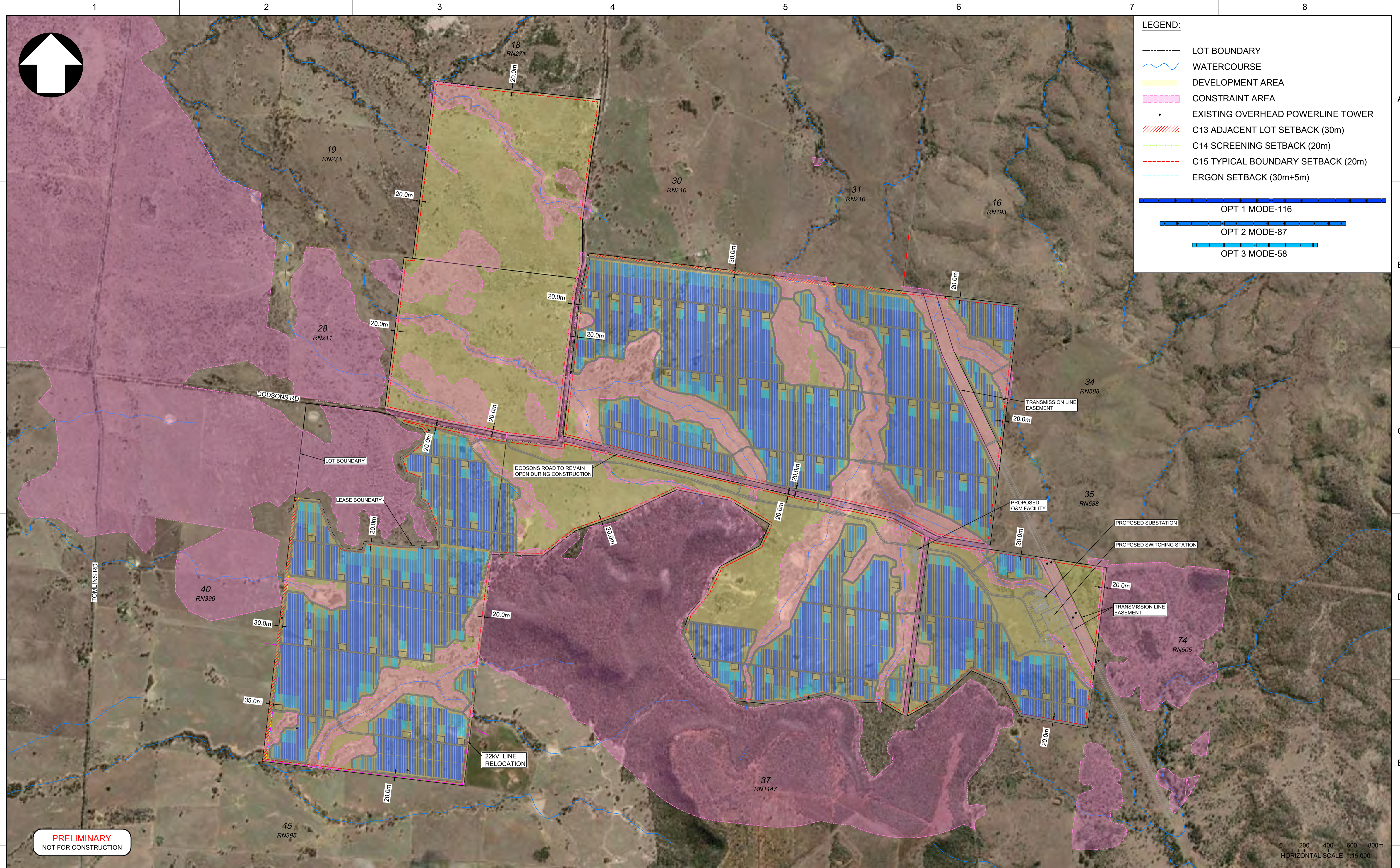
Records must be kept of the key environmental performance indicators, monitoring results, corrective actions, environmental incidents and complaints, reports to management, and any records required by law such as regulated waste tracking.

The records collected are to be made available upon request of Banana Shire Council, or DCCEEW. A weekly inspection checklist has been provided as **Appendix K**.

11.4 EMP Review

The EMP shall be reviewed annually and updated where necessary.

Appendix A Site Layout Plan



PRELIMINARY
NOT FOR CONSTRUCTION

0 200 400 600 800m
HORIZONTAL SCALE 1:15,000

| | |
|-------------------|--|
| ANSI | |
| NAME | |
| SIGNATURE | |
| ENG REG NUMBER | |
| REVISION DATE | |
| ORIGINAL DATE | |
| REG. PROFESSIONAL | |

| REV. | DESCRIPTION | R. ENG. | E. CHK'R | ADM. APP. | DATE |
|------|---------------------------|---------|----------|-----------|------------|
| D | APPROVED FOR USE (ECI) | TW | SH | DW | 2026-03-02 |
| C | CLIENT REVIEW | TW | SH | DW | 2026-02-05 |
| B | CLIENT REVIEW | TW | SH | DW | 2026-01-09 |
| A | INTRA DISCIPLINARY REVIEW | TW | SH | DW | 2026-01-08 |

THIS DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF DT INFRASTRUCTURE PTY LTD ("CLIENT") AND IS ISSUED PURSUANT TO THE TENDER SERVICES AGREEMENT BETWEEN CLIENT AND HATCH PTY LTD ("HATCH"). UNLESS OTHERWISE AGREED IN WRITING WITH CLIENT OR SPECIFIED ON THIS DRAWING, HATCH DOES NOT ACCEPT AND DISCLAIMS ANY AND ALL LIABILITY OR RESPONSIBILITY ARISING FROM ANY USE OF OR RELIANCE ON THIS DRAWING BY ANY THIRD PARTY OR ANY MODIFICATION OR REUSE OF THIS DRAWING BY CLIENT. THIS DRAWING IS CONFIDENTIAL AND ALL INTELLECTUAL PROPERTY RIGHTS EMBODIED OR REFERENCED IN THIS DRAWING REMAIN THE PROPERTY OF CLIENT, EXCEPT FOR HATCH'S INTELLECTUAL PROPERTY WHICH MAY BE INCORPORATED THEREIN.

| | | | |
|---------------|------------|--|------------|
| HATCH | | | |
| CAD DESIGNER | K RICKETTS | | 2026-01-07 |
| CAD CHECKER | A GREEN | | 2026-01-07 |
| RESP. ENG. | T WALTON | | 2026-03-02 |
| ENG. CHECKER | S HALL | | 2026-03-02 |
| DESIGN COORD. | D WILLIAMS | | 2026-03-02 |
| DISC. LEAD | T WALTON | | 2026-03-02 |
| ENG. MANAGER | D WILLIAMS | | 2026-03-02 |

DT
INFRASTRUCTURE
A DAMARA Company

Edify

SMOKY CREEK PROJECT
DT INFRASTRUCTURE PTY LTD

PROJECT WIDE
SIMPLIFIED SITE CONSTRAINT PLAN
GENERAL ARRANGEMENT

| | | |
|-------------|---------------------------|-----|
| SCALE | HATCH No. | REV |
| 1:15,000 | H377095-0000-220-272-0003 | D |
| OR AS NOTED | CLIENT No. | |
| | SCP-HAT-CV-CW-LAY-200003 | |

SUSERRAMES \$TIMES \$FILES \$STYLES SHEET SIZE: A1

Appendix B Development Approval

Your Reference:

Our Reference: CW: RR: ak: 19-10 (FID85501, COM002-18/19, 14704-00000-000, ID1451981)

Contact: Chris Welch

29 October 2019

Edify Energy C/- RPS
Mark Carter
PO Box 977
TOWNSVILLE QLD 4810

Dear Sir/Madam

Decision Notice – Approval

(Given under section 63 of the Planning Act 2016)

Application Number: COM002-18/19

Description: *COMBINED APPLICATION
Material Change of Use for a Public Facility - Other
(Solar PV Power Station (Solar Farm) and Associated
Facility Switchyard and Electrical Transmission Line)
Reconfiguring a Lot for Subdivision by Agreement (10
Lease Areas)*

Level of Assessment: *Impact Assessable*

Site Address: *480 Tomlins Road, Goovigen, Lot 38 Tomlins Road,
Dixalea, Lot 18 Dodsons Road, Dixalea, Lot 37 Hibbs
Road, Goovigen, 5460 Dodsons Road, Ulogie, Lot 33
Dodsons Road, Ulogie*

Lot & Plan Details: *Lot 39 on RN395, part of Lot 28 on RN211, part of Lot
18 on RN271, part of Lot 37 on RN1147, Lot 29 on
RN210, Lot 32 on RN194, Lot 33 on RN210*

On 23 October 2019, at Council's Ordinary Meeting (OM004518), the above development application was approved in full subject to conditions. The conditions of this approval are set out in Attachment 1. These conditions are clearly identified to indicate whether the assessment manager or a concurrence agency imposed them.

1. Details of Approval

The following approvals are given:

| | Planning Regulation 2017 reference | Development Permit | Preliminary Approval |
|--|------------------------------------|-------------------------------------|----------------------|
| Making a Material Change of Use assessable under the planning scheme | s20 | <input checked="" type="checkbox"/> | |
| Reconfiguring a Lot | s20 | <input checked="" type="checkbox"/> | |

2. Approved Plans

The approved plans and documents for this development approval are listed in the following table:

| Drawing/Report Title | Prepared By | Date |
|--|---------------------------------|------------|
| 140339-1-01 Subdivision Proposal Plan (Revision E) | RPS | 21/12/2018 |
| 140339-1-02 Project Proposal Plan (Revision F) | RPS | 26/04/2019 |
| 180217A-A200 Plan (Revision O) | ATCO Structures & Logistics | 20/04/2018 |
| 180217A-A300 Elevations (Revision O) | ATCO Structures & Logistics | 09/04/2018 |
| QC02-ST-TGD-DET-0001 (Revision A) Elevation | RCR Infrastructure | 16/11/2017 |
| NILSEN 60086 (Sheet 4.1) Floor Plan | ROLCON Pty Ltd | undated |
| NILSEN 60086 (Sheet 5.1) Elevations | ROLCON Pty Ltd | undated |
| NILSEN 60086 (Sheet 5.2) Elevations | ROLCON Pty Ltd | undated |
| Engineering Report (Revision A) | Northern Consulting Engineers | 07/09/2018 |
| Ecological Assessment Report | RPS (Version 3) | 16/08/2019 |
| Traffic Assessment Report (Revision B) | Northern Consulting Engineers | 11/01/2019 |
| Land Condition Assessment (J000283) | Range Environmental Consultants | 27/09/2019 |

3. Further Development Permits

Please be advised that the following development permits are required to be obtained before the development can be carried out:

- Operational Works
- Building Works
- Plumbing & Drainage

4. Conflict with relevant instrument and reasons for the decision despite the conflict.

The assessment manager does not consider that the assessment manager's decision conflicts with a relevant instrument.

5. Submissions

There were properly made submissions about the application.

The name and address of the principal submitter for each properly made submission are as follows:

| Name of Principal Submitter/s | Address |
|-------------------------------|--------------------------------------|
| Dennis Earth Moving | Lot 2 Burnett Highway, Jambin |
| Tony & Bridget Bongers | PO Box 6, Jambin QLD 4702 |
| Errol Dennis | erroldennis@outlook.com |
| Noel Jones | 790 Mt Eugene Road, Jambin QLD 4702 |
| Sue Wilkie | jambinhotelmotel@bigpond.com |
| Geoff Maynard | Mt Eugene, Jambin QLD 4702 |
| Lachlan & Kristy Dickson | "Burravale", 550 Dodson Road, Ulogie |
| Cedric Creed | beefy@beagle.com.au |
| Greenfields Charbrays | PO Box 23, Jambin QLD 4702 |
| Sanderson & Parks Solicitors | PO Box 1, Biloela QLD 4715 |
| Les Marshall | lamarshall81@bigpond.com.au |

6. Referral Agencies

The referral agency for this application was:

| Name of referral agency | Advice agency or concurrence agency | Referral Basis | Address |
|---|-------------------------------------|----------------|--|
| The Chief Executive Officer of the entity | Advice | | Powerlink PO Box 1193 VIRGINIA QLD 4014 |

7. Currency Period for the Approval

This development approval will lapse at the end of the period set out in section 85 of the *Planning Act 2016*.

8. Statement of Reasons

| | |
|---------------------------------------|--|
| Description of the development | Combined application for Material Change of Use - Public Facility - Other (Solar PV Power Station (Solar Farm) and Associated Switchyard and Electrical Transmission Line) and Reconfiguring a Lot for Subdivision by Agreement(10 Lease Areas) |
| Assessment Benchmarks | Rural Zone Code Natural Features and Conservation Areas Overlay Code Economic Resources Overlay Code Major Utilities Overlay Code Natural Disaster Overlay Code Development Standards Code Reconfiguring a Lot Code |
| Reasons for Decision | <p>Rural Zone Code - The development complies or has been conditioned to comply with all applicable Outcomes.</p> <p>Natural Features and Conservation Areas Overlay Code - The development complies or has been conditioned to comply with all applicable Outcomes.</p> <p>Economic Resources Overlay Code - The development complies or has been conditioned to comply with all applicable Outcomes.</p> <p>Major Utilities Overlay Code - The development complies or has been conditioned to comply with all applicable Outcomes.</p> <p>Natural Disaster Overlay Code - The development complies or has been conditioned to comply with all applicable Outcomes.</p> <p>Development Standards Code - The development complies or has been conditioned to comply with all applicable Outcomes.</p> |

9. Appeal rights

The rights of an applicant to appeal to a tribunal or the Planning and Environment Court against a decision about a development application are set out in chapter 6, part 1 of the Planning Act 2016. For particular applications, there may also be a right to make an application for a declaration by a tribunal (see chapter 6, part 2 of the Planning Act 2016).

Appeal by an applicant

An applicant for a development application may appeal to the Planning and Environment Court against the following:

- the refusal of all or part of the development application
- a provision of the development approval
- the decision to give a preliminary approval when a development permit was applied for
- a deemed refusal of the development application.

An applicant may also have a right to appeal to the Development tribunal. For more information, see schedule 1 of the Planning Act 2016.

Appeal by a submitter

A submitter for a development application may appeal to the Planning and Environment Court against:

- any part of the development application for the development approval that required impact assessment
- a variation request.

The timeframes for starting an appeal in the Planning and Environment Court are set out in section 229 of the Planning Act 2016.

Attachment 2 is an extract from the Planning Act 2016 that sets down the applicant's appeal rights and the appeal rights of a submitter.

The Planning and Environment Court appeals database lists all the appeals lodged in the Planning and Environment Court since 15 March 2008, which the department has been notified of. It contains information about the appeal, including the appeal number, site address, local government area, and a copy of the appeal notice, including grounds for the appeal. The appeal database is an easy way for anyone to obtain information about an appeal or check if an appeal has been lodged for a specific development application or approval.

The appeal database is available at

<https://planning.dsdmip.qld.gov.au/planning/our-planning-system/dispute-resolution>.

Should you require further assistance in relation to this matter, please do not hesitate to contact Council's Development Services section on (07) 4992 9500, quoting you application number of COM002-18/19.

Yours Sincerely



Chris Welch

MANAGER ENVIRONMENT & PLANNING

CC Powerlink

Enc Attachment 1 – Part A Conditions imposed by the Assessment Manager
Attachment 1 – Part B Assessment Manager Notes
Attachment 1 – Part C Conditions imposed by Powerlink
Attachment 2 – Appeal Rights
Attachment 3 – Approved Drawings
Attachment 4 – Environmental Obligations

COM002-18/19 Attachment 1

Part A - Conditions imposed by the Assessment Manager



Attachment 1

COM002-18/19 Conditions of Approval

Part A - Conditions imposed by the Assessment Manager

Section 1 – Development Permit – Reconfiguring a Lot (Subdivision by Agreement – 10 lease areas)

General

1. The development is to be completed and maintained generally in accordance with the approved plans and documents, as attached to this Decision Notice, except where modified by the conditions below:

| Plan/Document number | Plan/Document name | Date |
|-----------------------------|---------------------------|-------------|
| 140339-1-01 (Revision E) | Subdivision Proposal Plan | 21/12/2018 |

2. The leasehold period must not exceed a period of 43 years, and may be extended to provide tenure over the site for the conclusion of operations approved under Section 2 of this approval, decommissioning and rehabilitation works for a further period consistent with the approved Site Rehabilitation Plan.
3. A copy of the registered leases is to be provided to Council upon registration of the leases.
Note: If the applicant does not provide a copy of the leases on registration, the commencement date of the term of the leases will be taken from the date the development approval became effective.
4. Complete all associated works, including any relocation or installation of services, at no cost to Council.

Section 2 – Development Permit – Material Change of Use (Public Facility – Other (Solar PV Power Station (Solar Farm) and Associated Facility Switchyard and Electrical Transmission Line))

General

1. The development is to be completed and carried out generally in accordance with the following approved plans and reports, except where modified by the conditions of this Development Approval:

| Plan/Document number | Plan/Document name | Date |
|--|---------------------------|-------------|
| 140339-1-02 (Revision F) | Project Proposal Plan | 26/04/2019 |
| 180217A-A200 (Revision 0) | Plan | 10/04/2018 |
| 180217A-A300 (Revision 0) | Elevations | 10/04/2018 |
| QC02-ST-TGD- DET-0001 (Revision A) | Elevation | 16.11.17 |
| NILSEN 60086 Sheet 4.1 | Ground Floor Plan | Undated |
| NILSEN 60086 Sheet 5.1 | Elevations | Undated |
| NILSEN 60086 Sheet 5.2 | Elevations | Undated |
| Engineering Report prepared by Northern Consulting (Revision A) | | 07/09/2018 |
| Ecological Assessment prepared by RPS (Version 3) | | 16/08/2018 |
| Traffic Assessment Report prepared by Northern Consulting (Issue B) | | 11/01/2019 |
| Land Condition Assessment prepared by Range Environmental Consultants | | 27/09/2019 |

2. Comply with all of the conditions of this Development Approval prior to the commencement of the use, unless otherwise stated within this Decision Notice, and maintain compliance for the duration of the approved use.
3. Exercise the approval and complete all associated works, including any relocation or installation of services, at no cost to Council.

4. Alterations to public utilities, mains and services made necessary in connection with any of the works arising from this approval including works to restore and reinstate all roads are to be completed at no cost to Council.

Amended Plans

5. Submit an amended Project Proposal Plan that excludes solar array panels or other improvements from any areas identified as land degradation features in Figures 7, 8, 9 or 10 of the approved Land Condition Assessment including suitable buffers.
6. Final detailed layout plans of the solar farm facility are to be submitted to Council for approval prior to the commencement of the use. The plans at a minimum must show:
 - a. all building and structure locations;
 - b. substation locations;
 - c. inverter locations;
 - d. above and below ground cabling;
 - e. internal access roads;
 - f. boundary setbacks;
 - g. solar panel system type;
 - h. solar plant configuration; and
 - i. fencing associated with the use;

Approved Use

7. The approved use of the premises is for Public Facility – Other (Solar PV Power Station (Solar Farm) and Associated Facility Switchyard and Electrical Transmission Line).
8. The approved use may operate for a maximum of 40 years from the date the facility, or part thereof, becomes operational.

Building and other works

9. The applicant shall obtain a development permit prior to commencement of any works defined as building work under the Building Act 1975.
10. The maximum height of any building must not exceed 10 meters above natural ground level. This does not include any support towers for the proposed transmission line.

11. Proposed earthworks are limited to the establishment of building pads, hardstand areas, internal roads, vehicle parking areas and minor re-profiling of land beneath the solar arrays. A development permit is required for all Operational Works.
12. All habitable buildings must be located a minimum of 40 metres from any electricity transmission line.

Setbacks

13. Project infrastructure is setback a minimum of 30 metres from site boundaries adjoining Lots 30 and 31 on RN210 and Lot 40 on RN396.
14. Screen landscaping in accordance with Condition 62 below is established to a mature height for a distance of 20 metres from the site boundaries adjoining Lots 30 and 31 on RN210 and Lot 40 on RN396 prior to installation of solar farm infrastructure on Lot 29 on RN210, Lot 32 on RN194 and Lot 39 on RN395 respectively where visible from a residence on an adjoining site.
15. Project infrastructure is setback a minimum of 20 metres from all other site boundaries including Dodsons Road.
16. Project infrastructure is setback 50 metres from the top of the bank of waterways and 27 metres from the edge of vegetation mapped under the *Vegetation Management Act 1999*.
17. Except where in conflict with the advice provided by Powerlink (as attached), a 20 metre vegetated buffer is provided adjacent to all easements for electricity transmission lines.
18. All improvements are to be located outside any bushfire hazard area and associated impact buffers identified on the State's Development Assessment Mapping System.

Road work and access

19. Prior to the commencement of construction of the solar farm, the following roads are to be upgraded:
 - a. Tomlins Road – Upgraded to Rural Minor Collector as per CMDG-Geometric Design or as agreed to by Council. Records and site inspection indicate seal widths less than 5.0m with poorly formed shoulders.
 - b. Dodsons Road – Upgraded to Rural Minor Collector as per CMDG-Geometric Design or as agreed to by Council. Records and site inspection indicate a formation width (shoulders inclusive) of 5.0m (max) and inadequate clear zones.

20. Prior to the commencement of construction of the solar farm, the intersection of Tomlins and Dodsons Road is to be upgraded as per the recommendations included in the approved Traffic Assessment Report (Issue B) prepared by Northern Consulting or as agreed to by Council.
21. The developer is to maintain the upgraded sections of Tomlins and Dodsons Roads for the life of the development to the appropriate standard in the CMDG.
22. A rural access is to be provided in accordance with an Operational Works approval constructed in accordance with the requirements of the CMDG (Standard Drawing CMDG-R-040).
Note: The dimensions listed on this standard drawing are considered the minimum required for compliance.
23. Design and construct all internal roads and parking areas to be all weather gravel standard with suitable permanent dust suppression methods provided.
24. All vehicles accessing the site must be able to enter and exit in a forward gear.
25. Provide sufficient parking and manoeuvring, loading/unloading space on-site for all vehicles; no vehicle storage or parking is permitted on the adjoining road reserve. Car parking facilities must be designed in accordance with the Australian Standard.
26. Where an existing driveway crossover is proposed to be replaced it is to be constructed in accordance with the CMDG and have a slope not exceeding 1 in 6.
27. Any damage to the existing road surface, services or furniture as a result of construction work is to be repaired to the pre-existing condition or better condition at no cost to Council.
28. Prior to undertaking any road upgrade works identified in the conditions of this development permit, provide a bank guarantee for an amount equivalent to 10% of the value of the road upgrade works.

Water and Sewerage Infrastructure

29. Prior to the commencement of construction, a detailed report for the on-site wastewater disposal, that addresses on-site treatment and disposal for each proposed use area, is to be submitted to Council. The report is to be prepared by a suitably qualified person in accordance with the relevant codes and Australian Standards. The report is to clearly demonstrate the suitability of the lot size and treatment facilities for sustainable treatment and disposal of wastewater generated by the proposed development.

30. The minimum standard of wastewater treatment to be considered is secondary treatment incorporating disinfection. Appropriate reserve disposal areas are to be provided and maintained on the site.
31. Prior to the commencement of use, an effluent disposal/storage system, appropriate for the proposed development, is to be installed. All relevant approvals for this system, in accordance with the requirements of the *Plumbing and Drainage Act*, are to be obtained before installation.
32. The proposed effluent disposal/storage system is to be maintained so that all effluent is wholly contained within the confines of the development site and does not pond or enter any gully, watercourse, stormwater system or adjoining properties.
33. Provide a sufficient supply of potable water for all staff and visitors associated with the approved use. The water must satisfy the Australian Drinking Water Guidelines or relevant standard applicable at the time.
34. At the time of lodging a building application, documentation is required to be submitted to Council that demonstrates that a reasonable water supply for emergency purposes (including adequate storage for a minimum 5,000 Litre capacity volume) is available for the development.

Stormwater Quality

35. The solar farm should not adversely interfere with the existing hydrological regime of adjoining properties or catchments
36. Stormwater Management is to be undertaken in accordance with the approved Engineering Report prepared by Northern Consulting.
37. All stormwater being discharged from the site is to meet the requirements of the CMDG and the Queensland Water Quality Guidelines 2009.
38. Stormwater runoff is to discharge to Council's stormwater drainage system or a legal point of discharge. A detailed Stormwater Management Plan, and associated engineering drawings, is to be provided to Council, as part of an Operational Works application, for approval. This plan must comply with the requirements of the CMDG and is to address all relevant recommendations made by the approved Land Condition Assessment prepared by Range Environmental Consultants.
39. All stormwater infrastructure must be designed and constructed, prior to the commencement of use, as per the requirements of the Stormwater Management Plan.

40. The stormwater drainage system serving the approved use must be designed so that the development will not make material changes to the pre-development location, duration, frequency or concentration of overland stormwater flow at the point of discharge to all downstream properties including road reserves. In the event that a material change to the pre-development stormwater flows cannot be avoided provide written evidence to Council's satisfaction of a legal right to discharge stormwater over the downstream land in the proposed method.
41. Ponding of stormwater resulting from the development must not occur on adjacent properties. Stormwater formerly flowing onto the site must not be diverted onto other properties.
42. Contaminated water must not be directly or indirectly released from the premises onto the ground or into the groundwater at the premises.
43. Releases to stormwater must not cause any visible oil slick or other visible evidence of oil or grease, nor contain visible grease, scum, litter or floating oil.
44. Grass cover is to be established across all areas of the development site, excluding internal roads, vehicle parking and hardstand areas prior to construction and maintained for the duration of the use.

Erosion and Sediment Control

45. A detailed Erosion and Sediment Management Plan, and associated engineered drawings, is to be provided to Council as part of the operational works application and in accordance with the CMDG and is to address all relevant recommendations made by the approved Land Condition Assessment prepared by Range Environmental Consultants.
46. During construction the developer is to undertake sediment and erosion control management as per the approved Erosion and Sediment Management Plan.

Construction Phase Environmental Management Plan

47. The applicant must prepare a separate detailed Construction Phase Environmental Management Plan (CPEMP) for each stage of the development identifying environmental management measures to be implemented during all construction works associated with the solar farm facility. The CPEMP must address the following as a minimum:
 - a. Erosion and Sediment Control
 - b. Stormwater Management / Water Quality and Surface Water Runoff (interim drainage plan during construction);
 - c. Water Management

- d. Air Quality Management (dust suppression)
- e. Noise and Vibration Management
- f. Management of light spill and on-site lighting
- g. Land Contamination (storage / use of fuel and chemicals)
- h. Biosecurity Management (animal and plant pests)
- i. Construction Waste Management
- j. Flora and Fauna Impact Management
- k. Storage and handling of fuel and other hazardous goods
- l. Emergency Management
- m. Environmental monitoring and reporting
- n. Management of works near existing above ground and underground infrastructure
- o. Hazard Management
- p. Complaints handling and Management
- q. Statutory obligations and approvals

48. The CPEMP must:

- a. Be prepared and certified by a suitably qualified person
- b. Clearly identify design and control measures to be adopted during the construction and post construction phase
- c. Provide recommendations based on criteria and environmental data relevant to the site and surrounding area and construction works proposed
- d. Be prepared in accordance to the relevant standards
- e. Contain all recommendations of the approved Land Condition Assessment prepared by Range Environmental Consultants

49. The Applicant must prepare and submit the CPEMP to Council for approval within 40 working days of construction work commencing on each stage of the solar farm facility. The plan must be approved by Council before work commences.

50. The applicant must implement the recommendations of the Council approved CPEMP including any recommended works, installation of monitoring equipment and management measures at all times during construction of the Solar Farm Activity.

Operational Environmental Management Plan

- 51.** The applicant must prepare a detailed Operational Environmental Management Plan (OEMP) identifying environmental management measures to be implemented during operation of each stage of the solar farm facility. The OEMP must address the following as a minimum:
 - a. Erosion and Sediment Control
 - b. Stormwater Management / Water Quality
 - c. Groundcover management
 - d. Water Management
 - e. Air Quality Management (dust suppression)
 - f. Noise and Vibration Management
 - g. Management of light spill and on-site lighting
 - h. Land Contamination (storage / use of fuel and chemicals)
 - i. Biosecurity Management (animal and plant pests)
 - j. Operational Waste Management
 - k. Flora and Fauna Impact Management
 - l. Storage and handling of fuel and other hazardous goods
 - m. Emergency Management
 - n. Environmental monitoring and reporting
 - o. Hazard Management
 - p. Complaints handling and Management
 - q. Statutory obligations and approvals

- 52.** The OEMP must:
 - a. Be prepared and certified by a suitably qualified person
 - b. Clearly identify design and control measures to be adopted during the operational phase.
 - c. Provide recommendations based on criteria and environmental data relevant to the site and surrounding area and operational works proposed.

- 53.** The Applicant must prepare and submit the OEMP to Council for approval within 40 working days of operations commencing on each stage of the solar farm facility. The plan must be approved by Council before work commences.

- 54.** The applicant must implement the recommendations of the Council approved OEMP including any recommended works, installation of monitoring equipment and management measures at all times during operation of the Solar Farm Activity

Amenity

55. Ensure that all reasonable and feasible avoidance and mitigation measures are employed so that noise, dust, glare, vibration and other emissions generated by the construction and operation of the approved does not cause a nuisance at any sensitive land use.
56. The photovoltaic panels, any visible support structures, framing, cabling, or other equipment and infrastructure shall have a non-reflective or matte finish.
57. In the event that panels become 'out-of-sync' (i.e. not tracking the sun such that the panels are perpendicular to the sun), the affected panels are to be repaired as soon as reasonably practicable; or removed; or adjusted to remain in a fixed stowed position (so that potential for reflection is minimised for any sensitive receptors) until the repair is completed.
58. Night and outdoor lighting must be designed, constructed and operated in accordance with *Australian Standard AS4282 – Control of the obtrusive effects of outdoor lighting*.
59. Air-conditioning units (including individual compressor units), mechanical plant and equipment fitted to service the building must be shielded from view from public roads and adjoining properties. They must be concealed or screened with materials compatible and consistent with that elsewhere in the building.
60. The applicant must construct and operate the project in a manner that minimises dust generation from the site, including wind-blown and traffic-generated dust as far as practicable. The applicant must identify and implement all practicable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust are minimised during severe weather conditions.
61. Should Council receive a dust nuisance complaint (that is not frivolous or vexatious) directly related to the operation of the development, further actions must be taken to manage the impacts

Landscaping

62. Prior to the commencement of the installation of any infrastructure associated with the use, the applicant is to submit for approval to Council, a landscaping plan showing the vegetated buffers identified in Condition 15. The landscaping plan must include:
 - a. Identification of any existing vegetation to be retained as part of site landscaping;
 - b. A list of plantings, the species to be used, containing predominantly species that are endemic to Central Queensland;

- c. The location of plantings, spaced to achieve a dense, visually-impermeable screen;
 - d. Sections through each area of landscaping showing the mature heights of the planted native vegetation
 - e. A watering and maintenance plan during the establishment phase;
 - f. An ongoing maintenance and replanting program.
63. The vegetation buffer must be sufficiently vegetated such that when fully mature, screens views into the approved development from adjoining sensitive uses.
64. The landscaping is to be maintained in a tidy manner by the developer (i.e. watering, fertilising, mulching, weeding, and the like) at all times to the satisfaction of the Assessment Manager.
65. Any significant trees to be retained are to be protected during construction.

Fencing and signage

66. The applicant must install safety / security fencing a minimum of 1.8 metres in height along all property boundaries to prevent unauthorised or accidental public entry. The fencing must not obscure sight lines at corners or intersections.
67. The applicant must install industry standard warning signage on all boundaries of the site, at regular intervals, warning of the safety hazards associated with the approved use.
68. Erect and maintain a single sign with a minimum area of six square metres adjacent to each access for the approved use. The sign must display as a minimum:
- a. the name of the business operating on the premises;
 - b. the maximum onsite speed limit of 20km/h;
 - c. contact details for complaints and the site office.
69. All fencing must be completed prior to the commencement of use.

Waste

70. The applicant is required to prepare a Waste Management Plan for the proposed development. The plan should include, but is not limited to, the following
- a. A description of the development activities that may generate waste

- b. The types and amount of waste that might be generated by the activities
- c. how the waste will be dealt with, including a description of the types and amounts of waste that will be dealt with under each waste management practices under the waste hierarchy
- d. procedures for identifying and implementing opportunities to minimise the amount of waste generated, promote efficiency in the use of resources, and otherwise improve the waste management practices employed
- e. procedures for dealing with accidents, spills and other incidents that may impact waste management
- f. how often the waste management practices will be assessed

71. Recycling and waste must use appropriately licensed facilities.

72. Waste must not be burned at the premises.

Site rehabilitation

73. Commence rehabilitation of areas of existing land degradation identified in Figures 7, 8, 9, or 10 of the approved Land Condition Assessment as soon as practical after this approval takes effect. The areas are to be rehabilitated to a condition consistent with the soil classifications identified on Map 2 contained in Appendix A of the approved Land Condition Assessment.

74. Bank guarantees are to be provided to Council at the commencement of construction of each stage of development to be held against the cost of rehabilitating the site post-operation. The amount of the bank guarantee is to be agreed between the developer and Council, is to represent a reasonable estimation of costs and is to be indexed annually.

75. Twelve (12) months prior to the operations associated with the approved use ceasing on the premises the applicant must provide a Site Rehabilitation Plan (SRP) to Council detailing all planned works and actions proposed and required to be undertaken to rehabilitate the site as far as practical to the condition consistent with the soil classifications identified on Map 2 contained in Appendix A of the approved Land Condition Assessment. The SRP must contain all relevant recommendations from the approved Land Condition Assessment prepared by Range Environmental Consultants.

76. Within 6 months of ceasing electricity generation, the applicant must commence implementation of the Council approved SRP including any recommended works and remediation measures required to rehabilitate the site as far as practical to the condition the site was in prior to the approved use commencing on the premises.

77. Within 6 months of the site rehabilitation works being completed the applicant must submit a Site Conditions Report detailing the condition of the site following the recommended works stipulated in the SRP.
78. Decommissioning activities to be undertaken as part of the SRP must include, though not limited to, the following:
 - a. Disconnection of the Solar Installation from the switchyard
 - b. Disconnection of the PV modules and all the equipment
 - c. Removal of PV modules from trackers and packaged for removal from the site
 - d. Removal of all the buildings, equipment and materials recycled, wherever possible
 - e. Disassembling and recycling of trackers
 - f. Removal and recycling (where appropriate) of steel columns and cabling
 - g. Removal of fencing in accordance to the landowners wishes
 - h. Removal of gravel from internal tracks in accordance to the landowners wishes
 - i. No disposal of any waste material is permitted to municipal landfill facilities.

COM002-18/19 Attachment 1

Part B – Assessment Manager Notes

Assessment Manager Notes

- A. In carrying out the activity or works associated with the development, all reasonable and practical measures are to be taken to minimise releases and the likelihood of releases of contaminants to the environment, except as otherwise provided by the conditions of this development approval.
- B. The approved development must also comply with Council's current Local Laws under the Local Government Act 2009.
- C. The applicant and or owner/s of the land and the person/s responsible for the management of the premise is/are to ensure ongoing compliance with conditions of this Development Permit including Conditions relating to the ongoing use of the premise, and the design and layout of the development.
- D. Pursuant to section 75 of the *Local Government Act 2009*, Council's written approval is required to carry out works on a road, or interfere with a road or its operation. This requirement applies to all Council-controlled roads within its local government area. The process for obtaining approval is set out in Council's *Local Law No. 1 (Administration) 2011*. Approval must be obtained prior to the commencement of the works.
- E. Please note the statements dated 7 March 2019 from Powerlink as an advice agency and attached to this Decision Notice.
- F. Please note the advice surrounding the applicants 'Environmental Obligations' contained in an attachment to the Decision Notice.
- G. Where further development is proposed it is the applicant's / developer's responsibility to ensure further approvals are sought as required by the Banana Shire Planning Scheme.

Engineering

- H. Prior to commencing any of the following construction activities the applicant/developer will be required to obtain a development permit for operational work:
 - i. Internal and external roadworks;
 - ii. earthworks;
 - iii. Internal pathways;
 - iv. stormwater drainage ;
 - v. erosion and sediment control;
 - vi. electricity and communication layout;
 - vii. internal and external lighting; and
 - viii. landscaping.

- I. Operational works designs are to be in accordance with Capricorn Municipal Development Guidelines - CMDG Design Specifications and Standard Drawings (www.cmdg.com.au), unless otherwise stated in a condition of the Development Approval.

Cultural Heritage

- J. This development approval does not authorise any activity that may harm Aboriginal cultural heritage. Under the Aboriginal Cultural Heritage Act 2003 you have a duty of care in relation to such heritage. Section 23(1) provides that, "A person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage".

Council does not warrant that the approved development avoids affecting Aboriginal cultural heritage. It may therefore be prudent for you to carry out searches, consultation, or a cultural heritage assessment to ascertain the presence or otherwise of Aboriginal cultural heritage. The Act and the associated duty of care guidelines explain your obligations in more detail and should be consulted before proceeding.

Declared Pests/Plants

- K. A landowner has an obligation to take reasonable steps to keep their land free of invasive plants and animals in accordance with the Biosecurity Act 2014. Consideration should be given to appropriate treating of invasive plants, where necessary, in the construction and operational phases of the proposed development to meet the obligations under this Act.
- L. Vehicle movement must be managed to prevent the spread of invasive plants. All vehicles used in weed infested areas must either be contained or cleaned to prevent the spread of invasive plant material. Numerous washdown facilities are available within the Shire to help remove weed seeds, soil and other foreign matter from vehicles and machines, and Council staff is available to conduct vehicle inspections.

Mosquito breeding

- M. The site is required to be appropriately drained so that water is not allowed to accumulate or pond in a manner that may allow mosquito breeding, as required under the Public Health Regulation 2005.

Water & Sewerage

- N. The applicant is responsible for ensuring Queensland Fire Services requirements are met with respect to this development which may include but not be limited to the installation/upgrade of holding tanks or pumps as necessary to meet flow and pressure requirements.

- O. Subsequent applications will be required for Operational Works, Building and Plumbing/Drainage Works. Building works are to comply with the *Building Act 1975*, the Building Code of Australia and other relevant authorities.
- P. All new taps and plumbing fixtures on the site are to be installed and maintained with approved water saving devices in accordance with current legislative and Council requirements (AAA rating or better). The installation shall include but not be limited to approved water efficient shower heads, flow restrictors/aerators on internal taps, dual flush toilets, etc. In addition approved water efficient washing machines, dishwashers and other appliances shall be the only appliances installed on the site. Pre and post installation inspections shall be arranged with Council's Plumbing Inspector.
- Q. Hydraulic Services plans will be required to be submitted to Council for Plumbing and Drainage approval. These plans must show all drinking, non-drinking, heated, rainwater, sanitary plumbing, sanitary drainage and trade waste services.

Amenity

- R. Air and light emissions must be appropriately managed to prevent environmental nuisance beyond the boundaries of the property during all stages of the development including earthworks and construction.
- S. Suitable dust suppression should be used, where required during excavation and building works, to reduce the emission of dust or other such emissions from the site.
- T. Artificial illumination should not cause a nuisance to occupants of nearby premises and any passing traffic. Security and flood lighting is to be directed away from adjacent premises to minimise the protrusion of light outside the site.

Water & Stormwater

- U. It is an offence under the *Environmental Protection Act 1994* to discharge sand, silt, mud, oils, chemicals, cement or concrete, paint, thinner, degreaser, rubbish and other such contaminants to a stormwater drain, roadside gutter or a water course.
- V. During construction, stockpiles and areas of bare soil or earth that are likely to become eroded must be adequately protected – by upslope surface water diversion, downslope sediment fencing and/or temporary surface coverings.
- W. Building and construction materials and waste, including bitumen, brick, cement, concrete and plaster, are prescribed water contaminants and as such

must not be stored or disposed of in a water course, stormwater drain, roadside gutter or where they may be expected to wash into such places.

- X. It is recommended that any oil, waste oil, paints and chemicals kept on site are stored within a bund or otherwise in a manner that will prevent spills onto land or into stormwater.
- Y. Appropriate material must be kept on site for the containment and clean-up of spills, and any spills of oils, paints, chemicals etc must be contained and cleaned up as soon as possible.

Waste Management

- Z. It is an offence under the *Waste Reduction and Recycling Act 2011* to leave litter behind or allow litter to blow from site. All waste must be appropriately contained on site prior to removal.
- AA. Trap Gully Landfill is the only approved waste facility within the Banana Shire for the disposal of commercial waste. No commercial waste is to be deposited at other Banana Shire landfills or transfer stations without prior written approval from Council.
- BB. It is an offence under the *Environmental Protection Regulation 2008* to fail to comply with signage or directions at a waste facility.
- CC. Regulated waste (including asbestos) is only to be disposed of at Trap Gully Landfill and an application form must be completed and approved prior to disposal.

COM002-18/19 Attachment 1
Part C - Conditions imposed by Powerlink



7 March 2019

Our Ref: DA3213

RPS Group
PO Box 977
TOWNSVILLE QLD 4810

c.c. Banana Shire Council
PO Box 412
BILOELA QLD 4715

By Email: mark.carter@rpsgroup.com.au
Attention: Mark Carter

By Email: enquiries@banana.qld.gov.au
Attention: Renita Robertson Ref:PR140339-1

Dear Mr Carter

Referral Agency Response (Advice)

(Given under section 9.2 of the Development Assessment Rules)

| Transmission Infrastructure Impacted | |
|--------------------------------------|--|
| Transmission Corridor | Callide A – Rockhampton 275kV Transmission Line and Calvale – Stanwell 275kV Transmission Line Corridor |
| Easement ID | Easement A on RN1185 Dealing 700378683 Easement B on RN1569 Dealing 700378690 Easement B on RP611008 Dealing 601542235 Easement C on RP619533 Dealing 601542237 Easement A on RP611008 Dealing 601542234 Easement B on RP619534 Dealing 601542237 |
| Location Details | |
| Street address | 480 Tomlins Road, Goovigen Lot 28 Tomlins Road, Dixalea Lot 18 Dodsons Road, Dixalea Lot 37 Hibbs Road, Goovigen 460 Dodsons Road, Ulogie Lot 33 Dodsons Road, Ulogie |
| Real property description | Lot 37 RN194, Lot 33 RN210, Lot 32 RN194, Lot 39 RN395, Lot 28 RN211, Lot 18 RN271 Lot 29 RN210 |
| Local government area | Banana Shire Council |
| Application Details | |
| Proposed development: | Material Change of Use for a Public Facility – Other Solar PV Power Station (Solar Farm) and Associated Facility Switchyard and Electrical Transmission Line Reconfiguring a Lot for Subdivision By Agreement (10 Lease Areas |
| Approval sought | Development Permit |

We refer to the above referenced development application which has been referred to Powerlink Queensland in accordance with Section 54 of the *Planning Act 2016*.

In accordance with its jurisdiction under Schedule 10 Part 9 Division 2 of the *Planning Regulation 2016*, Powerlink Queensland is a **Referral Agency (Advice)** for the above development application.

Specifically, the application has been triggered for assessment by Powerlink Queensland because:

1. For **reconfiguring a lot** – all or part of the lot is subject to a transmission entity easement which is part of the transmission supply network (Table 1 1(a))

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PO Box 1193, Virginia, Queensland 4014, Australia
Telephone: (07) 3860 2111 Facsimile: (07) 3860 2100
www.powerlink.com.au

Powerlink Queensland is the registered business name of the
Queensland Electricity Transmission Corporation Limited
ABN 82 078 849 233

2. For **material change of use** – all or part of the premises are subject to a transmission entity easement which is part of the transmission supply network (Table 2 1b)

PLANS AND REPORTS ASSESSED

The following plans and reports have been reviewed by Powerlink Queensland and form the basis of our assessment. Any variation to these plans and reports may require amendment of our advice.

Table 1: Plans and Reports upon which the assessment is based

| Drawing / Report Title | Prepared by | Dated | Reference No. | Version / Issue |
|--|-------------|------------|---------------|-----------------|
| Smokey Creek Solar Project – Subdivision Proposal Plan | RPS | 21/12/2018 | 14039-1-01 | E |
| Smokey Creek Solar Project – Proposed Development Plan | RPS | 28/11/2018 | 140339-1-02 | E |

Powerlink Queensland, acting as a Referral Agency (Advice) under the Planning Regulation 2017 provides its response to the application as attached (**Attachment 1**).

Please treat this response as a properly made submission for the purposes of Powerlink being an eligible advice agency in accordance with the *Planning Act 2016*.

For further information please contact Michaela Tyack Property Services Advisors Team Leader, on (07) 3866 1313 or via email property@powerlink.com.au who will be pleased to assist.

Yours sincerely



for
Brandon Kingwill
MANAGER PROPERTY

Enquiries: Michaela Tyack

Telephone: 07 3866 1313

Enclosures: Annexure 'A'
Submitted Plans

ATTACHMENT 1 – REFERRAL AGENCY (ADVICE) RESPONSE

Powerlink Queensland **supports** this application subject to the inclusion of the following conditions in the Assessment Manager's Decision Notice.

| No. | Condition | Timing | Reason |
|-----|--|---------------|---|
| 1 | The development must be carried out generally in accordance with the reviewed plans detailed in Table 1. | At all times. | To ensure that the development is carried out generally in accordance with the plans of development submitted with the application. |
| 2 | The statutory clearances set out in the <i>Electrical Safety Regulation 2013</i> must be maintained during construction and operation. No encroachment within the statutory clearances is permitted. | At all times. | To ensure that the purpose of the <i>Electrical Safety Act 2002</i> is achieved and electrical safety requirements are met. |
| 3 | Compliance with the terms and conditions of the easement dealing no's. shown in the heading of this letter. | At all times. | To ensure that the existing rights contained in the registered easement dealings are maintained. |
| 4 | Compliance with the generic requirements in respect to proposed works in the vicinity of Powerlink Queensland infrastructure as detailed in the enclosed Annexure "A". | At all times. | To ensure that the purpose of the <i>Electrical Safety Act 2002</i> is achieved and electrical safety requirements are met. To ensure the integrity of the easement is maintained. |

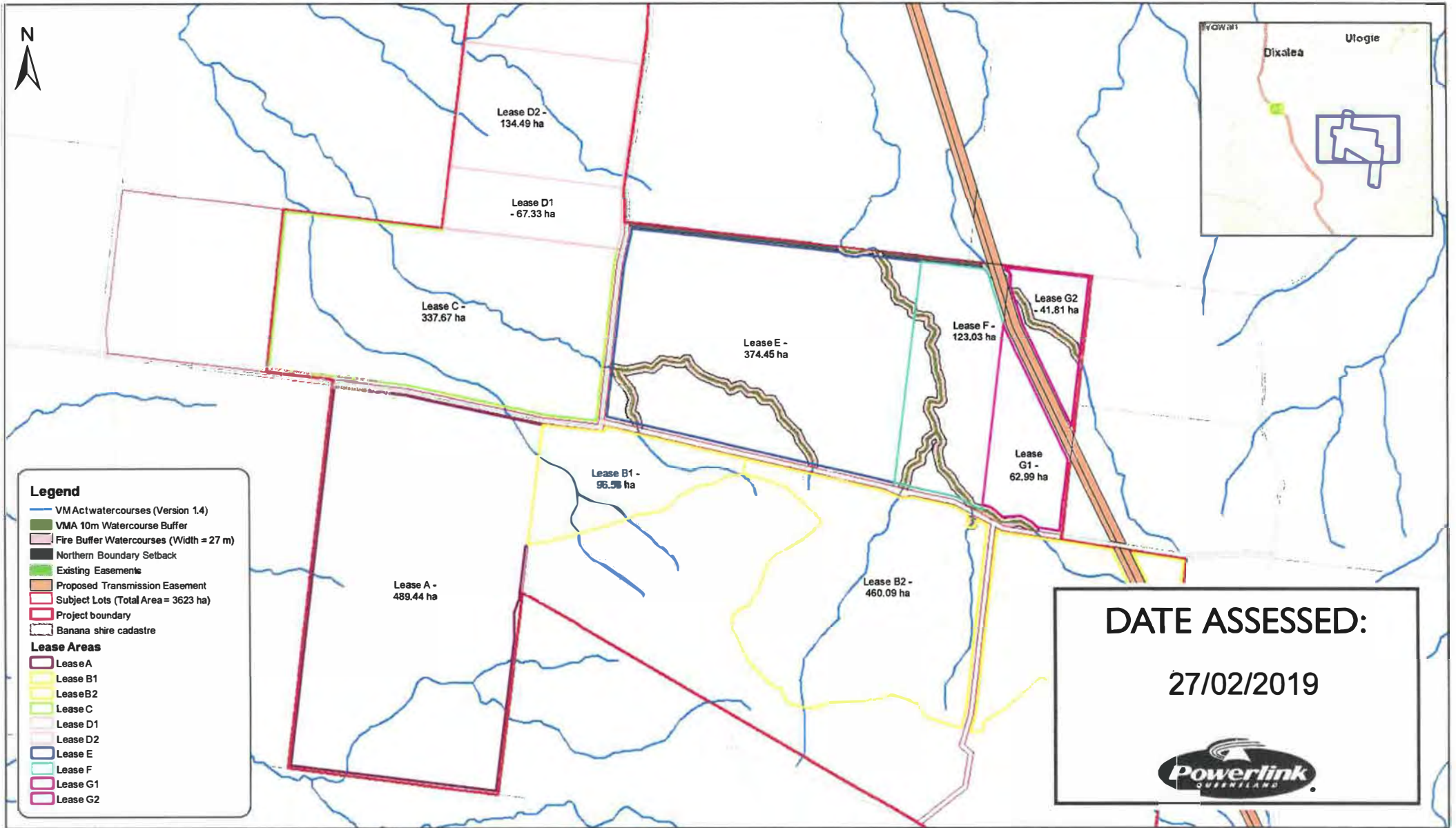
Advice to Council and the Applicant

1. Powerlink and Edify Energy are currently negotiating network connection of the solar farm to the transmission grid. This correspondence does not constitute approval for connection which remains the subject of ongoing technical assessment and commercial negotiations. The exact location of connecting infrastructure is also part of ongoing negotiations. As a result we wish to advise council that the location of switching station and electrical transmission line is likely to change, and as such its location (as shown on the proposed plans) should not form part of the approval.
2. We draw your attention to the obligations & requirements of the Electrical Safety Act 2002 and the safety exclusion zones prescribed by the Electrical Safety Regulations 2013 based on the voltage of the transmission line.

In respect to this application the exclusion zone for untrained persons and for operating plant operated by untrained persons is **6 metres from** the 275,000-volt wires and exposed electrical parts.

Should any doubt exist in maintaining the prescribed clearance to the conductors and electrical infrastructure, then the applicant is obliged under this Act to seek advice from Powerlink Queensland.

ATTACHMENT 2 – ASSESSED PLANS



- Legend**
- VM Act watercourses (Version 1.4)
 - VMA 10m Watercourse Buffer
 - Fire Buffer Watercourses (Width = 27 m)
 - Northern Boundary Setback
 - Existing Easements
 - Proposed Transmission Easement
 - Subject Lots (Total Area = 3623 ha)
 - Project boundary
 - Banana shire cadastral
- Lease Areas**
- Lease A
 - Lease B1
 - Lease B2
 - Lease C
 - Lease D1
 - Lease D2
 - Lease E
 - Lease F
 - Lease G1
 - Lease G2



DATE ASSESSED:
27/02/2019




RPS Australia East Pty Ltd
 ACN 140 292 762
 ABN 44 140 292 76


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 370 Flinders Street
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 Townsville QLD 4810
 T +61 7 4724 4244
 W rpsgroup.com.au

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| | | |
|--------------------------------|-----------------|--------------------|
| Plan Ref 140339-1-01 | Rev E | Sheet A3 |
|--------------------------------|-----------------|--------------------|

PROJECT
SMOKY CREEK SOLAR PROJECT

SUBDIVISION PROPOSAL PLAN



Reference Scale: 1:28,000

Source: Department of Natural Resources & Mines - Cadastral data fortnightly extract Townsville Local Government Area © State of Queensland (Department of Natural Resources and Mines) 2014.
 Vegetation management watercourse and drainage feature map (1:100 000 and 1:250 000) -version 1.4 © State of Queensland (Department of Natural Resources and Mines) 2015.
 Wetland protection area - high ecological significance wetland © State of Queensland (Department of Environment and Heritage Protection) 2015
 Vegetation management - essential habitat map - version 4.34 © State of Queensland (Department of Natural Resources and Mines) 2016

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information presented is free from error or omission. Please verify the accuracy of all information prior to use.

Coordinate System: GDA 1994 MGA Zone 56
 Projection: Transverse Mercator
 Datum: GDA 1994

| | | |
|--|------------|---------------------|
| Document Name: 140339-1-01RevE_SubdivisionProposalPlan | | |
| Date: 21/12/2018 | Author: AF | Project Manager: MC |



DATE ASSESSED:

27/02/2019



Infrastructure setback 30 m from northern boundary

Infrastructure setback a minimum of 27 m from all regrowth watercourses.

Infrastructure setback a minimum of 27 m from all remnant and high-value regrowth vegetation.

Legend

- Extent Of Built Infrastructure
- Battery Storage
- Switchyard
- Access points (arrows point to accessed property)
- Site Office
- Existing Easements (100m wide)
- VMA 10m Watercourse Buffer
- VM Act watercourses (Version 1.4)
- Proposed Transmission Easement
- Project boundary
- Subject Lots (Total Area = 3623 ha)
- Developable area (cleared area) (total area = 2113 ha)

Category C Regrowth Vegetation

- Endangered-dominant
- Of Concern-dominant
- Of Concern-subdominant

Regional ecosystem mapping (V10.1)

- Endangered-dominant
- Of Concern-subdominant
- Least Concern
- non-remnant
- Banana shire cadastre



RPS Australia East Pty Ltd
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PROJECT
SMOKY CREEK SOLAR PROJECT

PROPOSED DEVELOPMENT PLAN



Reference Scale: 1:30,000

Source: Department of Natural Resources & Mines - Cadastral data fortnightly extract Townsville Local Government Area © State of Queensland (Department of Natural Resources and Mines) 2014.
 Vegetation management watercourse and drainage feature map (1:100 000 and 1:250 000) - version 1.4 © State of Queensland (Department of Natural Resources and Mines) 2015.
 Wetland protection area - high ecological significance wetland © State of Queensland (Department of Environment and Heritage Protection) 2015.
 Vegetation management - essential habitat map - version 4.34 © State of Queensland (Department of Natural Resources and Mines) 2016

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Coordinate System: GDA 1994 MGA Zone 56
 Projection: Transverse Mercator
 Datum: GDA 1994

Document Name: 140339-1-02RevE_ProjectProposalPlan

Date: 28/11/2018

Author: AF

Project Manager: MC

| | | |
|-------------|-----|-------|
| Plan Ref | Rev | Sheet |
| 140339-1-02 | E | A3 |

ATTACHMENT 3 – ANNEXURE A

ANNEXURE A – GENERIC REQUIREMENTS

The conditions contained in this Annexure have been compiled to assist persons (the applicant) intending to undertake work within the vicinity of high-voltage electrical installations and infrastructure owned or operated by Powerlink. The conditions are supplementary to the provisions of the Electrical Safety Act 2002, Electrical Safety Regulation 2013 and the Terms and Conditions of Registered Easements and other forms of Occupational Agreements hereinafter collectively referred to as the “Easement”. Where any inconsistency exists between this Annexure and the Easement, the Easement shall take precedence.

1. POWERLINK INFRASTRUCTURE

You may not do any act or thing which jeopardises the foundations, ground anchorages, supports, towers or poles, including (without limitation) inundate or place, excavate or remove any soil, sand or gravel within a distance of twenty (20) metres surrounding the base of any tower, pole, foundation, ground anchorage or support.

2. STRUCTURES

No structures should be placed within twenty (20) metres of any part of a tower or structure foundation or within 5m of the conductor shadow area. Any structures on the easement require prior written consent from Powerlink.

3. EXCLUSION ZONES

Exclusion zones for operating plant are defined in Schedule 2 of the Electrical Safety Regulation 2013 for Untrained Persons. All Powerlink infrastructure should be regarded as “electrically live” and therefore potentially dangerous at all times.

In particular your attention is drawn to Schedule 2 of the Electrical Safety Regulation 2013 which defines exclusion zones for untrained persons in charge of operating plant or equipment in the vicinity of electrical facilities. If any doubt exists in meeting the prescribed clearance distances from the conductors, the applicant is obliged under this Act to seek advice from Powerlink.

4. ACCESS AND EGRESS

Powerlink shall at all times retain the right to unobstructed access to and egress from its infrastructure. Typically, access shall be by 4WD vehicle.

5. APPROVALS (ADDITIONAL)

Powerlink's consent to the proposal does not relieve the applicant from obtaining statutory, landowner or shire/local authority approvals.

6. MACHINERY

All mechanical equipment proposed for use within the easement must not infringe the exclusion zones prescribed in Schedule 2 of the Electrical Safety Regulation 2013. All operators of machinery, plant or equipment within the easement must be made aware of the presence of live high-voltage overhead wires. It is recommended that all persons entering the Easement be advised of the presence of the conductors as part of on site workplace safety inductions. The use of warning signs is also recommended.

7. EASEMENTS

All terms and conditions of the easement are to be observed. Note that the easement takes precedence over all subsequent registered easement documents. Copies of the easement together with the plan of the Easement can be purchased from the Department of Environment & Resource Management.

8. EXPENDITURE AND COST RECOVERY

Should Powerlink incur costs as a result of the applicant's proposal, all costs shall be recovered from the applicant.

Where Powerlink expects such costs to be in excess of \$10 000.00, advanced payments may be requested.

9. EXPLOSIVES

Blasting within the vicinity (500 metres) of Powerlink infrastructure must comply with AS 2187. Proposed blasting within 100 metres of Powerlink infrastructure must be referred to Powerlink for a detailed assessment.

10. BURNING OFF OR THE LIGHTING OF FIRES

We strongly recommend that fires not be lit or permitted to burn within the transmission line corridor and in the vicinity of any electrical infrastructure placed on the land. Due to safety risks Powerlink's written approval should be sought.

11. GROUND LEVEL VARIATIONS**Overhead Conductors**

Changes in ground level must not reduce statutory ground to conductor clearance distances as prescribed by the Electrical Safety Act 2002 and the Electrical Safety Regulation 2013.

Underground Cables

Any change to the ground level above installed underground cable is not permitted without express written agreement of Powerlink.

12. VEGETATION

Vegetation planted within an easement must not exceed 3.5 metres in height when fully matured. Powerlink reserves the right to remove vegetation to ensure the safe operation of the transmission line and, where necessary, to maintain access to infrastructure.

13. INDEMNITY

Any use of the Easement by the applicant in a way which is not permitted under the easement and which is not strictly in accordance with Powerlink's prior written approval is an unauthorised use. Powerlink is not liable for personal injury or death or for property loss or damage resulting from unauthorized use. If other parties make damage claims against Powerlink as a result of unauthorized use then Powerlink reserves the right to recover those damages from the applicant.

14. INTERFERENCE

The applicant's attention is drawn to s.230 of the Electricity Act 1994 (the "Act"), which provides that a person must not wilfully, and unlawfully interfere with an electricity entity's works. "Works" are defined in s.12 (1) of the Act. The maximum penalty for breach of s.230 of the Act is a fine equal to 40 penalty units or up to 6 months imprisonment.

15. REMEDIAL ACTION

Should remedial action be necessary by Powerlink as a result of the proposal, the applicant will be liable for all costs incurred.

16. OWNERS USE OF LAND

The owner may use the easement land for any lawful purpose consistent with the terms of the registered easement; the conditions contained herein, the Electrical Safety Act 2002 and the Electrical Safety Regulation 2013.

17. ELECTRIC AND MAGNETIC FIELDS

Electric and Magnetic Fields (EMF) occur everywhere electricity is used (e.g. in homes and offices) as well as where electricity is transported (electricity networks).

Powerlink recognises that there is community interest about Electric and Magnetic Fields. We rely on expert advice on this matter from recognised health authorities in Australia and around the world. In Australia, the Federal Government agency charged with responsibility for regulation of EMFs is the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). ARPANSA's *Fact Sheet – Magnetic and Electric Fields from Power Lines*, concludes:

"On balance, the scientific evidence does not indicate that exposure to 50Hz EMF's found around the home, the office or near powerlines is a hazard to human health."

Whilst there is no scientifically proven causal link between EMF and human health, Powerlink nevertheless follows an approach of "prudent avoidance" in the design and siting of new powerlines. This includes seeking to locate new powerline easements away from houses, schools and other buildings, where it is practical to do so and the added cost is modest.

The level of EMF decreases rapidly with distance from the source. EMF readings at the edge of a typical Powerlink easement are generally similar to those encountered by people in their daily activities at home or at work. And in the case of most Powerlink lines, at about 100 metres from the line, the EMF level is so small that it cannot be measured.

Powerlink is a member of the ENA's EMF Committee that monitors and compiles up-to-date information about EMF on behalf of all electricity network businesses in Australia. This includes subscribing to an international monitoring service that keeps the industry informed about any new developments regarding EMF such as new research studies, literature and research reviews, publications, and conferences.

We encourage community members with an interest in EMF to visit ARPANSA's website: www.arpansa.gov.au Information on EMF is also available on the ENA's website: www.ena.asn.au

Attachment 2

Planning Act 2016 Extract on Appeal Rights

Part 1 Appeal rights

229 Appeals to tribunal or P&E Court

(1) Schedule 1 states—

(a) matters that may be appealed to—

(i) either a tribunal or the P&E Court; or

(ii) only a tribunal; or

(iii) only the P&E Court; and

(b) the person—

(i) who may appeal a matter (the appellant); and

(ii) who is a respondent in an appeal of the matter; and

(iii) who is a co-respondent in an appeal of the matter; and

(iv) who may elect to be a co-respondent in an appeal of the matter.

(2) An appellant may start an appeal within the appeal period.

(3) The appeal period is—

(a) For an appeal by a building advisory agency—10 business days after a decision notice for the decision is given to the agency; or

(b) For an appeal against a deemed refusal—at any time after the deemed refusal happens; or

(c) for an appeal against a decision of the Minister, under chapter 7, part 4, to register premises or to renew the registration of premises—20 business days after a notice is published under section 269(3)(a) or (4); or

(d) for an appeal against an infrastructure charges notice—20 business days after the infrastructure charges notice is given to the person; or

(e) for an appeal about a deemed approval of a development application for which a decision notice has not been given—30 business days after the applicant gives the deemed approval notice to the assessment manager; or

(f) for any other appeal—20 business days after a notice of the decision for the matter, including an enforcement notice, is given to the person. Note— See the P&E Court Act for the court's power to extend the appeal period.

(4) Each respondent and co-respondent for an appeal may be heard in the appeal.

(5) If an appeal is only about a referral agency's response, the assessment manager may apply to the tribunal or P&E Court to withdraw from the appeal.

(6) To remove any doubt, it is declared that an appeal against an infrastructure charges notice must not be about—

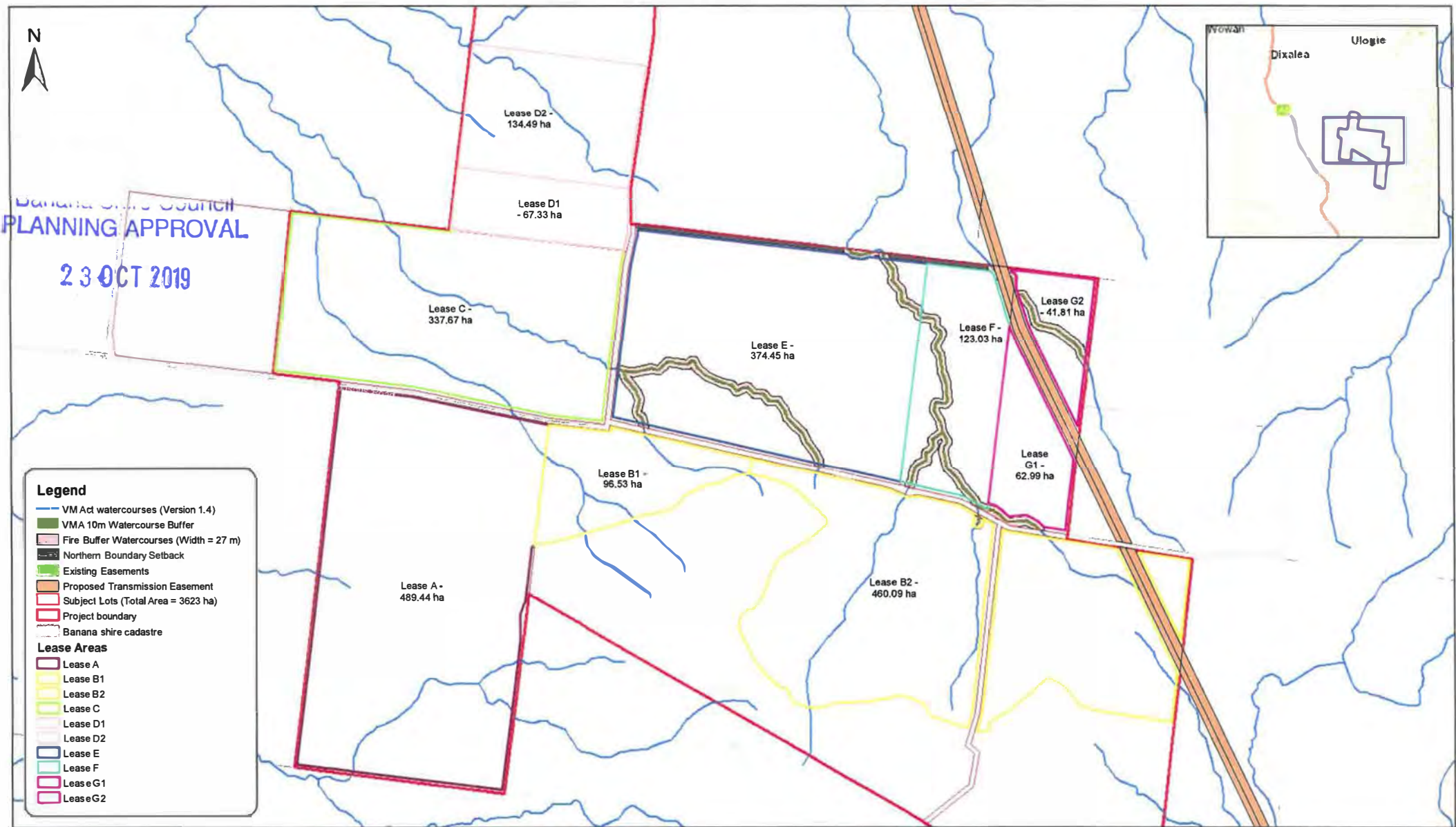
(a) the adopted charge itself; or

(b) for a decision about an offset or refund—

(i) the establishment cost of trunk infrastructure identified in a LGIP; or

(ii) The cost of infrastructure decided using the method included in the local government's charges resolution.

Attachment 3
Approved Drawings



RPS Australia East Pty Ltd
ACN 140 292 762
ABN 44 140 292 76

Level 5, Central Plaza
370 Flinders Street
(PO Box 977)
Townsville QLD 4810
T +61 7 4724 4244
W rpsgroup.com.au

PROJECT
SMOKY CREEK SOLAR PROJECT

SUBDIVISION PROPOSAL PLAN



Reference Scale: 1:28,000

Source: Department of Natural Resources & Mines - Cadastral data fortnightly extract Townsville Local Government Area © State of Queensland (Department of Natural Resources and Mines) 2014.
Vegetation management watercourse and drainage feature map (1:100 000 and 1:250 000) - version 1.4 © State of Queensland (Department of Natural Resources and Mines) 2015.
Wetland protection area - high ecological significance wetland © State of Queensland (Department of Environment and Heritage Protection) 2015
Vegetation management - essential habitat map - version 4.34 © State of Queensland (Department of Natural Resources and Mines) 2016

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994

Document Name: 140339-1-01RevE_SubdivisionProposalPlan

Date: 21/12/2018

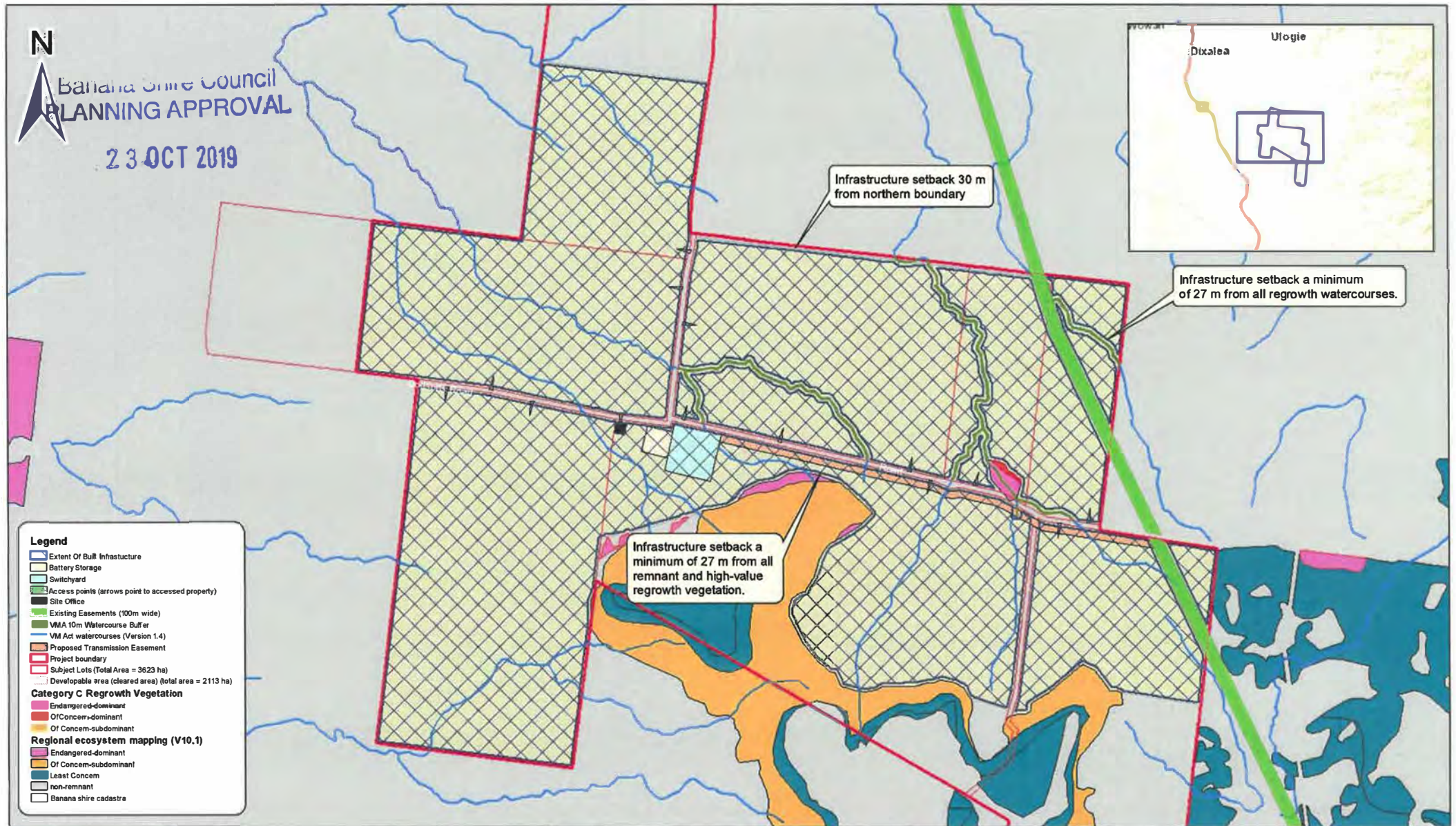
Author: AF

Project Manager: MC

Plan Ref
140339-1-01

Rev
E

Sheet
A3



- Legend**
- Extent Of Bulk Infrastructure
 - Battery Storage
 - Switchyard
 - Access points (arrows point to accessed property)
 - Site Office
 - Existing Easements (100m wide)
 - VM A 10m Watercourse Buffer
 - VM Act watercourses (Version 1.4)
 - Proposed Transmission Easement
 - Project boundary
 - Subject Lots (Total Area = 3623 ha)
 - Developable area (cleared area) (total area = 2113 ha)
- Category C Regrowth Vegetation**
- Endangered-dominant
 - Of Concern-dominant
 - Of Concern-subdominant
- Regional ecosystem mapping (V10.1)**
- Endangered-dominant
 - Of Concern-subdominant
 - Least Concern
 - non-remnant
 - Banana shire cadastra



RPS Australia East Pty Ltd
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ABN 44 140 292 76

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W rpsgroup.com.au

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PROJECT

SMOKY CREEK SOLAR PROJECT

PROPOSED DEVELOPMENT PLAN



Reference Scale: 1:30,000

Source: Department of Natural Resources & Mines - Cadastral data fortnightly extract Townsville Local Government Area © State of Queensland (Department of Natural Resources and Mines) 2014.
Vegetation management watercourse and drainage feature map (1:100 000 and 1:250 000) - version 1.4 © State of Queensland (Department of Natural Resources and Mines) 2015.
Wetland protection area - high ecological significance wetland © State of Queensland (Department of Environment and Heritage Protection) 2015
Vegetation management - essential habitat map - version 4.34 © State of Queensland (Department of Natural Resources and Mines) 2015

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994

Document Name: 140339-1-02RevE_ProjectProposalPlan

Date: 28/11/2018

Author: AF

Project Manager: MC

Plan Ref
140339-1-02

Rev
E

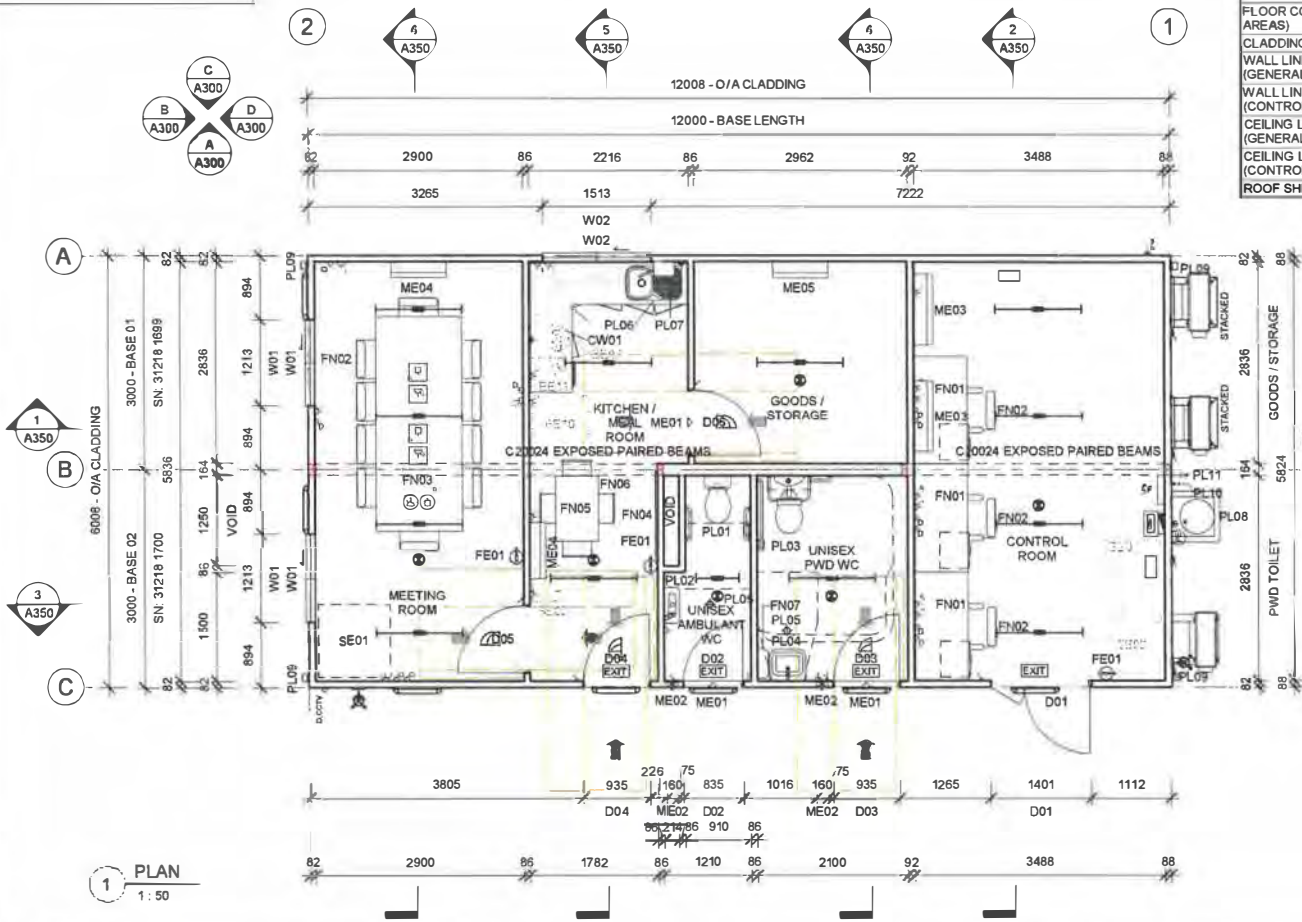
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A3

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SIGNATURE:
DATE: 10/04/2018 10:23:19 AM

| FINISHES SCHEDULE | |
|--|--|
| FLOOR COVERING (GENERAL) | 2mm VINYL |
| FLOOR COVERING (WC AREAS) | 2mm VINYL - SLIP RESISTANT - 150mm COVERED |
| CLADDING - EXTERNAL | COLORBOND MAXIRIB - HORIZONTAL |
| WALL LINING - INTERNAL (GENERAL) | 3.6mm POLYESTER COATED PLYWOOD |
| WALL LINING - INTERNAL (CONTROL ROOM) | 10mm PLASTERBOARD - PAINTED |
| CEILING LINING - INTERNAL (GENERAL) | 3.6mm COATED PLYWOOD |
| CEILING LINING - INTERNAL (CONTROL ROOM) | 10mm PLASTERBOARD - PAINTED |
| ROOF SHEETING | 0.42mm BMT SUPERDEK COLORBOND ROOFING |

| | |
|---------------------------------|-----|
| WIND REGION: | C |
| TERRAIN CATEGORY: | 2 |
| IMPORTANCE LEVEL: | 2 |
| SHIELDING FACTOR: | NS |
| BUILDING CLASS: | 5 |
| FLOOR LOADS (DISTRIBUTED (kPa): | 3.0 |
| LOADS (CONCENTRATED (kN): | 2.7 |
| CLIMATE ZONE: | 1 |

FLOOR LOADS CALCULATED FROM AS1170.1 - 2002.
WIND SPEED CALCULATED FROM AS1170.2 - 2011.
BUILDING CLASS, IMPORTANCE LEVEL, PROBABILITY OF EXCEEDANCE, WIND REGION, TERRAIN CATEGORY, TOPOGRAPHIC CLASSIFICATION, SHIELDING FACTOR, CLIMATE ZONE & NORTH POINT ARE ASSUMED UNLESS OTHERWISE ADVISED BY CLIENT.



| ITEM LIST | | |
|-----------------------------|-----|---|
| ITEM | QTY | DESCRIPTION |
| Casework | | |
| CW01 | 1 | BENCHTOP c/w SPLASHBACKS (150H), END PANELS, CUPBOARDS/4 DRAWERS & CUTLERY INSERT UNDER, LAMINATED, L SHAPED - 32mm, 600D - 1832x2216L - 900H |
| Electrical Equipment | | |
| EE01 | 1 | SECURITY PANEL - 300W x 300D x 2100H - SUPPLIED BY OTHERS INCLUDING POWER SUPPLY |
| EE02 | 1 | SECURITY PANEL - 300W x 300D x 2100H - SUPPLIED BY OTHERS INCLUDING POWER SUPPLY |
| EE03 | 1 | CORPORATE SERVICES ITT PANEL (PPC) - SUPPLIED BY OTHERS INCLUDING POWER SUPPLY |
| EE05 | 1 | SCADA PANEL - SUPPLIED BY OTHERS INCLUDING POWER SUPPLY |
| EE06 | 1 | COOKTOP - NOT PROVIDED |
| EE07 | 1 | RANGE HOOD - NOT PROVIDED |
| EE08 | 1 | SANDWICH TOASTER - NOT PROVIDED |
| EE09 | 1 | MICROWAVE - 40 Ltr - NOT PROVIDED |
| EE10 | 1 | FRIDGE SPACE - FRIDGE NOT PROVIDED |
| EE11 | 1 | KETTLE - NOT PROVIDED |
| Fire Alarm Devices | | |
| FE01 | 3 | FIRE EXTINGUISHER - 9.0Kg ABE c/w SIGNAGE |
| Furniture | | |
| FN01 | 3 | DESK c/w 3 DRAWERS - 1500 x 750 |
| FN02 | 13 | CHAIR - SWIVEL w/ ARMS |
| FN03 | 1 | TABLE, CONFERENCE - 3000 x 1200 |
| FN04 | 1 | PINBOARD - 1200(H) x 900(W), FITTED 1800 TO TOP |
| FN05 | 1 | TABLE, MELAMINE - 900L x 600W |
| FN06 | 4 | CHAIR, PVC, STACKABLE |
| FN07 | 1 | SHELF FOR HAND BASIN, COMPLIANT TO AS1428.1: 2009 |
| Plumbing Fixtures | | |
| PL01 | 1 | WC - AMBULANT c/w GRABRAILS, TOILET ROLL HOLDER & COAT HOOK |
| PL02 | 1 | HAND BASIN, COMPACT, STAINLESS STEEL (HOT & COLD FLICKMIXER) w/ MIRROR |
| PL03 | 1 | WC SUITE, AS1428.1: 2009 COMPLIANT - c/w TOILET ROLL HOLDER, GRAB RAILS & BACKREST |
| PL04 | 1 | HAND BASIN, COMPLIANT TO AS1428.1: 2009 - c/w OVERSIZED MIRROR OVER |
| PL05 | 2 | FLOOR WASTE |
| PL06 | 1 | SINK c/w FLICKMIXER (HOT & COLD), 1 BOWL, 1 DRAIN - 780mm L ONG |
| PL07 | 1 | AUTOBOILER - 5.0Ltr w/ IN-BUILT TIMER |
| PL08 | 1 | HOT WATER SYSTEM, MOUNTED EXTERNALLY - 125Ltr, 1x3.6kW |
| PL09 | 4 | DOWNPIPE - 100 x 75mm c/w 3 STRAPS |
| PL10 | 1 | WATER INLET |
| PL11 | 1 | WASTE MANIFOLD OUTLET |
| Specialty Equipment | | |
| SE01 | 1 | MULTI FUNCTION PRINTER SPACE - PRINTER NOT PROVIDED |
| SE02 | 1 | WATER COOLER DISPENSER - FLOOR STANDING - NOT PROVIDED |

GENERAL NOTES

- ELECTRICAL EQUIPMENT (SECURITY / SCADA / ETC. INC. ELECTRICAL POWER PROVISIONS) IN CONTROL ROOM BY OTHERS
- NO ALLOWANCE OF FIRE RATING (FLOOR & PENETRATIONS / WALLS / CEILING / DOORS) TO CONTROL ROOM
- NO ALLOWANCE OF WALL PENETRATIONS
- EARTHING PLATES (50x5mm) ONLY ON SKID BEAMS BY ATCO (EARTHING BAR, TABS & RODS CONNECTIONS SUPPLY & INSTALL ON SITE BY CLIENT)
- DRY FIRE / FIRE DETECTION SYSTEM (INCLUDED)
- ADDITIONAL FIRE FIGHTING EQUIPMENT BY OTHERS
- NO ALLOWANCE FOR FIRE SEPARATION FROM EXISTING BUILDINGS ON SITE

NOTE:
 1. REFER TO SHEET E210 FOR ADDITIONAL ELECTRICAL NOTES.

PLANNING APPROVAL
 23 OCT 2019

| | |
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| | |
| SUPPLIER/ CONTRACTOR PROJECT DELIVERABLE REVIEW | |
| RCR Doc. No: | |
| 1 | V ACCEPTED WORK MAY PROCEED |
| 2 | ACCEPTED AS NOTED WORK MAY PROCEED - REVISE AND RESUBMIT |
| 3 | NOT ACCEPTED WORK MAY NOT PROCEED - REVISE AND RESUBMIT |
| 4 | REVIEW NOT REQUIRED WORK MAY PROCEED |
| Signed: Richard Pawlowski Date: 20/04/2018 | |
| Acceptance for other than in any of these categories in no way releases the Supplier/Contractor of any of its legal or contractual obligations | |

| REV | DESCRIPTION | DATE | BY | CHKD |
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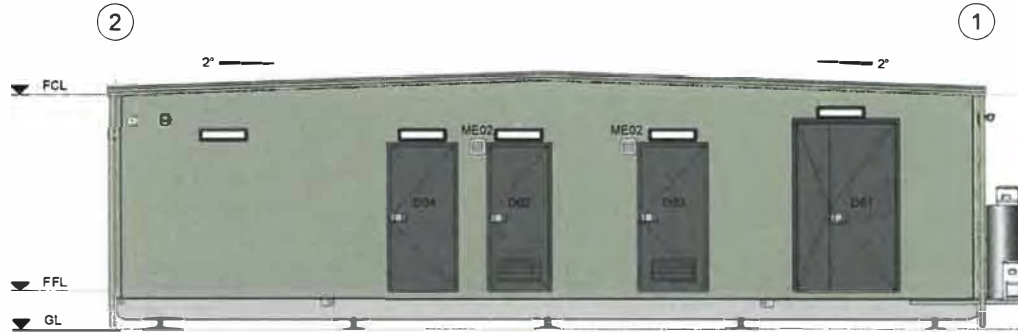
ATCO

ATCO BUILDERS & CONSTRUCTORS PTY. LTD.
 148 LUMBERGROVE DRIVE
 CHESTERFIELD, QLD 4113
 P.O. BOX 1171, BIRKENHEAD, QLD 4119
 E-mail: atco@atco.com.au

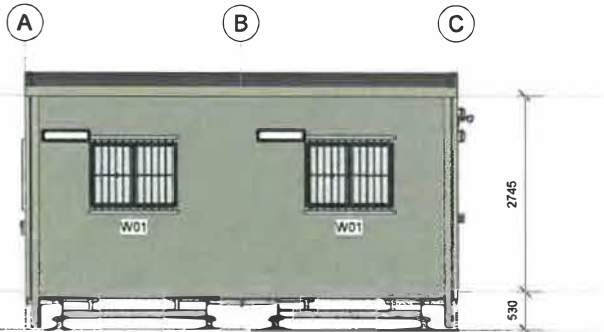
PHONE: (07) 3412 8900
 FAX: (07) 3412 8979
 ABN: 71 001 097 338

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| DESCRIPTION | 12.0 x 6.0m OPERATIONS / MAINTENANCE BUILDING | SCALE AT A2 | 1:50 |
| ADDRESS | DAYDREAM SOLAR FARM LOT 2 STRATHMORE RD 9 SPRINGLANDS QLD 4804 RPD: 2/PP742329 | DRAWING NUMBER | 180217A-A200 |
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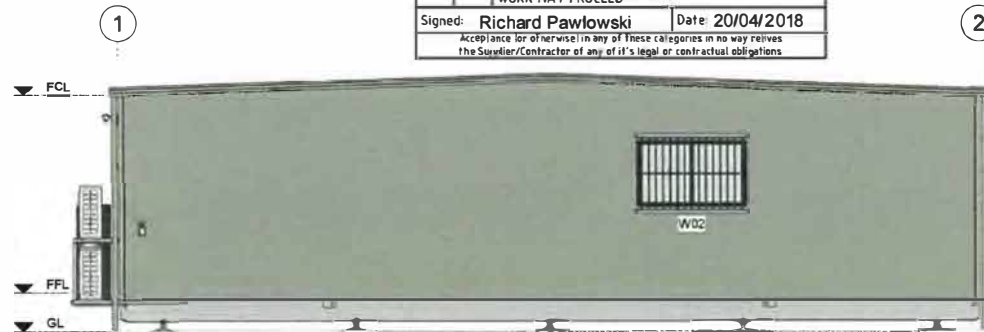


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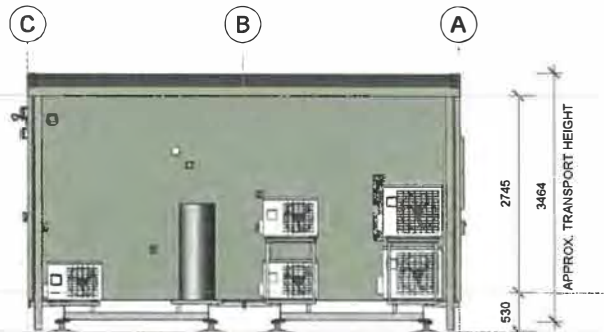


B ELEVATION
A200 1:50

| | |
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| SUPPLIER / CONTRACTOR PROJECT DELIVERABLE REVIEW | |
| RCR Doc. No: | |
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| 2 | <input type="checkbox"/> ACCEPTED AS NOTED WORK MAY PROCEED - REVISE AND RESUBMIT |
| 3 | <input type="checkbox"/> NOT ACCEPTED WORK MAY NOT PROCEED - REVISE AND RESUBMIT |
| 4 | <input type="checkbox"/> REVIEW NOT REQUIRED WORK MAY PROCEED |
| Signed: Richard Pawlowski | Date: 20/04/2018 |
| Acceptance for otherwise in any of these categories in no way relieves the Supplier/Contractor of any of it's legal or contractual obligations | |



C ELEVATION
A200 1:50



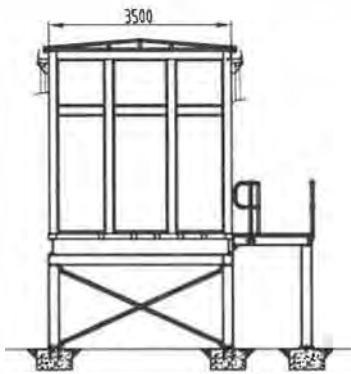
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Banana Shire Council
PLANNING APPROVAL

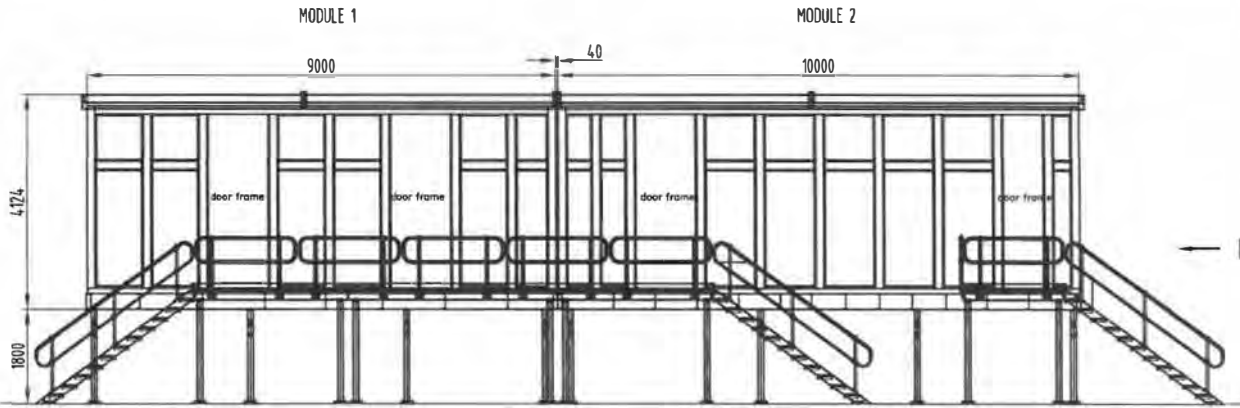
23 OCT 2019

QC02-ST-ATC-DWG-0003

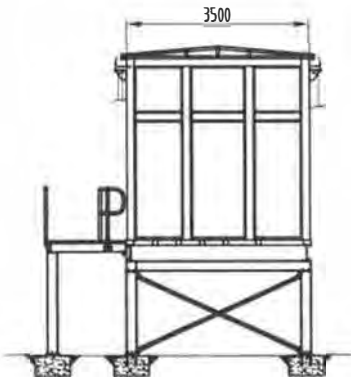
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| COMPROMISE OF SET OUTS, LEVELS AND OR FINAL DIMENSIONS ON THE PROS TO SHOWN DIMENSIONS AND PRESENTATION QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY ISO-QUALITY OPERATIONAL PERSONNEL No. 531 *DO NOT SCALE FROM THIS DRAWING FOR DIMENSIONS ONLY OVERALL DIMENSIONS EXCLUDE EXTERNAL CLADDING UNLTD. *CHECK PROTECTIVE COATING WITH SUPPLIER'S COMPANY FROM CODE OF PRACTICE AND APPLICABLE STANDARDS REQUIREMENTS THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES & LUBRICANTS PTY LTD. (ATCO). IT MAY NOT BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT WRITTEN AUTHORITY. | REV C LAYOUT CHANGED AS PER CLIENT. REPAIRED 24mm PLASTER WALLS IN BOLLINGS W/ 100mm PLASTERBOARD IN CONTR. CLR. ONLY. REPLACED TOFF LINEX LUBRICANT W/ W/ UNISKA PHD INC. ADDED MASTER HEATING (2 SETS IN CAPSULE (2 UNITS) INSTEAD (REQ BY CLIENT). ADDED 2 HA MILES EXTERNAL DOOR HARDWARE RECOMMENDED ELECTRICAL PROVISIONS/SPECIFURES | DATE 12.04.18 BY VI ST | SERIAL NUMBERS: 312181699-1700 | | CLIENT RCR O'DONNELL GRIFFIN PTY LTD DESCRIPTION 12.0 x 6.0m OPERATIONS / MAINTENANCE BUILDING PROJECT NO. 3500029510 SCALE AT A1 1:50 | TITLE ELEVATIONS DRAWING NUMBER 180217A -A300 REVISION 0 |
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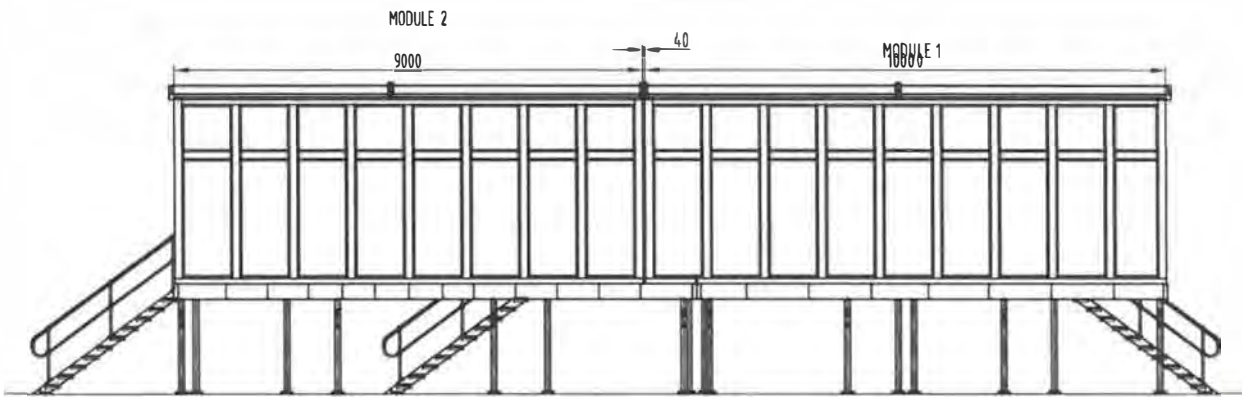
VIEW A ELEVATION



FRONT ELEVATION



VIEW B ELEVATION



BACK ELEVATION

Banana Shire Council
PLANNING APPROVAL

23 OCT 2019

| | |
|--|---|
| RCR Infrastructure <small>ODONNELL GRIFFIN</small> | |
| SUPPLIER / CONTRACTOR PROJECT DELIVERABLE REVIEW | |
| RCR Doc. No: | |
| 1 | ACCEPTED WORK MAY PROCEED |
| 2 | ACCEPTED AS NOTED WORK MAY PROCEED - REVISE AND RESUBMIT |
| 3 | NOT ACCEPTED WORK MAY NOT PROCEED - REVISE AND RESUBMIT |
| 4 | REVIEW NOT REQUIRED WORK MAY PROCEED |

REVIEWED
By *kevin.sorath* at 11:49 am, Nov 20, 2017. Default signature for this VDP folder. Uncontrolled signature.



| NO. | REV. | DATE | DESCRIPTION | BY | APP. |
|-----|------|----------|------------------------|----|------|
| 1 | A | 16.10.17 | FIRST ISSUE FOR REVIEW | SK | |

SCALING OF THIS DRAWING IS NOT RECOMMENDED.



| | |
|----------------|---|
| CLIENT | EDIFY ENERGY |
| PROJECT | DAYDREAM SOLAR FARM PROJECT 33kV SWITCHROOM AND CONTROL ROOM |
| DRAWING TITLE | ELEVATION |
| PROJECT NO. | QC02 |
| DRAWING STATUS | FOR REVIEW |

| | |
|------------------|----------------------|
| DRAWING NO. | QC02-ST-TGD-DET-0001 |
| CITY DRAWING NO. | P170323-ORG-BLD-005 |
| SHEET NO. | SHEET 1 OF 1 |
| REVISION | A |

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23 OCT 2019

WIND RATING C2.5

NAILING & ANCHORING ACCORDING TO MANUFACTURERS SPECIFICATIONS.

ALL FIXINGS, TIE DOWNS & BRACING IN ACCORDANCE WITH THE BUILDING CODE OF AUSTRALIA & AS 1684.3-2006 RESIDENTIAL TIMBER-FRAMED CONSTRUCTION.

HAMILTON SOLAR FARM PTY LTD



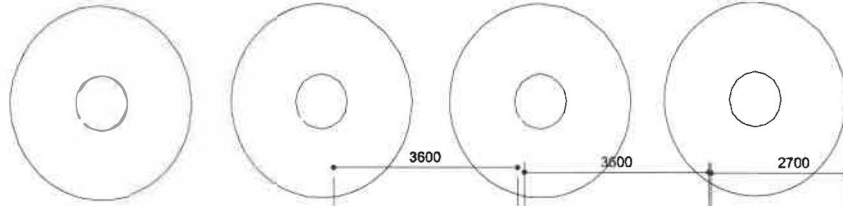
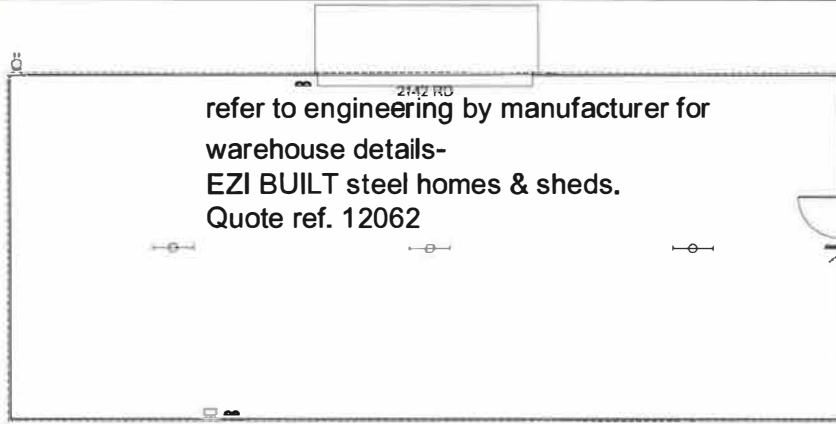
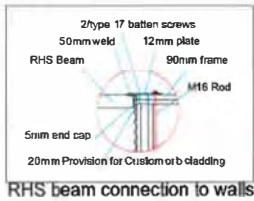
Development Approval

Decision Notice No

50289

Devcert

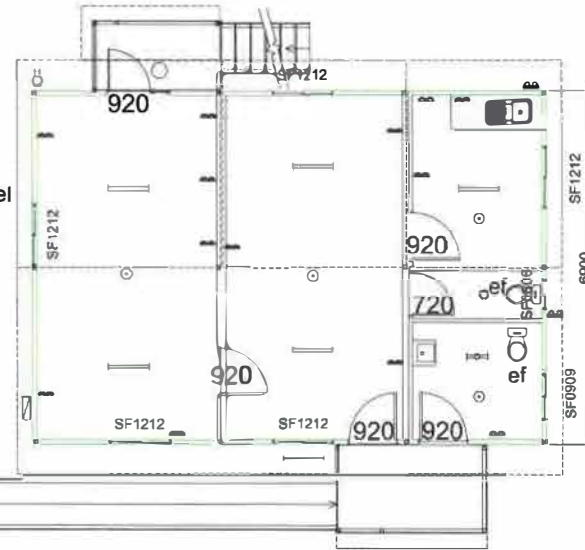
Development Approval for Building Work is granted under the Building Act 1975, subject to conditions of Decision Notice.



- smoke detector
- ⌘ DPP
- ⌘ DPP
- ⌘ DPP

1200x600 surface LED panel
600x600 surface LED panel

ef exhaust fan



GROUND FLOOR PLAN
Scale - 1:100

GENERAL NOTES

| No. | REVISION/ISSUE | DATE |
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ALL DRAWINGS ARE THE PROPERTY OF THE DESIGNER AND THEY ARE NOT TO BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN CONSENT OF THE DESIGNER.
CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE COMMENCING WORK AND TO REPORT ANY DISCREPANCIES TO THE DESIGNER.

ROLCON PTY LTD.
332 BAYSWATER ROAD,
GARbutt, 4814
Mobile 0411 646 472
Email don@rolfhomes.com.au

PROJECT:
SOLAR COLLINSVILLE
COLLINSVILLE

CLIENT:
SOLAR FARMS

DRAWING:
NILSEN 60086

SCALE: 1:100 DATE: 00/00/00

DRAWN BY: **DAJR** SHEET:
CHECKED BY: **4.1**
APPROVED BY:

Timber Wall Framing Table

| Module Width | Max RLW | Common Stud 2600 high | Common Stud 3300 high | Top Plate | Bottom Plate |
|--------------|---------|--------------------------------|-------------------------------|-----------------|-----------------|
| 3600 | 2400 | 1/90 x 35MGP10 At 1450 ctrs | 1/90 x 35MGP12 At 300 ctrs | 1/90 x 35 MGP12 | 1/90 x 35 MGP10 |
| 3800 | 2500 | 1/90 x 35MGP10 At 1450 ctrs | 1/90 x 35MGP12 At 300 ctrs | 1/90 x 35 MGP12 | 1/90 x 35 MGP10 |
| 4000 | 2500 | 1/90 x 35MGP10 At 1450 ctrs | 1/90 x 35MGP12 At 300 ctrs | 1/90 x 35 MGP12 | 1/90 x 35 MGP10 |

Notes:
1. PROVIDE DOUBLE TOP PLATE WHEN STUDS DON'T ALIGN WITH TRUSS LOCATIONS 2/90 x 35 MGP10

Timber Lintel Sizes & Jamb Studs

| Span | RLW | Lintel Size | Jamb Stud Size | Sill Trimmers |
|------|------|-----------------|----------------|-----------------|
| 600 | 2500 | 2/90 x 35MGP10 | 2/90 x 35MGP10 | 1/90 x 35 MGP12 |
| | | 1/90 x 35MGP12 | 1/90 x 45MGP12 | 1/90 x 35 MGP12 |
| 900 | 2500 | 2/90 x 35MGP10 | 2/90 x 35MGP10 | 1/90 x 35 MGP12 |
| | | 1/90 x 35MGP12 | 1/90 x 45MGP12 | 1/90 x 35 MGP12 |
| 1200 | 2500 | 2/90 x 35MGP12 | 2/90 x 35MGP10 | 1/90 x 35 MGP12 |
| | | 1/90 x 35MGP15 | 1/90 x 45MGP12 | 1/90 x 35 MGP12 |
| 1500 | 2500 | 1/140 x 45MGP12 | 3/90 x 35MGP10 | 1/90 x 35 MGP12 |
| | | 2/90 x 35MGP15 | 2/90 x 45MGP12 | 1/90 x 35 MGP12 |
| 1800 | 2500 | 2/140 x 35MGP12 | 3/90 x 35MGP10 | 1/90 x 35 MGP12 |
| | | 2/90 x 45MGP12 | 2/90 x 45MGP12 | 1/90 x 35 MGP12 |
| 2400 | 2500 | 2/140 x 35MGP12 | 3/90 x 35MGP12 | 1/90 x 35 MGP12 |
| | | 1/190 x 45MGP12 | 2/90 x 45MGP12 | 1/90 x 35 MGP12 |

WIND RATING C2.5

NAILING & ANCHORING ACCORDING TO MANUFACTURERS SPECIFICATIONS.

ALL FIXINGS , TIE DOWNS & BRACING IN ACCORDANCE WITH THE BUILDING CODE OF AUSTRALIA & AS 1684.3-2006 RESIDENTIAL TIMBER-FRAMED CONSTRUCTION.

MODULE 3. MODULE 2. MODULE 1.

CGI. COLOURBOND ROOFING

▼ Ceiling Level 2600

▼ Floor Level 700

▼ Ground Level 0

1 ELEVATION



Development Approval

Decision Notice No

50289

Devcert

Development Approval for Building Work is granted under the Building Act 1975, subject to conditions of Decision Notice.

GENERAL NOTES

| No. | REVISION/ISSUE | DATE |
|-----|----------------|------|
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|-------|----|----|----|----|
| Area | 77 | 77 | 77 | 77 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Total | 77 | 77 | 77 | 77 |

ALL DRAWINGS ARE THE PROPERTY OF THE DESIGNER AND THEY ARE NOT TO BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN CONSENT OF THE DESIGNER.
CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE COMMENCING WORK AND TO REPORT ANY DISCREPANCIES TO THE DESIGNER.

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Mobile 0411 646 472
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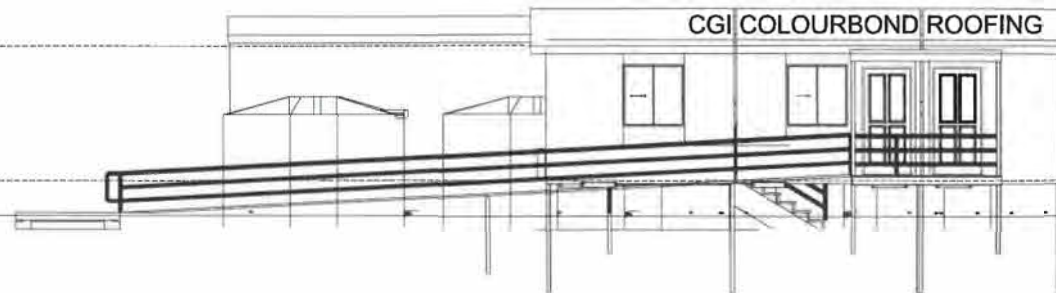
PROJECT:
SOLAR COLLINSVILLE
COLLINSVILLE

CLIENT:
SOLAR FARMS

DRAWING:
NILSEN 60086

SCALE: 1:100 DATE: 00/00/00

| | |
|------------------------------------|----------------------|
| DRAWN BY: DIAJR | SHEET: 5.1 |
| CHECKED BY: CHECKED BY | |
| APPROVED BY: APPROVED BY | |



▼ Ceiling Level 2600

▼ Floor Level 700

▼ Ground Level 0

2 ELEVATION

Banana Shire Council
PLANNING APPROVAL

23 OCT 2019

ELEVATIONS
Scale - 1:100

Appendix C EPBC Approval

Variation of conditions attached to approval

Smoky Creek Solar Farm, Queensland (EPBC ref 2021/9030)

This decision to vary conditions of approval is made under section 143 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).


Approved action

| | |
|---|---|
| approval holder | Edify Energy Pty Ltd ACN: 606 684 995 |
| approved action | To construct, operate and decommission a solar farm and associated infrastructure, at 460 Dodsons Road, Smoky Creek, Queensland. See EPBC Act referral 2021/9030]. |
| period for which the approval has effect | This approval has effect until 31 December 2080 |

Variation

| | |
|---|--|
| variation of conditions attached to approval | The variation is: Delete condition 5 attached to the approval and substitute with the condition specified in the table below. Delete the definitions Brigalow TEC , Solanum habitat , Squatter Pigeon breeding habitat and Squatter Pigeon dispersal habitat attached to the approval and substitute with the definitions specified in the table below. Delete the maps at attachments A, B, C, D and E attached to the approval and substitute with the maps specified in the table below. |
| date of effect | This variation has effect on the date this instrument is signed. |

Person authorised to make decision

| | |
|--------------------------|--|
| name and position | Brendan Linton-Smith Acting Branch Head Environment Assessments (Vic and Tas) and Post Approvals |
| signature |  |
| date of decision | 9 July 2025 |

| date of decision | conditions attached to approval |
|---|---|
| Part A – Conditions specific to the Action | |
| Original dated 27 September 2023 | 1) To avoid and mitigate harm to protected matters , the approval holder must not take the Action outside the Action area . |
| Original dated 27 September 2023 | <p>2) To avoid and mitigate harm to protected matters, the approval holder must not clear:</p> <ul style="list-style-type: none"> a) more than 5 hectares (ha) of Brigalow TEC, comprising no more than: <ul style="list-style-type: none"> i) 3 ha in watercourse 1. ii) 2 ha in watercourse 2. b) more than 20.85 ha of Squatter Pigeon foraging habitat. c) more than 21.85 ha of Squatter Pigeon dispersal habitat. d) more than 2 ha of Solanum habitat. e) any Squatter Pigeon breeding habitat. f) any Ornamental Snake habitat. g) within any avoidance areas. |
| Original dated 27 September 2023 | <p>3) To avoid harm to protected matters, the approval holder must not translocate any:</p> <ul style="list-style-type: none"> a) Solanum johnsonianum individuals. b) Solanum dissectum individuals. |
| Original dated 27 September 2023 | <p>Environmental Management Plan</p> <p>4) To avoid and mitigate harm to protected matters, the approval holder must submit to the department for the Minister’s written approval an Environmental Management Plan (EMP) developed by a suitably qualified expert. The approval holder must not commence the Action unless the Minister has approved the EMP in writing. The approval holder must implement the EMP as approved by the Minister in writing, from when it is approved until the expiry date of this approval.</p> |

| | |
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| As varied on the date this instrument was signed | <p>5) By implementing the EMP required under condition 4, the approval holder must achieve the following environmental objectives:</p> <ul style="list-style-type: none">a) Any avoidable harm to protected matters is prevented, and unavoidable and accidental harm to protected matters is mitigated.b) The Action, including associated clearing activities, does not contribute to an increase in sediments in any waterway within the Action area or downstream of the Action area.c) Fencing does not obstruct the movement of Ornamental Snake individuals within the Action area or into and out of the Action area.d) There is no increase in weed infestation within the Action area and no new introduction of weed species to the Action area.e) All vehicles use only designated internal roads and access tracks to minimise harm to protected matters within the Action area.f) Harm to protected matters is prevented by clearly labelling avoidance areas and watercourses with clear and maintained signage during the construction phase and decommissioning phase. |
| Original dated 27 September 2023 | <p>6) The EMP required under condition 4 must be consistent with the Environmental Management Plan Guidelines, and must include:</p> <ul style="list-style-type: none">a) details of the relevant protected matters and a reference to EPBC Act approval conditions to which the EMP refers,b) description of all components of the Action, including construction, operation and decommissioning,c) commitments, capable of ensuring that the environmental objectives are achieved are achieved based on supporting evidence,d) a table of commitments made in the EMP to achieve the environmental objectives, and a reference to exactly where these commitments are detailed in the EMP,e) reference to protected matter Conservation Advice, Recovery Plan/s and Threat Abatement Plan/s where commitments to environmental objectives are made in the EMP, |

-
- f) an explanation of how proposed commitments are consistent with relevant **protected matter** Conservation Advice, Recovery Plan/s and Threat Abatement Plan/s,
 - g) impact avoidance, mitigation and/or repair measures, and the timing of those measures,
 - h) an assessment of risks relating to achieving the environmental objectives and risk management strategies and/or mitigation measures that will be applied to address identified risks,
 - i) reporting and review mechanisms to demonstrate compliance with the commitments and environmental objectives made in the EMP,
 - j) a monitoring program capable of detecting any possible failure to achieve the environmental objectives, which must include:
 - i) measurable performance indicators,
 - ii) trigger values for corrective actions,
 - iii) the timing and frequency of monitoring, ensuring monitoring is capable of detecting trigger values and changes in the performance indicators, and
 - iv) proposed corrective actions if trigger values are reached.
 - k) procedures for prompt notification to the **department** and details of investigation that will be undertaken if monitoring detects an **increase in sediments**, and
 - l) references demonstrating the relationship between the EMP and other relevant plans or conditions of approval.

Original dated 27
September 2023

Environmental Offsets

- 7) To compensate for the **clearance** of **Brigalow TEC**, up to the limit specified in condition 2, the approval holder must, prior to any **clearance** of any **Brigalow TEC**, submit to the **department** an Offset Management Plan in writing for approval by the **Minister**. The approval holder must not commence **clearing** any **Brigalow TEC** unless the Offset Management Plan has been approved in writing by the **Minister**. The approval holder must commence implementing the approved Offset Management Plan prior to the **clearance** of any **Brigalow TEC** and continue to implement the approved Offset Management Plan at least until the expiry of this approval. The Offset Management Plan must meet the requirements of **the Environmental Offsets Policy** and the **Environmental Management**
-

Plan Guidelines to the satisfaction of the **Minister**. The Offset Management Plan must include:

- a) Detailed information on the residual impacts to **Brigalow TEC** that will be compensated for by the offset. This must include the area(s) of habitat for **Brigalow TEC** and its condition and quality at all locations impacted by the Action which the offset is to address.
 - b) A reference to the **EPBC Act** approval conditions to which the Offset Management Plan refers.
 - c) Detailed information and a **shapefile** specifying the location, area and boundaries of the proposed offset site.
 - d) Detailed baseline information on the area(s) of habitat, its condition, and the presence of **Brigalow TEC** at the proposed offset site.
 - e) Commitments to achievable improved ecological benefits at the proposed offset site and the timeframes in which they will be achieved.
 - f) A table summarising all commitments to achieve the proposed ecological benefits for **Brigalow TEC** at the proposed offset site, and a reference to where each commitment is detailed in the Offset Management Plan.
 - g) Reporting and review mechanisms to inform the **department** annually regarding compliance with the management and environmental outcome commitments, and attainment and maintenance of the ecological benefits specified in the Offset Management Plan.
 - h) An assessment of risks to achieving the ecological benefit(s) and what risk management measures and/or strategies will be applied to address these.
 - i) A monitoring program, which must specify:
 - i) measurable performance indicators and the timeframes for their achievement to gauge attainment of the ecological benefits for **Brigalow TEC**
 - ii) trigger values for corrective actions, and
 - iii) the proposed timing (including season/time of day/frequency) methods and effort, and an explanation of how these will be effective for this purpose, of monitoring
-

to detect trigger values, changes in the performance indicators and to gather evidence that effectively demonstrates actual progress towards, attainment of and maintenance of the ecological benefits for **Brigalow TEC**.

- j) Corrective actions to be implemented to ensure that the proposed ecological benefits for **Brigalow TEC** are achieved or maintained if trigger values are reached or performance indicators not achieved in the specified timeframes.
- k) Statements and commitments which are consistent to relevant referenced plans or conditions of approval (including state/territory approval conditions), and
- l) How the proposed offset site will be protected, and ecological benefits maintained, at least until the expiry of the approval.

Original dated 27
September 2023

- 8) To compensate for the residual significant impacts of the Action on **Brigalow TEC**, the approval holder must not **clear** any **Brigalow TEC** unless the offset site(s) specified in the approved Offset Management Plan is **secured**.

Part B – Administrative conditions

Original dated 27
September 2023

REVISION OF ACTION MANAGEMENT PLANS

- 9) The approval holder may, at any time, apply to the **Minister** for a variation to an action management plan approved by the **Minister** or as subsequently revised in accordance with the following conditions, by submitting an application in accordance with the requirements of section 143A of the **EPBC Act**. If the **Minister** approves a revised action management plan (RAMP) then, from the date specified, the approval holder must implement the RAMP in place of the previous action management plan.

Original dated 27
September 2023

- 10) The approval holder may choose to revise an action management plan approved by the **Minister** under condition 4 or as subsequently revised in accordance with these conditions, without submitting it for approval under section 143A of the **EPBC Act**, if the taking of the Action in accordance with the RAMP would not be likely to have a **new or increased impact**.
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| Original dated 27 September 2023 | <p>11) If the approval holder makes the choice under condition 10 to revise an action management plan without submitting it for approval, the approval holder must:</p> <ul style="list-style-type: none">a) Notify the department electronically that the approved action management plan has been revised and provide the department with:<ul style="list-style-type: none">i) An electronic copy of the RAMP.ii) An electronic copy of the RAMP marked up with track changes to show the differences between the approved action management plan and the RAMP.iii) An explanation of the differences between the approved action management plan and the RAMP.iv) The reasons the approval holder considers that taking the Action in accordance with the RAMP would not be likely to have a new or increased impact.v) Written notice of the date on which the approval holder will implement the RAMP (RAMP implementation date), being at least 20 business days after the date of providing notice of the revision of the action management plan, or a date agreed to in writing with the department.b) Subject to condition 13 implement the RAMP from the RAMP implementation date. |
| Original dated 27 September 2023 | <p>12) The approval holder may revoke its choice to implement a RAMP under condition 10 at any time by giving written notice to the department. If the approval holder revokes the choice under condition 10 the approval holder must implement the action management plan in force immediately prior to the revision undertaken under condition 10.</p> |
| Original dated 27 September 2023 | <p>13) If the Minister notifies the approval holder that the Minister is satisfied that the taking of the Action in accordance with the RAMP would be likely to have a new or increased impact, then:</p> <ul style="list-style-type: none">a) Condition 10 does not apply, or ceases to apply, in relation to the RAMP.b) The approval holder must implement the action management plan specified by the Minister in the notice. |

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| Original dated 27 September 2023 | 14) At the time of giving the notice under condition 13, the Minister may also notify that for a specified period of time, condition 10 does not apply for one or more specified action management plans. |
| Note: Conditions 10, 11,12, 13 and 14 are not intended to limit the operation of section 143A of the EPBC Act which allows the approval holder to submit a revised Action management plan, at any time, to the Minister for approval. | |
| Original dated 27 September 2023 | SUBMISSION AND PUBLICATION OF PLANS |
| | 15) The approval holder must submit all plans required by these conditions electronically to the department . |
| Original dated 27 September 2023 | 16) Unless otherwise agreed to in writing by the Minister , the approval holder must publish each plan on the website within 15 business days of the date: <ul style="list-style-type: none"> a) of this approval, if the version of the plan to be implemented is specified in these conditions, or b) the plan is approved by the Minister in writing, if the plan requires the approval of the Minister, or c) the plan is submitted to the department in accordance with a requirement of these conditions, if the plan does not require the approval of the Minister, or d) the plan is approved by a state government official as required under a state government condition which must be complied with in accordance with these EPBC Act conditions. |
| Original dated 27 September 2023 | 17) The approval holder must keep all published plans required by these conditions on the website until the expiry date of this approval. |
| Original dated 27 September 2023 | 18) The approval holder is required to exclude or redact sensitive ecological data from plans published on the website or otherwise provided to a member of the public. If sensitive ecological data is excluded or redacted from a plan , the approval holder must notify the department in writing what exclusions and redactions have been made in the version published on the website . |
| Original dated 27 September 2023 | NOTIFICATION OF DATE OF COMMENCEMENT OF THE ACTION |
| | 19) The approval holder must notify the department electronically of the date of commencement of the Action , within 5 business days following commencement of the Action . |

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| Original dated 27 September 2023 | 20) If the commencement of the Action does not occur within 5 years from the date of this approval, then the approval holder must not commence the Action without the prior written agreement of the Minister . |
| Original dated 27 September 2023 | <p>COMPLIANCE RECORDS</p> <p>21) The approval holder must maintain accurate and complete compliance records.</p> |
| Original dated 27 September 2023 | <p>22) If the department makes a request in writing, the approval holder must provide electronic copies of compliance records to the department within the timeframe specified in the request.</p> <p>Note: Compliance records may be subject to audit by the department, or by an independent auditor in accordance with section 458 of the EPBC Act, and/or be used to verify compliance with the conditions. Summaries of the results of an audit may be published on the department's website or through the general media.</p> |
| Original dated 27 September 2023 | 23) The approval holder must ensure that any monitoring data (including sensitive ecological data), surveys, maps, and other spatial and metadata required under the conditions of this approval are prepared in accordance with the <i>Guidelines for biological survey and mapped data</i> , Commonwealth of Australia 2018, or as otherwise specified by the Minister in writing. |
| Original dated 27 September 2023 | 24) The approval holder must ensure that any monitoring data (including sensitive ecological data), surveys, maps, and other spatial and metadata required under the conditions of this approval are prepared in accordance with the <i>Guide to providing maps and boundary data for EPBC Act projects</i> , Commonwealth of Australia 2021, or as otherwise specified by the Minister in writing. |
| Original dated 27 September 2023 | 25) The approval holder must submit all monitoring data (including sensitive ecological data), surveys, maps, other spatial and metadata and all species occurrence record data (sightings and evidence of presence) electronically to the department within 20 business days of each anniversary of the date of the commencement of the action or in accordance with the requirements of the Environmental Management Plan. |
| Original dated 27 September 2023 | <p>ANNUAL COMPLIANCE REPORTING</p> <p>26) The approval holder must prepare a compliance report for each 12-month period following the date of the commencement of the action , or as otherwise agreed to in writing by the Minister.</p> |

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| Original dated 27 September 2023 | 27) Each compliance report must be consistent with the <i>Annual Compliance Report Guidelines</i> , Commonwealth of Australia 2014. |
| Original dated 27 September 2023 | <p>28) Each compliance report must include:</p> <ul style="list-style-type: none"> a) Accurate and complete details of compliance and any non-compliance with the conditions and the plans, and any incidents. b) One or more shapefile showing all clearing of protected matters, and/or their habitat, undertaken within the 12-month period at the end of which that compliance report is prepared. c) A schedule of all plans in existence in relation to these conditions and accurate and complete details of how each plan is being implemented. |
| Original dated 27 September 2023 | <p>29) The approval holder must:</p> <ul style="list-style-type: none"> a) publish each compliance report on the website within 60 business days following the end of the 12-month period for which that compliance report is required. b) Notify the department electronically, within 5 business days of the date of publication that a compliance report has been published on the website. c) Provide the weblink for the compliance report in the notification to the department. d) Keep all published compliance reports required by these conditions on the website until the expiry date of this approval. e) Exclude or redact sensitive ecological data from compliance reports published on the website or otherwise provided to a member of the public. f) If sensitive ecological data is excluded or redacted from the published version, submit the full compliance report to the department within 5 business days of its publication on the website and notify the department in writing what exclusions and redactions have been made in the version published on the website. <p>Note: Compliance reports may be published on the department's website.</p> |

Original dated 27
September 2023

REPORTING NON-COMPLIANCE

30) The approval holder must notify the **department** electronically, within 2 **business days** of becoming aware of any **incident** and/or potential non-compliance and/or actual non-compliance with the conditions or commitments made in a **plan**.

Original dated 27
September 2023

31) The approval holder must specify in the notification:

- a) Any condition or commitment made in a **plan** which has been or may have been breached.
- b) A short description of the **incident** and/or potential non-compliance and/or actual noncompliance.
- c) The location (including co-ordinates), date and time of the **incident** and/or potential noncompliance and/or actual non-compliance.

Note: If the exact information cannot be provided, the approval holder must provide the best information available.

Original dated 27
September 2023

32) The approval holder must provide to the **department** in writing, within 12 **business days** of becoming aware of any **incident** and/or potential non-compliance and/or actual noncompliance, the details of that **incident** and/or potential non-compliance and/or actual non-compliance with the conditions or commitments made in a **plan**. The approval holder must specify:

- a) Any corrective action or investigation which the approval holder has already taken.
- b) The potential impacts of the **incident** and/or non-compliance.
- c) The method and timing of any corrective action that will be undertaken by the approval holder.

Original dated 27
September 2023

INDEPENDENT AUDIT

33) The approval holder must ensure that an **independent audit** of compliance with the conditions is conducted for every five-year period following the **commencement of the Action** until this approval expires, unless otherwise specified in writing by the **Minister**.

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| Original dated 27 September 2023 | <p>34) For each independent audit, the approval holder must:</p> <ul style="list-style-type: none"> a) Provide the name and qualifications of the nominated independent auditor, the draft audit criteria, and proposed timeframe for submitting the audit report to the department prior to commencing the independent audit. b) Only commence the independent audit once the nominated independent auditor, audit criteria and timeframe for submitting the audit report have been approved in writing by the department. c) Submit the audit report to the department for approval within the timeframe specified and approved in writing by the department. d) Publish each audit report on the website within 15 business days of the date of the department's approval of the audit report. e) Keep every audit report published on the website until this approval expires. |
| Original dated 27 September 2023 | 35) Each audit report must report for the five-year period preceding that audit report. |
| Original dated 27 September 2023 | 36) Each audit report must be completed to the satisfaction of the Minister and be consistent with the <i>Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines</i> , Commonwealth of Australia 2019. |
| Original dated 27 September 2023 | <p>COMPLETION OF THE ACTION</p> <p>37) The approval holder must notify the department electronically 60 business days prior to the expiry date of this approval, that the approval is due to expire.</p> |
| Original dated 27 September 2023 | 38) Within 20 business days after the completion of the Action , and, in any event, before this approval expires, the approval holder must notify the department electronically of the date of completion of the Action and provide completion data . The approval holder must submit any spatial data that comprises completion data as a shapefile . |

| date of decision | definitions attached to approval |
|--|--|
| Original dated 27 September 2023 | Action area means the location of the Action, represented in <u>Attachment A</u> by the zone enclosed by the solid red line designated 'Project area boundary'. |
| Original dated 27 September 2023 | Audit report means a written report of compliance and fulfilment of the conditions attached to this approval, objectively evaluated against the audit criteria approved by the department . |
| Original dated 27 September 2023 | Avoidance area means any and all of the areas within the Action area represented in <u>Attachment A</u> by the white shaded zones designated 'Avoidance Areas'. |
| As varied on the date this instrument was signed | Brigalow TEC means the EPBC Act listed threatened ecological community Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant). Within the Action area , the extent of Brigalow TEC identified at the time of this approval is represented in <u>Attachment E</u> by the zones enclosed within the solid black lines and with black dots designated 'Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant)'. |
| Original dated 27 September 2023 | Business day means a day that is not a Saturday, a Sunday or a public holiday in Queensland. |
| Original dated 27 September 2023 | Clear, cleared or clearing means the cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting, or burning of vegetation but does not include weed species . |
| Original dated 27 September 2023 | <p>Commence the Action or Commencement of the Action means the date on which the first instance of any activity associated with the Action (including clearing and construction) is undertaken. Commencement of the Action does not include minor physical disturbance necessary to:</p> <ol style="list-style-type: none"> <li>a) Undertake pre-clearance surveys or monitoring programs. <li>b) Install signage and/or temporary fencing to prevent unapproved use of the Action area, so long as the signage and/or temporary fencing is located where it does not harm any protected matter. <li>c) Protect environmental and property assets from fire, weeds, and feral animals, including use of existing surface access tracks. <li>d) Install temporary site facilities for persons undertaking pre-commencement activities so |

long as these facilities are located where they do not **harm** any **protected matter**.

| | |
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| Original dated 27 September 2023 | Completion data means an environmental report and spatial data clearly detailing how the conditions of this approval have been met. |
| Original dated 27 September 2023 | Completion of the Action means the date on which all activities associated with this approval have permanently ceased and/or been completed. |
| Original dated 27 September 2023 | Compliance records means all documentation or other material in whatever form required to demonstrate compliance with the conditions of approval (including compliance with commitments made in plans) in the approval holder's possession, or that are within the approval holder's power to obtain lawfully. |
| Original dated 27 September 2023 | Compliance report means a written report of compliance with, and fulfilment of, the conditions attached to the approval. |
| | Construction means the erection of a building or structure that is, or is to be, fixed to the ground and wholly or partially fabricated on-site; the alteration, maintenance, repair or demolition of any building or structure; any work which involves breaking of the ground (including pile driving) or bulk earthworks; the laying of pipes and other prefabricated materials in the ground, and any associated excavation work. |
| Original dated 27 September 2023 | Decommissioning means the removal of all above and below ground infrastructure from the Action area . |
| Original dated 27 September 2023 | Department means the Australian Government agency responsible for administering the EPBC Act . |
| Original dated 27 September 2023 | Environmental Management Plan Guidelines means the <i>Environmental Management Plan Guidelines</i> , Commonwealth of Australia 2014. |
| Original dated 27 September 2023 | Environmental Offsets Policy means the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy, Commonwealth of Australia 2012. |
| Original dated 27 September 2023 | EPBC Act means the Environment Protection and Biodiversity Conservation Act 1999 (Cth). |
| Original dated 27 September 2023 | Fence or fencing means any temporary or permanent fencing barriers, including security fencing, erected during the life of the approval on the Action area perimeter or within the Action area . |

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| Original dated 27 September 2023 | Harm means to cause any measurable direct or indirect disturbance or deleterious change as a result of any activity associated with the Action. |
| Original dated 27 September 2023 | Incident means any event which has the potential to, or does, harm any protected matter . |
| Original dated 27 September 2023 | Increase in sediments means an increase in water quality parameters, including turbidity, indicating higher than baseline from suitable reference sites in accordance with the Queensland Water Quality Guidelines . |
| Original dated 27 September 2023 | Independent means a person or firm who does not have any individual, financial*, employment* or family affiliation or any conflicting interests with the project, the approval holder or the approval holder's staff, representatives, or associated persons. *Other than for the purpose of undertaking the role for which an independent person is required |
| Original dated 27 September 2023 | Independent audit means an audit conducted by an independent and suitably qualified person as detailed in the <i>Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines</i> , Commonwealth of Australia 2019. |
| Original dated 27 September 2023 | Minister means the Australian Government Minister administering the EPBC Act , including any delegate thereof. |
| Original dated 27 September 2023 | Monitoring data means the data required to be recorded under the conditions of this approval. |
| Original dated 27 September 2023 | New or increased impact means any direct or indirect increase in the impacts of an Action, an increase to the likelihood of an impact occurring, a reduction to the monitoring or mitigation measures for a protected matter , and/or a change to the nature or management of an environmental offset as outlined in the <i>Guidance on 'new or increased impact' relating to changes to approved management plans under EPBC Act environmental approvals</i> , Commonwealth of Australia 2017. |
| Original dated 27 September 2023 | Ornamental Snake means the EPBC Act listed threatened species <i>Denisonia maculata</i> . |
| Original dated 27 September 2023 | Ornamental Snake habitat means any area of vegetation which supports Ornamental Snake , including habitat described in the <i>Approved Conservation Advice for Denisonia maculata (Ornamental Snake)</i> , Commonwealth of Australia 2014. Within the Action area , the extent of Ornamental Snake habitat identified at the time of this approval is |

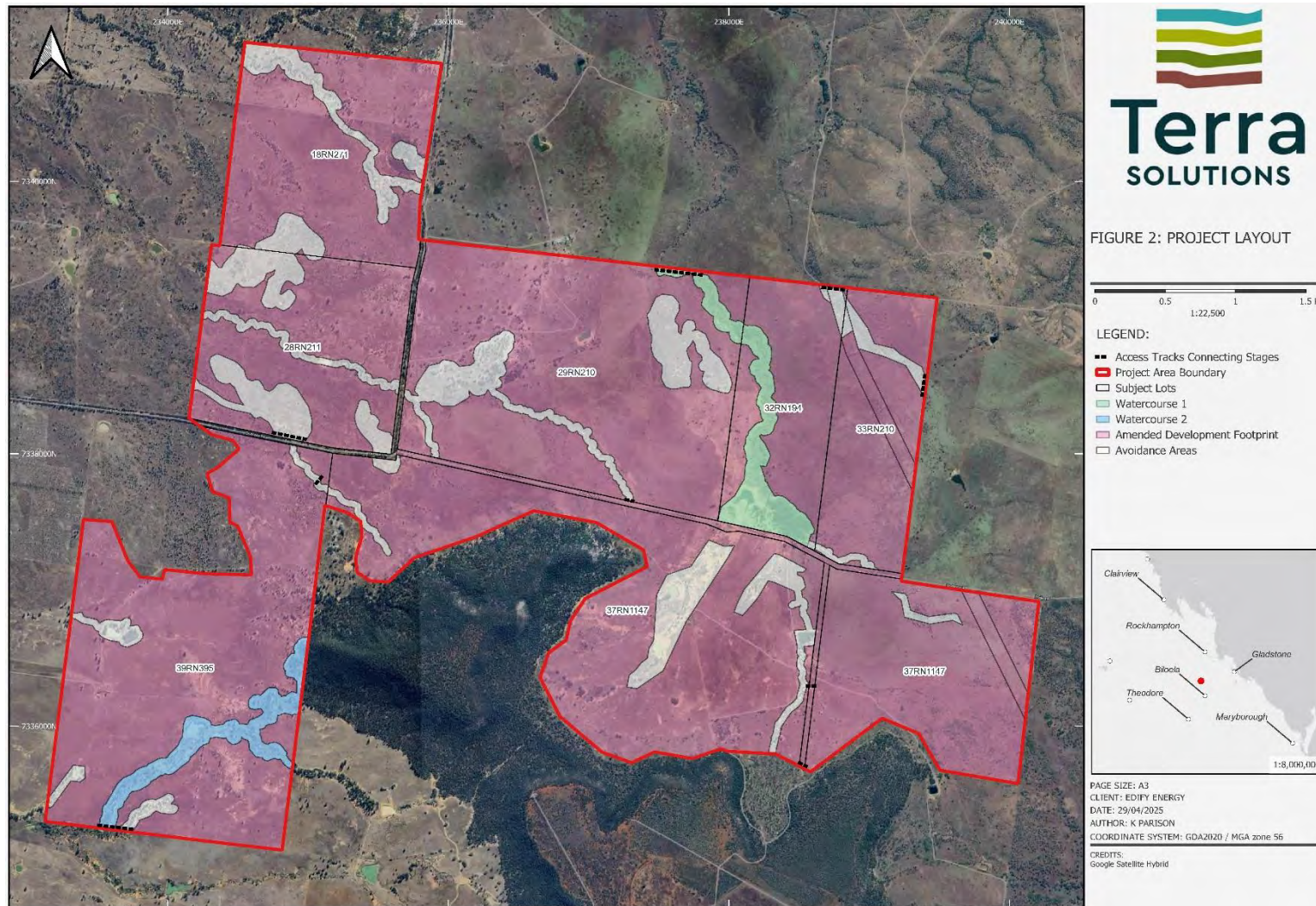
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| | represented in <u>Attachment D</u> by the zones enclosed within the solid aqua lines and with aqua hatching designated 'Reduced quality'. |
| Original dated 27 September 2023 | Plan means any action management plan or strategy that the approval holder is required by these conditions to implement. |
| Original dated 27 September 2023 | Protected matter means a matter protected under a controlling provision in Part 3 of the EPBC Act for which this approval has effect. |
| Original dated 27 September 2023 | Queensland Water Quality Guidelines means the <i>Queensland Water Quality Guidelines</i> , version 3, The State of Queensland 2009. |
| Original dated 27 September 2023 | Secure or secured means to provide enduring conservation protection on the title of land under an enduring protection mechanism, such as voluntary declaration under the Vegetation Management Act 1999 (QLD) or another enduring protection mechanism agreed to in writing by the department , to provide protection for the site against development incompatible with conservation. |
| Original dated 27 September 2023 | Sensitive ecological data means data as defined in the <i>Sensitive Ecological Data – Access and Management Policy V1.0</i> , Commonwealth of Australia 2016. |
| Original dated 27 September 2023 | Shapefile means location and attribute information about the Action provided in an Esri shapefile format containing: <ul style="list-style-type: none"> a) '.shp', '.shx', '.dbf' files, b) a '.prj' file which specifies the projection or geographic coordinate system used, and c) an '.xml' metadata file that describes the shapefile for discovery and identification purposes. |
| Original dated 27 September 2023 | Solanum johnsonianum means the EPBC Act listed threatened species <i>Solanum johnsonianum</i> . |
| Original dated 27 September 2023 | Solanum dissectum means the EPBC Act listed threatened species <i>Solanum dissectum</i> . |
| As varied on the date this instrument was signed | Solanum habitat means any area of vegetation which supports either or both of the species Solanum dissectum and Solanum johnsonianum , including habitat described in <i>Conservation advice Solanum dissectum</i> , Commonwealth of Australia 2016 and <i>Conservation advice Solanum johnsonianum</i> , Commonwealth of Australia 2016. Within the Action area , the extent of Solanum habitat identified at the time of this approval is represented in <u>Attachment C</u> by the zones enclosed within |

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| | the solid black lines and with black dots designated 'Solanum dissectum & Solanum johnsonianum habitat'. |
| Original dated 27 September 2023 | Squatter Pigeon means the EPBC Act listed threatened species <i>Geophaps scripta scripta</i> . |
| As varied on the date this instrument was signed | Squatter Pigeon breeding habitat means any remnant or regrowth open forest or woodland community with a patchy tussock grass understorey on well-draining, gravelly, sandy or loamy soils or open community dominated by <i>Eucalyptus</i> , <i>Corymbia</i> , <i>Acacia</i> or <i>Callitris</i> species within 1 kilometre of a waterbody. Within the Action area , the extent of Squatter Pigeon breeding habitat identified at the time of this approval is represented in Attachment B by the zones enclosed within the solid red line and with red hatching designated 'Breeding'. |
| As varied on the date this instrument was signed | Squatter Pigeon dispersal habitat means any forest or woodland between patches of foraging or breeding habitat and suitable waterbodies. Within the Action area , the extent of Squatter Pigeon dispersal habitat identified at the time of this approval is represented in Attachment B by the zones enclosed within the solid black lines and with black dots designated 'Dispersal'. |
| Original dated 27 September 2023 | Squatter Pigeon foraging habitat means any remnant or regrowth open forest or woodland community with a patchy tussock grass understorey on well-draining, gravelly, sandy or loamy soils or open community dominated by <i>Eucalyptus</i> , <i>Corymbia</i> , <i>Acacia</i> or <i>Callitris</i> species within 3 kilometres of a waterbody. Within the Action area , the extent of Squatter Pigeon foraging habitat identified at the time of this approval is represented in Attachment B by the zones enclosed within the solid blue lines and with blue hatching designated 'Foraging'. |
| Original dated 27 September 2023 | Suitably qualified expert means a person who has relevant professional qualifications in writing and implementing environmental management plans with knowledge of the conservation management requirements of the protected matters . |
| Original dated 27 September 2023 | Suitably qualified person means a person who has professional qualifications, training, skills and/or experience related to the nominated subject matter and can give authoritative independent assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods and/or literature. |
| Original dated 27 September 2023 | Translocate means the human-mediated movement of living organisms from one area with release in another, either to sites where the particular species may already be present, to new sites, or to sites where |

| | |
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| | the animal or plant has become locally extinct. The intention of translocation must be to keep the translocated individuals alive and protected in the long term. |
| Original dated 27 September 2023 | Watercourse 1 means the watercourse and surrounding area identified within the Action area at <u>Attachment A</u> by the green shaded zone designated 'Watercourse 1'. |
| Original dated 27 September 2023 | Watercourse 2 means the watercourse and surrounding area identified within the Action area at <u>Attachment A</u> by the blue shaded zone designated 'Watercourse 2'. |
| Original dated 27 September 2023 | Website means a set of related web pages located under a single domain name attributed to the approval holder and available to the public. |
| Original dated 27 September 2023 | Weed infestation means the abundance, composition and distribution of weed species known to restrict the distribution of the protected matters or adversely impact on available habitat of the protected matters across the landscape, as determined by field surveys of the Action area undertaken by a suitably qualified expert using a scientifically robust and repeatable methodology over a timeframe that serves as a sound basis for comparison to the results of surveys using the same methodology undertaken prior to the commencement of the Action . |
| Original dated 27 September 2023 | Weed species means any flora species identified as one of the Weeds of National Significance and any weed species listed under the <i>Biosecurity Act 2014</i> (Cth). |
| Original dated 27 September 2023 | Weeds of National Significance means any flora species listed in the <i>Australian Weeds Strategy 2017–2027</i> , Commonwealth of Australia 2017. |

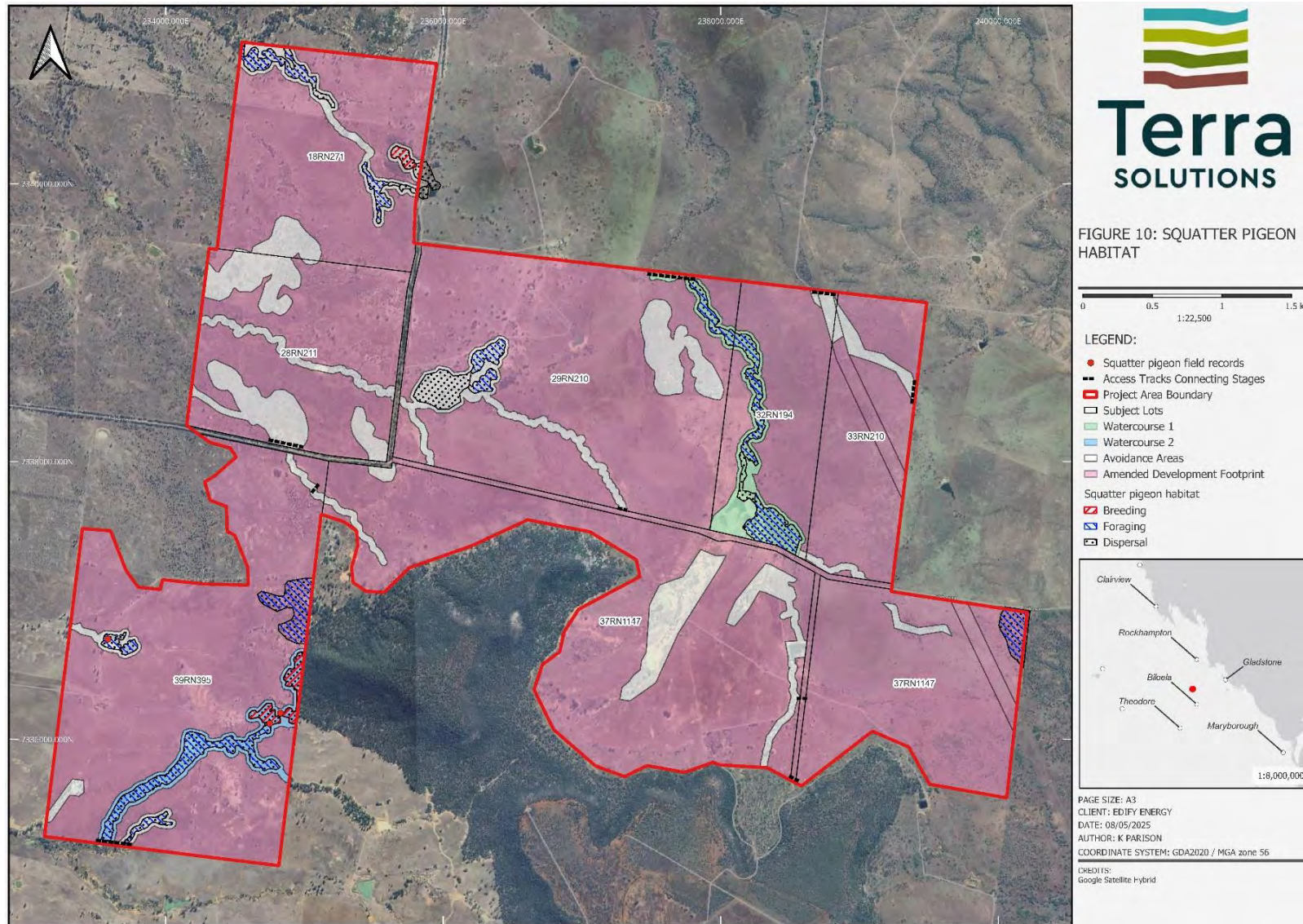
| date of decision | Attachment |
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| As varied on the date this instrument was signed | <u>Attachment A</u> – Action area and avoidance areas |
| As varied on the date this instrument was signed | <u>Attachment B</u> – Squatter Pigeon habitat |
| As varied on the date this instrument was signed | <u>Attachment C</u> – Solanum habitat |
| As varied on the date this instrument was signed | <u>Attachment D</u> – Ornamental Snake habitat |
| As varied on the date this instrument was signed | <u>Attachment E</u> – Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant) threatened ecological community |

Attachment A – Action area and avoidance areas

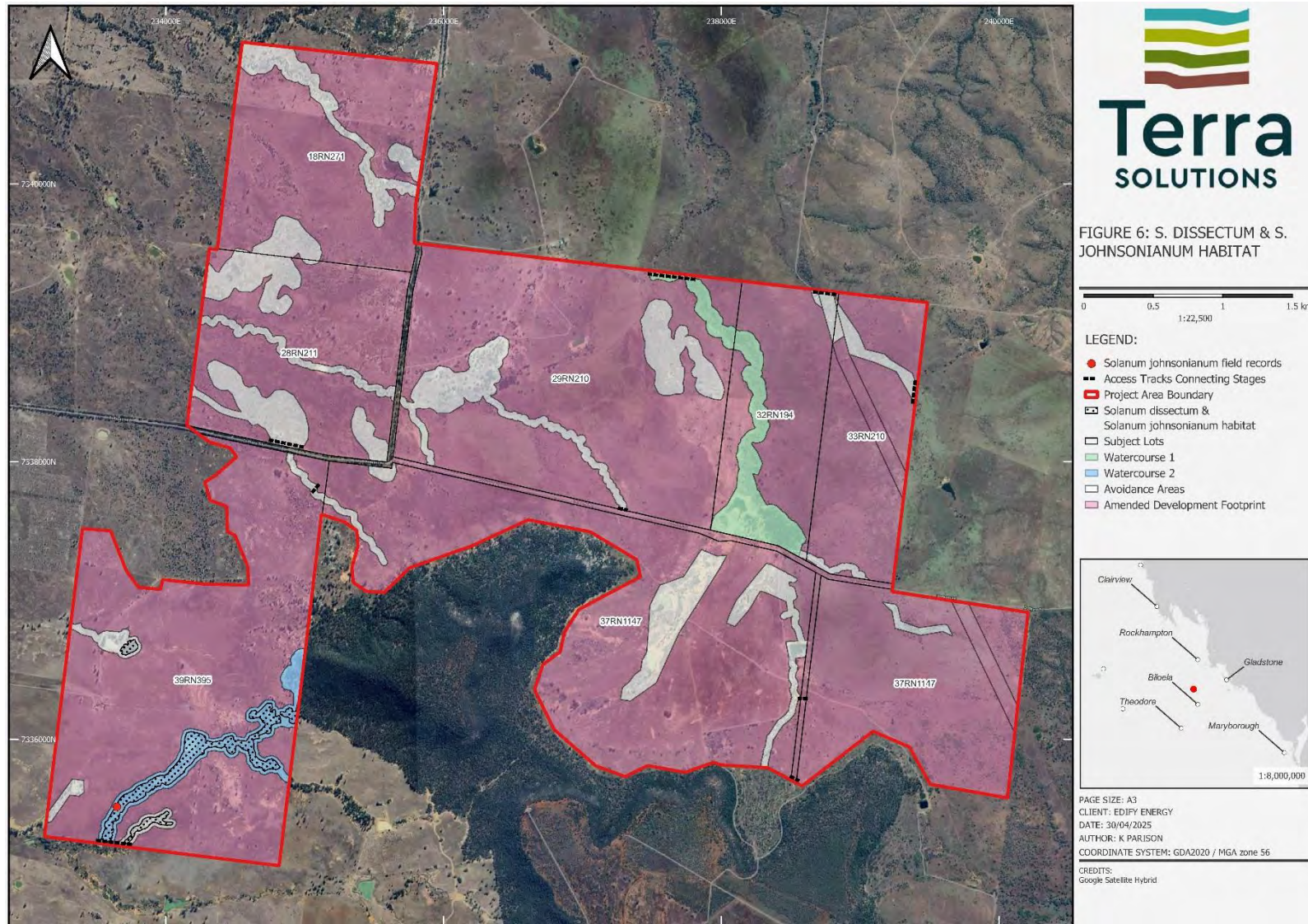


Attachment B – Squatter Pigeon habitat

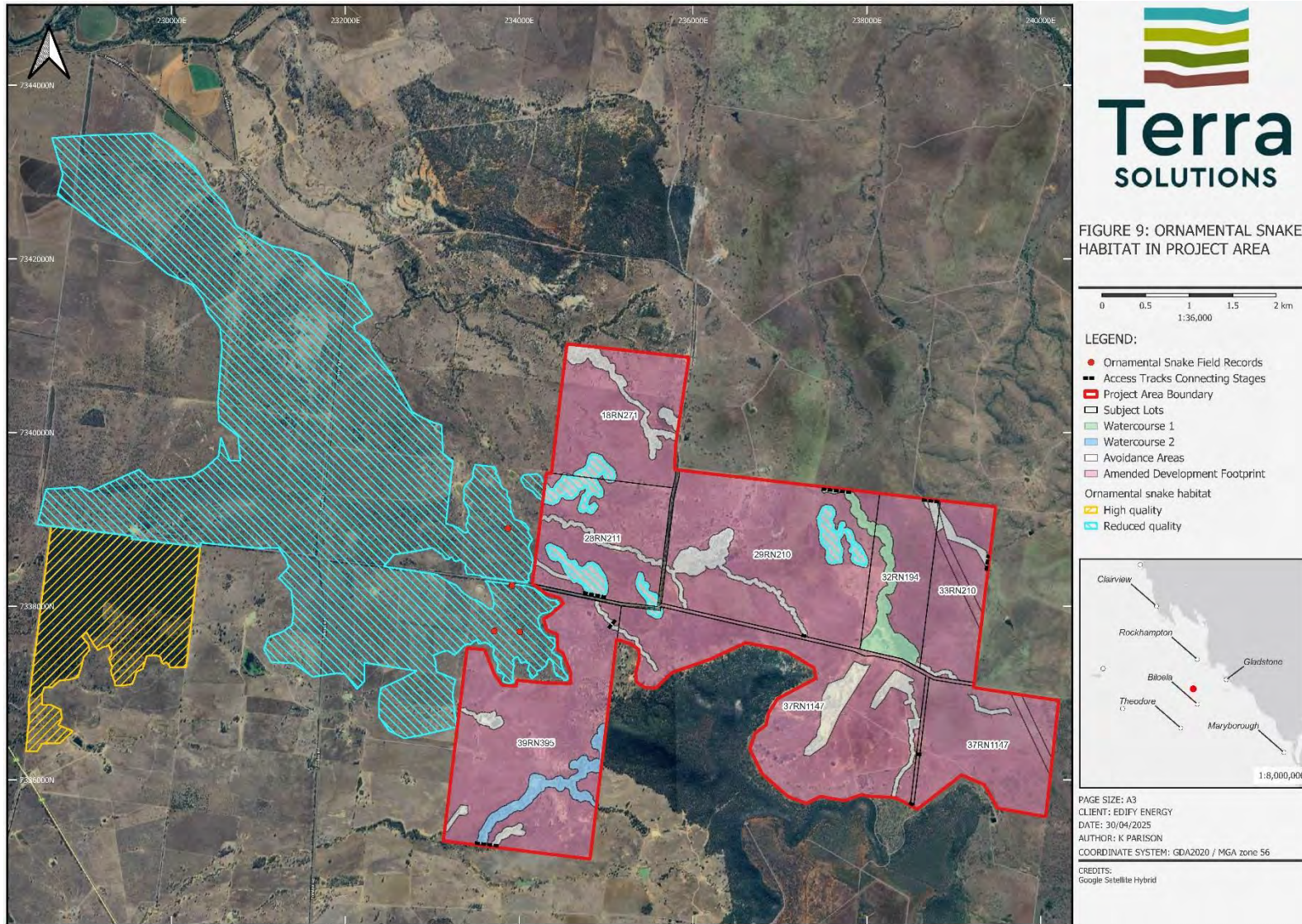
DCCEEW.gov.au
John Gorton Building - King Edward Terrace, Parkes ACT 2600 Australia
GPO Box 3090 Canberra ACT 2601 ABN: 63 573 932 849
NOT 571 v3.4



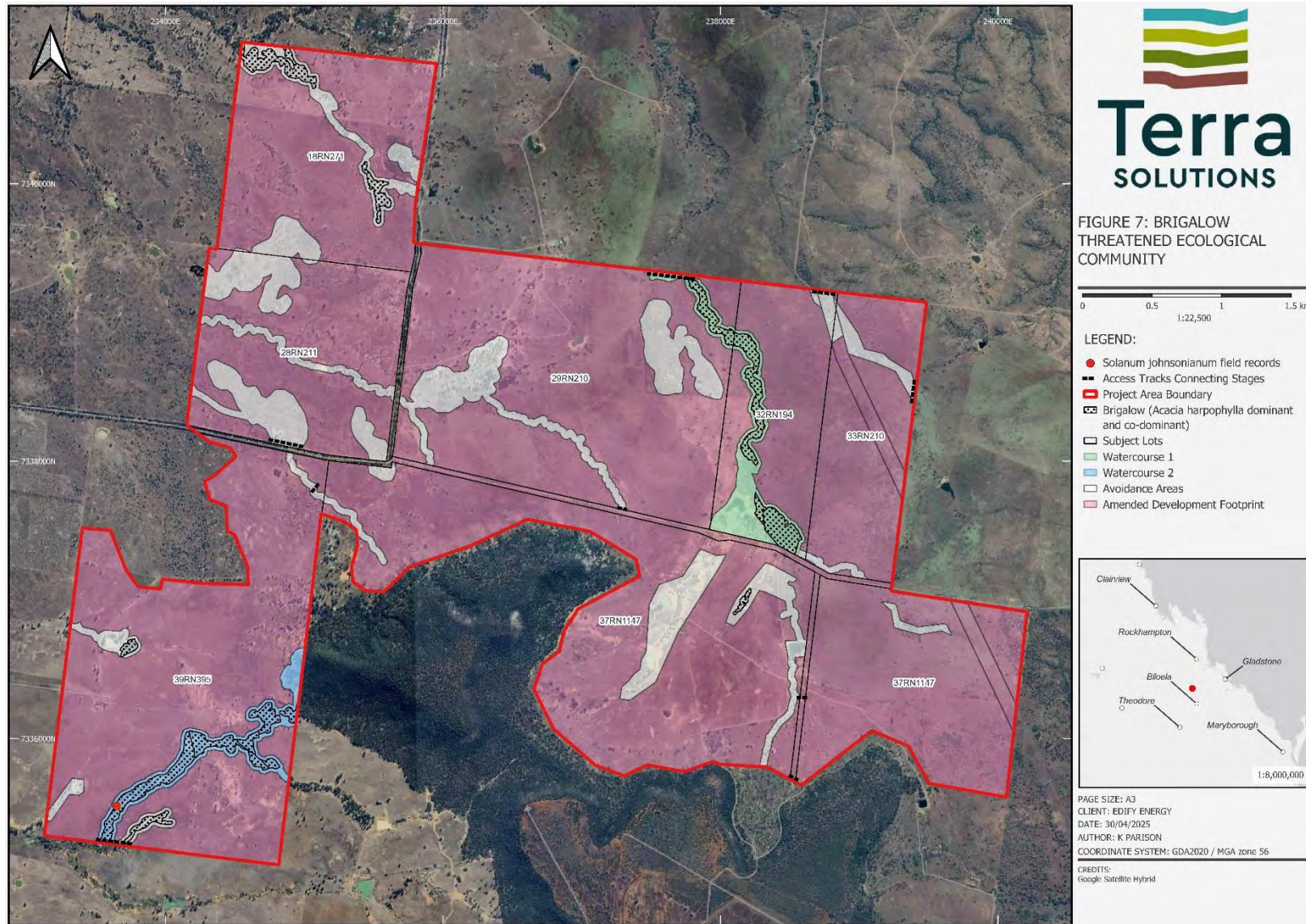
Attachment C – Solanum habitat



Attachment D – Ornamental Snake habitat



Attachment E – Brigalow (Acacia harpophylla dominant and co-dominant) threatened ecological community



Appendix D EPBC Act 1999 Conditioned EMP Response

Measurable Performance Indicators & Triggers

Measurable Monitoring: Vegetation Clearing

| Environmental Objective | Measurable Performance Indicator | Trigger Value for Corrective Action | Timing & Frequency |
|---|--|---|---------------------------------------|
| No more than 5ha of approved clearing to occur within the Brigalow TEC: <ul style="list-style-type: none"> • 3 ha in watercourse 1. • 2 ha in watercourse 2. • more than 20.85 ha of Squatter Pigeon foraging habitat. • more than 21.85 ha of Squatter Pigeon dispersal habitat. • more than 2 ha of Solanum habitat. • any Squatter Pigeon breeding habitat. • any Ornamental Snake habitat. • within any avoidance areas. | Undertake review of remaining clearing to ensure compliance with permitted clearing extents will be achieved – calculate remaining clearing required to ensure within threshold limits. | All clearing areas will be checked and confirmed post-clearing. Site inspection will be undertaken prior to and following clearing to confirm clearing is appropriately demarcated. | Weekly during clearing activities. |
| | Communicate extents of clearing for each vegetation type / priority flora /fauna habitat type to key personnel, noting percentage cleared to date. This includes no adverse impacts to priority flora. | Ground survey and use of aerial imagery of clearing areas and comparison to the Project footprint. | Quarterly when clearing has occurred. |
| | | Under Edify Energy's environmental monitoring program, performance against compliance targets is monitored and internally | Monthly |

Proposed Corrective Actions

If a trigger value is reached (e.g., vegetation clearing limits are exceeded):

- a. Clearing will cease immediately.
- b. Environmental incident will be recorded and investigated if threshold is exceeded.
- c. Department will be notified along with investigation report if threshold is exceeded.
- d. Rehabilitation of any clearing exceedance areas will be undertaken.
- e. Reporting
 - i. Internal construction reporting.
 - ii. Annual Compliance Assessment Reports (CAR) are required to be submitted in accordance with EPBC Approval Condition and must be consistent with the Annual Compliance Report Guidelines, Commonwealth of Australia 2014.
 - iii. In the event that trigger criteria were exceeded during the reporting period, the CAR will include a description of the effectiveness of the contingency actions that have been implemented to manage the impact and any adaptive management measures applied as a result of the exceedance.

Measurable Monitoring: Erosion & Sediment Control (ESC)

| Environmental Objective | Measurable Performance Indicator | Trigger Value for Corrective Action | Timing & Frequency |
|-------------------------------|---|--|--|
| Protect Gilgai Habitat | Turbidity (NTU) levels in downstream seasonal swamps/creeks. | NTU >20% above background (upstream) levels after a rain event. | Within 24 hours of any rain event >10mm. |
| Prevent Siltation | Sediment depth within identified gilgai depressions or drainage fans. | Visible accumulation of "fine" sediment (>5mm) in pre-disturbance baseline. | Monthly during the wet season; post-rainfall. |
| Control Integrity | Integrity of ESC devices (silt fences, sediment basins, diversion banks). | >50% capacity reached in sediment basins or any visible breach/bypass of silt fencing. | Weekly inspections; Daily during active clearing/earthworks. |

Proposed Corrective Actions

If a trigger value is reached (e.g., sediment enters a gilgai):

- a. Immediate Stop-Work: Cease all earthworks in the contributing sub-catchment until the source is identified and stabilised.
- b. Repair & Reinforce: Upgrade ESC measures (e.g., install double-layered silt fences or additional rock check dams).
- c. Remediation: Under the guidance of a suitably qualified ecologist, manually remove sediment from sensitive gilgai cracks if it is feasible without causing further soil compaction (not recommended unless gilgia are completely filled).
- d. Reporting:
 - i. Electronically: notify the Department (DCCEEW) of the non-compliance incident within 2 business days of becoming aware of any incidents and as described in paragraphs 30 and 31 of the approval notification 2021/9030, which also includes: all details as specified in the approval.
 - ii. In writing: provide the department within 12 business days of becoming aware of any incidents and/or potential non-compliance and/or actual non-compliance with the conditions or commitments made in a plan. The approval holder must specify:
 - 1. Any corrective action or investigation that the approval holder has already taken.
 - 2. The potential impacts of the incident and/or non-compliance.
 - 3. The method and timing of any corrective action that will be undertaken by the approval holder.

Solanum johnsonianum and *Solanum dissectum*

Consistency Statement: *Solanum johnsonianum* & *Solanum dissectum*

Alignment with Conservation Advice (2016):

The [Conservation Advice for *Solanum johnsonianum*](#) and [S. *dissectum*](#) emphasize that these plants do not persist in cleared areas and are highly vulnerable to weed invasion and altered fire regimes. This project aligns by:

- Total Avoidance of Clearing: Committing to zero disturbance of mapped remnant habitat, as these species have a >93% population decline due to historical clearing.
- Buffer Integrity: Maintaining a minimum 50m exclusion buffer around all known individuals to protect the microclimate and reduce the "edge effect" that facilitates weed spread.
- Biosecurity & Fire Risk Management: Actively managing high-biomass exotic grasses to exclude and prevent intense wildfires to prevent loss of these fire-sensitive species.

Squatter Pigeons

Consistency Statement: Squatter Pigeon (*Geophaps scripta scripta*)

Alignment with Conservation Advice (2015): The primary threats identified for the Squatter Pigeon are the loss and fragmentation of grassy woodland habitat and predation by feral cats and foxes. This project ensures consistency with the official recovery objectives by:

- Protecting Breeding Habitat: By maintaining a 24% native ground cover threshold and restricting clearing within 1km of permanent water, the project preserves the specific micro-habitat required for ground-nesting success.
- Managing Grazing & Trampling: Commitment to excluding livestock from identified nesting areas during peak breeding months (July to February) directly addresses the threat of nest destruction and soil compaction.
- Active Threat Abatement: Consistent with the *Threat Abatement Plan for Predation by Feral Cats*, the project implements a zero-tolerance policy for domestic pets and a mandatory feral animal monitoring and trapping program triggered by a single detection.
- Hydrological Integrity: Ensuring project-related infrastructure does not divert or contaminate the perennial water sources essential for the species' daily drinking requirements, particularly during dry seasons.

Measurable Monitoring: Flora & Weed Management

| Environmental Objective | Measurable Performance Indicator | Trigger Value for Corrective Action | Timing & Frequency |
|--------------------------------|---|--|--|
| Protect Extant Plants | Plant Vigor/Condition of known <i>Solanum</i> individuals. | Any physical damage to plants or >20% decline in health (foliage loss/dischouration). | Monthly during construction; Quarterly thereafter. |
| Manage Weed Competition | % Cover of Exotic Grasses (Buffel, Rhodes, Green Panic) in buffers. | Exotic grass cover exceeds 30% within the exclusion buffer or any new species is detected. | Quarterly weed audits; targeted inspections post-rainfall. |
| Prevent Soil Compaction | Soil Surface Condition within exclusion zones. | Evidence of unauthorised vehicle tracks or heavy machinery encroachment (>0m). | Daily visual checks by the Site Supervisor during active work. |

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| Mitigate Fire Risk | Fuel Load (t/ha) within 100m of habitat. | Grass height >30cm or dry biomass exceeding site-specific safety limits. | Biannually (start of dry season and mid-season). |
|---------------------------|--|--|--|

Proposed Corrective Actions

If a trigger value is reached (e.g., weeds exceed 40%):

- a. **Immediate Treatment:** implement control actions as outlined in the EMP Pest Management Plan. All work should be carried out by a licenced weed/pest contractor using best practice methods for manual removal or selective, low-pressure spot-spraying of the target exotic grasses within 5 business days.
- b. **Access Review:** If tracks are found in exclusion zones, immediately increase fencing visibility (e.g., high-visibility hard-fencing) and re-induct all site staff.
- c. **Population Audit:** If plant populations decline, engage a botanist to assess and evaluate potential new threats and/or mitigation measures.

Proposed Corrective Actions (Applicable to all MNES)

The following tiered response must occur:

1. **Immediate Action:** Cease all contributing activities in the immediate area.
2. **Notification:** The Site Supervisor must notify the Environmental Manager within 2 hours.
3. **Remediation:**
 - A. *For Siltation:* Repair/upgrade Erosion and Sediment Controls (ESC) and manually remove silt if ecologically safe.
 - B. *For Weed/Pests:* Deploy targeted weed spraying or professional pest trapping within 7 days.
 - C. *For Fauna Strike:* Conduct a site-wide "toolbox talk" to re-induct staff on speed limits and fauna awareness.
4. **Reporting:** Log the incident in the Non-Conformance Register and notify DCCEEW as required by the approval conditions;
 - Electronically: notify the Department (DCCEEW) of the non-compliance incident within 2 business days of becoming aware of any incidents and as described in paragraphs 30 and 31 of the approval notification 2021/9030, which also includes: all details as specified in the approval.
 - In writing: provide the department within 12 business days of becoming aware of any incidents and/or potential non-compliance and/or actual non-compliance with the conditions or commitments made in a plan. The approval holder must specify:
 - Any corrective action or investigation that the approval holder has already taken.
 - The potential impacts of the incident and/or non-compliance.
 - The method and timing of any corrective action that will be undertaken by the approval holder.

Integrating Threats into Biosecurity & Compliance

Feral Cat Management (Predation Threat)

Alignment with the [Threat Abatement Plan for Predation by Feral Cats](#) for the Squatter Pigeon and Ornamental Snake.

| Environmental Objectives | Performance Indicator | Trigger Value | Corrective Action |
|--------------------------|---|--|---|
| Predator Presence | Number of unique feral cats detected on-site per quarter. | Detection of one (1) or more feral cats in high-value habitat (e.g., near gilgais or water). | <ul style="list-style-type: none"> • Activate professional trapping/culling program within 7 days • Review waste management compliance. |
| Site Hygiene | Presence of unmanaged putrescible waste (food scraps). | Any food waste found in open/non-wildlife-proof bins. | <ul style="list-style-type: none"> • Immediate removal • upgrade to wildlife-proof lids • re-induct staff on waste policy. |

Buffel Grass & Exotic Perennials (Competition & Fire Threat)

Alignment with the [Threat Abatement Plan for Exotic Perennial Grasses](#) for the Solanum flora and Ornamental Snake habitat.

| Environmental objective | Performance Indicator | Trigger Value | Corrective Action |
|-----------------------------|---|---|---|
| Invasive Grass Cover | Percentage cover of Buffel or Rhodes grass in MNES buffers. | Cover exceeds 40% Detection of a <i>new</i> restricted biosecurity weed. | <ul style="list-style-type: none"> • Implement selective herbicide application or manual removal as outlined in the site Pest Management Plan • Actions to be implemented by licenced pest/weed contractor. |
| Vehicle Hygiene | % of vehicles with valid "Clean-Down" certificates. | Any vehicle entering the site without a verified weed-free certificate. | <ul style="list-style-type: none"> • Immediate "Stop-Work" for that vehicle • mandatory off-site wash-down • audit site entry logs. |

Strategic Alignment Summary

Integrated Threat Management Matrix (Biosecurity & EPBC)

Alignment of known threats to their specific biosecurity categories and federal [Threat Abatement Plans \(TAPs\)](#).

| Environmental objectives | Biosecurity Category (Qld) | Aligned Performance Indicator | Trigger Value for Action | Monitoring & Frequency |
|--|----------------------------|--|--|---|
| Reduce Feral Cats (Predation) | Restricted (Cat 3, 4, 6) | Number of unique cats detected in MNES habitat areas. | Detection of one (1) feral cat on-site. | Pre, during and post control actions Annual pest audits Remote-sensed motion-camera trap surveys. Sightings register |
| Reduce Invasive Grasses (Buffel/Rhodes) | Restricted (Cat 3) | % cover of invasive perennial grass in <i>Solanum</i> buffers. | Invasive grass cover reaches >40%. | Post control actions Annual pest audits field audits using fixed quadrats permanent photo points |
| Vehicle Hygiene (Weed Spread) | General Obligation | % of vehicles with valid Weed Hygiene Declarations. | One (1) vehicle found without valid certification. | Daily gate-log audits and visual spot-checks. |
| Waterborne Silt (Habitat Loss) | General Obligation | Sediment depth in gilgai depressions. | Visible sediment accumulation >5mm. | Post-rainfall (>10mm) within 24 hours. |

Corrective Actions for Biosecurity Breaches

- Feral Animal Detection: Deploy professional [trapping or culling services](#) within 7 business days of any trigger event.
- Weed Outbreak: Apply selective herbicide via a licensed contractor; implement a 6-month intensive monitoring cycle to ensure no seed-bank persistence.
- Hygiene Failure: Immediately quarantine the uncertified vehicle; conduct an off-site [wash-down](#) and issue a formal non-conformance notice to the subcontractor.

EMP Project Lifecycle Schedule

- Pre-commencement (Avoidance):
 - Timing: At least 48 hours prior to any ground disturbance.
 - Measure: Final survey and flagging of *Solanum spp* and other exclusion zones and Ornamental Snake gilgai habitats by a suitably qualified ecologist.
 - Pre-clearance survey at least 24 hours prior to any clearing activities
- Construction Phase (Mitigation):
 - Timing: Concurrent with daily operations.
 - Measure: Active fauna spotter-catcher presence during all clearing; daily inspection of sediment controls to prevent siltation of drainage fans.
- Post-Construction (Repair/Rehabilitation):
 - Timing: Within 3 months of construction completion in any given area.
 - Measure: Decompaction of soils and direct seeding of native grasses in temporary disturbance areas to restore Squatter Pigeon foraging habitat.

Reporting and Review Mechanisms

The auditable trail of compliance to define the Governance Framework:

- Annual Compliance Report (ACR): A mandatory report submitted to [DCCEEW](#) every 12 months detailing progress against every performance indicator in the matrix (condition 26-29).
- Non-Conformance Reporting: A formal mechanism where any "Trigger Value" breach (e.g., a fauna strike) is recorded in a centralised register and reported to the Department within 48 hours (electronic) and 12 business days (written) as per approval conditions (32).
- Management Plan Review: A commitment to review and update the EMP (Annually and/or following a significant trigger breach) to ensure "Adaptive Management" remains effective.
- Independent Audits: every 5 years as outlined in the approval conditions (33-36) by the Department, an [Independent Audit](#) will be conducted by a third party to verify that all mitigations are being implemented as promised.

Consolidated MNES Monitoring & Compliance Matrix

| Protected Matter | Conservation Alignment | Measurable Performance Indicator | Trigger Value for Corrective Action | Monitoring Frequency |
|---|---|--|---|--|
| Squatter Pigeon <i>(Geophaps scripta scripta)</i> | Aligns with 2015 Advice; <ul style="list-style-type: none"> • reduce mortality • protect foraging/breeding habitat near water. | <ul style="list-style-type: none"> • Fauna Strikes: Number of recorded bird deaths/injuries • Speed: GPS logs of site vehicles. | <ul style="list-style-type: none"> • One (1) bird injury/death • vehicle speed >40km/hr. | <ul style="list-style-type: none"> • Daily visual site checks • Monthly GPS log audits. |
| Ornamental Snake <i>(Denisonia maculata)</i> | Aligns with 2014 Advice; <ul style="list-style-type: none"> • maintain landscape hydrology • prevent siltation of gilgais. • Prevent restrictions to movement between habitats | <ul style="list-style-type: none"> • Water Quality: NTU (turbidity) levels in seasonal swamps. • Connectivity: Fence ground-clearance. | <ul style="list-style-type: none"> • NTU >20% above water quality trigger values • ESC devices sagging/blocked by debris. • Snakes trapped in fencing | <ul style="list-style-type: none"> • Daily during rain events (>10mm); • Weekly ESC device/fence inspections. |

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| <i>Solanum johnsonianum</i> & <i>S. dissectum</i> | Aligns with 2016 Advice; <ul style="list-style-type: none"> to prevent exotic grass dominance/invasion habitat fragmentation. | <ul style="list-style-type: none"> Weed Cover: % of exotic grasses in known habitat/buffer zones. Buffer Integrity: Distance to clearing. | <ul style="list-style-type: none"> Exotic grass cover >40%; Encroachment into 50m exclusion zone. | <ul style="list-style-type: none"> Annual pest audits Post implementation of control actions Daily during active clearing. |
| Fauna MNES | Aligns with Threat Abatement Plans; <ul style="list-style-type: none"> feral cats/foxes exotic grasses/weed management. | <ul style="list-style-type: none"> Pest Presence: Number of feral predator sightings. % exotic grass cover % native grass cover. | <ul style="list-style-type: none"> Sighting of feral cat/fox >40% exotic grass cover Reported injury or death of fauna species | <ul style="list-style-type: none"> Prior, during and post pest control actions Annual pest audit |

Phased Implementation Schedule

| Project Phase | Key Avoidance & Mitigation Measures | Timing & Duration |
|---------------------------|--|---|
| Pre-Commencement | Final site-walk to verify <i>Solanum</i> and Ornamental Snake exclusion flagging. | Within 48 hours prior to any ground disturbance. |
| Construction | Active fauna spotter-catchers; daily ESC inspections; strict 40km/hr speed limits. | Daily for the duration of all active clearing and earthworks. |
| Operation | Annual weed audits; feral animal trapping; fire hazard management. | Ongoing; annually for the duration of construction as specified in the approval conditions. |
| Repair & Rehab | Decompaction of soils; seeding of native Squatter Pigeon foraging habitat. | Commencing within 3 months of construction completion in the temporary disturbance areas and as set out in the approved conditions. |

Mandatory Reporting Framework

| Report Title | Contents & Objectives | Submission Frequency |
|---------------------------------------|---|---|
| Annual Compliance Report (ACR) | Audit of all performance indicators, trigger breaches, and corrective actions taken. | Every 12 months from the date of project approval. |
| Non-Conformance Report | Detailed account of any "Trigger Value" breach (e.g., a fauna death or siltation event). | Within 48 hours (electronic) 12 business days (written) of detection of the non-compliance as set out in the approval conditions. |
| Weed & Pest Audit | Data from motion cameras (cats/foxes) vegetation quadrats (weeds) permanent photo points (weeds). | Annually and after targeted control programs. |
| Plan Review Report | Analysis of monitoring data to propose updates to the EMP based on adaptive learning. | Every year and/or following a significant environmental incident. |

Adaptive Management & Review

If monitoring reveals a mitigation isn't working (e.g., *Solanum sp* population is declining despite weed control), the proponent is obligated to:

- Analyse why the performance indicator was not met.
- Update the management plan with improved measures.

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3. Resubmit the revised EMP for Ministerial approval if the variations change environmental outcomes.

Roles and Responsibilities

| Role | Key Responsibilities | Accountability for Compliance |
|------------------------------------|--|--|
| Project Manager | Oversight of budget/schedule for environmental controls; signing off on Annual Compliance Reports (ACR). | Overall compliance with EPBC Conditions. |
| Environmental Manager | Maintaining the Non-Conformance Register; notifying DCCEEW of trigger breaches; coordinating independent audits. | Condition 6i (Reporting and Review). |
| Site Supervisor | Daily boundary inspections; ensuring staff adhere to 40km/hr speed limits; verifying weed hygiene certificates. | Condition 6g (Implementation of Mitigations). |
| Ecologist / Fauna Spotter | Pre-clearance surveys; handling/relocating Ornamental Snakes/Squatter Pigeons; flora health monitoring. | Condition 6f (Consistency with Conservation Advice). |
| All Staff & Contractors | Adhering to site inductions; reporting sightings/incidents immediately; staying within flagged clearing limits. | General Compliance. |

Appendix E MNES Trigger Values and Explanatory Notes

| Habitat Component | Performance Indicator | Trigger Value / Threshold | Explanatory Notes (Alignment & Habitat Needs) |
|--|--|--|---|
| Squatter Pigeon: Breeding Habitat | Native Perennial Grass Cover in identified breeding zones. | Trigger: Average ground cover of native perennial grasses falls below 24%. | Breeding Requirements: Typically, on stony rises within 1 km of permanent water. Nests are shallow ground depressions lined with grass/leaves. They require patchy ground cover for predator evasion while nesting. |
| Squatter Pigeon: Breeding Habitat | Distance to Perennial Water for active nests. | Threshold: Breeding habitat must be within 1.7 km (average <500m) of perennial water. | Critical Access: Drinking occurs daily, usually in the morning. Loss of access to water or nesting sites within this radius significantly reduces breeding success. |
| Ornamental Snake: Shelter Habitat | Soil Crack Availability in gilgai formations. | Trigger: Evidence of soil compaction or leveling that closes deep cracks (>50mm wide). | Shelter Requirements: This species is viviparous and does not require specific breeding features, but it requires deep soil cracks for shelter during dry periods and daytime inactivity. |
| Ornamental Snake: Shelter Habitat | Gilgai Microrelief Integrity (Mounds & Depressions). | Threshold: 0.0% unauthorized leveling or deep ripping in mapped gilgai areas. | Inundation Cycle: Cracking clay soils (vertosols) create ephemeral wetlands for frog prey. Any process that disturbs the landform (e.g., clearing, ploughing) significantly impacts shelter capacity. |
| Ornamental Snake: Shelter Habitat | Coarse Woody Debris (CWD) and leaf litter. | Trigger: Reduction of CWD below baseline levels in dry season shelter areas. | Alternate Shelter: During wet seasons when soil cracks disappear, snakes rely on coarse woody debris and litter for daytime shelter. |

Additional Explanatory Notes for Breeding and Shelter

- Squatter Pigeon Breeding Season: While they can breed year-round, the primary season is July to February. Monitoring should intensify during this period, and grazing must be excluded from known nesting sites to prevent nest trampling.
- Ornamental Snake "Important Habitat": All habitats meeting the definition of gilgai formations or open forest/woodland associated with wetlands are typically considered "Important Habitat" by the Department.
- Foraging Connectivity: Ornamental Snake, fencing that does not have ground-level gaps for movement is a trigger for corrective action.
- Siltation Sensitivity: For the Ornamental Snake, a key shelter trigger is silt accumulation >5mm in gilgai cracks, as this permanently blocks shelter access and smothers egg-laying sites for frog prey.

Key Explanatory Notes for Compliance

- Squatter Pigeon (Breeding): The 24% cover threshold is derived from best-practice landscape metrics for the species, ensuring enough cover for nest concealment while maintaining the open spaces required for foraging and dusting.
- Ornamental Snake (Shelter): The 5mm siltation trigger aligns with the *Approved Conservation Advice (2014)* regarding habitat degradation. Preventing silt from filling gilgai cracks is the primary mechanism for maintaining shelter and prey (frog) breeding cycles.
- Solanum Integrity: Maintaining a 50m buffer is the "Avoidance" measure; the 40% weed trigger is the "Mitigation" measure to ensure the *Solanum* is not out-competed by high-biomass exotic grasses.

Appendix F EPBC Listed Species - Step-by-Step Response Procedure

| Phase | Action Item | Responsibility |
|-----------------------------|---|-----------------------|
| 1. Immediate Stop | Cease all machinery within 50m of the discovery. Keep engines running briefly if the bird is still on the nest to avoid sudden silence, then shut down. | Machine Operator |
| 2. Secure the Area | Place high-visibility flagging tape or cones at a 25m radius around the site. Do NOT approach the nest/crack closely (stay at least 5m back). | Site Supervisor |
| 3. Notify | Immediately call the Fauna Spotter-Catcher (FSC) and Environmental Manager. | Site Supervisor |
| 4. Ecological Assessment | The FSC must assess if the site is "Active." For Squatter Pigeons, this means checking for eggs or dependent young. | Fauna Spotter-Catcher |
| 5. Implementation of Buffer | If active, an Exclusion Zone (minimum 50m) must be formally established with signage. No clearing or high-vibration work is permitted within this zone. | Env. Manager |
| 6. Documentation | Record the GPS location, take photos from a distance, and enter the details into the Animal Breeding Place Register. | Site Supervisor |

Specific Handling Rules

- Squatter Pigeon Nests: DO NOT RELOCATE. Squatter Pigeons are ground-nesters and will likely abandon the nest if it is moved. The exclusion zone must remain until the young have fledged (verified by an ecologist).
- Ornamental Snakes: The FSC may relocate the individual to a pre-approved Refuge Area if permitted under their Rehabilitation Permit. The shelter crack itself should be inspected to ensure no other individuals are present before work resumes.

When Can Work Recommence?

Work inside the exclusion zone may only restart when the Suitably Qualified Ecologist provides a "Clearance Certificate" or written confirmation that:

1. The Squatter Pigeon chicks have naturally dispersed; or
2. The Ornamental Snake has been safely relocated and the habitat is no longer occupied.

Appendix G EPBC Conditions - Site Supervisor Compliance Calendar

| Frequency | Task Description | Responsibility | Record Required |
|-----------|--|-----------------|----------------------|
| Daily | Boundary Checks: Verify exclusion fencing and "Solanum Protection Zone" signage are intact. | Site Supervisor | Daily Site Diary |
| Daily | Speed Audit: Monitor GPS logs or conduct spot checks to ensure <40km/hr compliance. | Site Supervisor | Vehicle Log / SMS |
| Daily | ESC Inspection: Visual check of silt fences and sediment basins in gilgai catchments. | Site Supervisor | Inspection App / Log |
| Weekly | Fence Integrity: Detailed inspection of snake-friendly fencing for ground-level gaps (>100mm). | Site Supervisor | Weekly HSEQ Report |
| Post-Rain | Siltation Audit: Inspect gilgai cracks for sediment accumulation >5mm within 24hrs of >10mm rain. | Env. Manager | Photo-point Log |
| Monthly | Fauna Review: Audit "Animal Breeding Place" register for any new Squatter Pigeon nests. | Ecologist | Electronic Register |
| Monthly | Predator Check: Review on-site motion camera footage for feral cat/fox detections. | Env. Manager | Camera Data Log |
| Quarterly | Weed Audit: Quantitative survey of exotic grass cover in <i>Solanum</i> buffer zones. | Ecologist | Weed Survey Report |
| Bi-Annual | Fire Hazard: Assess fuel loads and grass height to mitigate fire risk to <i>Solanum</i> populations. | Env. Manager | Hazard Assessment |
| Annual | Compliance Review: Compile all logs into the Annual Compliance Report (ACR) for DCCEEW. | Project Manager | ACR Submission |

Appendix H Land Condition Assessment

LAND CONDITION ASSESSMENT

Smoky Creek Solar Farm



Client: RPS Australia East Pty Ltd

**Banana Shire Council
PLANNING APPROVAL**

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23 OCT 2019

Project Number: J000283
Status: Final
Date: 27/09/2019





Important Note

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Document Version Register

| Version | Purpose | Lead Author | Reviewer | Approved for Issue | |
|---------|---------|-------------|----------|--------------------|------------|
| | | | | Approver | Date |
| 1 | Final | SD & JH | LMT | LMT | 27/09/2019 |



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Appendix B: Land Degradation Features (Dunn Property) B.1
Appendix C: Land Degradation Features (Fenech Property) C.1
Appendix D: Land Degradation Features (Maynard Property) D.1



1. Introduction

Range Environmental was engaged by RPS Australia East Pty Ltd (RPS) on behalf of Edify Energy Pty Ltd to undertake a land condition assessment for the proposed Smoky Creek Solar Farm (Figure 1).

The proposed solar farm includes 10 lease areas that have a total area of 2188 hectares and are located within the following landholder properties:

- Maynard property: Lot 39 RN395 (Lease A) and Lot 37 RN1147 (Lease B1 & B2);
- Dunn property: Lot 29 RN210 (Lease E), Lot 32 RN194 (Lease F) and Lot 33 RN210 (Lease G1 & G2); and
- Fenech property: Lot 28 RN211 (Lease C) and Lot 18 RN271 (Lease D1 & D2).

The proposed solar farm site is currently used for cattle grazing. Land Resource Assessment and Management (LRAM) (2019¹) prepared an indicative Agricultural Land Class (ALC) map for the site which indicated that it may potentially include cropping (ALC A) and grazing land (ALC C) (refer to Map 2 of the LRAM (2019) report) (Appendix A:).

The proposed solar farm is a temporary use and the land can be returned to agricultural use at the end of the solar farm life. The solar farm will not have a permanent impact on agricultural land values or quality if construction, operational and decommissioning works are managed correctly to minimise the risk of further land degradation occurring.

The land condition assessment was conducted to document and describe pre-development land and soil features at the site of the proposed solar farm. The purpose of this was to inform the preparation of further detailed plans for the development to prevent any worsening of existing land degradation or the creation of new land degradation issues. Examples of detailed plans may include: Erosion and Sediment Control Plan (ESCP), Environmental Management Plans (Construction and Operational), Soil and Rehabilitation Management Plan, Site Layout Plan, Earthworks Plan and Stormwater Drainage Plan.

¹ LRAM. 2019. Review of Qualitative Agricultural Land Assessment Smoky Creek Solar Farm. Prepared for Banana Shire Council.



Figure 1 Site Locality

Project:
Land Condition
Assessment

Client: RPS Australia
East Pty Ltd

Project No.: J000283

Compiled by: JLH Date: 25/09/2019
Approved by: SKD Date: 25/09/2019

0 0.6 1.2 Kilometres

Legend

- Lease Area
- Site Boundary Owner**
- Dunn
- Fenech
- Maynard

The content of this document includes third party data. We do not guarantee the accuracy of such data.

Source: Cadastral data sourced from Queensland Globe (2017). Aerial imagery sourced from Esri (2019).



2. General Property Descriptions

Table 1 below provides a general description of the properties that comprise the lease areas of the Smoky Creek Solar Farm, including the current and proposed agricultural land use activities. The locations of agricultural infrastructure at the properties is provided at Figure 2, Figure 3, Figure 4 and Figure 5.

Table 1 General description and agricultural conditions of the properties that comprise the lease areas

| Descriptors | Maynard Property | Dunn Property | Fenech Property |
|--|--|---|--|
| General Property Descriptions | | | |
| Property Size (ha) | 2093 | 657 | 874 |
| Leases | A, B1 and B2 | E, F, G1 and G2 | C, D1 and D2 |
| Leased area (ha) | 1046 | 657 | 539 |
| Property Plans | Appendix B | Appendix C | Appendix D |
| Current Agricultural Use² | | | |
| Type of activity | Cattle grazing | Cattle grazing | Cattle grazing |
| Stocking rate | 1 head per 8 acres | 1 head per 8 acres | 1 head per 7-10 acres |
| Key pasture species | Buffel grass and Urochloa | Buffel grass and Urochloa | Buffel grass and Urochloa |
| Existing agricultural infrastructure | | | |
| Contour banks | Yes | Yes | Yes |
| Bores | No | No | No |
| Dams | Yes | Yes | Yes |
| Windmills | Yes | No | No |
| Cattle yards | Yes | Yes | No |
| Cattle dips | Yes - Lease A | Yes - Lease E | No |
| Homestead | No (abandoned) | Yes | No |
| Agricultural Uses During the Operational Life of Solar Farm³ | | | |
| Co-location | As detailed in previous reports, there is no proposed co-location of agricultural land uses within the lease areas. Vegetation (grass cover) will be managed by slashing as required to simulate grazing pressures, with weed control also undertaken as required. | | |
| Co-existence | Yes | No (lease areas occupy entire property) | Yes |
| Type of activity | Cattle grazing on land outside the lease areas | Not applicable | Cattle grazing on land outside the lease areas |

² Findings of the site inspection and interviews with land holders on 18-19 September 2019.

³ Information sourced from land holders during onsite interviews on 18-19 September 2019.

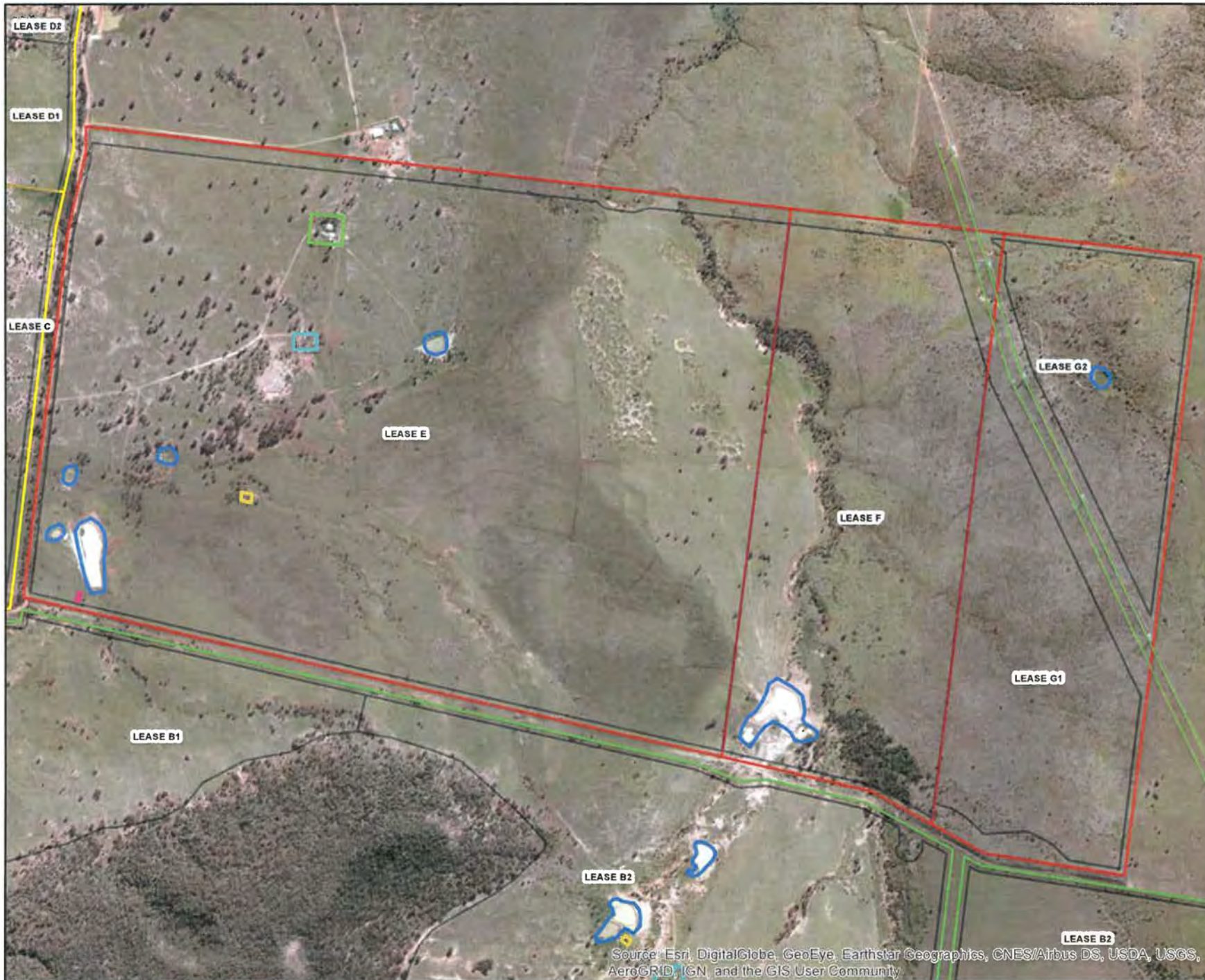


Figure 2
Key Infrastructure
Dunn Property

Project:
 Land Condition
 Assessment

Client: RPS Australia
 East Pty Ltd

Project No.: J000283

Compiled by: JLH Date: 25/09/2019
 Approved by: SKD Date: 25/09/2019



Legend

- Lease
- Key Infrastructure**
- Cattle dip
- Cattleyard
- Dam
- Homestead
- Waste burial pit
- Trough
- Watertank
- Powerlines
- Site Boundary**
- Owner**
- Dunn
- Fenech
- Maynard

The content of this document includes third party data. We do not guarantee the accuracy of such data.

Source: Cadastal data sourced from Queensland Globe (2017). Aerial imagery sourced from Esri (2019).



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



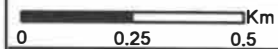
Figure 3
Key Infrastructure
Fenech Property

Project:
 Land Condition
 Assessment

Client: RPS Australia
 East Pty Ltd

Project No.: J000283

Compiled by: JLH Date: 25/09/2019
 Approved by: SKD Date: 25/09/2019



Legend

□ Lease Area

Key Infrastructure

- Cattle dip
- Cattleyard
- Dam
- Homestead
- Waste burial pit
- Trough
- Watertank
- Powerlines

Site Boundary

Owner

- Dunn
- Fenech
- Maynard

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Source: Cadastral data sourced from Queensland Globe (2017), Aerial imagery sourced from Esri (2019).



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DC, USDA, USGS, AeroGRID, IGN, and the GIS User Community. B1



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

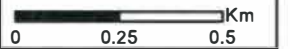
Figure 4
Key Infrastructure
Maynard Property

Project:
 Land Condition
 Assessment

Client: RPS Australia
 East Pty Ltd

Project No.: J000283

Compiled by: JLH Date: 25/09/2019
 Approved by: SKD Date: 25/09/2019



Legend

Lease Area

Key Infrastructure

- Cattle dip
- Cattleyard
- Dam
- Homestead
- Waste burial pit
- Trough
- Watertank
- Powerlines

Site Boundary

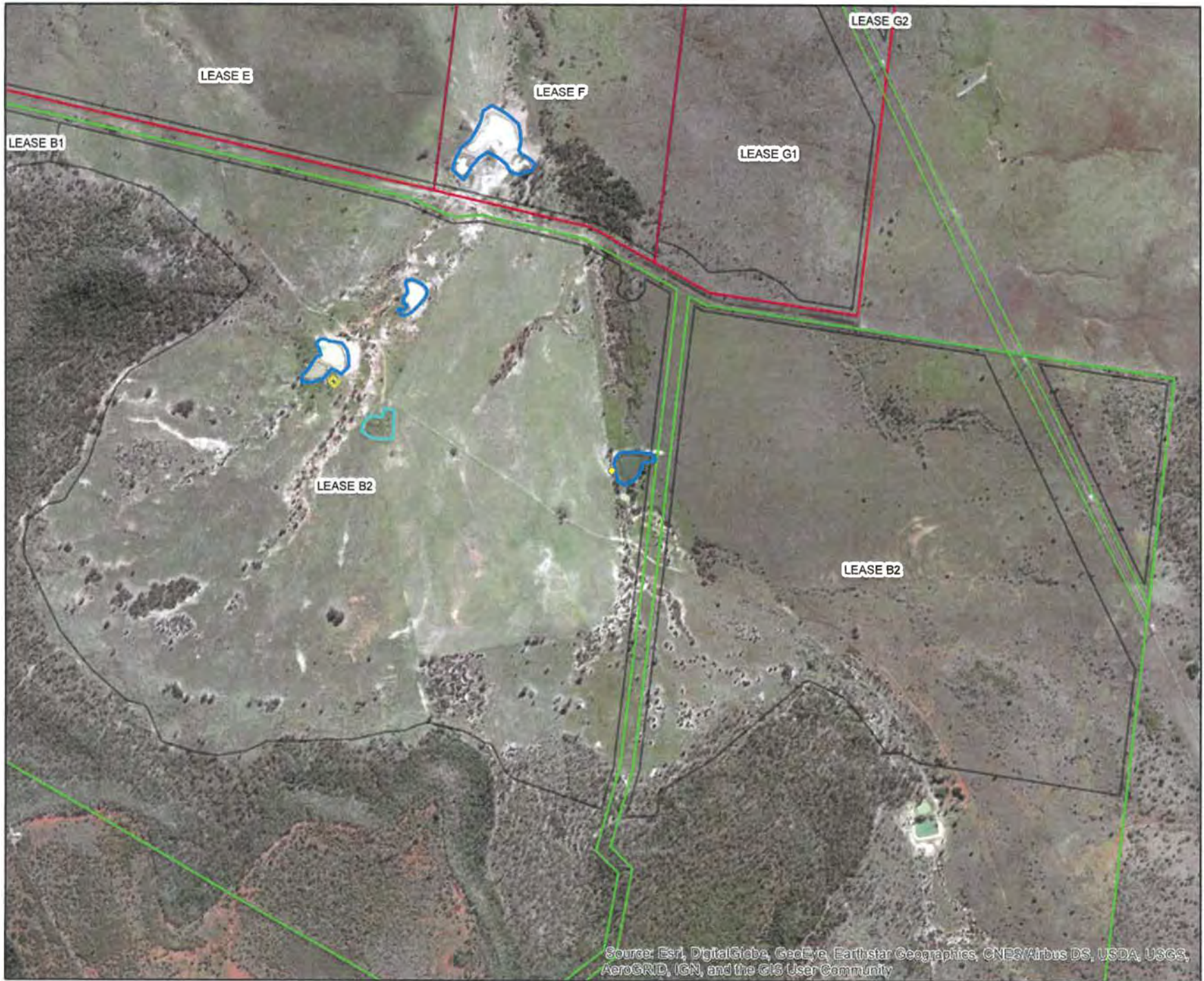
Owner

- Dunn
- Fenech
- Maynard

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Source: Cadastral data sourced from Queensland Globe (2017). Aerial imagery sourced from Esri (2019).





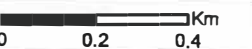
**Figure 5
Key Infrastructure
Maynard Property**

**Project:
Land Condition
Assessment**

**Client: RPS Australia
East Pty Ltd**

Project No.: J000283

Compiled by: J.L.H Date: 25/09/2019
Approved by: SKD Date: 25/09/2019



- Legend**
- Lease Area
 - Key Infrastructure**
 - Cattle dip
 - Cattleyard
 - Dam
 - Homestead
 - Waste burial pit
 - Trough
 - Watertank
 - Powerlines
 - Site Boundary**
 - Owner**
 - Dunn
 - Fenech
 - Maynard

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community




3. Land and Soil Features


Land and soil features observed at the site and determined from Muller (2008⁴) which may present potential constraints to future agriculture and/or construction and rehabilitation of the solar farm are identified in Table 2 and shown in Figure 6.

⁴ Muller. P. G. 2008. Soils of the Banana Area Central Queensland.


Table 2 Key land and soil features

| Constraint | Description | Soils | Representative Photograph |
|---------------------------------|--|---|---|
| Gilgai microrelief (melonholes) | <ul style="list-style-type: none"> • Gilgai are depressions that form in the surface of cracking clay soils (Vertosols). They can hold water during wet conditions. • Continuous cultivation can level out some shallow gilgai. But they will reform if the ground is left undisturbed. • Gilgai soil profiles include soils that are dispersive, very strongly acid and moderately saline. • Melonhole gilgai were observed in the field to commonly be greater than 0.5 m deep and at least several metres wide. • Soils that form gilgai occur across 20% of the lease areas | Beldeen, Greycliffe and Greycliffe Melonhole Phase. |  |


View to the north of gilgai microrelief

| Constraint | Description | Soils | Representative Photograph |
|--------------------|---|--|---|
| Shrink swell soils | <ul style="list-style-type: none"> • Shrink-swell soils (or cracking clay soils) move or react to soil moisture. • Infrastructure engineering designs need to account for soil movement by shrink-swell soils. • Shrink swell soils occur across 39% of the lease areas. | Annandale, Beldeem, Clancy, Earlsfield, Greycliffe and Greycliffe Melonhole Phase. |  |

Example of shrink swell (Vertosol) soils


| Constraint | Description | Soils | Representative Photograph |
|--------------|--|--|---|
| Surface rock | <ul style="list-style-type: none">• Dense surface rock was observed in parts of the lease areas. Rocks ranged in size from medium pebbles (6-20mm) to stones (60-200 mm).• Surface rock can impede cultivation practices. | Kokotungo, Spier, Ulogie and Annandale |  |

Example of dense surface rock cover.

| Constraint | Description | Soils | Representative Photograph |
|--------------------------|--|---|--|
| Dispersive soils | <ul style="list-style-type: none"> Dispersive soils include soils with an Exchangeable Sodium Percentage (ESP) of 15 or more or a Ca:Mg ratio <0.1. Dispersive soils present a high erosion risk if exposed. They also impede drainage and root growth. Topsoil (A horizon) is not normally dispersive soil. Dispersive soils commonly occur in the subsoil (B horizon). Dispersive soils at the site are mainly associated with gilgai soils (from 0.2 m) and texture contrast soils (from 0.2 m). Dispersive soils occur at 0.8 m for Earlsfield soils (Vertosols). Soils with dispersive soils in their profile occur across 75% of the lease areas. | Bluff, Desdemona, Earlsfield, Greycliffe, Greycliffe Melonhole Phase, Kokotungo and Ulogie. |  <p>Example of dispersive soil erosion.</p> |
| Very strongly acid soils | <ul style="list-style-type: none"> Very strongly acid soils have a pH <5. Very strongly acid soils can limit plant growth for agriculture or rehabilitation due to decreased nutrient availability and increased elemental toxicity. Very strongly acid soils at the site are mainly associated with gilgai soils (from 0.4 m) and acid texture contrast soils (Kurosols) (throughout the profile). Very strongly acid soils occur at depth (1.4 m) for the Spier soils. Soils with very strongly acid soils in their profile occur across 27% of the lease areas. | Greycliffe, Greycliffe Melonhole Phase, Bluff and Spier. | Not available. |




| Constraint | Description | Soils | Representative Photograph |
|-------------------------|---|--|---------------------------|
| Moderately saline soils | <ul style="list-style-type: none"> Moderately saline soils have an EC_{se} greater than 4 dS/m. Saline soils can affect plant growth for agriculture or rehabilitation works. Topsoil (A horizon) is not normally saline soil. Saline soils commonly occur in the subsoil (B horizon). Moderately saline soils at the site are mainly associated with gilgai soils (from 0.2 m) and texture contrast soils (from 0.7m). Moderately saline soils occur at 0.6 m for Earlsfield soils (Vertosols). Soils with moderately saline soils in their profile occur across 74% of the lease areas. | Bluff, Earlsfield, Greycliffe, Greycliffe Melonhole Phase, Kokotungo and Ulogie. | Not available. |

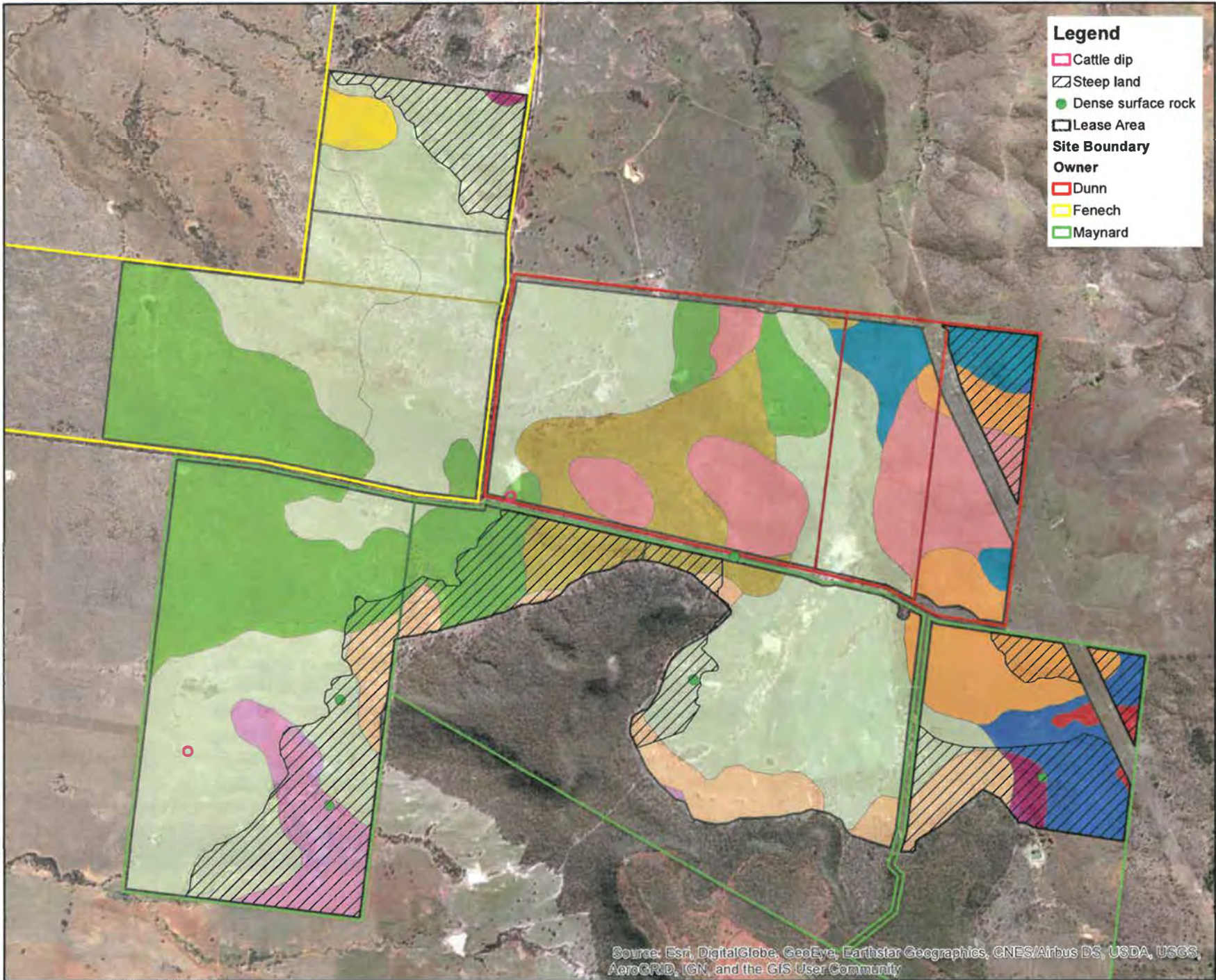
| Constraint | Description | Soils | Representative Photograph |
|-------------------|---|--------------------------|--|
| Contaminated soil | <ul style="list-style-type: none">• Cattle dips were located at Lease Areas A and E.• Common soil contaminants at cattle dips include arsenic and DDT.• Contamination at cattle dips is usually localised to the dip area (i.e. nominally within 30m of the dip and associated infrastructure⁵). | Greycliffe and Kokotungo |  |

View to the east of a livestock plunge dip

⁵ NSW Agriculture. 1996. Assessment and Cleanup of Cattle Tick Dip Sites for Residential Purposes.

| Constraint | Description | Soils | Representative Photograph |
|--------------|---|---|---|
| Steep slopes | <ul style="list-style-type: none"> • Steeply sloping land exceeds 3%. Steeply sloping land occurs in lease areas A, B1, B2, D2 and G2 • Steeply sloping land, particularly where dispersive soils occur, can increase the risk of erosion for land disturbing activities for agriculture or construction. | Annandale, Beldeem, Bluff, Clancy, Earlsfield, Greycliffe Melonhole Phase, Greycliffe, Kokotungo, Santo Fertile Phase, Santo Stony Phase, Spier, Ulogie |  |

View to the north of steeply sloping land.



Legend

- Cattle dip
- Steep land
- Dense surface rock
- Lease Area
- Site Boundary**
- Owner**
- Dunn
- Fenech
- Maynard

Figure 6
Key land & soil features

Project:
Land Condition Assessment

Client: RPS Australia East Pty Ltd

Project No.: J000283

Compiled by: JLH Date: 25/09/2019
Approved by: SKD Date: 25/09/2019



Legend

Soils of the Banana Region (Muller, 2008)

- Annandale
- Belldeen
- Bluff (BAN)
- Clancy
- Desdemona
- Earlsfield
- Greycliffe
- Greycliffe
- Melonhole Phase
- Kokutungo
- Santo Fertile Phase
- Santo Stony Phase
- Spier
- Ulogie

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Source: Cadastral data sourced from Queensland Globe (2017). Aerial imagery sourced from Esri (2019).



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



4. Existing Land Degradation

A summary of existing land degradation features across the lease areas is provided at Table 3 and is based on observations and measurements made during the land condition assessment undertaken by Sam Donald and Lucas Talbot of Range Environmental on 18-19 September 2019.

Further detailed assessment of existing land degradation features is provided at Appendix B: (Dunn Property) Appendix C: (Fenech Property) and Appendix D: (Maynard Property) and shown in Figure 7, Figure 8, Figure 9 and Figure 10.

Table 3 Summary of existing land degradation features across the lease areas

| | Maynard Property | Dunn Property | Fenech Property |
|---------------------------|---|---|--|
| Land degradation features | <ol style="list-style-type: none"> 1. Gully erosion (including lateral bank erosion). 2. Sheet erosion. 3. Erosion of banks of watercourses. 4. Vegetation clearing. 5. Exposed subsoil. | <ol style="list-style-type: none"> 1. Gully erosion. 3. Erosion of banks of watercourses. | <ol style="list-style-type: none"> 1. Gully erosion. 3. Erosion of banks of watercourses. 4. Vegetation clearing. |
| General causes | <ol style="list-style-type: none"> 1. Factors contributing to gully erosion included: <ol style="list-style-type: none"> a. Concentration of overland flow by contour banks and natural topographical features including open depressions (Photograph 3). b. Reduced groundcover by pastoral activities and climatic conditions, including drought (Photograph 1 and Photograph 5). c. Removal of vegetation, including along watercourses (Photograph 4). d. Livestock tracking. e. Exposure of dispersive subsoils (Photograph 2). 2. Sheet erosion was generally formed on areas with reduced groundcover, shallow topsoil (A horizon) and on steeper slopes, including adjoining banks of watercourses. 3. Factors contributing to the erosion of banks of watercourses included: <ol style="list-style-type: none"> a. Concentration of overland flow. b. Reduced groundcover by pastoral activities and climatic conditions, including drought. c. Removal of vegetation. d. Livestock tracking. e. Exposure of dispersive subsoils. 4. Vegetation clearing was considered to have been undertaken to facilitate the agricultural land use. | | |
| General condition | <ol style="list-style-type: none"> 1. The erosion features at the site (including gully, sheet and within watercourses) was generally described as active, unstable and eroding. This was due to: <ol style="list-style-type: none"> a. The lack of vegetation stabilising gully heads, sidewalls and gully floors. b. Fresh sediment deposits present on gully floors and deep cracking sidewalls. c. Dispersive subsoils which are common across the lease areas. d. Limited or ineffective management. | | |



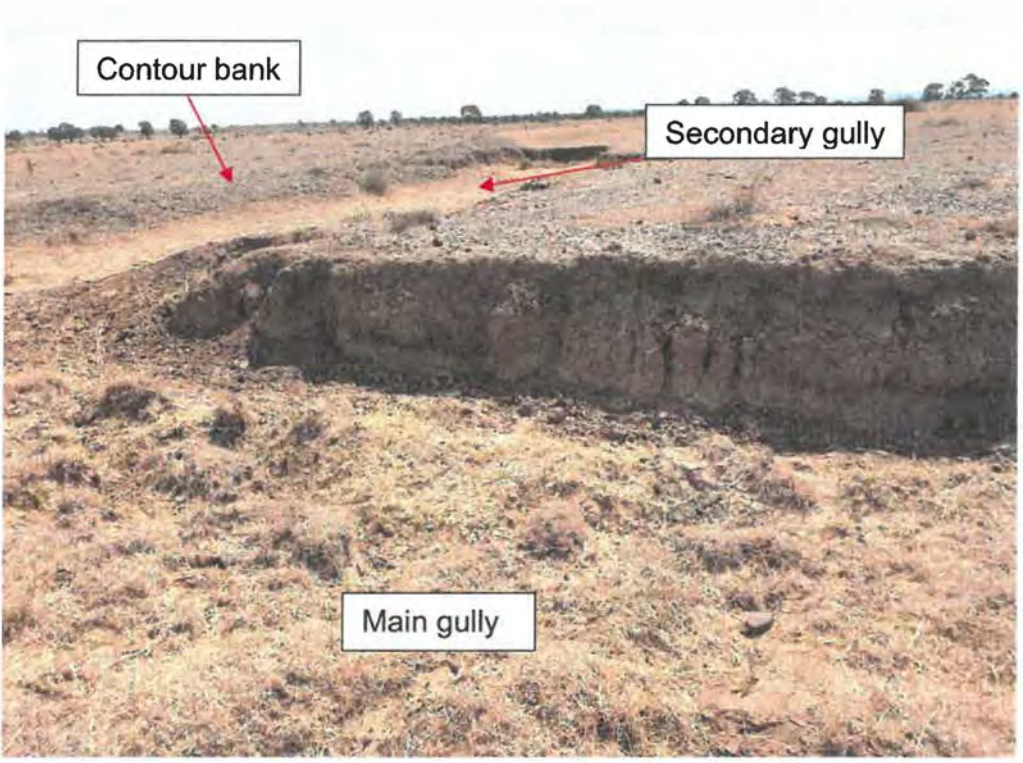
| | Maynard Property | Dunn Property | Fenech Property |
|---------------------|--|---------------|-----------------|
| General locations | <ol style="list-style-type: none"> 1. Gully erosion was generally observed adjoining watercourses (e.g. lateral bank erosion) and within open depressions. Gully erosion was also observed at the ends of contour banks where flows were concentrated. 2. Sheet erosion was generally formed on steeper slopes, adjoining banks of watercourses and at areas with reduced groundcover. 3. Erosion of the banks of watercourses generally occurred on dispersive (sodic) soils. 4. Vegetation clearing occurred on Maynard and Fenech properties, including along drainage lines. | | |
| Existing management | Establishment of exclusion areas (by fencing) around some high-risk areas such as dams and watercourses. Contour banks. | | Contour banks. |



Photograph 1 View to the west of a gully head with limited adjoining groundcover



Photograph 2 View to the north of a gully sidewall in dispersive soils



Photograph 3 View to the north of a secondary gully formed along the contour bank



Photograph 4 View to the north of cleared trees along a drainage line



Photograph 5 View to the south of low groundcover due to drought conditions

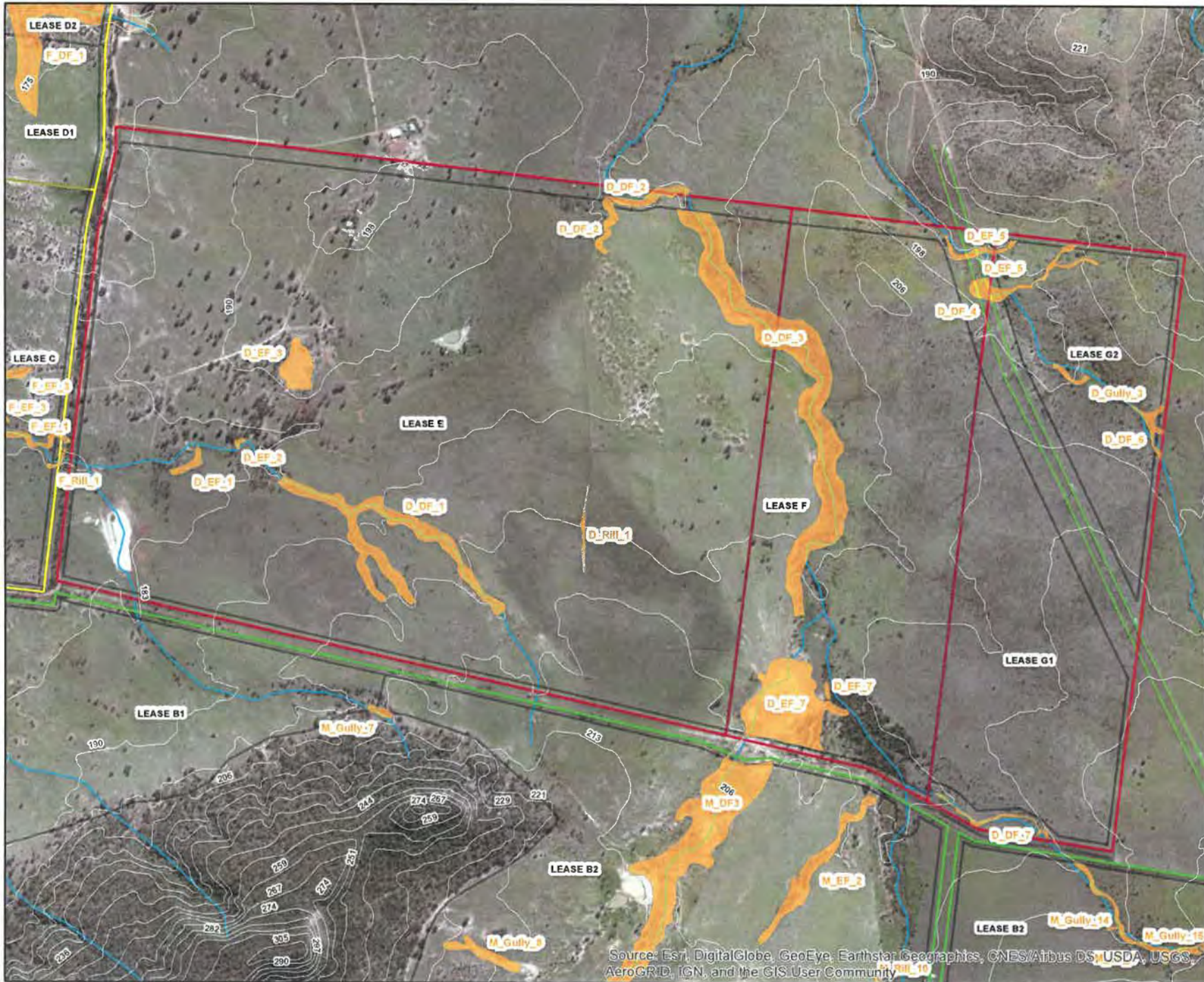


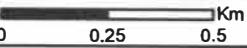
Figure 7
Land Degradation
Features
Dunn Property

Project:
 Land Condition
 Assessment

Client: RPS Australia
 East Pty Ltd

Project No.: J000283

Compiled by: JLH Date: 25/09/2019
 Approved by: SKD Date: 25/09/2019



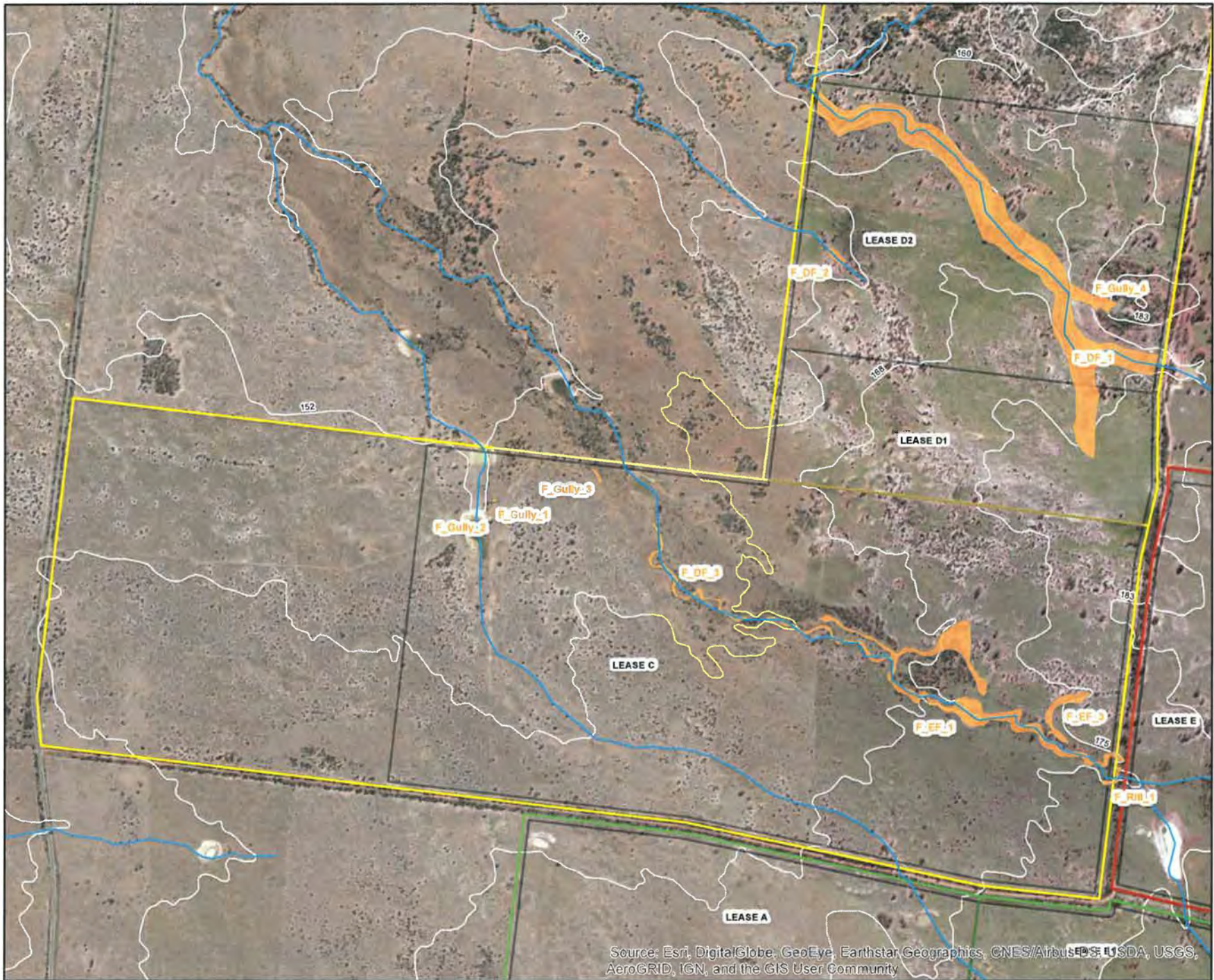
- Legend**
- Powerlines
 - Regulated Vegetation (MSES) - Intersecting a watercourse
 - Land Degradation Feature
 - Lease Area
 - 5m contours
 - Site Boundary**
 - Owner**
 - Dunn
 - Fenech
 - Maynard

The content of this document includes third party data. We do not guarantee the accuracy of such data.

Source: Cadastral data sourced from Queensland Globe (2017). Aerial imagery sourced from Esri (2019).



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



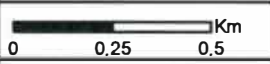
**Figure 8
Land Degradation
Features
Fenech Property**

Project:
Land Condition
Assessment

Client: RPS Australia
East Pty Ltd

Project No.: J000283

Compiled by: JLH Date: 25/09/2019
Approved by: SKD Date: 25/09/2019



- Legend**
- Powerlines
 - Regulated Vegetation (MSES) - Intersecting a watercourse
 - Land Degradation Feature
 - Lease
 - Site Boundary Owner**
 - Dunn
 - Fenech
 - Maynard
 - 5m contours

The content of this document includes third party data. We do not guarantee the accuracy of such data.

Source: Cadastral data sourced from Queensland Globe (2017). Aerial Imagery sourced from Esri (2019).

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

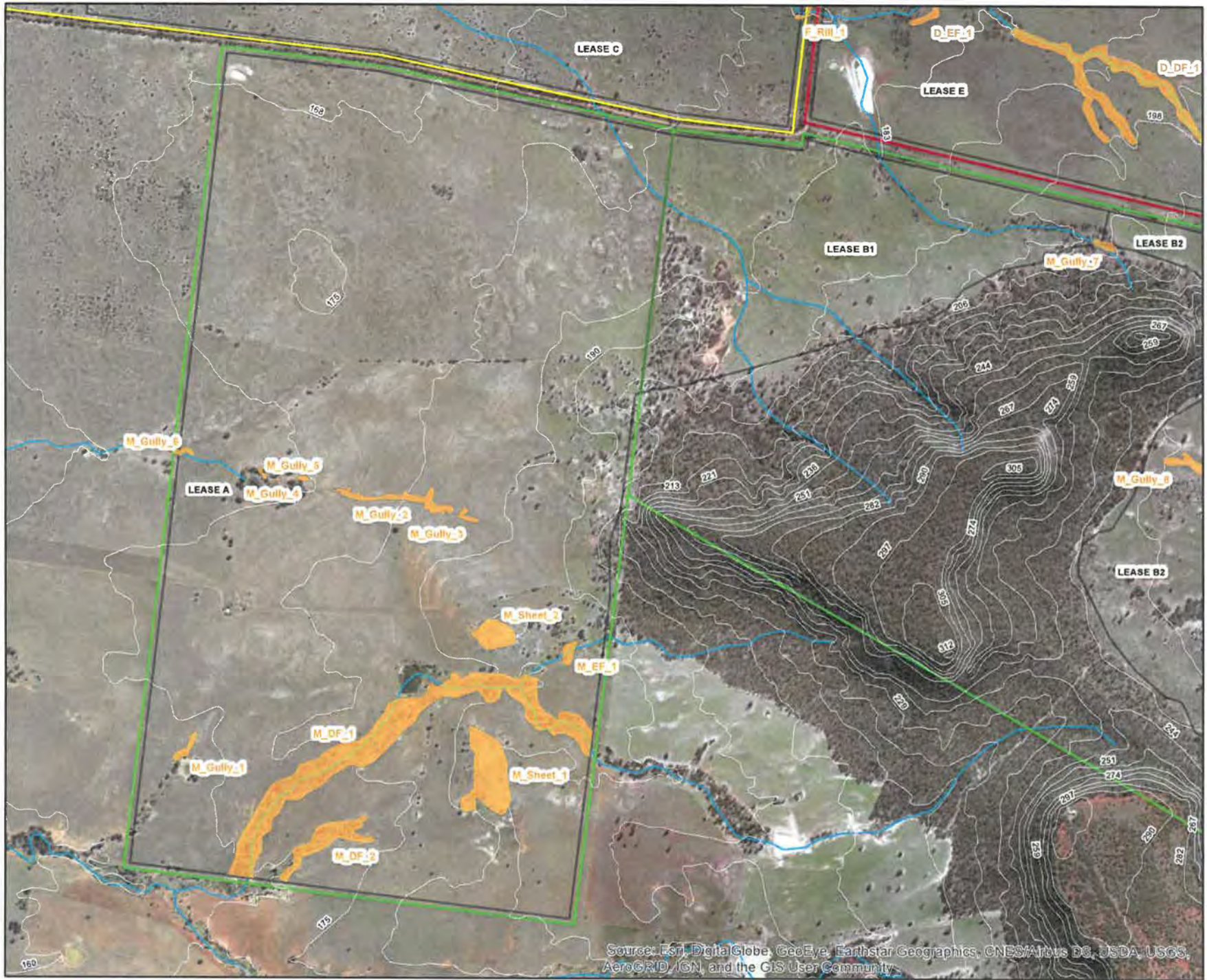


Figure 9 Land Degradation Features Maynard Property West

Project:
Land Condition Assessment

Client: RPS Australia East Pty Ltd

Project No.: J000283

Compiled by: JLH Date: 25/09/2019
Approved by: SKD Date: 25/09/2019

0 0.25 0.5 Km

Legend

- Regulated Vegetation (MSES) - Intersecting a watercourse
- Powerlines
- Land Degradation Feature
- Lease Area
- 5m contours
- Site Boundary
- Owner
 - Dunn
 - Fenech
 - Maynard

The content of this document includes third party data. We do not guarantee the accuracy of such data.

Source: Cadastral data sourced from Queensland Globe (2017). Aerial imagery sourced from Esri (2019).

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

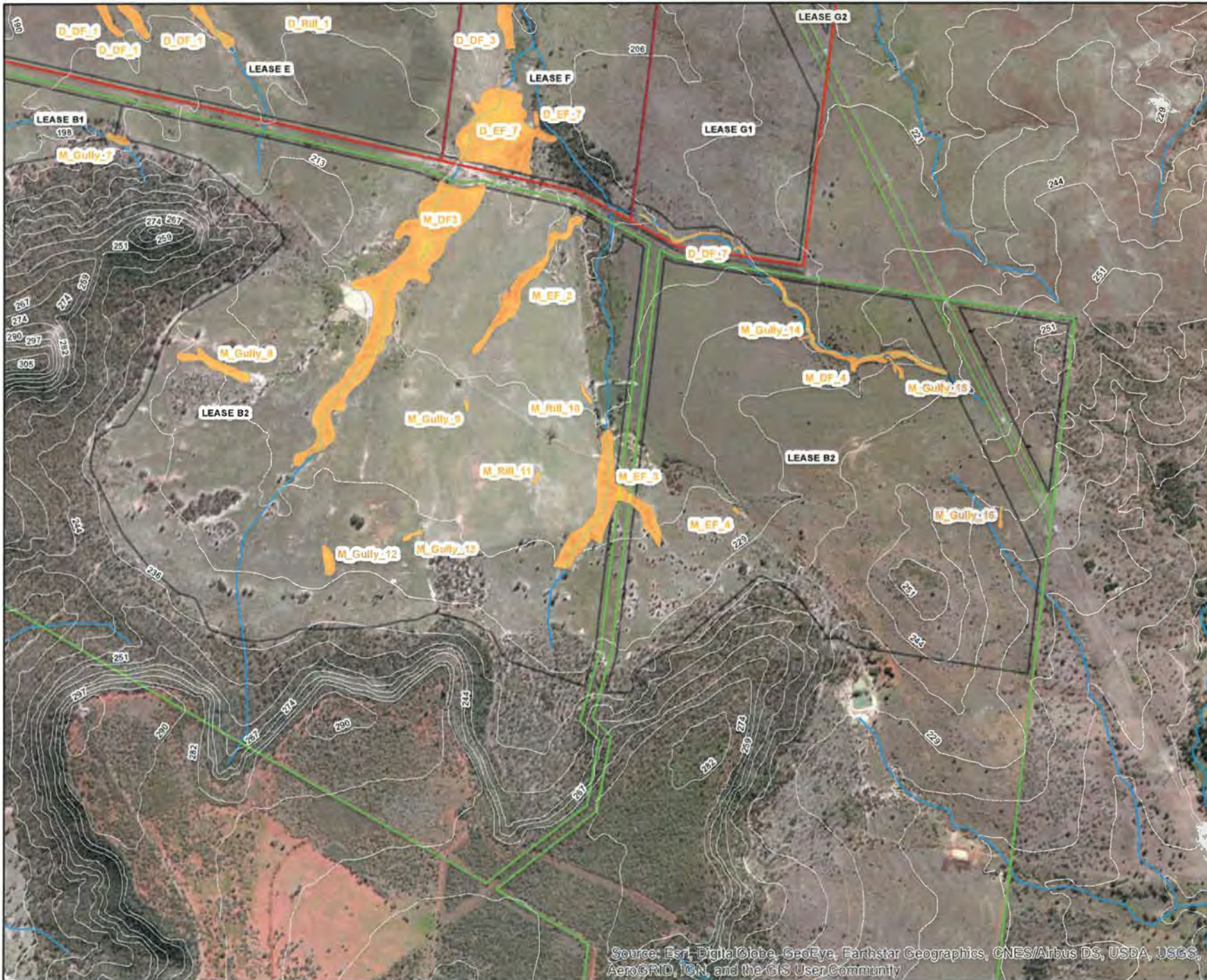


Figure 10 Land Degradation Features Maynard Property East

Project:
Land Condition Assessment

Client: RPS Australia East Pty Ltd

Project No.: J000283

Compiled by: JLH Date: 25/09/2019
Approved by: SKD Date: 25/09/2019



- Legend**
- Regulated Vegetation
 - (M_Ses) - Intersecting a watercourse
 - Powerlines
 - Land Degradation Feature
 - Lease Area
 - 5m contours
 - Site Boundary
 - Owner
 - Dunn
 - Fenech
 - Maynard

The content of this document includes third party data. We do not guarantee the accuracy of such data.

Source: Cadastral data sourced from Queensland Globe (2017). Aerial imagery sourced from Esri (2019).

N

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

5. Land Management Principles

Land degradation, namely in the form of erosion, has already occurred in parts of the solar farm lease areas. The construction, operation and decommissioning of the solar farm should be planned to prevent any worsening of existing land degradation or the creation of new land degradation issues. Achieving this will preserve the agricultural land values of the solar farm site.

Overarching land management principles are presented below to provide general guidance for more detailed planning for the solar farm development.

5.1 Management of Existing Land Degradation Features

Key management principles are provided in the subsections below and described in further detail in the following key resources:

- Carey BW, Stone B, Norman PL, Shilton P (2015) Chapter 13 - Gully Erosion and its control. In: Soil conservation guidelines for Queensland, Department of Science, Information Technology and Innovation, Brisbane.
- Wilkinson S, Hawdon A, Hairsine P, Austin J. 2015. Gully Toolbox. A technical guide for the Reef Trust Gully Erosion Control Programme 2015–16. Commonwealth of Australia.

5.1.1 Land Management

The following land management recommendations are provided to stabilise existing erosion features and manage the progression of erosion:

- Exclusion of established erosion features, including an adequate buffer area. Fences can be installed to establish exclusion areas. Exclusion areas prevent further physical disturbance (including grazing by native fauna) and assists in the rehabilitation (including groundcover) of erosion features.
- The design and layout of the solar farm should consider the location of vehicle tracks, fence lines, built infrastructure and rainfall runoff from solar panel driplines. These features can reduce the groundcover and concentrate stormwater flows.
 - This should include minimising the disturbance footprint upgradient of existing erosion features where practicable, including during construction and operation of the solar farm.
 - Where flows are concentrated (e.g. from solar panels, drains, roads etc), drainage works should be designed to ensure runoff is dispersed onto stable areas that have the capacity to receive increased flows.

- Promote rehabilitation and revegetation of natural drainage features where practicable. Direct sowing of grass species at upgradient areas may be required.
 - Surface cover is the key mitigating factor to the formation of erosion, including gully erosion. Surface cover reduces the risk of erosion by stabilising soils, improves rainfall infiltration and dissipates rainfall.
 - Retaining or re-establishing trees will assist in lowering the water table, drying out the soil profile and stabilising subsoils. This may only be practical in exclusion and riparian areas not subject to development and where shading will not impact solar panel performance.
 - Erosion control mats can be considered as they may assist with seed germination and provide protection from raindrop impact erosion. The mats are not intended for use in high-flow velocity areas.

5.1.2 Soil Management

The following soil management recommendations are provided to stabilise erosion features:

- Soil amelioration may assist in reducing the susceptibility of exposed soils to erosion, including sodic soils which are considered high risk and which occur across an extensive portion of the site.
 - Soil amelioration will also increase the rehabilitation success by promoting plant strike and persistence.
 - Soil sampling and analysis is required to calculate the appropriate amelioration rates.
- Reshaping or filling a gully may be considered if stabilisation (including amelioration and revegetation) is unsuccessful, impractical or if reclamation of land is beneficial to the development. Reshaping and filling works are not recommended in watercourses.
 - Reshaping can include earthmoving activities to batter the sides and head to a more gentle grade. Other reshaping activities include the installation of flumes, chutes, grade stabilisation which are further discussed in Section 5.1.3.
 - Shaping of the gully walls should be carried out only after the head of the gully has been stabilised.

5.1.3 Stormwater Management

Controlling stormwater flows in and surrounding gullies is a critical element for preventing worsening of existing erosion. Options for the management of stormwater flows include



diverting water around gullies or gully head management to control incoming flows. Examples include the following:

- Diversion banks can be used to direct runoff away from the gully and to a stable discharge point. Diversion banks are preferable where the gully is away from a natural drainage line. If the gully has formed in a drainage line care needs to be taken when using diversion banks to avoid causing erosion elsewhere. Discharge points need to be stable and capable of handling the increased runoff. This is very relevant to the site where gully erosion has already occurred due to concentration of flows by existing contour banks.
- Options to manage incoming flows to a gully may include gully stabilised chutes or drop-structures. Chutes are preferred over drop structures if the fall at the gully head is greater than 1m. Careful consideration needs to be given to undermining of structures that may occur in dispersive soils and managing erosion on the downstream side of stabilised gully head structures.
- Weirs can be used to manage flows to stabilise the gully bed. Weirs can be constructed from a range of materials. Careful consideration needs to be given to undermining of weirs that may occur in dispersive soils and managing erosion on the downstream side of the weir when it overtops.

5.2 Guidance for Detailed Management Planning

5.2.1 Erosion and Sediment Control

Erosion and Sediment Control Plans (ESCP) should be prepared for the construction and decommissioning phases of the development in accordance with Best Practice Erosion and Sediment Control (Aust IECA 2008⁶). ESCPs must consider proposed ground disturbing work, soil chemical properties (dispersive subsoils), topography and climate.

The ESCPs should all address the following three key elements of erosion and sediment control:

1. **DRAINAGE** - direct clean water around disturbed areas, control drainage in work areas and manage the discharge at the end of drains to prevent erosion.
2. **EROSION** - minimise the extent and duration of ground cover disturbance and progressively stabilise disturbed areas.
3. **SEDIMENT** - implement appropriate sediment controls to treat runoff from disturbed areas.

⁶ Aust IECA. 2008. Best Practice Erosion and Sediment Control. Picton, Australia.

Temporary erosion and sediment controls should be implemented prior to the commencement of ground disturbing works, maintained throughout the works phase and only removed once permanent controls are in place and functioning correctly and the site is stable.

5.2.2 Soil Management

Soils at the site may have a range of properties that require careful management to prevent harm to soil resources during construction, operation and decommissioning of the solar farm. Such properties include dispersive subsoils, very strongly acid soils and moderately saline soils.

A baseline soil assessment should be undertaken prior to construction in accordance with the Guidelines for Surveying Soil and Land Resources (McKenzie et al., 2008⁷). It should focus on key areas of proposed soil disturbance at the site (i.e. areas of trenching, roads, pads for switching yard and laydown areas etc) to obtain the following information on soil resources:

- Topsoil (A horizon) depth and structure; and
- Exchangeable cations, pH, Electrical Conductivity (EC) and Chloride.

The findings of the baseline soil assessment can inform the preparation of a Soil and Rehabilitation Management Plan. Examples of fundamental soil management measures for construction and decommissioning works include:

- Strip and segregate topsoil and subsoil;
- Do not invert the soil profile when backfilling trenches; and
- Cover or ameliorate dispersive soils, very strongly acid soils or moderately saline soils.

Contaminated soils may occur near cattle dips. This matter will need to be considered and be managed appropriately to prevent exposure, mobilisation or redistribution of potential contaminants.

5.2.3 Groundcover Management

Groundcover within the solar farm lease areas should be slashed as required to simulate grazing pressure. This should be incorporated into the Operational Environmental Management Plan (OEMP).

⁷ McKenzie et al., 2008. Guidelines for Surveying Soil and Land Resources. CSIRO Publishing. Australia.



5.2.4 Rehabilitation

At the end of the solar farm life the lease areas should be rehabilitated to allow agricultural land uses to recommence. Rehabilitation measures should be detailed in a Soil and Rehabilitation Management Plan. Overarching rehabilitation measures may include:

- Removal of all surface infrastructure that is not required by the landholder or other stakeholder;
- Removal of below ground infrastructure within 1 m of the ground surface that is not required by the landholder or other stakeholder;
- Reinstate soils as follows:
 - Do not have dispersive, very strongly acid or moderately saline soils within 300mm of the surface in areas of ALC A land or 100 mm in all other areas (except where this naturally occurs, for example very strongly acid soils are reported to occur in the surface of the Bluff soils).
 - Topsoil texture in rehabilitated areas should be consistent with the pre-disturbed condition determined by the baseline soil assessment.
- Areas that have been compacted shall be ripped.
- Disturbed areas shall be revegetated with existing pasture species (Buffel Grass and Urochloa).

5.2.5 Biosecurity

To meet the General Biosecurity Obligation (GBO) under the *Biosecurity Act 2014*, it is recommended that weed and pest control measures be outlined in the following documents to be prepared as part of the detailed planning and design works for the solar farm development:

- Construction Environmental Management Plan (CEMP);
- Operational Environmental Management Plan (OEMP); and
- Soil Management and Rehabilitation Plan.



Appendix A: LRAM (2019) Report

Your Reference: PR140339-1

Our Reference: CW:nz 19-06 (FID 85501, COM002-18/19, 14704/00000, 14706/00000, 14682/10000, 14299/50000, ID1451981, ID15456646, 1462164, ID1478211)

Contact: Chris Welch

13 June 2019

Edify Energy
C/- RPS
PO Box 977
TOWNSVILLE QLD 4810

Attn: Mark Carter

Dear Mark

**Re: COM002 - 18/19 Public Facility - Other (Solar PV Power Station)
Tomlins, Dodsons & Hibbs Roads, Goovigen & Dixalea
(Lots 39RN395, 28RN211, 18RN271, 37RN1147, 29RN210, 32RN194 &
33RN210)**

Council acknowledges receipt of your response to our Information Request which contained the Qualitative Agricultural Land Assessment (QALA) prepared by Range Environmental Consultants. Council has engaged the services of Land Resource Assessment and Management Pty Ltd to review the QALA. That review raises a number of issues, most particularly the methodology used to determine that the site contains only Class C agricultural land. A copy of the review is attached for your information.

Council takes the opportunity provided by section 35 of the Development Assessment Rules (DA Rules) to provide you with this review as further advice and how the application may be amended as a result.

It is recommended that the methodology of the QALA be revisited to expand the schema of reviewed mapping to include those carried out in Council's review and that the assessment be validated by field investigations. In the event that the further assessment identifies that Class A and/or B exist on the development site, you are invited to amend the proposed panel layout area to avoid the identified areas.

In addition, Council's review identified concerns about possible erosion potential on the site as a result of the development. A more detailed assessment of this issue would enable a clearer understanding of the risk of erosion that would allow for appropriate and reasonable conditioning of the development.

Please note that section 26 of the DA Rules identifies that this correspondence and any subsequent changes to the development application does not alter the statutory timeframes under the *Planning Act 2016*.

Should you require further assistance in relation to this matter, please do not hesitate to contact Council's Development Services, on (07) 4992 9500.

Yours sincerely



Chris Welch
MANAGER ENVIRONMENT & PLANNING

Enc QALA Review

**Review of
Qualitative Agricultural Land Assessment
Smoky Creek Solar Farm**

Prepared by

W.P. (Bill) Thompson

Monday, June 10, 2019

Summary

This review finds that up to 50% of the subject area is better quality agricultural land (ALC A and B) rather than the zero percent in the report. Whilst the applicant report appears to have accessed the same soil survey data as this review has accessed, the applicant misapplied the strategic cropping land rather than the regional framework land suitability criteria to their determination of what is cropping land as opposed to grazing land.

The review has also found that whilst it is highly likely that up to 50% may be better quality land, the frameworks and state planning data sets as well as the original soil survey data sets (accessed by the applicant) are inconsistent in identifying actual area location or extent. The applicant having presumably accessed these various data sets ought to have recommended that the location of the cropping suited land be mapped in the field using the state wide framework as part of the DA process.

The applicants report appears to understate the actual extent of impact in terms of grazing. 50% of leased area will not be able to be grazed and it is highly unlikely that the availability of lease payments will result in a 50% increase in sustainable grazing of that part of the lease area that remains in grazing land use. The impact on the grazing area, let alone access to croppable land will be major for the lifetime of the project.

The current low erosion status of the land appears to be based on land holder comments. In other projects of this type, the impact of changes in the hydrology of the area under panels has been a significant consideration when designing to avoid erosion impacts both within the development area and downstream of the development area.

The assessment of this project by council is therefore constrained in the following ways:

- The actual location and extent of better quality lands that ought to be avoided in the layout of the panel arrays has not been established.
- Because council has before it a proposal to condition rehabilitation on the basis that the land is grazing quality only, accepting this report would mean a lower level of compliance that what in fact would be advisable.
- The various layout and physical buffering requirements to mitigate impact from changes in hydrology appears not to have been identified

Introduction

This report is a desk based review of the report Qualitative Agricultural Land Assessment Smoky Creek Solar Farm prepared by Range Environmental Consultants (REC).

This review was requested by the Banana Shire Council. Whilst a desk based review, the author of this report is familiar with the mix of old softwood scrubs, deeply weathered uplands and adjoining tertiary clay plains.

The Range Environmental Consultants report was prepared to address the shires response to the application that found the application did not satisfy the performance criteria to sustain the productivity, viability or use of the identified agricultural land for agricultural purposes. The councils further requested that a qualitative agricultural land assessment was required to demonstrate the viability of Council's agricultural land class mapping of A, C1 and C2 for the subject site. The council also requested that if the agricultural assessment confirms the mapping then the applicant is to provide alternative agricultural uses and potential impacts that could co-exist with the intended use on the land during the life span of the solar farm.

Overview of REC report

The proposed development comprises 1993 ha within 3623 ha of land parcels which have a total cleared area of 2113 ha. This review assumes that 1993 ha of development footprint will be within the cleared lands although that is not clear from the REC report.

The report does not map the land uses on the proposed impact area, but simply states that the existing land use is grazing. Recent satellite imagery as well as historic imagery along with comments from landholders cited in the report indicates that dryland cropping has been practiced on the subject land. A decline in rainfall is cited as a primary driver of the decline in dryland cropping.

The report cites the 100,000 soil survey of the Banana Sheet by Muller in terms of soils and references the Agricultural Land Class map supplied by QDNRM on which the agricultural land overlay mapping in the shire plan is based.

REC concludes that the overlay mapping indicates that 25% of the subject area is in fact what used to be known as GQAL (Agricultural Land Class A and B) and the remainder is ALC or grazing quality land.

REC then uses the Strategic Cropping Land (SCL) criteria to conclude that all of the land is pastoral quality land.

REC then concludes that the impact on rural economic activity will be restricted to the loss in slaughter animal production from the solar farm area. This conclusion appears to assume that there is no current or future potential cropping activity and that grazing cannot be co-located within the panel area.

The report further cites the Mirani solar farm P&E court case decision involving a solar farm on cane lands in support of this project.

Agricultural Land Classes

The author of this review has reviewed a large number of projects within the rural sector over the last 20 years where developers and councils have reliance on land suitability at all stages of projects (feasibility, design, approval and compliance monitoring). The assessment of this project suffers from the same types of problems encountered in many projects which rely on land suitability schema and maps produced by the state agencies. Best practice would normally be to use the various schema that exist and do validate any assessment by field investigations.

In this case, there are in fact 4 schema that could help inform planning and assessment. These are as follows. These are discussed below.

Agricultural Land Overlay

The agricultural land overlay map used by the council in its strategic plan was provided to council by DNRM, however, the basis of the map and its classification system is not known, hence field validation is simply not possible. REC concluded that that mapping shows that 25% of the subject area is potential cropping land (ALC A or B) and that is a reasonable interpretation of the map face

Muller 1:100,000 soil survey

This mapping is very excellent quality regional scale soils mapping and in fact is the last in a series of this mapping. Whilst the mapping and report itself do not contain any land suitability classification; the report contains reference to soil parameters of critical importance to Agricultural Land Class Assessments that use land suitability. The digital data set supplied by QDNRM does however contain ALC codes. Map 1 contains the result and Table 1 shows that 85% of the subject land is either ALC A or B as opposed to the 25% figure from the overlay mapping.

Regional Framework Land Suitability Schema

This schema was published in 2013¹. It posts dates the Muller report but pre dates the REC report. data is from. AALC can be inferred from this framework. The result is shown in Map 2 and also tabled in Table 1. It is important to stress that the land suitability and ALC designations is based solely on the Muller soils data. Table 1 shows that 47% of the subject land is ALC A or B compared to 25% from the overlay mapping and 85% from the Muller digital data.

Queensland agricultural land classes - land class A and B with urban mask

This state planning data post dates all of the above systems and whilst it is not referenced to the regional land suitability framework, it is likely that it uses that framework.

¹ DSITIA (2013) Regional Land Suitability Frameworks for Queensland

The data is available in GIS format² and is shown in Map 3 overlaying the regional framework map shown in Map 2. The proportion of the area that is ALC A or B is similar to that from applying the regional framework, although notably there one large area of land ranked as ALC C which this mapping shows as ALC A/B.

SCL framework

Finally, there is the SCL framework. This framework was developed to clearly identify those soils which were the very best quality cropping lands in the state. The plethora of classifications for land suitability using sometimes different criteria and thus producing different outcomes as shown in this study area meant that more quantified method was needed.

REC applied the SCL schema to the Muller data and concluded as a result that there was no ALC A in the project area. Whilst the schema reviewed above are obviously quantitatively different because they used different approaches to identify ALC A and B, the REC assessment is simply wrong. SCL criteria are a much stricter data set and at the very best will only identify a small part of those soils that are ALC A. Map 2 shows the one area which is likely to be SCL based on the Muller work. It is simply wrong to conclude that there is no ALC A because there is no SCL.

Extent ALC A and B

It is very regrettable that a decade of land assessment based on a very good quality soils map should produce such divergent desk based assessments. It is true that the soils and landscape of this area are complex but they are not as complex as the land suitability systems referred to above would lead one to believe.

It is regrettable that REC did not complete a similar review and, in that process, it is highly likely that somewhere between 10 and 40% of the project area would be ALC A and B. A quick field inspection of the potential areas could then refine that figure. The proposed solar farm layout could then be adjusted to avoid as much as possible of the better quality soils.

Apart from avoiding any unnecessary alienation of better quality land, this information is critical to ensuring that the project is conditioned (if approved) to return land to its pre project condition. If land is ALC A, then returning it to the soil depth, soil water store, salinity and pH condition of ALC C land would be a lower level of rehabilitation.

It is recommended that the location of ALC and B be accurately determined and where appropriate the solar farm layout be adjusted to minimize being co-located on these lands.

² This dataset comprises the 'best available' agricultural land class (ALC) data – land classes A and B only with an urban mask applied. This data set is a subset of the state-wide ALC Class A, B, C, D layer and is produced for use in the DSDMIP State Planning Policy interactive mapping system. ALC mapping identifies agricultural land that can be used sustainably for a range of land uses with minimal land degradation. The classes imply a decreasing range of land use choice and an increase in the severity of limitations and/or land degradation hazard. This data was released in January 2019. The data is sourced from individual soil surveys in the Queensland Governments corporate soil information system

Land Use Impact

The report draws a number of conclusions on the land use impact. These conclusions are paraphrased and commented on below.

1. The report concludes that **0.03%** of the CQ grazing lands will be directly impacted from the 1082 ha of lease area under panels out of 2188 ha. This conclusion ought to have been qualified by an interpretation of the same data which shows that **50%** of the lease area of 2188 ha will be directly impacted. Such a statement would more accurately give indication of the impact on agricultural activities on the subject land.
2. The report then indicated that only one of the land holders has indicated a belief that grazing production will increase on the remainder of the holding because income from the solar lease payments will be directed to improving productivity on the rest of the property. If the proposition that lease payments will be re-invested within the area of the property that is leased but not used for panels is an outcome, then subject to other planning issues, that would require an almost 50% doubling of grazing production each and every year of the lease period. This is not at all likely and ought not to be used as a justification for the project.
3. Rural Land Use co-exists or co-locates on the impact area. The report does indicate that grazing will be possible on the 50% of the leased not under panels. In other words, rural land use is not proposed to co-exist in the panel field. The report also cites the recent Mirani case in support of this project. It is important to note that in that case rural land use was proposed to co-exist in the panel area as grazing use under panels in order to manage excess growth. That is not proposed on this site and if proposed would require significant amendment to the design, for example to use form of grazing (sheep) and panel array changes that could co-locate on the panel area³.
4. The report also notes that there are a number of drainage lines throughout the area and that the land holders also report that there is no erosion on the site. The report does not discuss the impact of changes in the runoff volume and Intensity resulting from hard surfacing due to panels and access tracks on the erosion status or on the down stream Impacts outside of panel area. Mitigation of these impacts may need to involve such strategies as drainage lines and overland flow path buffering strategies based on hydrological assessments, use of detention basins and diversion bunds and pasture improvement strategies. It is possible that these fundamental design and layout strategies my be identified in a hydrology assessment, however, the absence of such an assessment and reliance solely on land holders interpretation would suggest that caution is required before any conditions on the project or its designs can be properly identified.

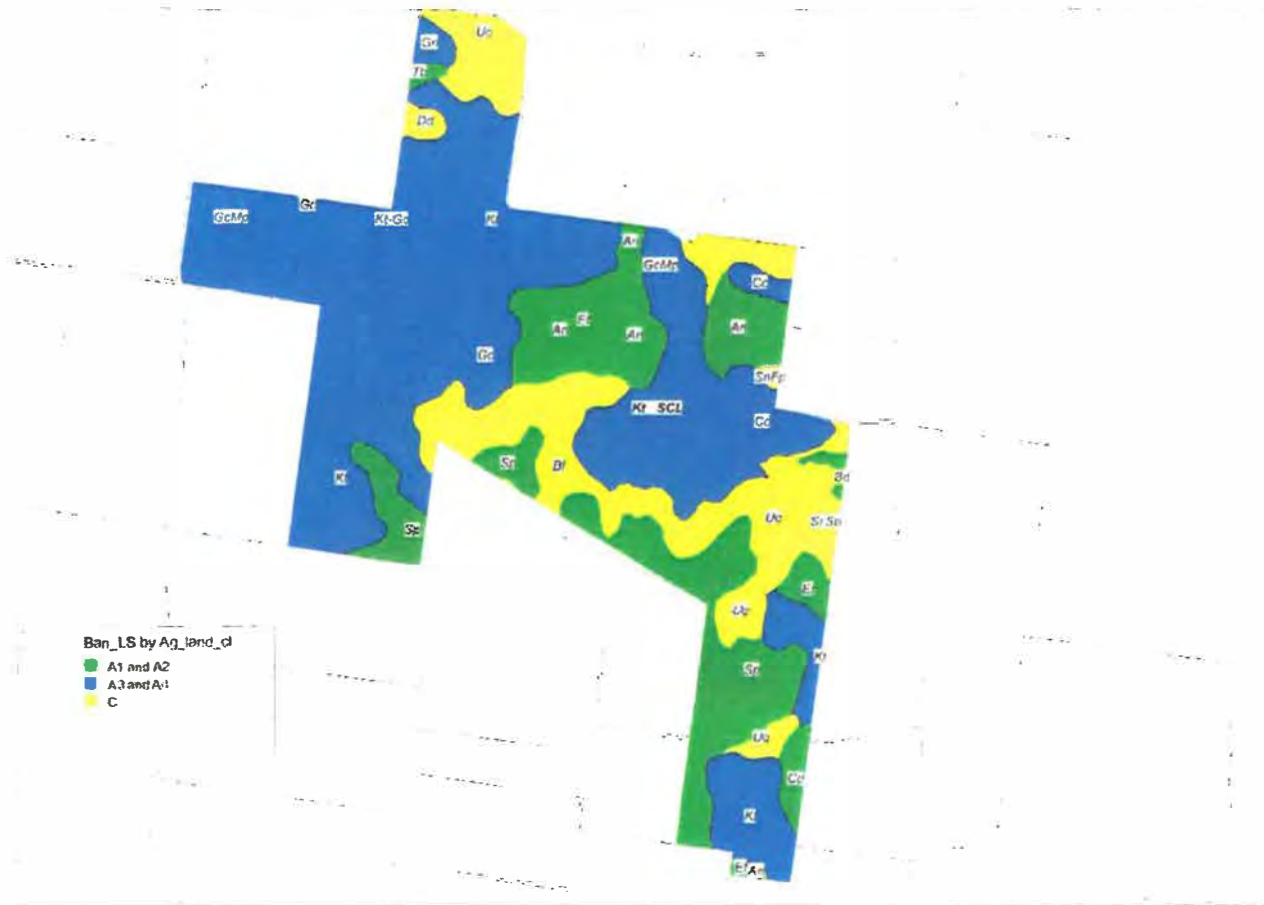
³ The author of this review was an expert witness in that case and has also been involved in the DA process for numerous solar farm proposals where the issues of excluding ALC A and B, mitigation of impacts and co-exist versus co-locate are central matters

Table 1 Land Suitability within solar farm lease area

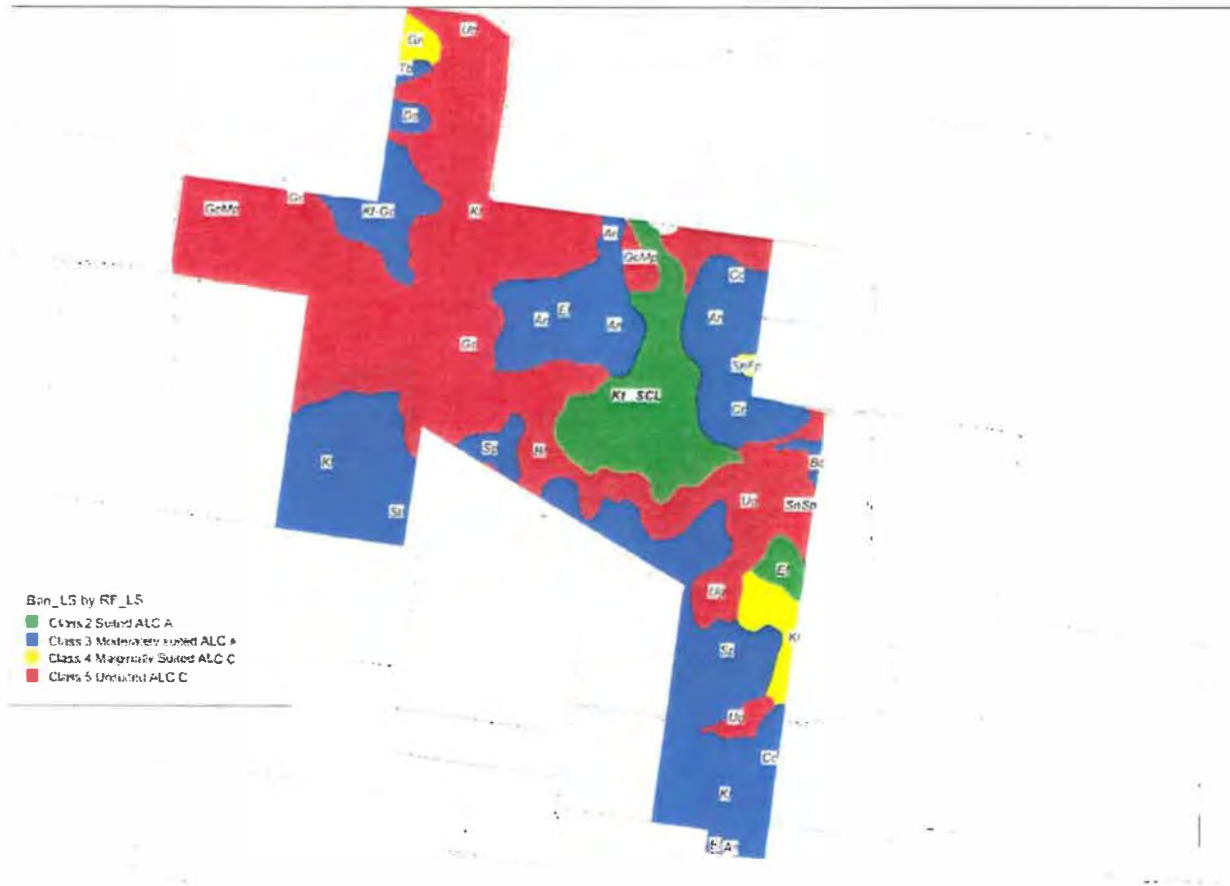
| Bill Thompson description adapted from Appendix 1 of Muller 2008 1:100,000 soil survey | Data within QDNRM digital GIS files | | | Area in solar farm ha | Regional Framework | |
|--|-------------------------------------|-------------------------|-------------|-----------------------|--------------------|-----|
| | MAP CODE | Agricultural Land Class | Max Slope % | | Land Suitability | ALC |
| Anandale, black CC on olivine basalt, 50 to 85 cm deep, PAWC >105 | An | A1 | 2 | 5 | 3 | A |
| | An | A1 | 4 | 81 | 3 | A |
| | An | A1 | 6 | 94 | 3 | A |
| Beldeen, BE linear gilgai on Permian Rocks, 70 to 150 cm deep PAWC >130 | Bd | A2 | 5 | 12 | 3 | A |
| Bluff, strongly acid duplex, deeply weathered sedimentary rock, 70 to 150, PAWC <40 | Bf | C | 200 | 332 | 4 | C |
| Clancy, similar to Anandale but slightly deeper and higher clay content PAWC >85 | Cc | A1 | 3 | 33 | 3 | A |
| | Cc | A4 | 4 | 25 | 3 | A |
| | Cc | A4 | 6 | 106 | 3 | A |
| Desdemona neutral sodic duplex on sediment, over 150 cm deep PAWC >90 | Dd | C | 4 | 19 | 3 | A |
| Earlsfield, deep self mulching CC, on alluvium, over 150 cm deep and PAWC >140 | Ef | A1 | 3 | 160 | 2 | A |
| | Ef | A1 | 5 | 37 | 3 | A |
| Greycliffe, deep sodic brown cracking clay, on alluvium, over 150 cm deep and PAWC 70 | Gc | A4 | 2 | 77 | 5 | C |
| Greycliffe melonhole, as above but with melonholes PAWC avg 50 | GcMp | A4 | 2 | 28 | 5 | C |
| | GcMp | A4 | 3 | 519 | 5 | C |
| Granville sodic duplex over sandstone, 70 to 130 cm deep, PAWC 75 | Gn | A4 | 6 | 25 | 4 | C |
| Kokotungo, Very deep sodic duplex on sediments, over 150 cm deep, PAWC 90 mm | Kt | A3 | 2 | 341 | 2 | A |
| | Kt | A3 | 4 | 353 | 3 | A |
| | Kt | A3 | 5 | 63 | 4 | C |

| Bill Thompson description adapted from Appendix 1 of Muller 2008 1:100,000 soil survey | Data within QDNRM digital GIS files | | | Area in solar farm ha | Regional Framework | |
|---|-------------------------------------|-------------------------|-------------|-----------------------|--------------------|------------|
| | MAP CODE | Agricultural Land Class | Max Slope % | | Land Suitability | ALC |
| | Kt | A3 | 8 | 419 | 5 | C |
| | Kt-Gc | A3 | 3 | 120 | 2 | |
| Santo fertile phase, softwood scrub red/brown non cracking clay on basalt, 30 to 90 cm deep, PAWC avg 70 mm | SnFp | B2 | 5 | 6 | 4 | C |
| | SnFp | B2 | 8 | 57 | 5 | C |
| | SnSp | B2 | 30 | 111 | 5 | C |
| Spier, very deep red gradational soils on deeply weather sandstone, >110 cm deep and PAWC avg 90 | Sp | A1 | 4 | 72 | 3 | A |
| | Sp | A1 | 5 | 371 | 3 | A |
| Thalberg, brown duplex very deep on sediments, PAWC 130 | Tb | A1 | 3 | 10 | 3 | A |
| Ulogie very deep sodic duplex on sediments, >150 cm deep, PAWC <50 | Ug | C | 4 | 52 | 5 | C |
| | Ug | C | 6 | 108 | 5 | C |
| | Ug | C | 10 | 45 | 5 | C |
| % of area as ALC A or B | | 85% | | | | 47% |

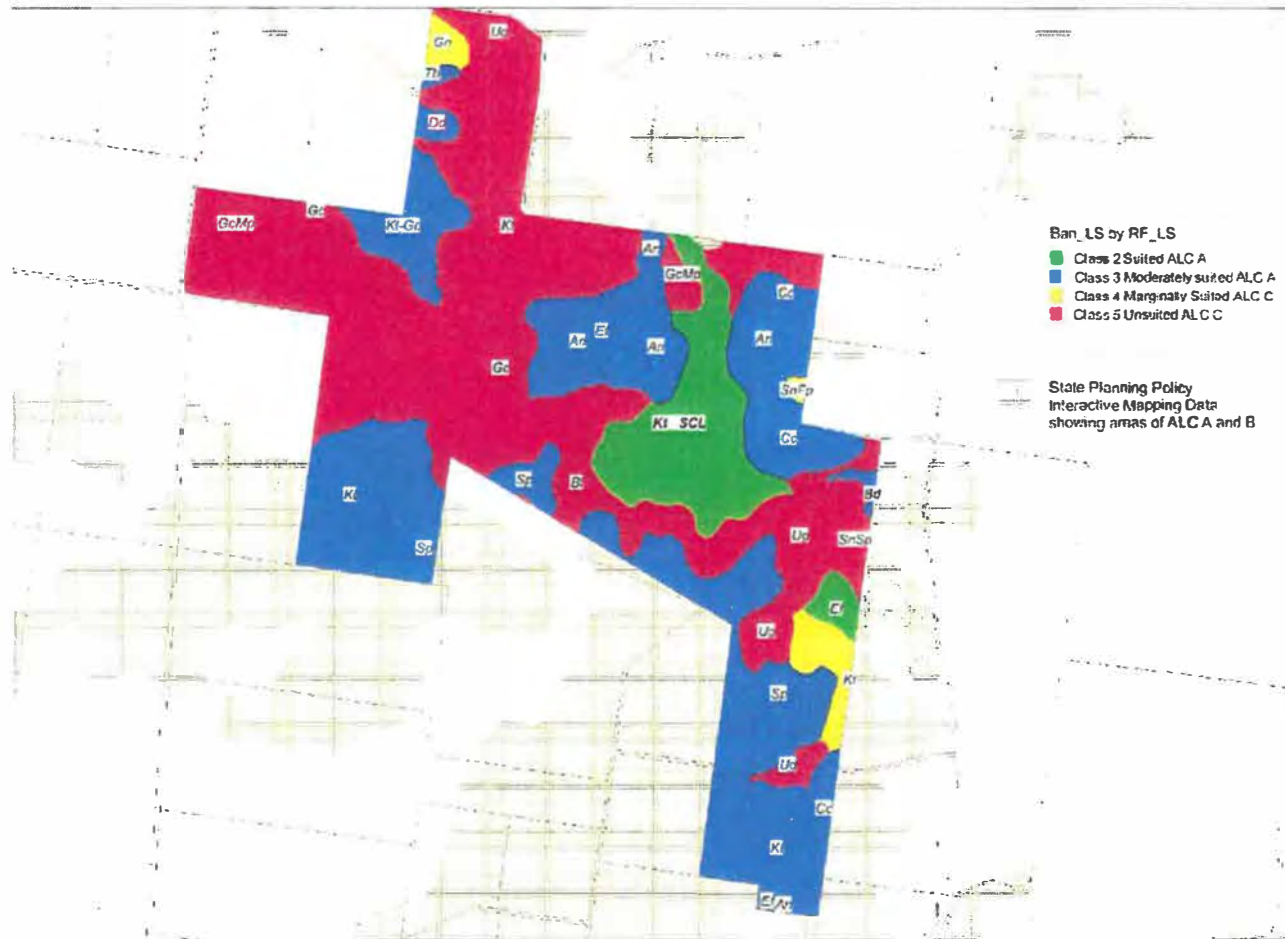
Map 1 Muller Agricultural Land Classes



Map 2 Regional Framework Land Suitability Data





Map 3 SPP Agric Land Classes over the Regional Framework





Appendix B: Land Degradation Features (Dunn Property)

| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| D_EF_1 | <p>Type of erosion feature Gully</p> <p>Lease Area E</p> <p>Landform Simple slope</p> <p>Location Downgradient of Dam7</p> <p>Soil Type (Muller, 2008) Earlsfield</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition: Cracking clay soils</p> <p>Gully head coordinate Latitude: -24.043813 Longitude: 150.405252</p> <p>Maximum gully depth (m) 1.6</p> <p>Maximum width (m) 11</p> <p>Length (m) 170</p> <p>Description</p> |  |
| D_EF_4 | <p>Type of erosion feature Erosion of bank of watercourse</p> <p>Lease Area E</p> <p>Landform Watercourse</p> <p>Location Northern bank</p> <p>Soil Type (Muller, 2008) Earlsfield</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition: Cracking clay soils</p> <p>Start of feature coordinate Latitude: -24.043743 Longitude: 150.406647</p> <p>Maximum depth (m) 1.3</p> <p>Maximum width (m) Not applicable</p> <p>Length (m) 45</p> | |



| Erosion feature I.D | Description | Photograph |
|---------------------|--|--|
| | <p>Description</p> <p>Contributing factors to the erosion of the northern bank of a watercourse include unstable ground surface condition and sidewall (low groundcover).</p> |  |
| D_EF_3 | <p>Type of erosion feature</p> <p>Lease Area</p> <p>Landform</p> <p>Location</p> <p>Soil Type (Muller, 2008)</p> <p>ALC (Thompson)</p> <p>Soil Condition:</p> <p>Top of feature coordinate</p> <p>Maximum depth (m)</p> <p>Maximum width (m)</p> <p>Length (m)</p> | <p>Anthropogenic</p> <p>E</p> <p>Crest</p> <p>Downgradient of cattle yards</p> <p>Kokotungo</p> <p>ALC C</p> <p>Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Latitude: -24.0407578</p> <p>Longitude: 150.408544</p> <p>2 m at cutting for vehicle access</p> <p>90</p> <p>120</p> |

| Erosion feature I.D | Description | Photograph |
|---------------------|-------------|------------|
|---------------------|-------------|------------|

| | |
|-------------|--|
| Description | Unstable sidewalls and limited upgradient groundcover. |
|-------------|--|





| | | |
|----------|--------------------------|--------------------------|
| D_Rill_1 | Type of erosion feature | Rill |
| | Lease Area | E |
| | Landform | Simple slope |
| | Location | Formed from cattle track |
| | Soil Type (Muller, 2008) | Annandale |
| | ALC (Thompson) | Class A |
| | Soil Condition: | Cracking clay soils |
| | Rill head coordinate | Latitude: -24.047835 |
| | | Longitude: 150.418234 |
| | Maximum depth (m) | 0.4 |
| | Maximum width (m) | 3 |
| | Length (m) | 310 |


| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| | <p>Description</p> <p>Rill erosion with head formed at cattle track. Gently inclined sidewalls.</p> |  |
| D_DF_1 | <p>Type of erosion feature</p> <p>Lease Area</p> <p>Landform</p> <p>Location</p> <p>Soil Type (Muller, 2008)</p> <p>ALC (Thompson)</p> <p>Soil Condition:</p> <p>Start of feature coordinate</p> <p>Maximum depth (m)</p> <p>Maximum width (m)</p> <p>Length (m)</p> <p>Description</p> | <p>Erosion of bank of watercourse</p> <p>E</p> <p>Watercourse</p> <p>Banks</p> <p>Earlsfield & Annandale</p> <p>Class A</p> <p>Cracking clay soils</p> <p>Latitude: -24.048862</p> <p>Longitude: 150.415501</p> <p>1.5</p> <p>8</p> <p>935</p> <p>Contributing factors to the erosion of some banks of the watercourse</p>  |


| Erosion feature I.D | Description | Photograph |
|---------------------|---|--|
| D_EF_7 | <p>Type of erosion feature Lease Area Landform Location Soil Type (Muller, 2008) ALC (Thompson) Soil Condition: Start of feature coordinate Maximum depth (m) Maximum width (m) Length (m) Description</p> | <p>include unstable ground surface conditions and sidewalls (low groundcover). Evidence of lateral bank erosion at some locations.</p> <p>Extensive erosion F Watercourse and lower slope North of Dodson Road surrounding Dam9 Kokotungo ALC A Texture contrast soils, sodic subsoil and shallow topsoil. Latitude: -24.05323 Longitude: 150.424797 Note: Start of feature at Dodson Road 2.5 280 290 Contributing causes include concentrated flow from upgradient watercourses and dams, groundcover and dispersive subsoils.</p> |
| D_DF_3 | <p>Type of erosion feature Lease Area</p> | <p>Gully & watercourse E & F</p> |





| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| | <p>Landform Location Soil Type (Muller, 2008) ALC (Thompson) Soil Condition: Head of gully coordinate Maximum depth (m) Maximum width (m) Length (km) Description</p> | <p>Watercourse and lower slope Downgradient of Dam9 Kokotungo ALC A Texture contrast soils, sodic subsoil and shallow topsoil. Latitude: -24.0484 Longitude: 150.425296 Range from <0.5->2 50 1.56 Contributing causes include concentrated flow from upgradient watercourses and dams, groundcover and dispersive subsoils. Unstable sidewalls and limited upgradient groundcover. Evidence of lateral bank erosion at some locations.</p>  |
| D_DF_6 | <p>Type of erosion feature Lease Area Landform Location Soil Type (Muller, 2008)</p> | <p>Erosion of banks of watercourse & rill G2 Watercourse & lower slope Gully erosion formed at upgradient property east of the site and extended onto the site. Clancy</p> |

| Erosion feature I.D | Description | | Photograph |
|---------------------|---|--|---|
| | ALC (Thompson) Soil Condition: Top of feature coordinate Maximum depth (m) Maximum width (m) Length (m) Description | Class A Cracking clay soils Latitude: -24.043093 Longitude: 150.437625 1 8 230 Contributing factors to the erosion of some banks of the watercourse include low groundcover and cattle traffic. |  |
| D_Gully_3 | Type of erosion feature Lease Area Landform Location Soil Type (Muller, 2008) ALC (Thompson) Soil Condition: Gully head coordinate Maximum gully depth (m) Maximum width (m) | Gully G2 Watercourse & lower slope Gully erosion formed at downgradient extent of Dam10 Clancy Class A Cracking clay soils Latitude: -24.04213 Longitude: 150.43515 1.5 10 | |

| Erosion feature I.D | Description | Photograph |
|---------------------|--|---|
| | <p>Length (m) 135</p> <p>Description Contributing factors to the erosion include low groundcover, concentrated flow from the dam and cattle traffic.</p> |  |
| D_DF_4 | <p>Type of erosion feature Erosion of banks of watercourse</p> <p>Lease Area G2</p> <p>Landform Watercourse, upper to lower slopes</p> <p>Location Gully erosion formed at upgradient property north of the site and extended onto the site.</p> <p>Soil Type (Muller, 2008) Santo</p> <p>ALC (Thompson) Class C</p> <p>Soil Condition: Friable non-cracking clay or clay loam soils</p> <p>Start of feature coordinate Latitude: -24.038453 Longitude: 150.435185</p> | |


| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| | Maximum depth (m) 1 Maximum width (m) 14 Length (m) 450 Description Contributing factors to the erosion included low groundcover and steep slope. Unstable sidewalls and limited upgradient groundcover. |  |
| D_EF_5 | Type of erosion feature Gully Lease Area G2 Landform Upper slopes and crest Location Lateral bank erosion from watercourse. Soil Type (Muller, 2008) Santo ALC (Thompson) Class C Soil Condition: Friable non-cracking clay or clay loam soils Head of gully coordinate Latitude: -24.038453 Longitude: 150.435185 Maximum depth (m) 3 Maximum width (m) 20 Length (m) 140 | |



| Erosion feature I.D | Description | Photograph |
|---------------------|--|--|
| | <p>Description</p> <p>Contributing factors to the erosion included low groundcover, steep slope and sodic subsoils. Unstable sidewalls and limited upgradient groundcover.</p> |  |
| D_DF_2 | <p>Type of erosion feature Lease Area Landform Location</p> <p>Soil Type (Muller, 2008) ALC (Thompson) Soil Condition:</p> | <p>Erosion of banks of watercourse G2 Watercourse and lower slopes. Erosion formed from watercourse originating upgradient property north of the site and extended onto the site. Kokotungo ALC A Texture contrast soils, sodic subsoil and shallow topsoil.</p> |


| Erosion feature I.D | Description | Photograph |
|---------------------|--|---|
| | <p>Top of feature coordinate</p> | |
| | <p>Latitude: -24.036238</p> | |
| | <p>Longitude: 150.421</p> |  |
| | <p>Maximum depth (m)</p> | |
| | <p>Maximum width (m)</p> | |
| | <p>Length (m)</p> | |
| | <p>Description</p> <p>Contributing factors to the erosion included low groundcover, steep slope and sodic subsoils. Unstable sidewalls and limited upgradient groundcover.</p> | |





Appendix C: Land Degradation Features (Fenech Property)


| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| F_Rill_1 | <p>Type of erosion feature Rill</p> <p>Lease Area C</p> <p>Landform Lower slope</p> <p>Location Adjoining Dodsons Road</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) Class C</p> <p>Soil Condition: Friable non-cracking clay or clay loam soils</p> <p>Rill head coordinate Latitude: -24.044339 Longitude: 150.400246</p> <p>Maximum depth (m) 0.5</p> <p>Maximum width (m) 30</p> <p>Length (m) 110</p> <p>Description Contributing factors to the erosion included low groundcover and cattle traffic.</p> |  |
| F_EF_1 | <p>Type of erosion feature Erosion of banks of watercourse and lateral bank erosion and gullies.</p> <p>Lease Area G2</p> <p>Landform Watercourse</p> <p>Location Watercourse from property to the east across Dodsons Road</p> <p>Soil Type (Muller, 2008) Kokotungo & Kokotungo-Greycliffe complex</p> <p>ALC (Thompson) Class A & C</p> <p>Soil Condition: Friable non-cracking clay or clay loam soils and cracking clay soils.</p> <p>Top of feature coordinate Latitude: -24.043596 Longitude: 150.401046</p> | |



| Erosion feature I.D | Description | Photograph |
|---------------------|---|--|
| | <p>Maximum depth (m) 1.5</p> <p>Maximum width (m) 14</p> <p>Length (m) 2.1 km</p> <p>Description</p> | |
| | <p>Contributing factors to the erosion included low groundcover, concentrated flow from dams, including upgradient, cattle traffic and sodic subsoils at some locations.</p> <p>Unstable head and sidewalls and limited upgradient groundcover.</p> |   |


| Erosion feature I.D | Description | | Photograph |
|---------------------|---|--|---|
| F_EF_3 | Type of erosion feature Lease Area Landform Location Soil Type (Muller, 2008) ALC (Thompson) Soil Condition: Head of gully coordinate Maximum depth (m) Maximum width (m) Length (m) Description | Gully C Lower slope Adjoining Dodsons Road Kokotungo Class C Friable non-cracking clay or clay loam soils Latitude: -24.041294 Longitude: 150.399831 0.6 8 20 Contributing factors to the erosion included low groundcover and sodic subsoils. Unstable head and sidewalls and limited upgradient groundcover. |  |
| F_Gully_3 | Type of erosion feature Lease Area Landform Location Soil Type (Muller, 2008) ALC (Thompson) Soil Condition: Head of gully coordinate Maximum depth (m) Maximum width (m) Length (m) | Gully C Simple slope Adjoining Dodsons Road Kokotungo Class A Friable non-cracking clay or clay loam soils Latitude: -24.034123 Longitude: 150.382404 0.6 6 40 | |

| Erosion feature I.D | Description | | Photograph |
|---------------------|--|---|---|
| | Description | Contributing factors to the erosion included low groundcover and concentrated flow from upgradient dam. |  |
| F_Gully_1 | Type of erosion feature Lease Area Landform Location Soil Type (Muller, 2008) ALC (Thompson) Soil Condition: Head of gully coordinate Maximum depth (m) Maximum width (m) Length (m) | Gully C Simple slope Upgradient of dams Grecliffe (including Melonhole Phase) ALC C Cracking clay soils Latitude: -24.034631 Longitude: 150.378544 0.6 10 20 | |

| Erosion feature I.D | Description | | Photograph |
|---------------------|--|---|---|
| | Description | Contributing factors to the erosion included low groundcover and cattle traffic. |  |
| F_Gully_2 | Type of erosion feature Lease Area Landform Location Soil Type (Muller, 2008) ALC (Thompson) Soil Condition: Head of gully coordinate Maximum depth (m) Maximum width (m) Length (m) | Gully C Simple slope Upgradient of dams Greycliffe (including Melonhole Phase) ALC C Cracking clay soils Latitude: -24.035096 Longitude: 150.3784 1 6 10 | |

| Erosion feature I.D | Description | Photograph |
|---------------------|--|---|
| | <p>Description</p> <p>Contributing factors to the erosion included low groundcover and cattle traffic. Unstable head and sidewalls and limited upgradient groundcover.</p> |  |
| F_DF_2 | <p>Type of erosion feature</p> <p>Lease Area</p> <p>Landform</p> <p>Location</p> <p>Soil Type (Muller, 2008)</p> <p>ALC (Thompson)</p> <p>Soil Condition:</p> <p>Top of feature coordinate</p> | <p>Erosion of banks of watercourse and lateral bank erosion and gullies</p> <p>D2</p> <p>Watercourse and lower slopes.</p> <p>Watercourse from the western portion of the property</p> <p>Kokotungo</p> <p>ALC C</p> <p>Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Latitude: -24.026443</p> <p>Longitude: 150.390647</p> |

| Erosion feature I.D | Description | Photograph |
|---------------------|---|--|
| | <p>Maximum depth (m) 0.3</p> <p>Maximum width (m) 2</p> <p>Length (m) 80</p> <p>Description Contributing factors to the erosion included low groundcover, sodic subsoils and cattle tracking.</p> |  |
| F_DF_1 | <p>Type of erosion feature Erosion of banks of watercourse and lateral bank erosion</p> <p>Lease Area D1 & D2</p> <p>Landform Watercourse and lower slopes.</p> <p>Location Erosion formed from watercourse originating upgradient property to the east across Dodsons Road.</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) ALC C</p> <p>Soil Condition: Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Top of feature coordinate Latitude: -24.030501 Longitude: 150.402416 Head of secondary watercourse Latitude: -24.033482 Longitude: 150.399922</p> |  |

| Erosion feature I.D | Description | Photograph |
|---------------------|--|---|
| F_Gully_4 | <p>Maximum depth (m) 0.5-2</p> <p>Maximum width (m) 5-15</p> <p>Length (km) 1.8</p> <p>Description Contributing factors to the erosion included low groundcover, cattle tracking and sodic subsoils. Unstable head and sidewalls (including of banks) and limited upgradient groundcover.</p> <p>Type of erosion feature Gully</p> <p>Lease Area D2</p> <p>Landform Upper slope</p> <p>Location East of Dodsons Road</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) ALC C</p> <p>Soil Condition: Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Gully head coordinate Latitude: --24.028504 Longitude: 150.401092</p> <p>Maximum depth (m) 1.2</p> <p>Maximum width (m) 3</p> <p>Length (m) 175</p> <p>Description Contributing factors to the erosion included contour banks and sodic subsoils. Unstable head and sidewalls (including of banks) and limited upgradient groundcover. Secondary gullies formed.</p> |  |

Erosion feature I.D


Description


Photograph





Appendix D: Land Degradation Features (Maynard Property)

| Erosion feature I.D | Description | Photograph |
|---------------------|--|---|
| M_Gully_1 | <p>Type of erosion feature Gully</p> <p>Lease Area A</p> <p>Landform Plain</p> <p>Location North of Dam17</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Gully head coordinate Latitude: -24.067906 Longitude: 150.377679</p> <p>Maximum depth (m) 0.5</p> <p>Maximum width (m) 10</p> <p>Length (m) 120</p> <p>Description Contributing factors to the erosion included contour banks and sodic subsoils. Unstable head and sidewalls (including of banks) and limited upgradient groundcover.</p> |  |
| M_Gully_2 | <p>Type of erosion feature Gully</p> <p>Lease Area A</p> <p>Landform Plain</p> <p>Location Upgradient of Dam18</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) Class A</p> | |



| Erosion feature I.D | Description | Photograph |
|--|---|---|
| <p>Soil Condition</p> <p>Gully head coordinate</p> <p>Maximum depth (m)</p> <p>Maximum width (m)</p> <p>Length (m)</p> | <p>Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Latitude: -24.06052 Longitude: 150.387346</p> <p>1.5</p> <p>18</p> <p>460</p> |  |
| <p>Description</p> | <p>Contributing factors to the erosion included contour banks and sodic subsoils. Unstable head and sidewalls (including of banks) and limited upgradient groundcover. Secondary gullies formed along contour banks.</p> <p>Gully includes several secondary heads.</p> | |


| Erosion feature I.D | Description | Photograph |
|---------------------|-------------|------------|
|---------------------|-------------|------------|


M_Gully_3


| | |
|--------------------------|--|
| Type of erosion feature | Gully |
| Lease Area | A |
| Landform | Open depression |
| Location | Upgradient of Dam18 |
| Soil Type (Muller, 2008) | Kokotungo |
| ALC (Thompson) | Class A |
| Soil Condition | Texture contrast soils, sodic subsoil and shallow topsoil. |






| Erosion feature I.D | Description | Photograph |
|---------------------|---|--|
| | <p>Gully head coordinate Latitude: -24.06088 Longitude: 150.388281</p> <p>Maximum depth (m) 0.5</p> <p>Maximum width (m) 8</p> <p>Length (m) 80</p> <p>Description Contributing factors to the erosion included contour banks and sodic subsoils.</p> |  |
| M_Gully_4 | <p>Type of erosion feature Gully</p> <p>Lease Area A</p> <p>Landform Lower slope</p> <p>Location Upgradient of Dam18</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Gully head coordinate Latitude: -24.059453 Longitude: 150.382186</p> <p>Maximum depth (m) 1</p> <p>Maximum width (m) 6</p> |  |

| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| M_Gully_5 | <p>Length (m) 25</p> <p>Description Contributing factors to the erosion included contour banks and sodic subsoils. Unstable head and sidewalls (including of banks) and limited upgradient groundcover.</p> <p>Type of erosion feature Gully</p> <p>Lease Area A</p> <p>Landform Plain</p> <p>Location Upgradient of Dam18</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Gully head coordinate Latitude: -24.059343 Longitude: 150.380686</p> <p>Maximum depth (m) 0.5</p> <p>Maximum width (m) 5</p> <p>Length (m) 20</p> <p>Description Contributing factors to the erosion included contour banks and sodic subsoils. Unstable head and sidewalls (including of banks) and limited upgradient groundcover.</p> |  |
| M_Gully_6 | <p>Type of erosion feature Gully</p> <p>Lease Area A</p> <p>Landform Simple slope</p> | |

| Erosion feature I.D | Description | Photograph |
|---------------------|--|---|
| | <p>Location Downgradient of Dam 18</p> <p>Soil Type (Muller, 2008) Gleycliffe, melonhole phase</p> <p>ALC (Thompson) Class C</p> <p>Soil Condition Texture contrast soils, sodic subsoil.</p> <p>Gully head coordinate Latitude: -24.058761 Longitude: 150.37833</p> <p>Maximum depth (m) 1</p> <p>Maximum width (m) 8</p> <p>Length (m) 70</p> <p>Description Contributing factors to the erosion included low groundcover and sodic subsoils. Unstable head and sidewalls (including of banks) and limited upgradient groundcover.</p> |  |
| M_EF_1 | <p>Type of erosion feature Gully</p> <p>Lease Area A</p> <p>Landform Simple slope</p> <p>Location Upgradient of drainage feature</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Texture contrast soils, sodic subsoil and shallow topsoil.</p> | |

| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| | <p>Gully head coordinate Latitude: 24.065114 Longitude: 150.391657</p> <p>Maximum depth (m) 0.5</p> <p>Maximum width (m) 5</p> <p>Length (m) 48</p> <p>Description Contributing factors to the erosion included low groundcover, steep slope and sodic subsoils.</p> |  |
| M_Sheet_2 | <p>Type of erosion feature Sheet erosion</p> <p>Lease Area A</p> <p>Landform Crest</p> <p>Location Upgradient of Dam14</p> <p>Soil Type (Muller, 2008) Spier & Kokotungo</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Texture contrast soils, sodic subsoil and shallow topsoil.</p> | |

| Erosion feature I.D | Description | Photograph |
|---------------------|---|--|
| | <p>Top of sheet coordinate Latitude: -24.064506 Longitude: 150.389563</p> <p>Maximum depth (m) NA</p> <p>Maximum width (m) 110 (north to south)</p> <p>Length (m) 190 (east to west)</p> <p>Description Contributing factors to the sheet erosion include unstable ground surface condition, low groundcover and cattle tracking.</p> |  |
| M_Sheet_3 | <p>Type of erosion feature Sheet</p> <p>Lease Area A</p> <p>Landform Simple slope</p> <p>Location Upgradient of Dam14 and drainage feature (M_DF_1)</p> <p>Soil Type (Muller, 2008) Spier</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Top of sheet coordinate Latitude: -24.069642 Longitude: 150.38928</p> <p>Maximum depth (m) NA</p> |  |

| Erosion feature I.D | Description | Photograph | |
|---------------------|---|---|--|
| M_DF_1 | Maximum width (m) | 180 (east to west) |  |
| | Length (m) | 290 (north to south) | |
| | Description | Contributing factors to the sheet erosion include unstable ground surface condition, low groundcover and cattle tracking. | |
| | Type of erosion feature | Erosion of banks of watercourse and lateral bank erosion and gullies. | |
| | Lease Area | A | |
| | Landform | Watercourse | |
| | Location | Erosion of banks of watercourse | |
| | Soil Type (Muller, 2008) | Spier & Kokotungo | |
| | ALC (Thompson) | Class A | |
| | Soil Condition | Texture contrast soils, sodic subsoil and shallow topsoil. | |
| | Start of feature coordinate | Latitude: -24.068399 Longitude: 150.392243 Note: start of feature at eastern lease boundary | |
| | Maximum depth (m) | 6 | |
| | Maximum width (m) | 90 | |
| | Length (km) | 1.8 | |
| Description | Contributing factors to the erosion included low groundcover, concentrated flow, cattle traffic, shallow topsoil and sodic subsoils. Unstable head and sidewalls and limited upgradient groundcover causing lateral bank erosion. | | |

| Erosion feature I.D | Description |
|---------------------|-------------|
|---------------------|-------------|

Photograph




Significant gully erosion adjoining dam.

| Erosion feature I.D | Description | Photograph |
|---------------------|-------------|------------|
|---------------------|-------------|------------|



| | | |
|--------|---------------------------|--|
| M_DF_2 | Type of erosion feature | Sheet |
| | Lease Area | A |
| | Landform | Open depression adjoining watercourse |
| | Location | East of drainage feature |
| | Soil Type (Muller, 2008) | Kokotungo |
| | ALC (Thompson) | Class A |
| | Soil Condition | Texture contrast soils, sodic subsoil and shallow topsoil. |
| | Top of feature coordinate | Latitude: -24.070707 Longitude: 150.384056 |


| Erosion feature I.D | Description | Photograph |
|---------------------|--|---|
| | <p>Note: top of feature measured on northern head</p> <p>Maximum depth (m) NA</p> <p>Maximum width (m) 65</p> <p>Length (m) 395</p> <p>Description Contributing factors to the erosion included low groundcover, cattle traffic, shallow topsoil and sodic subsoils.</p> |  |
| M_Gully_7 | <p>Type of erosion feature Gully</p> <p>Lease Area B1 & B2</p> <p>Landform Simple slope</p> <p>Location South of Dodson's Road</p> <p>Soil Type (Muller, 2008) Earlsfield</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Friable non-cracking clay or clay loam soils</p> <p>Top of gully coordinate Latitude: -24.052188 Longitude: 150.411517</p> | |

| Erosion feature I.D | Description | Photograph |
|---------------------|-------------|------------|
|---------------------|-------------|------------|

| | |
|-------------------|--|
| Maximum depth (m) | 1 |
| Maximum width (m) | 4 |
| Length (m) | 70 |
| Description | Contributing factors to the erosion included low groundcover and cattle traffic. |



| | | |
|-----------|--------------------------|--|
| M_Gully_8 | Type of erosion feature | Gully |
| | Lease Area | B2 |
| | Landform | Simple slope |
| | Location | Upgradient of drainage feature (M_DF_3) |
| | Soil Type (Muller, 2008) | Kokotungo |
| | ALC (Thompson) | Class A |
| | Soil Condition | Texture contrast soils, sodic subsoil and shallow topsoil. |


| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| | <p>Top of gully coordinate Latitude: -24.059255 Longitude: 150.413334</p> <p>Maximum depth (m) 1</p> <p>Maximum width (m) 20</p> <p>Length (m) 205</p> <p>Description Contributing factors to the erosion included low groundcover, cattle traffic, steep slopes, shallow topsoil and sodic subsoils.</p> |  |
| M_Gully_9 | <p>Type of erosion feature Gully</p> <p>Lease Area B2</p> <p>Landform Simple slope</p> <p>Location East of cattleyard2</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Texture contrast soils, sodic subsoil and shallow topsoil.</p> | |

| Erosion feature I.D | Description | Photograph |
|---------------------|-------------|------------|
|---------------------|-------------|------------|

| | |
|---------------------------|---|
| Top of feature coordinate | Latitude: -24.061241 |
| Maximum depth (m) | Longitude: 150.423583 |
| Maximum width (m) | 0.5 |
| Length (m) | 9 |
| Description | Contributing factors to the erosion included low groundcover, cattle traffic, shallow topsoil and sodic subsoils. |



| | | |
|-----------|---------------------------|--|
| M_Rill_10 | Type of erosion feature | Rill |
| | Lease Area | B2 |
| | Landform | Simple slope |
| | Location | West of Dam11 |
| | Soil Type (Muller, 2008) | Kokotungo |
| | ALC (Thompson) | Class A |
| | Soil Condition | Texture contrast soils, sodic subsoil and shallow topsoil. |
| | Top of feature coordinate | Latitude: -24.061072 |
| | Maximum depth (m) | Longitude: 150.428054 |
| | Maximum width (m) | 0.4 |
| | Length (m) | 8 |
| | | 80 |


| Erosion feature I.D | Description | Photograph |
|---------------------|--|--|
| | <p>Description</p> <p>Contributing factors to the erosion included low groundcover and cattle traffic.</p> |  |
| M_Rill_11 | <p>Type of erosion feature</p> <p>Lease Area</p> <p>Landform</p> <p>Location</p> <p>Soil Type (Muller, 2008)</p> <p>ALC (Thompson)</p> <p>Soil Condition</p> | <p>Gully</p> <p>B2</p> <p>Simple slope</p> <p>South of Dam11</p> <p>Kokotungo</p> <p>Class A</p> <p>Texture contrast soils, sodic subsoil and shallow topsoil.</p> |


| Erosion feature I.D | Description | Photograph |
|---------------------|-------------|------------|
|---------------------|-------------|------------|


| | |
|-------------------------|--|
| Top of gully coordinate | Latitude: -24.063676 Longitude: 150.425923 |
| Maximum depth (m) | 0.4 |
| Maximum width (m) | 8 |
| Length (m) | 35 |
| Description | Contributing factors to the erosion included low groundcover and cattle traffic. |



| | | |
|------------|---------------------------|--|
| M_Gully_12 | Type of erosion feature | Gully |
| | Lease Area | B2 |
| | Landform | Simple slope |
| | Location | Southern portion of lease area B2 |
| | Soil Type (Muller, 2008) | Bluff |
| | ALC (Thompson) | Class C |
| | Soil Condition | Texture contrast soils, sodic subsoil and shallow topsoil. |
| | Top of feature coordinate | Latitude: -24.06644 Longitude: 150.418547 |
| | Maximum depth (m) | 0.6 |
| | Maximum width (m) | 10 |

| Erosion feature I.D | Description | Photograph |
|---------------------|--|---|
| | <p>Length (m) 65</p> <p>Description Contributing factors to the erosion included low groundcover, cattle traffic, steep slopes, shallow topsoil and sodic subsoils.</p> |  |
| M_Gully_13 | <p>Type of erosion feature Gully</p> <p>Lease Area B2</p> <p>Landform Simple slope</p> <p>Location Southern portion of lease area B2</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Top of feature coordinate Latitude: -24.065527 Longitude: 150.42116</p> | |


| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| | <p>Maximum depth (m) 0.5</p> <p>Maximum width (m) 10</p> <p>Length (m) 110</p> <p>Description Contributing factors to the erosion included low groundcover, cattle traffic, steep slopes, shallow topsoil and sodic subsoils.</p> |  |
| M_DF_3 | <p>Type of erosion feature Erosion of banks of watercourse and lateral bank erosion</p> <p>Lease Area B2</p> <p>Landform Watercourse and open depression.</p> <p>Location Central portion of lease area B2</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Texture contrast soils, sodic subsoil and shallow topsoil.</p> <p>Top of feature coordinate Latitude: -24.053879 Longitude: 150.423404 Note: start of feature at northern lease area B2 boundary</p> <p>Maximum depth (m) 1</p> <p>Maximum width (m) 170</p> | |


| Erosion feature I.D | Description | Photograph |
|----------------------------|---|---|
| Length (km) Description | <p>1.2</p> <p>Incorporates Dam22.</p> <p>Contributing factors to the erosion included low groundcover, concentrated flow, cattle traffic, shallow topsoil and sodic subsoils. Unstable head and sidewalls and limited upgradient groundcover causing lateral bank erosion.</p> <p>Extends north onto Dunn property.</p> |  |


| Erosion feature I.D | Description | Photograph |
|---------------------|-------------|------------|
|---------------------|-------------|------------|


| | | |
|--------|---------------------------|--|
| M_EF_2 | Type of erosion feature | Minor gully |
| | Lease Area | B2 |
| | Landform | Open depression |
| | Location | North east of Dam12 |
| | Soil Type (Muller, 2008) | Kokotungo |
| | ALC (Thompson) | Class A |
| | Soil Condition | Texture contrast soils, sodic subsoil and shallow topsoil. |
| | Top of feature coordinate | Latitude: -24.059245 Longitude: 150.42395 |





| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| | <p>Maximum depth (m) 0.5</p> <p>Maximum width (m) 40</p> <p>Length (m) 640</p> <p>Description Contributing factors to the erosion included low groundcover, cattle traffic, steep slopes, shallow topsoil and sodic subsoils.</p> |  |
| M_EF_3 | <p>Type of erosion feature Minor gully along watercourse</p> <p>Lease Area B2</p> <p>Landform Watercourse and open depression.</p> <p>Location Upgradient of Dam11</p> <p>Soil Type (Muller, 2008) Kokotungo</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Texture contrast soils, sodic subsoil and shallow topsoil.</p> | |

| Erosion feature I.D | Description | Photograph |
|---------------------|--|---|
| | <p>Top of feature coordinate Western head Latitude: -24.066466 Longitude:150.426898 Eastern head Latitude: -24.065877 Longitude:150.430585</p> <p>Maximum depth (m) 0.5 Maximum width (m) 90 Length (m) 565 Description Contributing factors to the erosion included concentrated flow, low groundcover, cattle traffic, shallow topsoil and sodic subsoils.</p> |  |
| M_EF_4 | <p>Type of erosion feature Lease Area Landform Location Soil Type (Muller, 2008) ALC (Thompson) Soil Condition Top of feature coordinate Maximum depth (m) Maximum width (m) Length (m)</p> <p>Gully B2 Open depression North of access track Bluff Class C Cracking clay soils Latitude: -24.064725 Longitude: 150.433094 0.4 4 10</p> | |

| Erosion feature I.D | Description | Photograph |
|---------------------|--|--|
| <p>M_Gully_14</p> | <p>Description Contributing factors to the erosion included concentrated flow along access track, cattle traffic, shallow topsoil and sodic subsoils.</p> <p>Type of erosion feature Gully</p> <p>Lease Area B2</p> <p>Landform Open depression adjoining watercourse</p> <p>Location West of drainage feature (M_DF_4) and parallel to a contour bank</p> <p>Soil Type (Muller, 2008) Clancy</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Cracking clay soils</p> <p>Top of feature coordinate Latitude: -24.059087 Longitude: 150.435579</p> <p>Maximum depth (m) 1.2</p> <p>Maximum width (m) 6</p> <p>Length (m) 30</p> <p>Description Contributing factors to the erosion included steep slope, low sidewall and base groundcover, contour banks and cattle traffic.</p> |  |
| <p>M_Gully_15</p> | <p>Type of erosion feature Gully</p> <p>Lease Area B2</p> <p>Landform Open depression</p> <p>Location Upgradient of drainage feature (M_DF_4)</p> | |

| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| | <p>Soil Type (Muller, 2008) Clancy</p> <p>ALC (Thompson) Class A</p> <p>Soil Condition Cracking clay soils</p> <p>Top of feature coordinate Latitude: -24.060447 Longitude: 150.439223</p> <p>Maximum depth (m) 2</p> <p>Maximum width (m) 6</p> <p>Length (m) 95</p> <p>Description Contributing factors to the erosion included steep slope, concentrated flow, low sidewall groundcover, contour banks and cattle traffic.</p> |  |
| M_Gully_16 | <p>Type of erosion feature Gully</p> <p>Lease Area B2</p> <p>Landform Simple slope</p> <p>Location South-west of powerlines</p> <p>Soil Type (Muller, 2008) Santo</p> <p>ALC (Thompson) Class C</p> <p>Soil Condition Cracking clay soils</p> <p>Top of feature coordinate Latitude: -24.064806 Longitude: 150.442652</p> | |

| Erosion feature I.D | Description | Photograph |
|---------------------|---|---|
| | Maximum depth (m) 1 |  |
| | Maximum width (m) 7 | |
| | Length (m) 75 | |
| | Description Contributing factors to the erosion included steep slope, contour banks and cattle traffic. | |
| M_DF_4 | Type of erosion feature Erosion of banks of watercourse and lateral bank erosion | |
| | Lease Area B2 | |
| | Landform Open depression/ watercourse | |
| | Location South of Dodson Road | |
| | Soil Type (Muller, 2008) Clancy | |
| | ALC (Thompson) Class A | |
| | Soil Condition Cracking clay soils | |

| Erosion feature I.D | Description | Photograph |
|---------------------|--|---|
| | Start of feature coordinate Latitude: -24.060367 Longitude: 150.440836 Note: start of feature at eastern lease boundary |  |
| | Maximum depth (m) 1.-1.2 | |
| | Maximum width (m) 10 | |
| | Length (m) 860 | |
| | Description Contributing factors to the erosion included concentrated flow, low groundcover and cattle traffic. | |

Appendix I Ecological Assessments



Banana Shire Council
PLANNING APPROVAL

23 OCT 2019

Smokey Creek Solar PV Farm

Ecological Assessment

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Document status

| Version | Purpose of document | Approved by | Reviewed by | Review date |
|---------|--|-------------|-------------|-------------|
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| 2. | Draft Report for Client Review | LL | AF | 30-JUL-2018 |
| 3. | Final Report for Issue including Client Amendments | AF | AW | 16-AUG-2018 |

Approval for issue

| Name | Signature | Date |
|--------------------|---|-------------|
| Laurence Liessmann |  | 16-AUG-2018 |

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1 Introduction

Edify Energy Pty Ltd (Edify) propose to construct and operate a solar farm on property located on Hibbs Road, off the Burnett Highway, approximately 15 km south-east of Dixalea (**Figure 1**). The project will be constructed over seven properties; Lot 39 on RN395; Lot 28 on RN211; Lot 18 on RN271; Lot 37 on RN1147; Lot 29 on RN210; Lot 32 on RN194; Lot 33 on RN210. The project will consist of:

- Solar photovoltaic panels;
- Sub-station;
- New overhead powerline;
- Transmission infrastructure;
- Site buildings and storage areas;
- Laydown and construction compound; and
- Access tracks

RPS Australia East Pty Ltd (RPS) has been engaged by Edify to undertake an ecological assessment for the project. The purpose of the investigation is to inform the statutory planning process, provide information for input into the design process and identify any potential ecological constraints relating to the development of the proposed PHES.

1.1 Objectives

The objective of the ecological assessment was to identify potential environmental constraints relating to development of the proposed PHES. These matters include threatened species and ecological communities listed as Matters of National Environmental Significance (MNES) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), listed threatened species pursuant to the *Nature Conservation Act 1992* (NC Act) and Matters of State Environmental Significance (MSES) under Queensland legislation.

The specific objectives of this study were to:

- Review relevant background information and data related to ecological constraints in a local and regional context;
- Describe the ecological values of the survey area, with consideration to relevant statutory requirements; and
- Detail any potential ecological constraints and opportunities of the proposed development.

1.2 Scope of works

The scope of the study included the following:

- Prepare a detailed desktop assessment of background information and legislative/policy documents relevant to the project;
- Undertake a brief site inspection; and
- Prepare a report detailing, methodology and results of the assessment.

1.3 Project area description

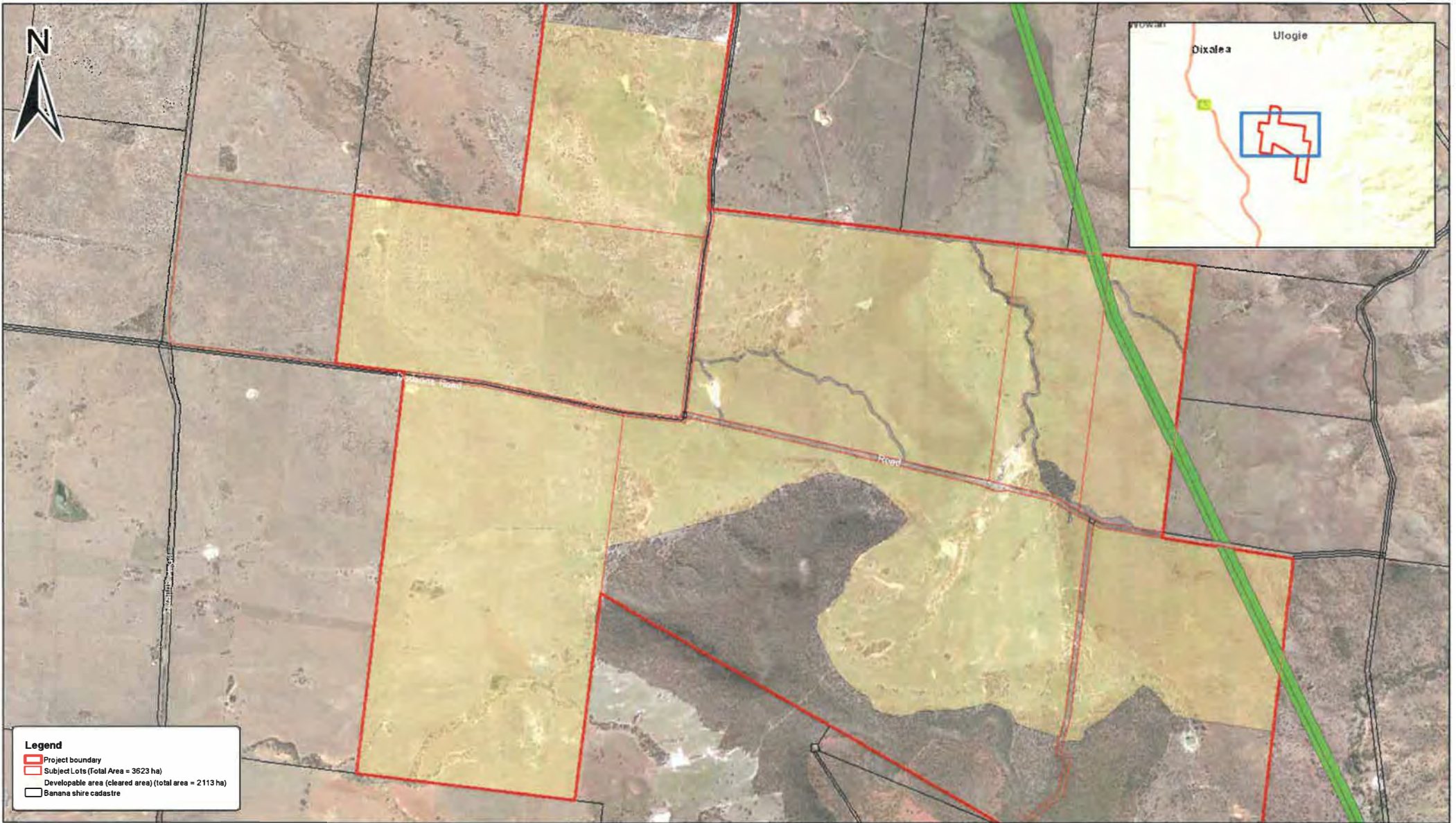
The project area occupies an area of approximately 2,113 ha on part of Lot 39 on RN395; Lot 28 on RN211; Lot 18 on RN271; Lot 37 on RN1147; Lot 29 on RN210; Lot 32 on RN194; Lot 33 on RN210, Dixalea (**Figure 1**) located within the Banana Shire Local Government Area. The total area of the allotments on which the development is proposed is approximately 3,623 ha. An aerial photograph of the site and surrounds is provided in **Figure 2**.

The project area is predominantly within the Callide Creek Downs sub-region of the Brigalow Belt South bioregion (BBSB) and a small section occurs in the Mount Morgan Ranges sub-region.

The project area is characterised by flat to undulating plains of stony brown clay loam that evidently supported brigalow and semi-evergreen vine thicket prior to clearing. The land management history of the project area includes clearing for pasture improvement and cattle grazing to the extent that the project area now contains only isolated trees and small, highly fragmented stands. Few areas of remnant vegetation have been retained on low-lying areas of the property. Habitat for native species is now highly modified being fragmented and heavily impacted by cattle grazing.

The elevation of the project area ranges from between 200 m AHD and 230 m AHD and is characterised by undulating plains with associated slopes and crests.

A high voltage transmission line passes immediately adjacent to the project area through lot 33RN210 and 37RN1147 in a north-west/south-east direction.



Legend

- Project boundary
- Subject Lots (Total Area = 3623 ha)
- Developable area (cleared area) (total area = 2113 ha)
- Banana shire cadastral



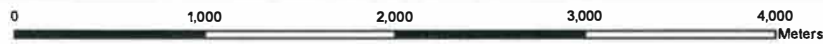
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PROJECT
SMOKY CREEK SOLAR PROJECT

FIGURE 1: SITE LOCATION PLAN



Reference Scale: 1:26,933

Source: Department of Natural Resources & Mines - Cadastral data fortnightly extract Townsville Local Government Area © State of Queensland (Department of Natural Resources and Mines) 2014.
Vegetation management watercourse and drainage feature map (1:100 000 and 1:250 000) - version 1.4 © State of Queensland (Department of Natural Resources and Mines) 2015.
Wetland protection area - high ecological significance wetland © State of Queensland (Department of Environment and Heritage Protection) 2015
Vegetation management - essential habitat map - version 4.34 © State of Queensland (Department of Natural Resources and Mines) 2016

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994

Document Name: 140339-3-01 RevB_SiteLocationPlan

Date: 16/08/2018

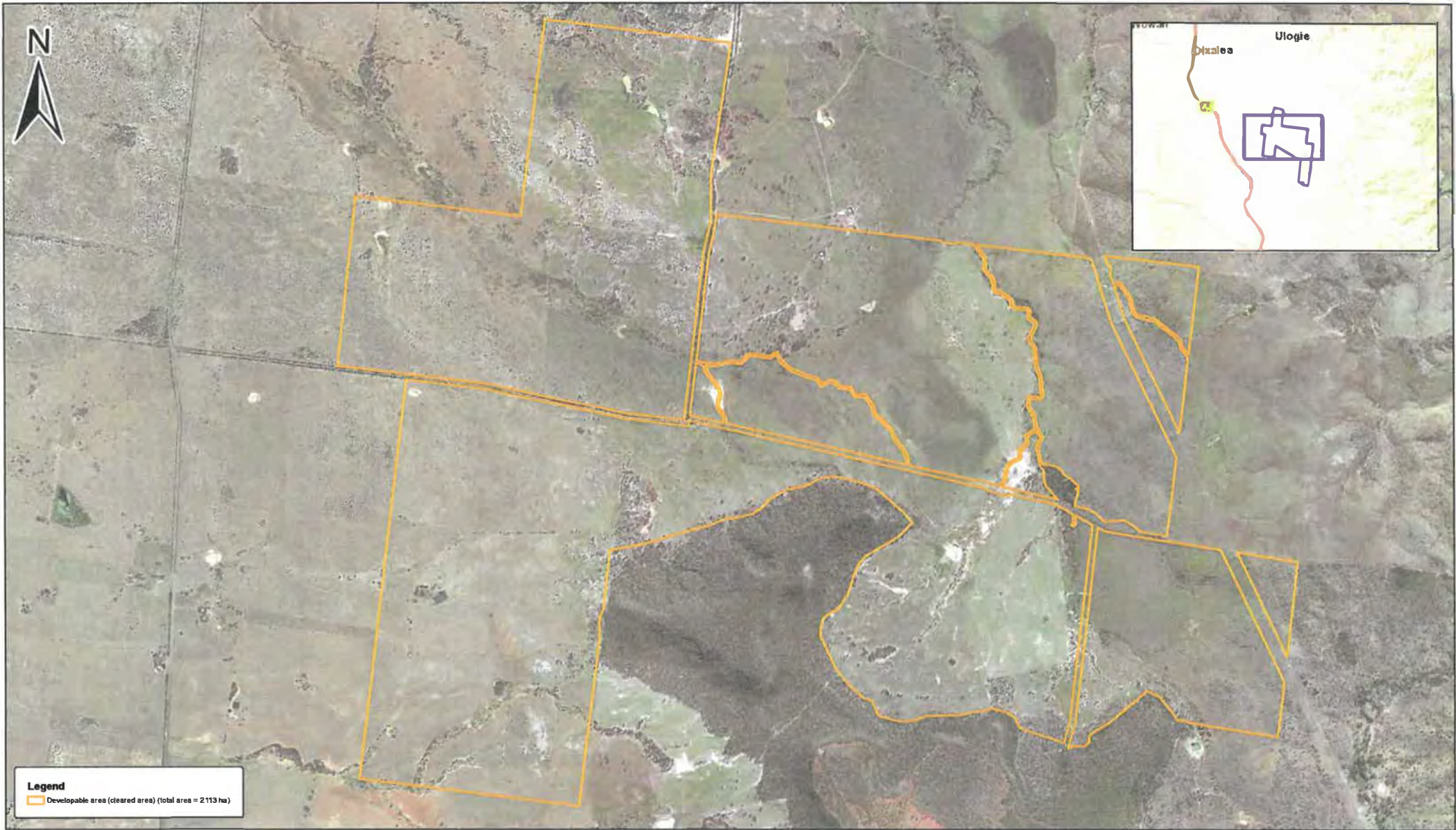
Author: AF

Project Manager: MC

Plan Ref
140339-1-01

Rev
A

Sheet
A3



Legend
 Developable area (cleared area) (total area = 2 113 ha)

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|--------------------------------|-----------------|--------------------|
| Plan Ref 140339-3-02 | Rev B | Sheet A3 |
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PROJECT
SMOKY CREEK SOLAR PROJECT

FIGURE 1: AERIAL IMAGERY OF PROJECT AREA

0 1,000 2,000 3,000 4,000 Meters
 Reference Scale: 1:26.933

Source: Department of Natural Resources & Mines - Cadastral data fortnightly extract Townsville Local Government Area © State of Queensland (Department of Natural Resources and Mines) 2014.
 Vegetation management watercourse and drainage feature map (1:100 000 and 1:250 000) - version 1.4 © State of Queensland (Department of Natural Resources and Mines) 2015.
 Wetland protection area - high ecological significance wetland © State of Queensland (Department of Environment and Heritage Protection) 2015
 Vegetation management - essential habitat map - version 4.34 © State of Queensland (Department of Natural Resources and Mines) 2016

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Coordinate System: GDA 1994 MGA Zone 56
 Projection: Transverse Mercator
 Datum: GDA 1994

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|--|------------|---------------------|
| Document Name: 140339-3-02RevB_AerialImagery | | |
| Date: 16/08/2018 | Author: AF | Project Manager: MC |

1.4 Statutory considerations

The following legislation, policy, guidelines and guidance documents provided in **Table 1** are relevant to identifying the impacts and constraints relevant to the site and provide guidance in the assessment of the ecological values of the site.

Table 1 Relevant environmental statutory considerations

| Legislative act | Brief description |
|--|--|
| Commonwealth Legislation | |
| <i>Environment Protection and Biodiversity Conservation Act 1999</i> | <p>The <i>Environment Protection and Biodiversity Conservation (EPBC) Act 1999</i> provides a mechanism for assessing the environmental impact of activities and development where "Matters of National Environmental Significance" (MNES) may be significantly affected.</p> <p>The Act identifies eight matters of MNES, which require consideration and analysis, including:</p> <ul style="list-style-type: none"> • Ramsar wetland of international importance; • World Heritage properties; • National Heritage places; • Commonwealth Marine areas; • Great Barrier Reef Marine Park; • Nationally threatened species and ecological communities; • Nationally listed migratory species; and • Nuclear actions (including uranium mining). <p>Where a project or action is believed to potentially cause a significant impact on a matter of MNES, it is to be referred to the Australian Government Department of Environment (DoE) for assessment as to whether the action is a 'controlled action' requiring Commonwealth approval for the proposed action. The EPBC Act processes also allow voluntary referral of a Project to seek confirmation that a Project will not have significant impacts on matters of MNES. Where an action requires Commonwealth approval, a formal assessment process is undertaken in accordance with provisions of relevant legislation.</p> |
| State Legislation | |
| <i>Nature Conservation Act 1999</i> | <p>The <i>Nature Conservation Act 1992 (NCA)</i> aims to conserve nature through strategies such as dedicating and declaring protected areas for those parts of Queensland with outstanding biological diversity, natural features and wilderness values. The Act provides for the protection of near threatened, vulnerable and endangered animals and plants.</p> <p><i>Nature Conservation (Wildlife) Regulation 2006.</i></p> <p>In support of the purpose and the provisions of the NCA, the <i>Nature Conservation (Wildlife) Regulation 2006</i> lists all flora and fauna species which are considered to be 'extinct in the wild', 'endangered', 'Vulnerable', 'Near Threatened' and 'Least Concern' wildlife.</p> |
| <i>Vegetation Management Act 1999</i> | <p>The VM Act is the planning initiative underlying regional management of vegetation in Queensland, including clearing of vegetation types, termed Regional Ecosystems (REs).</p> <ul style="list-style-type: none"> • The RE classification is a hierarchical system formed by a three-part code with the primary subdivision being bioregion, followed by land zone, and then vegetation. The biogeographic region or bioregion is the primary level of classification for biodiversity values in Queensland describing where the RE is found on a state-wide basis. Land Zones are geological and geomorphic categories that describe the major geologies and landforms of Queensland. The system is based primarily on geology, with geologic age considered an important determinant; |

Legislative act

Brief description

- The status of REs is based on their pre-clearing and remnant extent, and is gazetted under the Act and listed in the RE Description Database (REDD) maintained by the Queensland Department of Environment and Heritage Protection (DEHP); and
- The Act aims to conserve remnant endangered and of concern REs, prevent land degradation and further loss of biodiversity, manage the environmental impacts of clearing vegetation and reduce the emissions of greenhouse gases. The VMA status of an RE is described in line with the following:
 - Endangered. A RE that is prescribed under the regulation and has either of the following attributes:
 - Less than 10% of its pre-clearing extent remaining; or
 - From 10% to 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10,000ha.
 - Of concern. An RE that is prescribed under the regulation and has either of the following attributes:
 - From 10% to 30% of its pre-clearing extent remaining; or
 - More than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10,000 ha; or
 - Least concern. A RE that is prescribed under the regulation and has more than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is more than 10,000ha; or
 - The biodiversity status of a RE is classified by DEHP based on the condition of remnant vegetation. A RE will have a vegetation management status and/or a biodiversity status of endangered, of concern or least concern; or
 - Essential Habitat.

The VMA also has provision for the regulation of essential habitat for species of state significance. Essential habitat (mapped by DEHP) is vegetation in which a listed species has been known to occur. Clearing or disturbance to areas of essential habitat will require compensatory habitat measures to be developed. For the project development area, core habitat has been used to describe the combination of critical or essential habitat for both national or state listed significant species.

Water Act 2000

The *Water Act 2000 (Water Act)* provides for the sustainable management of water and other resources, a regulatory framework for water sewerage services, and the establishment and operation of water authorities. The Water Act governs the construction, control and management of works with respect to water conservation and protection, irrigation, drainage, water supply, flood control and prevention.

The Water Act regulates the destruction/ disturbance of freshwater riverine vegetation in the bed and banks of Department of Natural Resources and Mines (DNRM) watercourses. Section 266 of the Water Act identifies that:

A person may apply to the chief executive for a permit to do any or all of the following activities:

- Destroy vegetation in a watercourse, lake or spring;
- Excavate in a watercourse, lake or spring; and
- Place fill in a watercourse, lake or spring.

Destruction of vegetation in accordance with the Water Act is "...the removing, clearing, killing, cutting down, felling, ringbarking, digging up, pushing over, pulling over or poisoning of the vegetation". In accordance with the Water Act, watercourses are determined as watercourses by the DNRM through topographical mapping, aerial imagery and a possible onsite assessment.

| Legislative act | Brief description |
|---------------------------------------|---|
| <i>Queensland Fisheries Act 1994</i> | <p>The <i>Fisheries Act 1994</i> (Fisheries Act) provides for the use, conservation and enhancement of the community's fisheries resources and fish habitat by providing for, amongst other things, the protection of fish habitats.</p> <p>The Fisheries Act has been integrated into the <i>Sustainable Planning Act 2009</i> (SP Act) so that development permits under the SP Act are required for certain operational works that are assessable development under the SP Act.</p> <p>Operational works that are assessable development under the SP Act include waterway barrier works and works in a declared fish habitat.</p> |
| <i>Environmental Offsets Act 2014</i> | <p>On 1 July 2014, a new environmental offsets framework was introduced in Queensland. The new framework streamlines environmental offsets by providing an outcome-based approach to offsets, removing the complexities and duplication associated with the former offsets framework and aligning offsets across all three levels of government.</p> <p>The new framework includes:</p> <ul style="list-style-type: none"> ● <i>Environmental Offsets Act 2014</i> which coordinates the delivery of environmental offsets across jurisdictions is the overarching legislation for offsets in Queensland; ● <i>Environmental Offsets Regulation 2014</i> which provides details of the prescribed activities regulated under existing legislation and prescribed environmental matters to which the Act applies; and ● Queensland Environmental Offsets Policy which provides a single, consistent, whole-of-government policy for the assessment of offset proposals provided by authority holders to satisfy offset conditions. <p>The new policy provides greater flexibility in relation to how offsets can be delivered including:</p> <ul style="list-style-type: none"> ● Financial settlement calculated using the Financial Settlement Offset Calculator; ● Land-based offsets; and ● Offsets delivered as actions in a Direct Benefit Management Plan. ● Or a combination of these approaches. <p>Where offset conditions specify, staged offsets can also be delivered.</p> <p>The policy also introduces a more strategic approach to offset delivery through the introduction of Strategic Offset Investment Corridors and Direct Benefit Management Plans (DBMP). This more strategic approach is intended to lead to greater benefits for the environment and will provide more opportunities for landholders to receive income in return for voluntarily agreeing to manage their land, or part of their land, as an offset.</p> |

2 Methods

2.1 Desktop assessment

The desktop assessment involved a review of relevant environmental documents, databases, scientific journals, books, technical reports, maps and legislation (Commonwealth, State and Local) to identify the ecological values that potentially occur within and surrounding the project area.

This review included an assessment of the following information:

- Aerial Photograph Interpretation (API) to determine the broad categorisation of vegetation within and surrounding the site and to review the extent of historical clearing and land use, and any other significant environmental features such as watercourses and wetlands (Google Earth 2016);
- Regulated vegetation management map: The most recent version of the DNRM Regulated Vegetation Management mapping (2015) including regional ecosystems (Version 10.1), essential habitat mapping (Version 7.04) (**Figure 3**);
- Referable Wetlands mapping. The referable wetlands mapping produced by the DEHP was reviewed to provide an indication of the occurrence and location of any wetland management areas (comprising significant wetlands and a 100 m wetland buffer area) in relation to the landforms of the site;
- DEHP Protected Plants Flora Survey Trigger Map (**Appendix A**);
- Wildlife Online database of flora and fauna. This database holds records of plants and animals that have either been sighted or collected within a given radius of the site (a search parameter was prescribed limiting the search area to a 15km radius around an approximate central point of the site (-24.0564, 150.4114). Records held in this database are maintained by DEHP (**Appendix B**);
- Atlas of Living Australia species records review (AoLA, 2016);
- Protected matters database of Matters of NES. This database applies a range of bio-models to predict the presence of species of flora and fauna and other matters of NES within a given radius of the site (a search parameter was prescribed limiting the search area to a 15km radius around an approximate central point of the study area (-24.0564, 150.4114), as cited under the Commonwealth's EPBC Act (**Appendix C**).

2.2 Site inspection

A site inspection of the project area was undertaken by **Simon Danielson** (Principal Ecologist), on 23 June 2018. A ground traverse of the proposed clearing footprint was undertaken, including an examination of onsite vegetation communities and general fauna habitat values.

The habitat assessment focused on identifying the broad habitat features typically associated with threatened species considered to potentially occur onsite.

3 Results

3.1 Flora

3.1.1 Regional ecosystems

Regulated vegetation mapping in Queensland divides vegetation into three broad categories: remnant, non-remnant and high value regrowth vegetation. The map shows areas that are assessable and non-assessable under the provisions of the *Vegetation Management Act 1999* (VMA). Table 2 outlines the definitions of each of these categories.

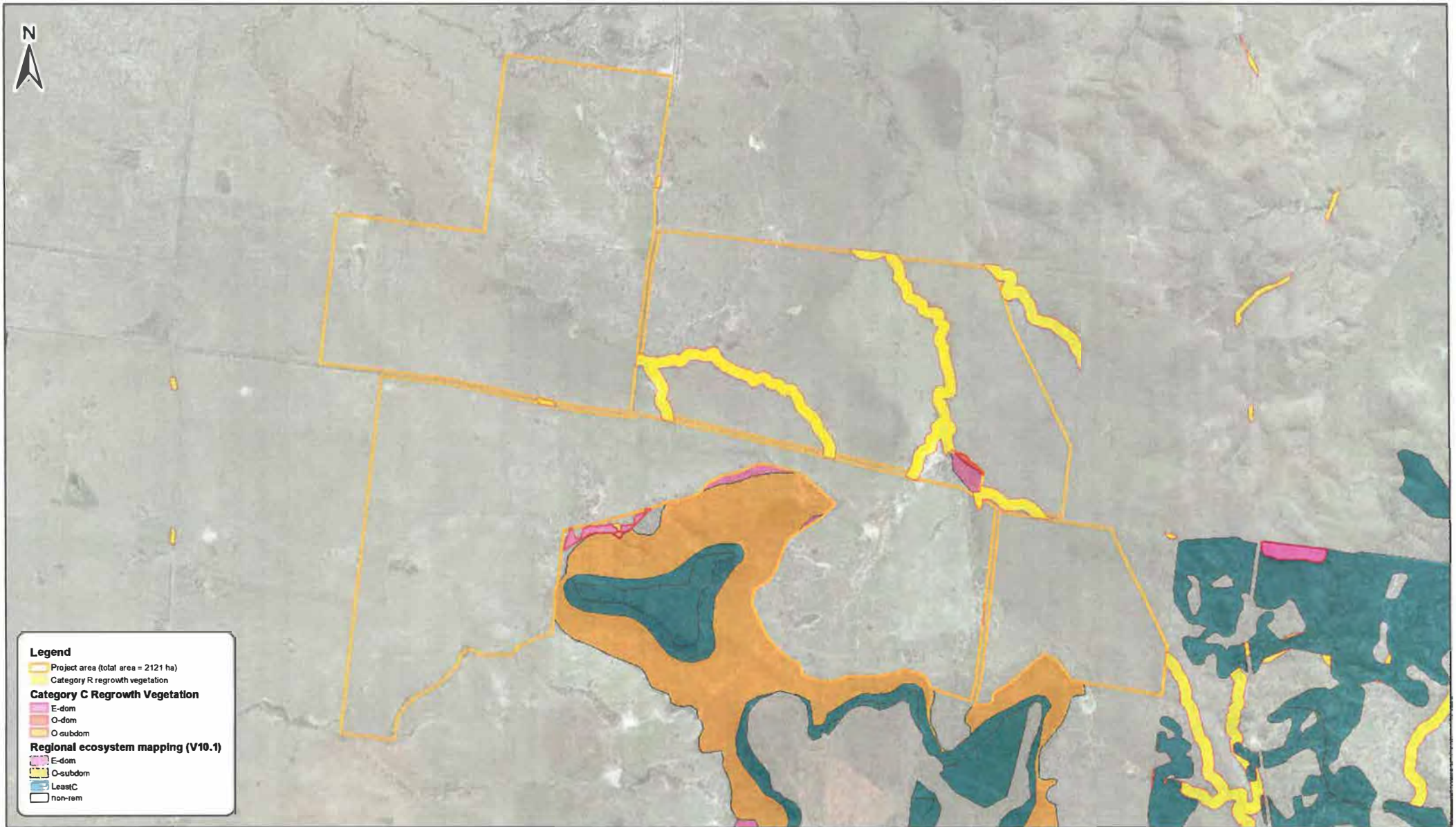
Table 2 Description of vegetation classifications

| Vegetation classification | Definition |
|---|--|
| Remnant Vegetation (Category A) | Areas subject to compliance notices, offsets and voluntary declarations. |
| Remnant Vegetation (Category B) | Remnant vegetation is vegetation which has never been cleared or vegetation which has been cleared but has regrown to meet the following: <ul style="list-style-type: none"> • 50% of the original undisturbed canopy cover; • 70% of the original undisturbed canopy height; and • Composed of the same floristic species that would exist if the vegetation community were undisturbed. |
| Reef Regrowth watercourse vegetation (Category R) | Native woody vegetation on freehold land, Indigenous land or leasehold land granted for agriculture or grazing purposes, located within 50 metres of a watercourse in the Burdekin, Mackay, Whitsunday and Wet Tropics Great Barrier Reef catchments (if there is no native vegetation within 50 metres of a regrowth watercourse, the code does not apply). |
| High Value Regrowth Vegetation (Category C) | Category C regrowth vegetation is an area on leasehold land granted for agricultural or grazing purposes that has regrowth vegetation (not remnant vegetation), that is either a least concern, of concern or endangered regional ecosystem, and has not been cleared since 31st December 1989. |
| Non-remnant Vegetation (Category X) | Non-remnant vegetation is vegetation which has been cleared and has not yet regrown to the meet the definition of remnant vegetation. |

Remnant vegetation communities in Queensland (Category A and Category B) are classified as Regional Ecosystems (RE) for the administration of the VMA (Table 2). Sattler and Williams (1999) describe regional ecosystems as:

“Communities of vegetation that are consistently associated with a particular combination of geology, land form and soil in a bioregion”.

The RE (Version 10.1) mapping of the site shows the entire project area as containing non-remnant vegetation.



Legend

- Project area (total area = 2121 ha)
- Category R regrowth vegetation
- Category C Regrowth Vegetation**
- E-dom
- O-dom
- O-subdom
- Regional ecosystem mapping (V10.1)**
- E-dom
- O-subdom
- Least C
- non-rem



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PROJECT

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FIGURE 3: REGIONAL ECOSYSTEM MAPPING (V10.1)



Reference Scale: 1:30,000

Source: Department of Natural Resources & Mines - Cadastral data fortnightly extract Banana Local Government Area © State of Queensland (Department of Natural Resources and Mines) 2014.
Vegetation management watercourse and drainage feature map (1:100 000 and 1:250 000) - version 1.4 © State of Queensland (Department of Natural Resources and Mines) 2015.
Wetland protection area - high ecological significance wetland © State of Queensland (Department of Environment and Heritage Protection) 2015
Vegetation management - essential habitat map - version 4.34 © State of Queensland (Department of Natural Resources and Mines) 2016

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Please verify the accuracy of all information prior to use.

Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994

Document Name: 140339-3-03RevA_REMapping

Date: 6/07/2018

Author: AF

Project Manager: LL

Plan Ref

140339-3-03

Rev

A

Sheet

A3

3.1.2 Threatened ecological communities

Listed threatened ecological communities are matters of national environmental significance (MNES) under the EPBC Act. Currently there are three categories for listing threatened ecological communities (TECs) under the EPBC Act: critically endangered, endangered and vulnerable.

An ecological community is a naturally occurring group of native plants, animals and other organisms that interact within a unique habitat. The structure, composition and distribution of ecological communities are influenced by many environmental factors including landscape position, altitude, climate and water availability. Threatened ecological communities that are protected under the EPBC Act include woodlands, grasslands, shrub lands, forests, wetlands, marine, ground springs and cave communities (Department of Environment, 2016).

In accordance with the EPBC Act, a person must not take an action that has, will have, or is likely to have, a significant impact on a listed threatened ecological community, without approval from the Minister for the Department of Environment.

A desktop search of the Protected Matters Database (PMD) of MNES was undertaken to identify any TEC's with the potential to occur in the project area using a 15 km radius of a central coordinate (-24.0564, 150.4114). The search returned the following TEC's:

- Brigalow (*Acacia harpophylla* dominant and co-dominant) (Endangered);
- Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions (Endangered);
- Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions (Endangered); and
- Weeping Myall Woodlands (Endangered).

For the TEC's identified through the desktop assessment and assessed in **Appendix D**, no TEC's were identified within the project area during the site investigation.

Elements of the brigalow and semi-evergreen vine thicket TEC are present as remnant vegetation in the southern extent of lot 32 on RN210, which has been excised from the project area.

Within the project area, watercourses which traverse lot 29 and 32 on RN210 and lot 33 on RN588 and the watercourse on the boundary of project area in Lot 39 on RN395, comprise regrowth vegetation containing elements of brigalow TEC.

3.1.3 On-ground vegetation communities

The field survey determined that the vegetation communities within the project area are consistent with the non-remnant status of RE mapping Version 8.0 (RE mapping). A brief description of the on-ground communities is provided in below.

3.1.3.1 Lot 28 on RN211 and lot 18 on RN271

These parcels are comprised of gently undulating plains of stony brown clay loams in the southern two thirds sloping upwards to undulating plains and rises in the northern third. Although a small section in the northern extent of lot 18 on RN271 is mapped as containing remnant vegetation, but the entire project area is non-remnant.

Vegetation in these parcels primarily consisted of isolated trees and patches of trees including species such as brigalow (*Acacia harpophylla*), Dawson's gum (*Eucalyptus cambageana*), mountain coolabah (*Eucalyptus orgadophila*), coolabah (*Eucalyptus coolabah*) and the Queensland bottle tree (*Brachychiton*

rupestris) (**Plate 1**). In places, a shrubby layer has been retained, and is dominated by species typically found in brigalow communities, such as *Geijera parviflora*, *Diospyros humilis*, *Carissa ovata*, *Psydrax* spp. *Alectryon diversifolius*. The pre-clearing RE was likely 11.9.1 (*Acacia harpophylla* – *Eucalyptus cambageana* woodland to open forest) over much of the undulating plain, where remnants of this community have been retained along the adjacent road corridors. Certain creek lines also contained some brigalow remnants.

The northern section of lot 18 on RN271 consists of low rocky rises with a low woodland dominated by rosewood (*Acacia rhodoxylon*) and *Acacia blakei* in places (**Plate 2**). Most of the community has been recently cleared, where the pre-clearing RE is likely to be RE 11.10.3 (*Acacia catenulata* or *A. shirleyi* open forest). A creek draining the land to the west supported a fringing brigalow community, which we consider to be non-remnant.

Along the northern boundary of lot 18 on RN271, shrubby open forest dominated by narrow-leaved ironbark (*Eucalyptus crebra*) was present on a rise (**Plate 3**) with gum-topped box shrubby open forest to the east on the adjoining flats. This vegetation has been incorrectly mapped as the heterogenous polygon 11.10.1/11.9.13 (*Corymbia citriodora* woodland / *Eucalyptus moluccana* or *E. microcarpa* open forest). The correct RE is a heterogenous polygon of RE 11.10.7/11.9.13 (*Eucalyptus crebra* woodland / *Eucalyptus moluccana* or *E. microcarpa* open forest).



Plate 1 Cleared pasture land with isolated trees and patches of trees was dominant in the project area



Plate 2 Rosewood (*Acacia rhodoxylon*) low woodland on low rises in the northern area



Plate 3 Shrubby open forest dominated by narrow-leaved ironbark (*Eucalyptus crebra*) which is mapped as remnant along the northern boundary.

3.1.3.2 Lot 29 and 33 on RN210 and lot 32 on RN194

These parcels are comprised of gently undulating plains in the centre and undulating to rolling rises in the west and east. The soil is a stony brown clay loam. Most of this land has been cleared for pasture improvement and contains the below vegetation communities:

- An area of approximately 50 ha in the western area of lot 29 on RN210, was comprised of retained woodland trees, primarily narrow-leaved ironbark (*E. crebra*), Queensland bottle tree and Dawson's gum (**Plate 4**).
- A vegetated creek line in lot 32 on RN194, consists of mature trees characteristic of the pre-clearing RE 11.3.1 (*Acacia harpophylla* and/or *Casuarina cristata* open forest), Dawson's gum, Queensland bottle tree and belah (*Casuarina cristata*) with a shrubby element (**Plate 5** and **Plate 6**). This vegetation community is thin and altered, and is correctly mapped as non-remnant, although it still retains some habitat value. The community fringes a creek bank which appears to be highly dispersive and the vegetation appears to stabilise the bank.
- An area of remnant vegetation is mapped outside the project area in the southern extent of lot 32 on RN194. The community comprises the endangered heterogenous polygon 11.9.1/11.9.4 (*Acacia harpophylla* – *Eucalyptus cambageana* woodland to open forest / semi-evergreen vine thicket or *Acacia harpophylla* with a semi-evergreen vine thicket understorey) and the of concern RE 11.11.16 (*Corymbia leichhardtii*, *C. clarksoniana* tall open woodland). This community is more accurately described as RE 11.9.1 (*Acacia harpophylla* – *Eucalyptus cambageana* woodland to open forest) (**Plate 7**).



Plate 4 Retained Dawson's gums in the western extent of 29 on RN210



Plate 5 The majority of this section is cleared open pasture land



Plate 6 Retained brigalow and Dawson's gum along a creek line in lot 32 on RN210



Plate 7 Brigalow vegetation mapped as remnant outside the project area in lot 32 on RN210

3.1.3.3 Lot 39 on RN395 and Lot 37 on RN1147

These parcels are comprised of gently undulating to undulating plains of stony brown clay loam. The area contains isolated trees generally comprising brigalow, Dawson's gum, Queensland bottle tree, mountain coolibah and narrow-leaved ironbark, with occasional small stands of trees. Where stands have been retained, they are generally heavily utilised by cattle and do not contain native ground covers or a characteristic shrub layer. These parcels skirt a low range of remnant vegetation which appears to be composed of a narrow-leaved ironbark and/or mountain coolibah woodland to low woodland and a rosewood low woodland.

The pre-clearing RE of these parcels was likely 11.9.1 (*Acacia harpophylla* – *Eucalyptus cambageana* woodland to open forest) with patches of RE 11.10.3 (*Acacia catenulata* or *A. shirleyi* open forest) and 11.7.2 (*Acacia* spp. woodland) along the flanks of the low range to its east. A creek system in the south of this land is fringed by low brigalow woodland community (pre-clearing RE likely to be 11.3.1) but is considered too narrow and open to be classified as remnant.

The pre-clearing RE of the northern section of Lot 37 on RN1147 (along the southern boundary of lot 29 and 33 on RN2110 and lot 32 on RN194), is likely to have been brigalow (RE11.9.1) and in some places semi-evergreen vine thicket (RE 11.9.4). Scattered trees and occasional stands of brigalow occur, however as noted above, these areas are heavily utilised by cattle and provide minimal habitat value. Many of these areas have been recently re-cleared and were not accessible at the time of the survey. All areas are correctly mapped as non-remnant vegetation.



Plate 8 Cleared brigalow vegetation along the eastern boundary of the western portion, near the apron slope of the low range.



Plate 9 Cleared brigalow vegetation along the eastern boundary of western section

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Plate 10 Cleared brigalow vegetation occupying the proposed location of the switchyard

3.1.4 Threatened flora

Desktop searches for threatened flora and fauna species potentially occurring within the locality were undertaken using the Wildlife Online database (**Appendix B**) and the Protected Matters database of Matters of NES (**Appendix C**) using a 20 km radius of the site.

An assessment of the likelihood of occurrence for each species has been provided based on their known ecological requirements and the current environmental conditions and habitat values of the site (**Appendix E**). Of the species assessed, two are considered to possibly occur within the project area. The species and their conservation status under the EPBC Act and NC Act is shown in **Table 3**.

No threatened or near threatened plants were identified during the initial site investigation.

Table 3 Conservation significant flora that have the potential to occur on site

| Species name | Common name | NC Act status | EPBC Act status |
|-----------------------------|-------------|---------------|-----------------|
| <i>Solanum dissectum</i> | - | Endangered | Endangered |
| <i>Solanum johnsonianum</i> | - | Endangered | Endangered |

3.1.4.1 *Solanum dissectum* and *Solanum johnsonianum*

Solanum dissectum is found in the Biloela-Banana-Baralaba area. It occurs on heavy cracking soils, often in association with brigalow (*Acacia harpophylla*), or *Eucalyptus thozetiana* (Bean 2004). Similarly, *Solanum johnsonianum* is found to the north of the Theodore – Biloela area. Occurs on heavy cracking clay soils in brigalow, often after fire or disturbance, such as clearance (Bean 2004). Both species have also been previously recorded within 10 km of the project area.

Overall, the habitat quality for both species of *Solanum* spp. is considered low due to the extensive broadscale clearing and historical cattle grazing. Marginal habitat for the species was present in the regrowth brigalow that fringed some watercourses and the associated extensive cracking clay loam plains. However, it

should be noted that the soil in the project area is not classified as heavy cracking clay and consists of a clay loam.

3.2 Fauna

3.2.1 Threatened fauna

Desktop searches for threatened flora and fauna species potentially occurring within the locality were undertaken using the Wildlife Online database (**Appendix B**) and the Protected Matters database of Matters of NES (**Appendix C**).

An assessment of the likelihood of occurrence of each fauna species has been provided based on their known ecological requirements and the current environmental conditions and habitat values of the site (**Appendix F**). Of the species assessed, two are considered to possibly occur within the project area. The species and their conservation status under the EPBC Act and NC Act is shown in **Table 4**.

The small number of threatened species records is probably due to a lack of local survey effort rather and should be used as an indicative measure of threatened species presence/absence in the local context.

Table 4 Threatened fauna that have the potential to occur on site

| Species name | Common name | NC Act status | EPBC Act status |
|---------------------------------|------------------|---------------|-----------------|
| <i>Geophaps scripta scripta</i> | Squatter pigeon | Vulnerable | Vulnerable |
| <i>Denisoniam maculata</i> | Ornamental snake | | Vulnerable |

3.2.1.1 Squatter pigeon

The squatter pigeon (southern subspecies) mainly inhabits grassy woodlands and open forests dominated by eucalyptus. It has also been recorded in sown grasslands with scattered remnant trees, disturbed sites in scrub and acacia. The species displays a preference for open areas with a short grass cover and is regularly found adjacent to tracks and areas with short grass (DoEE 2018a).

Species movement is not well understood but individuals and populations are believed to be resident or locally dispersive in response to changing resource availability (i.e. water, seed). The species is reliant on a permanent water source which might include rivers, creeks, waterholes, farm dams and water troughs and there is likely to be significant contraction toward important water resources during the dry season (DoEE 2018a).

Squatter pigeon populations north of the Carnarvon Ranges in southern Queensland are not considered to be important populations under the EPBC Act. The species remains common in heavily-grazed country north of the Tropic of Capricorn, where there is believed to be a continuous interbreeding sub-population (Squatter Pigeon Workshop 2011). The contraction of the species range in a northward direction has isolated the following sub-populations which are considered important populations:

- Populations occurring in the Condamine River catchment and Darling Downs of southern Queensland;
- The populations known to occur in the Warwick-Inglewood-Texas region of southern Queensland; and
- Any populations potentially occurring in NSW.

Potential habitat consisting of a generally short, well grazed grassy understorey of native and introduced grasses and permanent water resources (i.e. farm dams) occurs in the project area.

The squatter pigeon was not recorded during the site inspection and database searches (i.e. AoLA and wildlife online) have not been previously recorded the species within 25 km of the project area. In addition, any populations within the local area would not be considered an important population under the EPBC act due to the sites location, which is north of the Carnarvon Ranges.

3.2.1.2 Ornamental snake

Ornamental snake is believed to be endemic to the Brigalow Belt North and parts of the Brigalow Belt South biogeographic regions in central-eastern Queensland. The species prefers woodlands and open forests containing moist habitats, especially gilgai mounds and depressions, but also lake margins and wetlands (DoEE 2018b).

The species is most commonly recorded in vegetation dominated by brigalow (*Acacia harpophylla*), gidgee (*Acacia cambagei*), blackwood (*Acacia argyrodendron*) or coolibah (*Eucalyptus coolabah*) including the following RE's:

- 11.4.3 – Open forest dominated by Brigalow and/or Belah clay soils not associated with current alluvium;
- 11.4.6 – Gidgee woodland clay soils not associated with current alluvium;
- 11.4.8 – Woodland to open forest dominated by Dawson Gum (*Eucalyptus cambageana*) and Brigalow or, sometimes in the north of the species range, Blackwood/Black Gidgee; and
- 11.4.9 – Open forest, occasionally woodland, dominated by Brigalow on clay soils not associated with current alluvium.

The species has also been recorded in the following RE's (Agnew 2010 pers. comm, cited in DotEE 2016):

- 11.3.3 – Coolibah woodland adjacent to large areas, treeless, ephemeral wetland on alluvium (river and creek flats); and
- 11.5.16 – Brigalow and/or Belah open-forest in depressions in Cainozoic old loamy and sandy plains. Associated with gilgai with one-metre local relief and 5-6 m in diameter.

Microhabitat features preferred by the species include deep cracks formed in vertisols with shrink-swell properties and gilgai formations (Wilson & Taylor 2012). The importance of these microhabitats is only partially understood, although cracks in deep clays provide refuge for many animals during dry periods, including prey species such as burrowing frogs (*Cyclorana* spp.). Timber, bark, rocks and dense tussock grasses also offer refuge sites for cryptic reptiles.

The project area does not contain any pre-clearing RE's which have been associated with the species. Marginal habitat occurs as regrowth brigalow fringed watercourses and the associated cracking clay loam plains. We note however, that soils in the project area are not deep cracking clays. Despite being dry, cracks in the clay were not evident or common and the soil appeared to be more a clay loam.

Overall, the habitat quality for ornamental snake was very low as the species is known to be sensitive to activities such as cattle grazing which has a long history in the project area. Impacts that were observed include stunted vegetation regrowth from browsing animals, soil compaction, a general lack of microhabitat complexity (i.e. fallen timber, coarse woody debris and ground litter) and damage to surface soils from activities such as discing and ripping.

3.2.2 Marine and migratory species

Marine and migratory species are listed under schedules of the EPBC Act, where any significant impact on migratory species is regarded as a 'controlled action'.

An assessment of the likelihood of occurrence for each migratory fauna species has been provided based on the known ecological requirements of each species and the current environmental conditions and habitat values of the site (**Appendix G**). Of the species assessed, none are considered to have the potential to occur within the project area, due to the lack of suitable habitat or the site location not being located inside of the species distributional range.

No listed migratory fauna was observed on site during the reconnaissance field survey and all species are considered unlikely to occur in significant numbers. Consequently, the likelihood of a significant impact is very low.

3.2.3 Habitat assessment and existing impacts

The project area has been heavily modified from the natural state, with broadscale clearing evident in the project area. The following impacts were observed generally:

- No evidence of fire was observed, and the timing, area and intensity of fire at the site and its relevance to threatened species and fauna is unknown. Based on the observations made, fire does not appear to substantially contribute to the ecology of the site;
- No significant populations of feral animals were observed; however, it is presumed that cane toads, feral cats and wild dogs are likely to occur;
- Although a complete census of flora was not undertaken at the site, the general impression of the site was a low native plant richness and cover, especially compared to remnant communities adjacent to the project area;
- Microhabitat features in proximity to the tower site include exposed rock outcrops and a termite mound.
- Tree hollows, coarse woody debris (including hollow logs), organic litter, rocky outcrops and decorticated bark were uncommon.

3.2.4 Watercourses

3.2.4.1 VM Act watercourses – regulated and regrowth vegetation

The VM Act watercourse mapping identifies watercourses that support regulated vegetation under the VM Act. As the entire project area is located within a non-remnant area, the action will not impact on regulated vegetation associated with a water course (**Figure 4**).

Category R regrowth vegetation is associated with several watercourses which traverse the project area, namely, a stream order one watercourse on Lot 29 on RN210, a stream order one and two on Lot 32 on RN194 and a stream order one located in Lot 33 on RN210. All category R regrowth vegetation and associated protection area (i.e. stream order 1 or 2 – 10 m) have been excised from the overall project area.

3.2.4.2 Queensland waterways for waterway barrier works

The spatial data layer Queensland Waterways for Waterway Barrier Works shows the extent of the *Fisheries Act 1994* interest in barrier works on waterways, where the streams are colour-coded according to their level of risk of impact.

In total, 12 watercourses intersect the project area, 9 are classified as low risk and 3 as moderate risk (**Figure 5**).

3.2.4.3 Water Act watercourses

The purpose of the *Water Act 2000* is to provide for the sustainable management of water and other resources. Various activities are regulated under the Water Act and incorporated into the DA approval system via the Queensland *Planning Act 2016*.

To trigger the Water Act however, the watercourse needs to meet the definition of a watercourse under the Act. The Watercourse identification map (Water Act), shows watercourses that are classified under the Act and therefore require an RPP.

Watercourses within the project area are not identified on the Watercourse identification map, with the closest defined watercourse being Don River, approximately 3.8 km to the north.

3.2.5 Wetlands

3.2.5.1 Referrable wetlands

The map of referable wetlands identifies the location of wetland protection areas (WPA) in Great Barrier Reef (GBR) catchments which apply to State Development Assessment Provisions (SDAP) State code 9: Great Barrier Reef Wetland Protection Areas.

The map of referable wetlands also identifies wetlands of high ecological significance (HES) and general ecological significance (GES). HES wetlands are defined in the *Environmental Protection Regulation 2008* and are 'matters of state environmental significance' (MSES) under the Planning and Environmental Offsets legislation.

A review of the spatial database did not identify any WPA's or HES wetlands near the project area. The closest WPA is located approximately 6 km to the west of the project area, associated with Callide Creek (Figure 6).

3.2.5.2 Ramsar Wetlands

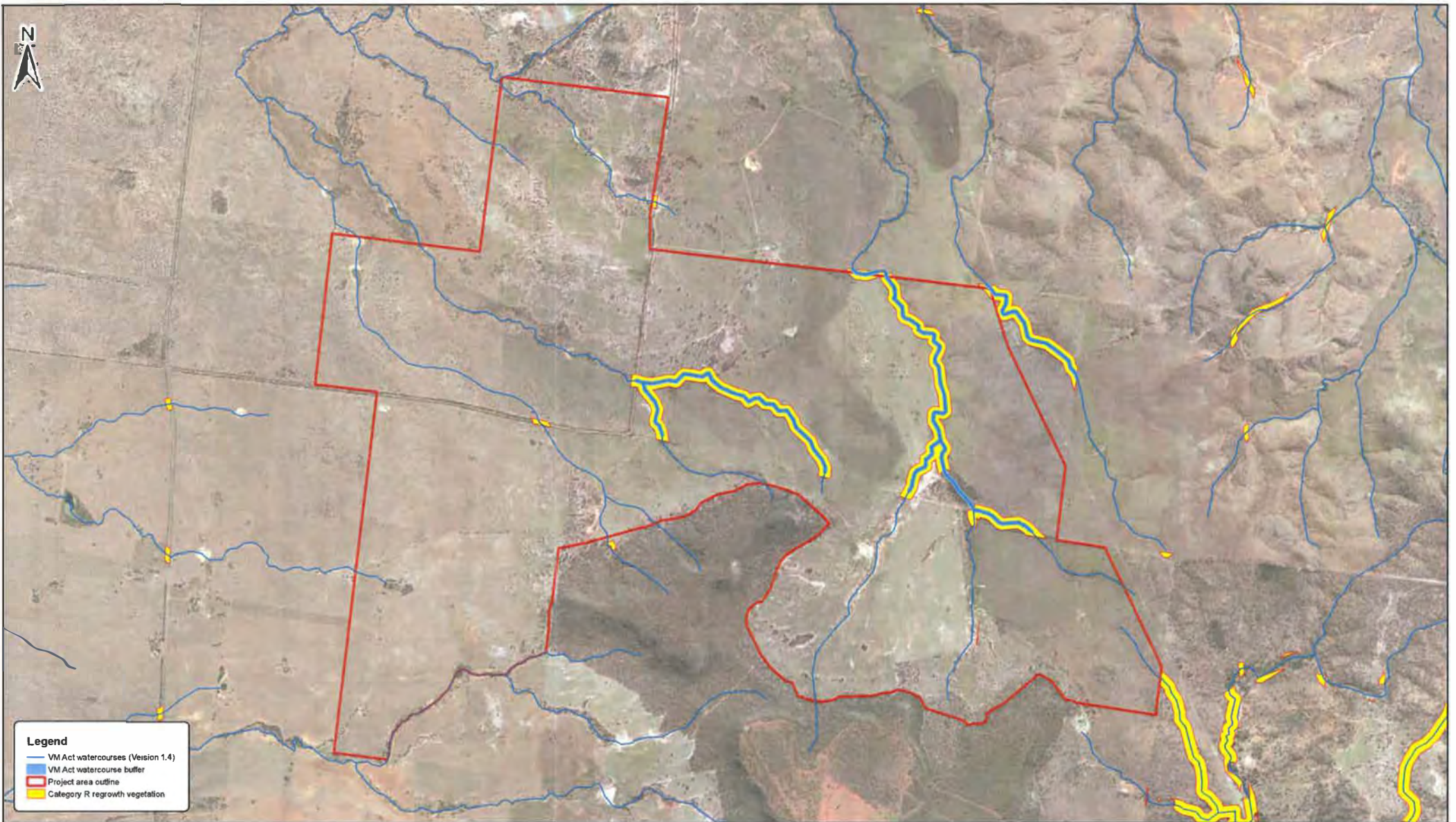
The Ramsar Convention (The convention on Wetlands of International Importance) is an international treaty for the conservation and sustainable utilisation of wetlands to which Australia is a signatory. The Ramsar List of Wetlands of International Importance now includes 1,950 sites (known as Ramsar Sites). Ramsar sites are MNES's pursuant to the EPBC Act.

A desktop search of Ramsar Wetlands did not identify any internationally important wetlands in the proximity of the project area or in the immediate downstream receiving environment.

3.2.5.3 HEV wetlands and watercourses

Watercourses and wetlands located in high ecological value waters (HEV's) are defined in the *Environmental Protection (Water) Policy 2009*, schedule 1 and are classified as MSES. The HEV waters spatial layer produced by the Department of Environment and Science (DES) shows the location of all wetlands and watercourses in high ecological value (HEV) waters in Queensland.

A review of the spatial layer confirmed that no HEV watercourses or wetlands occur near the project area.



- Legend**
- VM Act watercourses (Version 1.4)
 - VM Act watercourse buffer
 - Project area outline
 - Category R regrowth vegetation



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PROJECT

SMOKEY CREEK SOLAR PROJECT

FIGURE 4: VM ACT WATERCOURSE MAP



Reference Scale: 1:30,000

Source: Department of Natural Resources & Mines - Cadastral data fortnightly extract Banana Local Government Area © State of Queensland (Department of Natural Resources and Mines) 2014.
 Vegetation management watercourse and drainage feature map (1:100 000 and 1:250 000) - version 1.4 © State of Queensland (Department of Natural Resources and Mines) 2015.
 Wetland protection area - high ecological significance wetland © State of Queensland (Department of Environment and Heritage Protection) 2015
 Vegetation management - essential habitat map - version 4.34 © State of Queensland (Department of Natural Resources and Mines) 2016

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Coordinate System: GDA 1994 MGA Zone 56
 Projection: Transverse Mercator
 Datum: GDA 1994

Document Name: 140339-3-04RevA_VMActWatercourses

Date: 6/07/2018

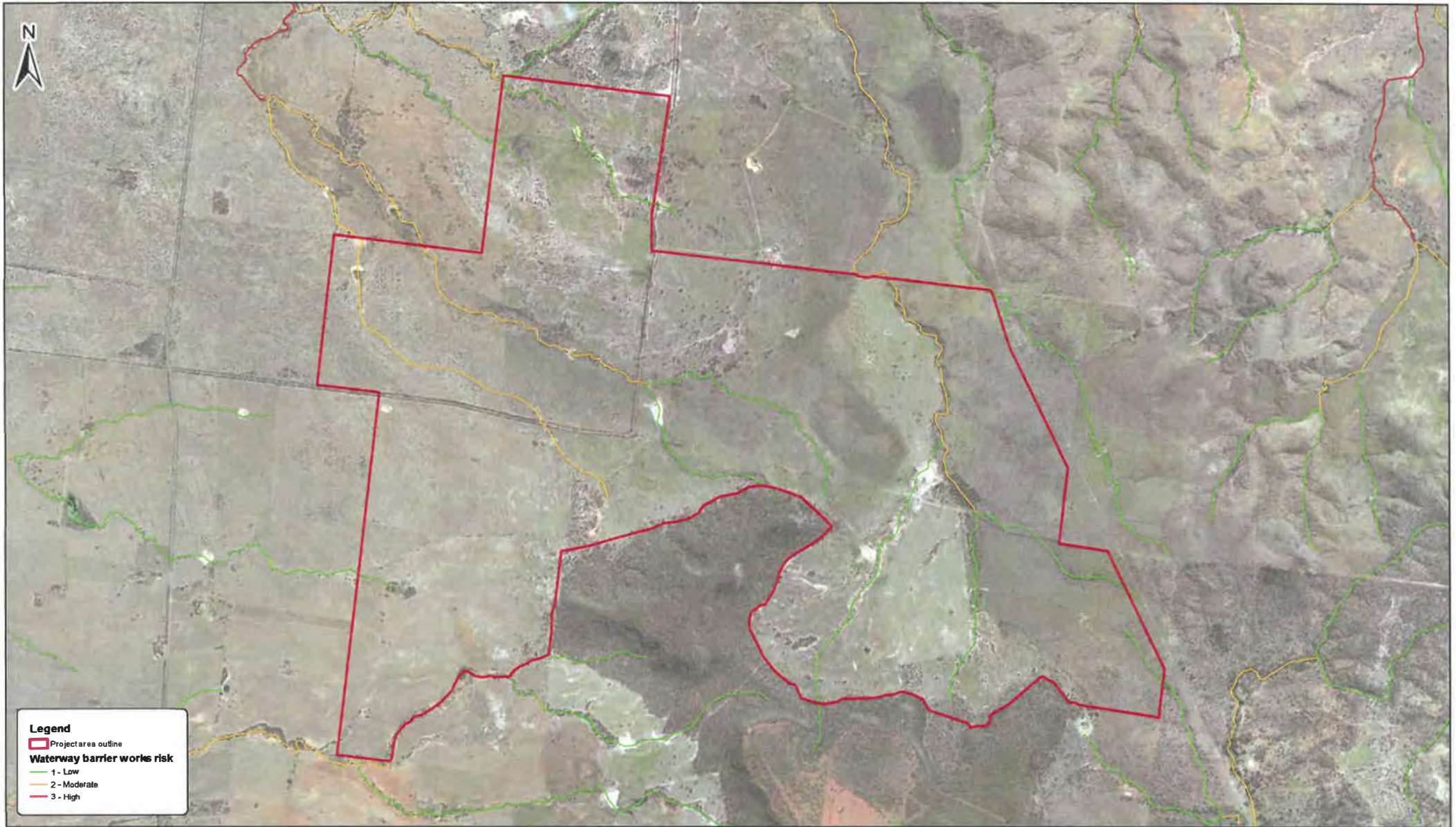
Author: AF

Project Manager: LL

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Legend

- Project area outline
- Waterway barrier works risk**
- 1 - Low
- 2 - Moderate
- 3 - High



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PROJECT

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FIGURE 5: WATERWAY BARRIER WORKS RISK MAP



Reference Scale: 1:30,000

Source: Department of Natural Resources & Mines - Cadastral data fortnightly extract Banana Local Government Area
 © State of Queensland (Department of Natural Resources and Mines) 2014;
 Vegetation management watercourse and drainage feature map (1:100 000 and 1:250 000) -version 1.4 © State of Queensland (Department of Natural Resources and Mines) 2015;
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Coordinate System: GDA 1994 MGA Zone 56
 Projection: Transverse Mercator
 Datum: GDA 1994

Document Name: 140339-3-05RevA_WaterwayBarrierRiskMap

Date: 6/07/2018

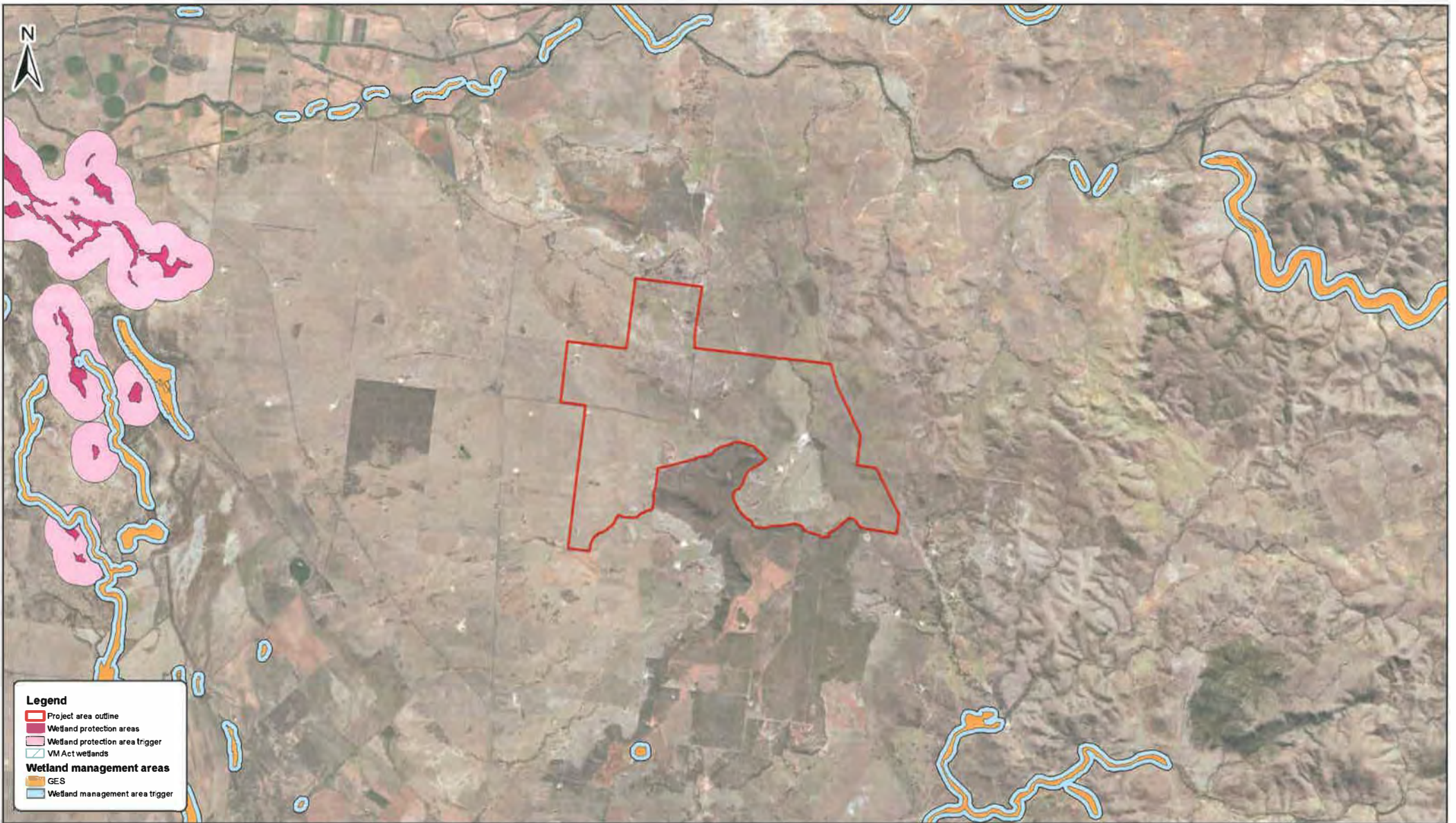
Author: AF

Project Manager: LL

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| Plan Ref 140339-3-06 | Rev A | Sheet A3 |
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PROJECT

SMOKEY CREEK SOLAR PROJECT

FIGURE 6: WETLAND MAPPING

0 2,800 5,600 8,400 11,200
 Meters

Reference Scale: 1:75,000

Source: Department of Natural Resources & Mines - Cadastral data for brightly extract Banana Local Government Area
 © State of Queensland (Department of Natural Resources and Mines) 2014.
 Vegetation management watercourse and drainage feature map (1:100 000 and 1:250 000) - version 1.4 © State of Queensland (Department of Natural Resources and Mines) 2015.
 Wetland protection area - high ecological significance wetland © State of Queensland (Department of Environment and Heritage Protection) 2015
 Vegetation management - essential habitat map - version 4.34 © State of Queensland (Department of Natural Resources and Mines) 2016

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Coordinate System: GDA 1994 MGA Zone 56
 Projection: Transverse Mercator
 Datum: GDA 1994

| | | |
|---|------------|---------------------|
| Document Name: 140339-3-06RevA_WetlandMapping | | |
| Date: 6/07/2018 | Author: AF | Project Manager: LL |

4 Potential impacts of development

4.1 Habitat loss

Habitat loss is the removal of an area of suitable habitat that cannot be reinstated. Microhabitat features such as tree hollows, large logs, leaf litter, and rock and boulder piles are particularly significant for their value as denning, breeding and nesting sites. The removal of these features from the landscape can substantially reduce the carrying capacity for native species and prevent future recolonization of the resource.

Taking into consideration the historical broadscale clearing that has occurred within the project area and retention of regrowth watercourses, habitat loss due to the action is negligible.

4.2 Fragmentation

Habitat fragmentation is the division of large contiguous habitat into smaller disjunct habitats. Species populations in fragmented landscapes are more exposed to harsh environmental factors, natural disasters and reduced genetic exchange and diversity (Hanski & Gaggiotti, 2004) which can culminate in species population decline, biodiversity loss and altered community structure and ecosystem function (Didham 2010).

The impacts of habitat fragmentation can be quantified using various methods and depend on factors including the remaining habitat area, shape and isolation, plus species-specific factors such as mobility. Irrespective of the measurement used, the retention of vegetated corridors connecting habitat areas that provide for the safe movement of animals between existing bush remnants and protected areas is critical.

Aerial imagery of the project area and surrounds shows the project area and surrounding regions have been extensively cleared. Therefore, the removal of the sparse vegetation layer and the retention of regrowth watercourses, connectivity within the local area is not expected to be impacted further.

4.3 Edge effects

Vegetation clearing in the landscape creates edges between the vegetation and the cleared area. Along edges, an ecotone is created with different environmental conditions which may be unsuitable for resident biota. Species remaining in the ecotone are therefore exposed to altered biotic processes of predation, competition and parasitism due to microclimatic changes from altered solar radiation, wind speed and soil moisture in the interior habitat.

Depending on their environmental niche or envelope, flora and fauna are differentially impacted by edge effects. Generalist species with a broad climatic niche are favoured over specialist interior species which have an obligate requirement for certain microclimatic conditions. These include a range of pest animal and weed species which are disproportionately favoured in disturbed areas.

It is noted that the impact of edge effect is somewhat related to the existing species composition and the abruptness of the change in community. For example, open woodland species are generally less likely to be impacted by edge effects.

Environmental conditions in the project area are currently subject to edge effects from previous broadscale clearing undertaken. Increased edge effects are unlikely to increase substantially because of the project.

4.4 Fauna injury and mortality

Fauna injury and mortality during development can occur via several avenues. Machinery used to fell and clear trees can crush animals, especially when shelter and nesting sites are destroyed. Operational traffic related injury and mortality in the form of road accidents might also occur. These impacts are more likely to impact less mobile and nocturnal species which are highly susceptible due to their inability to migrate to safe habitats.

It is recommended that all clearing is undertaken using best practice using the following minimum standards:

- Restrict the area of disturbed habitat to the proposed footprint and where possible retain significant habitat features such as hollow logs;
- Limit onsite speed limits to 20 km/hr reduce the risk of traffic related injury and mortality;
- Vegetation clearing should be undertaken in a manner that reduces potential injuries and mortalities to fauna; and
- Engage a Department of Environment and Science (DES) approved spotter/catcher or ecologist to identify habitat trees that may be occupied by fauna and implement a staged approach to clearing where habitat trees are gently disturbed to warn resident fauna of the impending clearing.

4.5 Invasive plants and animals

Although the impact of weeds is not significant in the project area, introduced grasses and exotic weeds occur. Future clearing activities and disturbance to the site has the potential to facilitate the proliferation and expansion of existing weeds and introduce additional species.

Weeds typically produce a large quantity of seeds, facilitating their proliferation, and rapid establishment in disturbed areas via vectors including wind, water, vehicles and machinery, and people, birds and other animals. Weed incursion impacts on vegetation function and floristic composition can impede or prevent natural regeneration, additionally weeds can have a pronounced effect on fire ecology.

Clearing activities often result in the incursion of weeds to adjacent vegetation. The dispersal of weeds from both internal and external sources can be avoided by implementing control measures during the construction and operational phases including but not limited to the following:

- Ensure that all vehicles are cleaned (i.e. free of contaminants) prior to entering and on exiting the subject site;
- Dispose of weeds and weed-affected material off-site in an approved refuse site;
- Employ rigorous weed management of disturbed areas following clearing until suitable ground cover can be established; and
- Mulch cleared vegetation and place in a layer over cleared surfaces to minimise erosion.

4.6 Noise, light and vibration

There will potentially be dust and noise impacts to fauna which will be generated during construction. As night works are not expected during construction, light spill into retained habitat areas is unlikely to impact on nocturnal fauna during construction.

4.7 Erosion and sediment

In relation to sedimentation, these impacts relate to erosion of the disturbed site, and sediment being transported via runoff to the local surface drainage network. Essential activities during the construction

phase include clearing of vegetation, extraction and stockpiling. These activities, by their nature, will disturb the soil surface reducing cover.

Although multiple sources of sedimentation are likely to have a cumulative effect, appropriate management strategies are likely to minimise and contain the impact to an acceptable level. It is recommended that an erosion and sediment control plan is developed to control impacts on the receiving environment. Erosion and sediment control that should be implemented during the construction phase, include but are not limited to the following:

- Maximise the retention of vegetation along adjacent streams and watercourse;
- Mulch cleared vegetation and place in a layer over cleared surfaces to minimise erosion; and
- Develop and implement an erosion and sediment control plan.

4.8 Water and soil contamination

Potential contamination may occur from accidental spills of fuel or oil from operation equipment. The potential contamination of surface water and groundwater is minimal if appropriate control measures are implemented. Control measures should include but not limited to staff trained in the use of spill kits, diesel storage is in self-bunded units and all major services are undertaken off site.

5 Legislative constraints and requirements

5.1 State legislation

5.1.1 Matters of state environmental significance

Matters of state environmental significance (MSES) are referenced in the Schedule 2 of the *Environmental Offset Regulation 2014* (EO Act) and include certain environmental values that are protected under Queensland legislation. A preliminary assessment of each of MSES with respect to the project site is included below in **Table 5**.

An environmental offset condition may be imposed under various State assessment frameworks for prescribed activities under the EO Act, if the activity will, or is likely to have a significant residual impact (SRI) on a prescribed environmental matter that is a MSES. An offset condition may be imposed where an activity will, or is likely to have a Significant Residual Impact (SRI) on a MSES. A SRI is defined under the EO Act, section 8 as:

“an adverse impact, whether direct or indirect, of a prescribed activity on all or part of a prescribed environmental matter that:

a) remains, or will or is likely to remain, (whether temporarily or permanently) despite on-site avoidance and mitigation measures for the prescribed activity;
and

b) is, or will or is likely to be, significant.”

Where an MSES is triggered, the ‘*Significant Residual Impact Guideline – For matters of state environmental significance and prescribed activities assessable under the Planning Act 2016* (DSDIP 2014) is used to determine the significance of the impact.

A summary assessment of MSES triggers in relation to the project is provided in **Table 5**, below. In the current location, the project is not expected to trigger any MSES.

Table 5 Matters of state environmental significance assessment

| Matter of state environmental significance | Trigger |
|---|---|
| Regulated Vegetation | |
| 1. The prescribed regional ecosystems that are endangered regional ecosystems comprise a matter of State environmental significance. | No Category B areas on the regulated vegetation management map that are ‘endangered’ regional ecosystems in the Project Area. |
| 2. The prescribed regional ecosystems that are of concern regional ecosystems comprise a matter of State environmental significance. | There are no Category B areas on the regulated vegetation management map that are ‘of concern’ regional ecosystems in the Project Area. |
| 3. A prescribed regional ecosystem is a matter of State environmental significance if it is— | No areas shown as a wetland on the vegetation management wetlands map in the project area. |
| a. a regional ecosystem that intersects with an area shown as a wetland on the vegetation management wetlands map (to the extent of the intersection); or | No essential habitat on the essential habitat map for an animal that is endangered wildlife or vulnerable wildlife or a plant that is endangered wildlife or vulnerable wildlife intersects the project area. |
| b. an area of essential habitat on the essential habitat map for an animal that is endangered | No prescribed regional ecosystems are located within the project area. |



| Matter of state environmental significance | Trigger |
|--|---|
| <p>wildlife or vulnerable wildlife or a plant that is endangered wildlife or vulnerable wildlife.</p> <p>4. A prescribed regional ecosystem is a matter of State environmental significance to the extent the ecosystem is located within a defined distance from the defining banks of a relevant watercourse.</p> | |
| <p>Connectivity Areas</p> <p>1. This section applies to a prescribed regional ecosystem—</p> <ul style="list-style-type: none"> a. to the extent the ecosystem contains remnant vegetation; and b. if the ecosystem contains an area of land that is required for ecosystem functioning (a connectivity area). <p>2. The prescribed regional ecosystem is a matter of State environmental significance if the administering agency is satisfied, having had regard to criteria in the environmental offsets policy about connectivity areas, that—</p> <ul style="list-style-type: none"> a. the connectivity area is of sufficient size or configured in a way that maintains ecosystem functioning; and b. the prescribed regional ecosystem will remain despite a threatening process within the meaning of the <i>Nature Conservation Act 1992</i>. | <p>The proposed clearing area does not contain prescribed regional ecosystems which could potentially be required for ecosystem functioning.</p> <p>As the project area entirely consists of non-remnant vegetation and the existing regrowth watercourses will be excised, there will be no impact on connectivity function.</p> |
| <p>Wetlands and Watercourses</p> <p>1. Each of the following matters is a matter of State environmental significance—</p> <ul style="list-style-type: none"> a. a wetland; <ul style="list-style-type: none"> i. in a wetland protection area; or ii. of high ecological significance (HES) shown on the Map of Referable Wetlands; b. a wetland or watercourse in high ecological value waters. | <p>No wetland protection area on the Map of Referable Wetlands occur near the project area.</p> <p>No HES wetlands on the Map of Referable Wetlands occur near the project area.</p> <p>No HEV wetlands or watercourses shown on the Environmental Protection Policy (Water) scheduled data – surface water mapping occurs near the project area.</p> |
| <p>Designated Precinct in a Strategic Environmental Area</p> <p>A designated precinct in a strategic environmental area is a matter of State environmental significance.</p> | <p>The project area does not intersect or contain a strategic environmental area.</p> <p>The proposed action therefore does not trigger the MSES – Designated Precinct in a Strategic Environmental Area.</p> |
| <p>Protected Wildlife Habitat</p> <p>1. An area that is shown as a high-risk area on the flora survey trigger map and that contains plants that are endangered wildlife or vulnerable wildlife is a matter of State environmental significance.</p> <p>2. An area that is not shown as a high-risk area on the flora survey trigger map, to the extent the area contains plants that are endangered wildlife</p> | <p>No high-risk areas shown on the flora survey trigger map occur near the project area.</p> <p>Brigalow fringed watercourses that potentially support plants that are endangered wildlife or vulnerable wildlife will be excised from the project area.</p> <p>The site is not located on Map of Assessable Development Area Koala Habitat Values' that applies under the South-East</p> |

| Matter of state environmental significance | Trigger |
|---|---|
| <p>or vulnerable wildlife, is a matter of State environmental significance.</p> <p>3. A non-juvenile koala habitat tree located in an area shown as bushland habitat, high value rehabilitation habitat or medium value rehabilitation habitat on the map called 'Map of Assessable Development Area Koala Habitat Values' that applies under the South-East Queensland Koala Conservation State Planning Regulatory Provisions is a matter of State environmental significance.</p> <p>4. A habitat for an animal that is endangered wildlife or vulnerable wildlife, or a special least concern animal is a matter of State environmental significance.</p> | <p>Queensland Koala Conservation State Planning Regulatory Provisions.</p> <p>The project area does not contain habitat for an animal that is endangered wildlife or vulnerable wildlife, or a special least concern animal.</p> |
| <p>Protected Areas</p> <p>A protected area is a matter of State environmental significance.</p> | <p>No protected areas under the NC Act are present on the site.</p> <p>The proposed action therefore does not trigger the MSES – Protected Areas.</p> |
| <p>Highly Protected Zones of State Marine Parks</p> <p>A highly protected area of a relevant Queensland marine park is a matter of State environmental significance.</p> | <p>No marine parks or land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone occur near the Project Area.</p> <p>The proposed action therefore does not trigger the MSES – Highly Protected Zones of State Marine Parks.</p> |
| <p>Fish Habitat Areas</p> <p>An area declared under the <i>Fisheries Act 1994</i> to be a fish habitat area is a matter of State environmental significance.</p> | <p>No declared fish habitat areas intersect the site.</p> <p>The proposed action therefore does not trigger the MSES – Fish Habitat Areas.</p> |
| <p>Waterway Providing for Fish Passage</p> <p>Any part of a waterway providing for passage of fish is a matter of State environmental significance only if the construction, installation or modification of waterway barrier works carried out under an authority will limit the passage of fish along the waterway.</p> | <p>12 barrier waterways intersect the project area, 9 are classified as low risk and 3 as moderate risk.</p> |
| <p>Marine Plants</p> <p>A marine plant within the meaning of the <i>Fisheries Act 1994</i> is a matter of State environmental significance.</p> | <p>Marine plants with the meaning of the <i>Fisheries Act 1994</i> do not occur in the Project Area.</p> <p>The proposed action therefore does not trigger the MSES – Marine Plants.</p> |
| <p>Legally Secured Offset Areas</p> <p>A legally secured offset area is a matter of State environmental significance.</p> | <p>No legally secured offset areas intersect the Project Area.</p> <p>The proposed action therefore does not trigger the MSES – Legally Secured Offset Areas.</p> |

5.2 Federal legislation

5.2.1 *Environment Protection and Biodiversity Conservation Act*

Under the EPBC Act, an action requires approval from Federal Environment Minister if the action has, will have, or is likely to have a significant impact on any Matter of National Environmental Significance (MNES) including listed threatened flora and fauna, migratory fauna and threatened ecological communities. Approval is obtained via a referral to the Australian Government Department of the Environment and Energy for a decision.

Significant impacts include those that degrade important habitats for listed species or disrupt the lifecycle of ecologically significant populations of listed species.

The Matters of National Environmental Significance – Significant Impact Guidelines (SIG) contain significant impact criteria which are used for the assessment of impacts on MNES. Separate criteria are applied for critically endangered and endangered species, vulnerable species and migratory species under the SIG.

For critically endangered or endangered species, an action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of a population;
- Reduce the area of occupancy of the species
- Fragment an existing population into two or more populations;
- Adversely affect habitat critical to the survival of a species;
- Disrupt the breeding cycle of a population;
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat;
- Introduce disease that may cause the species to decline; or
- Interfere with the recovery of the species.

For vulnerable species the same criteria apply, only the focus is for 'important populations' of the species or community. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

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

For migratory species, an action is likely to have a significant impact if there is a real chance or possibility that the action will:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species;
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or

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- Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

Important habitat for a migratory species is defined in the EPBC Act as:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species;
- Habitat that is of critical importance to the species at certain life-cycle stages;
- Habitat utilised by a migratory species which is at the limit of the species range; and
- Habitat within an area where the species is declining.

The desktop assessment and field reconnaissance investigation did not identify any potential habitat for endangered and vulnerable flora and fauna, as well as migratory species that could potentially be impacted by the proposed action. Therefore, the proposed action is unlikely to impact on a MNES.

It should be noted that only through formal referral and determination under the EPBC Act can legal certainty be provided, and it is the obligation of the applicant to decide whether a referral is necessary, based on the extent of the projects impacts.

6 Summary and recommendations

For ease of reference, findings of this investigation are summarised in **Table 6** below.

Table 6 Summary of findings

| | |
|---|--|
| <p>Significant flora</p> | <p>The desktop assessment and field investigation identify potential habitat for the following NC Act and EPBC Act listed plant species:</p> <ul style="list-style-type: none"> • <i>Solanum dissectum</i> (EPBC Act – endangered; NC Act – endangered); • <i>Solanum johnsonianum</i> (EPBC Act – endangered; NC Act – endangered). <p>Overall, the habitat quality for both species of <i>Solanum</i> spp. is considered low due to the extensive broadscale clearing and historical cattle grazing. Marginal habitat for the species was present in the regrowth brigalow that fringed some watercourses and the associated extensive cracking clay loam plains. However, it should be noted that the soil in the project area is not classified as heavy cracking clay and consists of a clay loam.</p> <p>Potential habitat along brigalow-fringed watercourses should be excised from the project area. If development occurs within the regrowth brigalow associated with the watercourses, a flora survey is recommended to identify and confirm the presence of any EPBC Act or NC Act listed species that may occur. In the absence of a standardised Federal guideline under the EPBC Act, we recommended that the survey is undertaken in accordance with the <i>Flora Survey Guidelines - Protected Plants: Nature Conservation Act 1992</i>.</p> |
| <p>Threatened ecological communities</p> | <p>No TEC's were returned in the MNES Protected Matter Search or considered likely to occur during the field assessment of the site.</p> |
| <p>Remnant and regrowth vegetation</p> | <p>The desktop assessment and field investigation determined that the project area consists entirely of non-remnant vegetation.</p> <p>Category R regrowth vegetation is associated with several watercourses which traverse the project area, namely, a stream order one watercourse on Lot 29 on RN210, a stream order one and two on Lot 32 on RN194 and a stream order one located in Lot 33 on RN210. Notwithstanding, all category R regrowth vegetation and associated protection area (i.e. stream order 1 or 2 – 10 m) have been excised from the overall project area.</p> |
| <p>Significant fauna</p> | <p>The desktop assessment and field investigation identified potential habitat for the following NC Act and EPBC Act listed animals:</p> <ul style="list-style-type: none"> • Squatter pigeon (<i>Geophaps scripta scripta</i>) - Vulnerable (EPBC Act), Vulnerable (NC Act); and • Ornamental snake (<i>Denisoniam maculata</i>) – Vulnerable (EPBC Act). <p>Although potential habitat occurs within the project area, the squatter pigeon was not recorded during the site inspection and database searches (i.e. AoLA and wildlife online) have not been previously recorded the species within 25 km of the project area. In addition, any populations within the local area would not be considered important due to the sites proximity, which is north of the Carnarvon Ranges.</p> <p>The project area does not contain any pre-clearing RE's which have been previously been associated with the ornamental snakes. Marginal habitat for the species was present as regrowth brigalow along watercourses and the associated cracking clay loam plains. We note these soils are not classified as deeply cracking. Although the site dry during the survey, cracks were not evident or common and the soil was more consistent with a clay loam.</p> <p>Overall, the habitat quality for ornamental snake was very low as the species is known to be sensitive to activities such as cattle grazing which has a long history in the project area. Impacts that were observed include stunted vegetation regrowth from browsing animals, soil compaction, a general lack of microhabitat complexity (i.e. fallen timber,</p> |



| | |
|--|--|
| | <p>coarse woody debris and ground litter) and damage to surface soils from activities such as discing and ripping.</p> <p>It should be noted that only through formal referral and determination under the EPBC Act, can legal certainty be provided for EPBC Act listed species, and it is the obligation of the applicant to decide whether a referral is necessary, based on the extent of the projects impacts.</p> |
| <p>Aquatic ecosystems and wetlands</p> | <ul style="list-style-type: none"> • In relation to the Watercourse identification map (Water Act), watercourses within the project area are not identified on the Watercourse identification map, with the closest defined watercourse being Don River, approximately 3.8 km to the north. • No WPA's or HES wetlands were identified within or adjacent to the project area. The closest WPA is located approximately 6 km to the west of the project area, associated with Callide Creek. • No significant wetlands listed under State or Commonwealth legislation occur within or immediately adjacent to the project area. |
| <p>Matters of state environmental significance</p> | <ul style="list-style-type: none"> • No MSES are likely to be triggered or impacted by the project. |
| <p>Matters of national environmental significance</p> | <ul style="list-style-type: none"> • MNES are unlikely to be significantly impacted because of the project. It should be noted that only through formal referral and determination under the EPBC Act, can legal certainty be provided for EPBC Act listed species, and it is the obligation of the applicant to decide whether a referral is necessary, based on the extent of the projects impacts. |

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Appendix A Smoky Creek Power Station Habitat Assessment and Targeted Survey report (Terra Solutions 2023)



SMOKY CREEK SOLAR POWER STATION HABITAT ASSESSMENT AND TARGETED SURVEY

Edify Energy Pty Ltd



202104

Smoky Creek Solar Power
Station Habitat Assessment and
Targeted Survey

09/03/2023

Document status

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1 INTRODUCTION

Edify Energy Pty Ltd (Edify) propose to construct and operate a solar power station on land located at 460 Dodson's Road, off the Burnett Highway, approximately 15 km south-east of the township of Dixalea (Figure 1). The maximum extent of the project area may incorporate up to seven properties Lot 39 on RN395; Lot 28 on RN211; Lot 18 on RN271; Lot 37 on RN1147; Lot 29 on RN210; Lot 32 on RN194; Lot 33 on RN210. The project is formally known as the Smoky Creek Solar Power Station (the Project) and pending final approval would be in the Banana Local Government Area in central Queensland.

The project is to be located at and will provide energy generation and supply to national electricity grid.

1.1 Purpose and scope of work

The purpose of this ecological assessment report is to provide further ecological information in response the request for information by preliminary documentation provided by Department of Climate Change, Energy, the Environment and Water (DCCEEW) in response to the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral (2021/9030). The ecological assessment builds on work undertaken by RPS (2018) with the primary focus of describing the ecological values as they relate to the following MNES threatened species:

- *Solanum dissectum* – Endangered
- *Solanum johnsonianum* – Endangered
- Ornamental Snake (*Denisonia maculata*)
- Squatter Pigeon (southern) (*Geophaps scripta scripta*)

The scope of works included the following tasks:

- Desktop assessment of background information and legislative/policy documents along with Commonwealth and State mapping layers and databases.
- Ecological assessment including a habitat assessment and targeted investigations for *Solanum dissectum*, *Solanum johnsonianum*, ornamental snake and squatter pigeon.
- Prepare a report detailing the methodology, results, and habitat mapping.

1.2 Project location and tenure

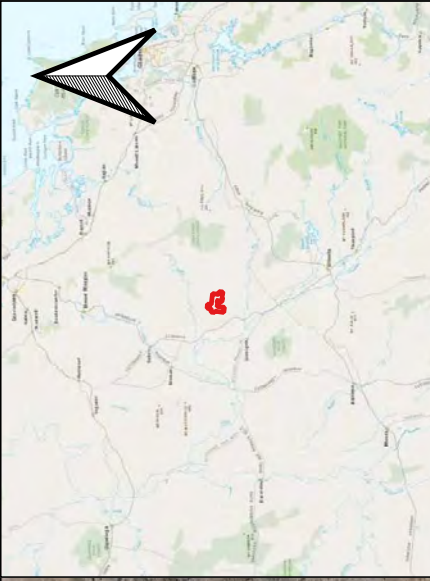
The Project site is located approximately 37 km north-northwest of Biloela and 13 km northeast of Goovigen in the Banana Shire Council Local Government Area in central Queensland (Figure 1). The total development footprint may be up to 2,240 ha depending on the outcome of the ecological assessment and the requirement to avoid sites of ecological value.

The Project site consists of six freehold lots ranging from 129.2 ha to 1,563.7 ha. Four of the allotments are entirely contained within the project area and the remaining three allotments extend beyond the project boundary (Figure 1).

Table 1 Description of subject allotments

| Lot | Plan | Tenure | Total Area (ha) | Total in Project area |
|-----|-------|----------|-----------------|-----------------------|
| 18 | RN271 | Freehold | 354.3 | 210.6 |
| 28 | RN211 | Freehold | 517.0 | 333.5 |
| 29 | RN210 | Freehold | 393.7 | 393.7 |
| 32 | RN194 | Freehold | 130.9 | 130.9 |

| Lot | Plan | Tenure | Total Area (ha) | Total in Project area |
|-----|--------|----------|-----------------|-----------------------|
| 33 | RN210 | Freehold | 129.2 | 129.2 |
| 37 | RN1147 | Freehold | 1,563.7 | 558.3 |
| 39 | RN395 | Freehold | 513.1 | 513.1 |



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CLIENT: EDIFY ENERGY

FIGURE 1: PROJECT LOCATION

0 1 2 3 4 5 km

1:30,000



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DATE: 06/04/2022

AUTHOR: Anton

Coordinate system: GDA94 / MGA zone 56 EPSG:28356

1.3 Project description

The Smoky Creek Solar Power Station will consist of the following elements:

- Solar photovoltaic panels
- Battery energy storage system (BESS)
- Electrical substation
- New overhead powerline connecting to the 275 kV Calvale to Stanwell transmission line
- Transmission infrastructure
- Site buildings and storage areas
- Laydown and construction compound
- Access tracks

1.3.1 Project construction

The construction process will generally be undertaken in the following order of works although some activities will be undertaken in parallel:

- Site office and amenities set up
- Vegetation removal and grubbing
- Construction of laydown areas
- Fencing construction
- Road construction
- Pile installation
- Trenching and underground cable installation
- Mechanical installations
- Solar module installation
- Inverter installation
- Battery system installation
- Construction of control building, HV switch room and spare parts building
- Testing and commissioning

Construction will be undertaken in accordance with a range of management plans once they have been developed. It is proposed that these plans are finalised on completion of the approvals process with significant levels of detail provided in the response by Preliminary Documentation. This will give the project proponent and regulators some certainty about the extent of the final project area and avoiding ongoing amendments to the plans.

- Construction Phase Environmental Management Plan
- Pest and Weed Management Plan
- Bushfire Management Plan
- Erosion and Sediment Management Plan
- Landscaping Plan

1.3.2 Project operation and maintenance

The Smoky Creek Solar Farm is expected to operate for approximately 30 years with the following operation activities continuous over this period:

- Monitoring and control of the solar farm
- Maintenance activities

An operational environmental management plan will be developed to avoid, minimise, and reduce impacts to the environment during the operational phase of the project.

1.3.3 Decommissioning

On completion of the operational phase of the solar facility it will be decommissioned. The process will include the removal of all above and below ground infrastructure from the site. Spent materials from the solar farm will be sorted into various waste streams to be recycled or disposed of at a waste facility.

1.3.4 Rehabilitation

On decommissioning the land will be reinstated to the pre-development land use. Ground disturbance associated with the operation or decommissioning of the solar farm will be remediated through the placement levelling of topsoil and then reseeded with pasture grasses. All onsite rehabilitation will be undertaken in accordance with a Site Rehabilitation Plan.

1.4 Existing approvals

The Smoky Creek Solar PV Power Station (Solar Farm) and Associated Facility Switchyard and Electrical Transmission obtained final planning approval on 11 December 2019 under the *Planning Regulation 2017* (Queensland) and in accordance with the Banana Shire Planning Scheme.

The development approval was given for Material Change of Use for a Public Facility (Impact assessable) and Reconfiguring a Lot for Subdivision by Agreement and is to be completed in general accordance with the plans, reports and conditions included in the approval.

An EPBC Act referral (2021/9030) was submitted to the DCCEEW on 27 September 2021 and received a Controlled Action decision (Preliminary Documentation) on 26 October 2021.

2 RELEVANT LEGISLATION

This section provides a summary of the key environmental legislation, policies and plans related to the proposed development (Table 2). Since the report is in response to an RFI by DAWE under the EPBC Act the report is written in this context.

Table 2 Relevant legislation

| Legislation | Brief description |
|--|---|
| Commonwealth Legislation | |
| Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) | <p>The EPBC Act is the key piece of Commonwealth environmental legislation. It provides a legal framework to protect and manage the following nine matters of national environmental significance (MNES):</p> <ul style="list-style-type: none"> • Listed critically endangered, endangered and vulnerable species and communities • Listed migratory species • Ramsar wetlands of international importance • Commonwealth marine environment • World heritage properties • National heritage places • The great barrier reef marine park • Nuclear actions • Water resources in relation to coal seam gas development and large coal mining developments. <p>Under the EPBC Act, an action that has, will have, or is likely to have a significant impact on any MNES or other protected matters must not be undertaken without approval from the Commonwealth Minister for the Environment.</p> <p>Before a proponent can lawfully undertake an action that may have a significant impact on a MNES, the action must be referred to the minister for consideration. If it is determined that an action is likely to have a significant impact on MNES it is categorised as a 'controlled action' requiring assessment and approval under the EPBC Act. This impact assessment may be undertaken in accordance with a relevant bilateral agreement between the commonwealth and a state or territory.</p> |

3 METHODS

3.1 Desktop assessment

The updated desktop assessment included a review of supporting material primarily relating to the Matters of National Environmental Significance (MNES) addressed in the report. These materials include but are not necessarily limited to the following mapping, databases and reports:

- Aerial imagery of the site to broadly assess vegetation within and surrounding the site
- Wildlife online (Appendix B) and Atlas of Living Australia databases. These databases hold records of plants and animals that have either been sighted or collected within a given radius of the site, noting that Wildlife online have higher reliability.
- Matters of National Environmental Significance database (Appendix A). The MNES search uses species records and applies a range of bio-models to predict the presence of MNES within a given radius of the site, including:
 - Listed threatened ecological communities
 - Listed threatened species
 - Listed migratory species.
- Soils of the Banana Area Central Queensland (Muller 2008) and geological datasets
- Inland waters including drainage boundaries, watercourses, and other wetland features (Queensland Globe)
- A review of relevant legislation and associated plans and policies associated with the EPBC Act including, but not limited to:
 - EPBC Act - Draft Referral guidelines for the nationally listed Brigalow Belt reptiles
 - EPBC Act – Survey guidelines for Australia’s threatened birds
 - EPBC Act – Sprat profiles.

3.2 Site investigation

A site inspection of the project area was undertaken by ecologists Anton Fitzgerald (Terra Solutions) and Simon Danielsen (Astrebla Ecological Services) over five days from 7 – 11 February 2022. A second site inspection of the project area was undertaken by ecologists Anton Fitzgerald (Terra Solutions) and Keeleigh Parison (Terra Solutions) over four days from 13 – 16 February 2023.

A ground traverse of the proposed clearing footprint was undertaken including an examination of onsite vegetation communities and fauna habitat values. Traverses were undertaken on foot and using a side-by-side vehicle (UTV) which enabled excellent access to the best on offer habitats.

The fauna habitat assessment targeted a range of critical microhabitat features typically associated with threatened species including, but not limited to the primary target species *Solanum dissectum*, *Solanum johnsonianum*, Ornamental Snake and Squatter Pigeon (southern).

On ground surveys were used to verify the various layers assessed in the desktop assessment including important features associated with geology, soil type, water resources and vegetation communities.

Surveys undertaken from 13 – 16 February were focused on confirming the presence of ornamental snake.

3.2.1 Vegetation and flora survey methods

Vegetation communities discernible in the field were surveyed using the outline for recording quaternary type information as defined by the 'Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland' (Neldner et al. 2019).

Representative survey sites were identified using aerial imagery of the project area and a review of available literature. Survey sites were positioned to ensure that the range of vegetation communities present in the project area was adequately surveyed. Where possible the probable locations of important/sensitive habitats were also identified.

In total 88 representative survey sites were assessed using a combination of aerial imagery and field data. Survey sites were positioned to ensure that all vegetation communities present in the project area were assessed and sites were accessible. The potential locations of important or sensitive habitats were identified during the desktop assessment and targeted for field assessment.

At each vegetation survey site ecologists verified the floristic structure and composition of vegetation communities. Common flora species from each structural layer were recorded and stratified descriptions were prepared for all sites. Photographic points were also recorded in instances where the community had already been well described. The location of survey sites is shown in Figure 2.

The habitat assessment focused on identifying broad scale and important microhabitat features associated with the threatened species identified in the preliminary documentation request, with a focus on the following features for the respective species.

3.2.2 Threatened flora surveys

Targeted searches were undertaken for *Solanum johnsonianum* and *Solanum dissectum* at all vegetation survey sites using 10-minute meandering transects. More substantial searches were undertaken throughout brigalow habitats and brigalow with SEVT understorey. Due to the small size of these communities the whole area could be adequately searched.

The survey timing was suitable for both species. All *Solanum*'s thrive in the hotter months of the year and especially following substantial rainfall. In the months leading up to the field survey there had been significant rainfall making survey conditions ideal.

3.2.3 Targeted threatened fauna surveys

- Targeted searches for fauna squatter pigeon used a combination of the following methods:
- Area searches were undertaken in all areas of suitable habitat and more generally at all vegetation survey sites and photograph sites using visual and auditory methods of detection.
- Slow-driving transects were utilised to cover large areas of the project area and has proven to be an excellent method of detection for the species which is often observed dust bathing on access tracks.
- Waterhole surveys were undertaken at dam sites with woodland or forest vegetation nearby.

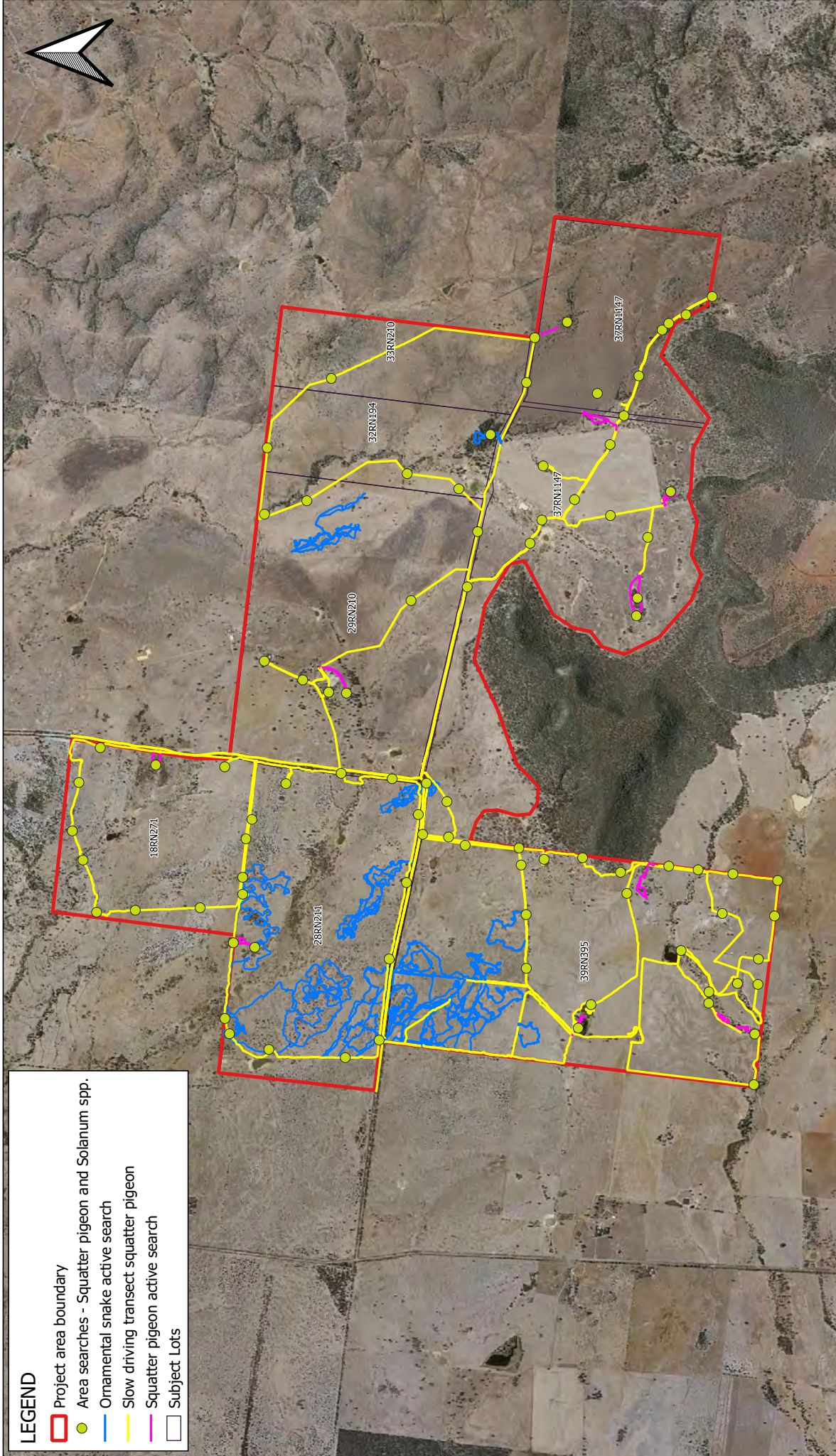
Targeted searches for ornamental snake used a combination of the following methods:

- Spotlighting surveys on foot within and around gilgai wetlands particularly in areas where frogs were active.
- Spotlighting surveys on foot of the gilgai mounds and gilgai flats
- Slow-driving spotlighting surveys within gilgai habitats and along tracks and roads proximate to suitable habitat using a UTV vehicle.

The survey locations are presented in Figure 2.

LEGEND

- ▭ Project area boundary
- Area searches - Squatter pigeon and Solanum spp.
- Ornamental snake active search
- Slow driving transect squatter pigeon
- Squatter pigeon active search
- Subject Lots



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Coordinate system: GDA2020 / MGA zone 56 EPSG:7856

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FIGURE 2: SURVEY LOCATIONS AND TRACKS



DOCUMENT: E:\Terra Solutions\PROJECTS -

DATE: 09/03/2023

AUTHOR: Anton Fitzerald

4 EXISTING ENVIRONMENT

4.1 Climate

The climate of the Banana local government area is typically classified as semi-arid with a summer dominant rainfall. Annual rainfall from the nearby Bureau of Meteorology Station at Goovigen (1973 – 2023) is 698.1 mm and on average 70% of annual rain falls between October and March (Table 3). Winter rainfall is generally reliable in the area despite being somewhat reduced. Summers are hot with average monthly with at least one heat wave each summer and frosts occur on the low-lying country between May and September (Muller 2008). The mean monthly maximum and minimum temperatures and daily pan evaporation for Thangool Airport (BOM Station 039089) is presented in

Table 4.

In the months leading up to the February 2022 survey, monthly rainfall totals at nearby Goovigen (BOM Station 039048) were very high. A total of 91.8 mm fell in October 2021, only slightly below the 90th percentile of 106.0 mm. Following this 247.4 mm fell in November which was the highest monthly total ever recorded at the station and almost 100 mm than the 95th percentile for November (154.4 mm). Significant rains also fell in December when 151.8 mm fell, only slightly below the 90th percentile for that month (160.6 mm).

Substantial rainfall had ceased when the February 2022 survey commenced, and no rain fell in the project area during the survey whilst only 0.2 mm was recorded at Goovigen (Table 5). Maximum temperatures were generally consistent with February average although minimum temperatures fell well below the February average during the night (Table 5).

In the months leading up to the 2023 survey monthly rainfall totals at nearby Goovigen (BOM Station 039048), rainfall varied. A total of 112.0 mm fell in October 2022, which is above the 90th percentile of 106.0 mm. Meanwhile, 64.4 mm fell in December, which was below the mean of 100.9 mm.

Rain and thunderstorms occurred at the site and in the local area during the survey. At Thangool Airport a total of 9.8 mm fell during the survey period (Table 6). Maximum temperatures exceeded the February average, except for the 15th of February (32.4 °C). Similarly minimum temperatures fell below the February average during the night, except for the 15th of February (20.4 °C) (Table 6).

Table 3 Rainfall statistics for Goovigen (BOM Station 039048) calculated for 1973 - 2023

| Statistic | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|-----------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|--------|
| Mean | 97.0 | 109.9 | 73.3 | 36.1 | 36.4 | 32.7 | 29.0 | 25.3 | 24.2 | 56.1 | 73.8 | 100.9 | 698 |
| Lowest | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.0 | 3.5 | 301 |
| 10th %ile | 24.8 | 20.9 | 9.4 | 2.5 | 1.3 | 1.4 | 0.0 | 0.0 | 0.0 | 8.4 | 14.5 | 28.1 | 491 |
| Median | 79.5 | 87.8 | 51.9 | 25.5 | 29.0 | 18.9 | 14.4 | 17.3 | 11.6 | 50.3 | 70.9 | 84.6 | 672 |
| 90th %ile | 199.8 | 229.2 | 160.6 | 77.2 | 72.4 | 81.8 | 90.4 | 70.4 | 63.0 | 106.0 | 135.5 | 160.6 | 1005 |
| 95th %ile | 223.1 | 286.7 | 217.2 | 104.1 | 93.5 | 96.0 | 105.3 | 77.0 | 87.6 | 133.1 | 154.4 | 236.5 | 1058 |
| Highest | 355.6 | 404.8 | 321.2 | 181.8 | 236.4 | 153.0 | 235.8 | 99.4 | 158.7 | 199.4 | 247.4 | 447.2 | 1206 |

Table 4 Climate statistics from Thangool Airport (BOM Station 039089) calculated for 1992 - 2020

| Statistic | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|---|------|------|------|------|------|------|------|------|------|------|------|------|--------|
| Mean maximum temperature (°C) | 33.8 | 33.1 | 32.0 | 29.6 | 26.3 | 23.4 | 23.3 | 25.0 | 28.2 | 30.6 | 32.0 | 33.2 | 29.2 |
| Mean minimum temperature (°C) | 19.7 | 19.8 | 18.0 | 14.1 | 9.9 | 7.1 | 5.8 | 6.4 | 9.8 | 13.6 | 16.4 | 18.7 | 13.3 |
| Mean daily evaporation (mm) | 7.4 | 6.6 | 6.4 | 5.1 | 4.0 | 2.9 | 3.1 | 4.0 | 5.5 | 6.7 | 6.8 | 7.4 | 5.5 |
| Average days with Max temperature >35°C | 11.2 | 7.6 | 3.9 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.8 | 4.7 | 7.9 | 37.6 |
| Average days with a Min temperature < 2°C | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1.3 | 2.9 | 1.7 | 0.1 | 0.0 | 0.0 | 0.0 | 6.1 |

Table 5 Weather data during the survey periods 7 – 11 February 2022

| Statistic | 7 th Feb | 8 th Feb | 9 th Feb | 10 th Feb | 11 th Feb | Feb mean (all years) |
|---|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|
| Rainfall (mm) – BOM Station 039048 | 0 | 0.2 | 0 | 0 | 0 | 109.9 |
| Maximum temperature (°C) - BOM Station 039089 | 30.8 | 31.0 | 33.7 | 33.9 | 33.7 | 33.1 |
| Minimum temperature (°C) - BOM Station 039089 | 15.1 | 15.8 | 14.4 | 16.4 | 13.7 | 19.8 |

Table 6 Weather data during the survey period 13 – 16 February 2023

| Statistic | 13 th Feb | 14 th Feb | 15 th Feb | 16 th Feb | Feb mean (all years) |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|
| Rainfall (mm) – BOM Station 039089 | 0 | 0 | 9.6 | 0.2 | 93.0 |
| Maximum temperature (°C) - BOM Station 039089 | 37.9 | 38.1 | 32.4 | 33.3 | 33.1 |
| Minimum temperature (°C) - BOM Station 039089 | 19.4 | 19.0 | 20.4 | 19.0 | 19.8 |

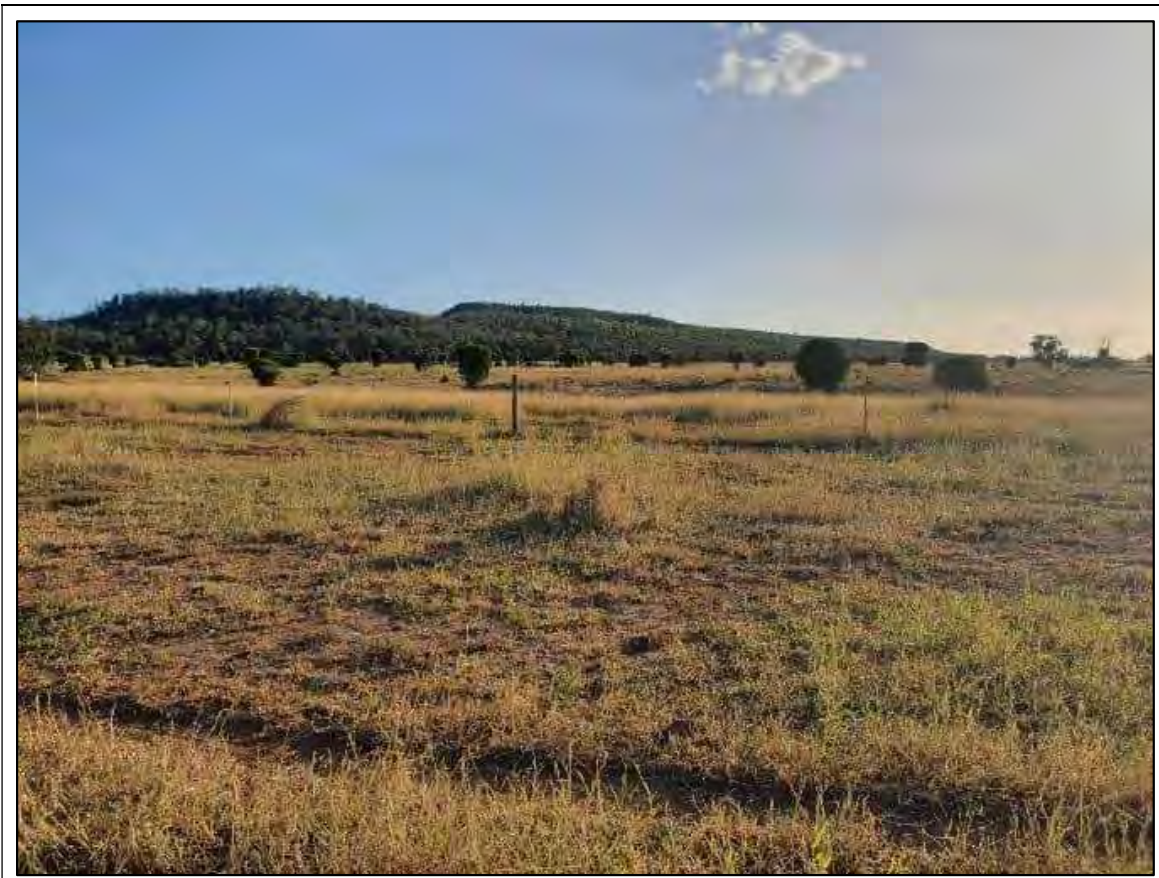
4.2 Topography

Site elevation ranges from approximately 250 m AHD from hilly country in the extreme east of Lot 37 to 155 m AHD (Plate 1a) and on Lot 18 and 28 in the north-west.

Undulating plains are dominant in Lot 28, Lot 32, Lot 33 and Lot 37 and the eastern parts of Lot 28 (Plate 1b) where they decline in elevation from the west and north-west (around 220 m AHD to 170 m AHD). The project area flattens to level and gently undulating plains in the western parts of the site including most of Lot 39 and the Lot 28 (Plate 1c).

Gilgai microrelief is present in the west of Lot 28 and the north-west of Lot 39 (Plate 1d). The steepest sections of the site are associated with the lower slopes of a lateritic tableland occurring south of Lot 37 with the steepest sections outside of the project area (Plate 1e) (Figure 3).

| | |
|---|--|
|  |  |
| <p>1a Slight rises in hilly country to the east of the project area</p> | <p>1b Undulating plains central to the site</p> |
|  |  |
| <p>1c Flat to gently undulating plain</p> | <p>1d Gilgai microrelief</p> |



1e Lateritic tableland south of the project area

Plate 1 Project area landforms

4.3 Geology

The site is located within the Rockhampton Subprovince (Yarrol Province) of the New England orogenic belt. The New England Orogen formed through tectonic movement and crustal development primarily in the Silurian (444 - 419 million years ago (Mya)) -Triassic period (252 – 201 Mya) and is recognised as the youngest and most complex of the three major recognised Orogens in Queensland. It extends over approximately 1300 km along the eastern margin of Australia from Bowen in Queensland to Newcastle in NSW (Flood and Aitchison 1993).

The Rockhampton Subprovince was formed as a forearc basin between (383 – 323 Mya) through deposition of volcanoclastic sediments, oolitic limestone and volcanic formations (Murray 1975). The Rockhampton Subprovince is separated the ranges of the Auburn Arch and Gogango Overfolded Zone to the west by the Grantleigh Subprovince (Early Permian 299 – 283 Mya) which is a deep basin of volcanoclastic sediments that overlay older rocks of the Rockhampton Subprovince.

Detailed surface geological mapping of the site identifies five distinct rock units that underly the site (i.e. Biloela formation, Smoky beds, Qpa-QLD, Balaclava formation and Pg/g?-YARROL/SCAG) (Table 7 and Figure 3). Except for the granitoid unit Pg/g?-YARROL/SCAG, all rock units are sedimentary with variable age and composition (Murray 1975).

The Qpa-QLD unit is the most recent geological formation and is associated with alluvial deposits of gravel, sand, silt and clay were laid down as the major floodplain of the Callide Creek. The Callide floodplain alluvium has an average thickness of 17 m (Murray 1975).

The Biloela formation occupies most of the site consisting of a recent arenite-mudrock formation (25 +/- 4 Mya) to approximately 350 m thick. Arenites and mudrocks typically form through the deposition and accumulation of sediment with subsequent cementation and in this case formed in freshwater (Murray 1975).

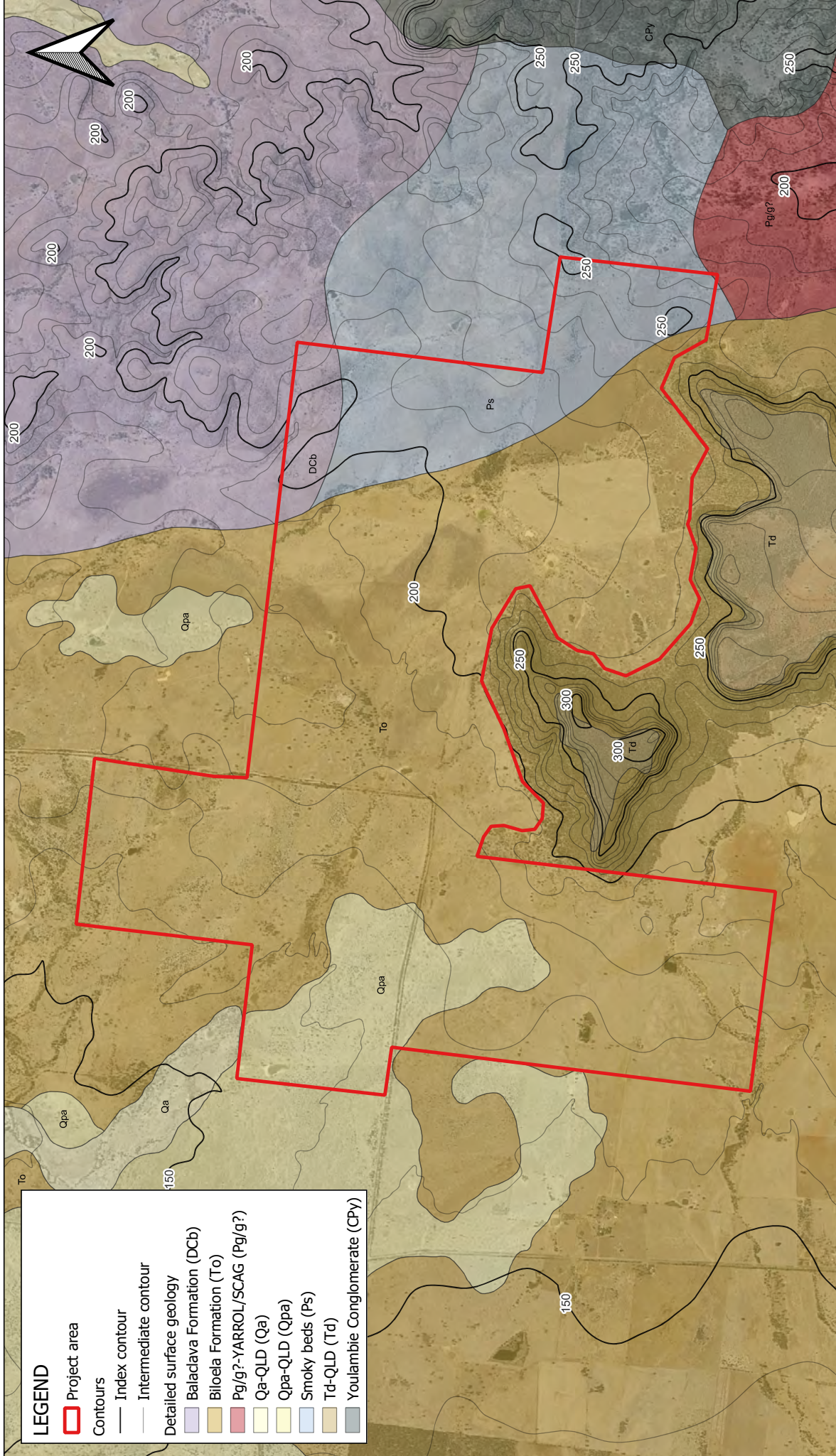
The Pg/g intrusive granitoid is located to the southeast of the site and only slightly intersects the site.

The Smoky beds, located in the eastern extent of the site are older (formed 272 – 299 Mya) and form a hilly topography of benches and flat-topped hills which extend some distance to the east of the project area. The Smoky beds consist of mafic material rich in magnesium and iron (Murray 1975).

The Balaclava formation occupies approximately 56 ha of the project area and is the oldest rock unit on the site (346 - 382 Ma). It is associated with the hilly topography in the north-east of the site and extends some distance further north and east of this area. The rock unit is inferred to be approximately 2,000 m thick and primarily consists of sandstone with rhyolitic clasts and conglomerate and contains some shelly fossil deposits (Murray 1975).

Table 7 Detailed surface geology of the site

| Rock unit name | Map symbol | Lithological summary | Dominant rock | Rock type | Time (years) | Site area (ha) |
|---------------------|------------|--|---|--|------------------|----------------|
| Qpa-QLD | Qpa | Clay, silt, sand and gravel; flood-plain alluvium on high terraces | Alluvium | Stratified unit (including volcanic and metamorphic) | 10,000 – 140,000 | 227.223 |
| Biloela formation | To | Freshwater, lacustrine mudstone, siltstone, oil shale and sandstone; minor lignite, carbonaceous mudstone and limestone. | Arenite-mudrock | Stratified unit (including volcanic and metamorphic) | ≈ 25 Mya | 1733.41 |
| Pg/g? - YARROL/SCAG | Pg/g? | Granite, granodiorite | Granitoid | Intrusive unit | ≈ 251 Mya | 0.185 |
| Smoky beds | Ps | Andesitic conglomerate and sandstone, mudstone, minor andesite lava | Mafites (lavas, clastics & high-level intrusives) | Stratified unit (including volcanic and metamorphic) | 272 – 299 Mya | 283.181 |
| Balaclava formation | DCb | Rhyolitic volcanoclastic sandstone and conglomerate, minor ignimbrite, rare rhyolite, siltstone and oolitic limestone | Mixed sedimentary rocks and felsites | Stratified unit (including volcanic and metamorphic) | 346 - 382 Ma | 56.772 |



LEGEND

- ▭ Project area
- Contours
 - Index contour
 - Intermediate contour
- Detailed surface geology
 - Balaciava Formation (DCb)
 - Biloela Formation (To)
 - Pg/g?-YARROL/SCAG (Pg/g?)
 - Qa-QLD (Qa)
 - Qpa-QLD (Qpa)
 - Smoky beds (Ps)
 - Tg-QLD (Td)
 - Youlambie Conglomerate (CPY)

Credits:
 Contours © State of Queensland (Department of Resources) 2021, Mountain peaks and capes - Queensland © State of Queensland (Department of Resources) 2021, Mountain ranges, beaches and sea passages - Queensland © State of Queensland (Department of Resources) 2021, Detailed surface geology - Queensland © State of Queensland (Department of Resources) 2021, Basemaps/ LatestStateProgram_AllUsers © State of Queensland (Department of Resources); © Planet Labs, Netherlands B.V., reproduced under licence from Planet and Google, all rights reserved, 2022.

Coordinate system: GDA94 / MGA zone 56 EPSG:28356

CLIENT: EDIFY ENERGY

FIGURE 3: GEOLOGICAL MAPPING

0 1 2 3 4 5 km

1:30,000

Terra SOLUTIONS

DOCUMENT: E:\OneDrive - Terra Solutions\Projects\202104_Edify

DATE: 07/04/2022

AUTHOR: Anton

4.4 Soils

The Banana Land Resource Survey (Muller 2008) mapping identifies 15 separate soil profiles within the project area. Sodosols (i.e. soils with strong texture contrast between A horizons and sodic B horizons which are not strongly acid) and Vertisols (i.e. clay soils with shrink-swell properties that exhibit strong cracking when dry and at depth have slickensides and/or lenticular peds) are the dominant soil orders occupying approximately 971.53 ha (43%) and 861.81 ha (38%) of the project area respectively. The cracking clays on the site are diverse with six different profiles categorised whilst only three sodic profiles are mapped.

Vertisols within the project area are categorised as moderately well drained soils that are high in exchangeable calcium or strongly sodic with a highly saline subsoil (Muller 2008). Both types are common on the site, however the Vertosols that formed from unconsolidated Cainozoic alluvial-colluvial sediments possess the saline subsoil which typically form gilgai mounds and depressions which primarily occur in the western extent of the project area. They are presented spatially in Figure 4 and described below:

- Earlsfield is found throughout the Callide Valley and commonly on the clay sheets to the north and west of Banana. Earlsfield soils are very deep cracking clays with occasionally widely spaced melonhole that range in size from 10 – 15 m horizontally and 0.3 – 0.5 m deep.
- Greycliffe soils are deep cracking clays with widely spaced melonhole gilgai. Gilgai sizes range in size from 10 – 30 m horizontally and 0.1 – 0.2 m deep. These gilgai are poorly drained with very slow runoff but are shallow and therefore support water for shorter periods. Soils on the mounds are strongly sodic with very high salt content.
- Greycliffe - melonhole phase soils are very deep cracking clays with strongly developed melonhole gilgai. Gilgai range in size from 20 – 60 m horizontally and 0.5 – 1.6 m deep. These gilgai are poorly drained with a very slow runoff and due to their size and depth contain water for long periods. Soils on the mounds are strongly sodic with very high salt content.

Typically for gilgai clay soils, the phosphorous content of the mound is lower than for the depression as topsoil erodes from the mounds into the depression. This exposes the saline subsurface soils which in turn favours salt-tolerant species which were commonly observed on gilgai mounds. This process is accelerated exacerbated through the clearing of brigalow and disturbance of surface soils by cattle.

Sodic duplex soils on the site coincide with unconsolidated Cainozoic alluvial- colluvial sediments in the geological mapping. This soil type consists of sands and loams overlying a sodic clay subsoil of which three profiles are mapped on the site.

- Kokotungo is one of the most extensive soils in the Banana Land Resource Survey and is also the most extensive soil profile in this project area (940.11 ha). Kokotungo has a clay loamy topsoil with a strongly sodic subsoil that is highly dispersive.
- The Desdemona soil occurs in only a few small areas on the extensive colluvial plains to the north-east of Goovigen. Desdemona has a sandy topsoil with a sodic subsoil which is less prone to dispersal than Kokotungo.
- Ulogie often occurs near Tertiary sandstone plateaus. It has a sandy loam to clay loam topsoil with a dense and strongly sodic subsoil that is highly dispersive and erodible.

Detailed soil information for each the profiles mapped in the study are presented in Table 8 and the mapping is presented in Figure 4.

Table 8 Soil concepts present within the project area (from Muller 2008)

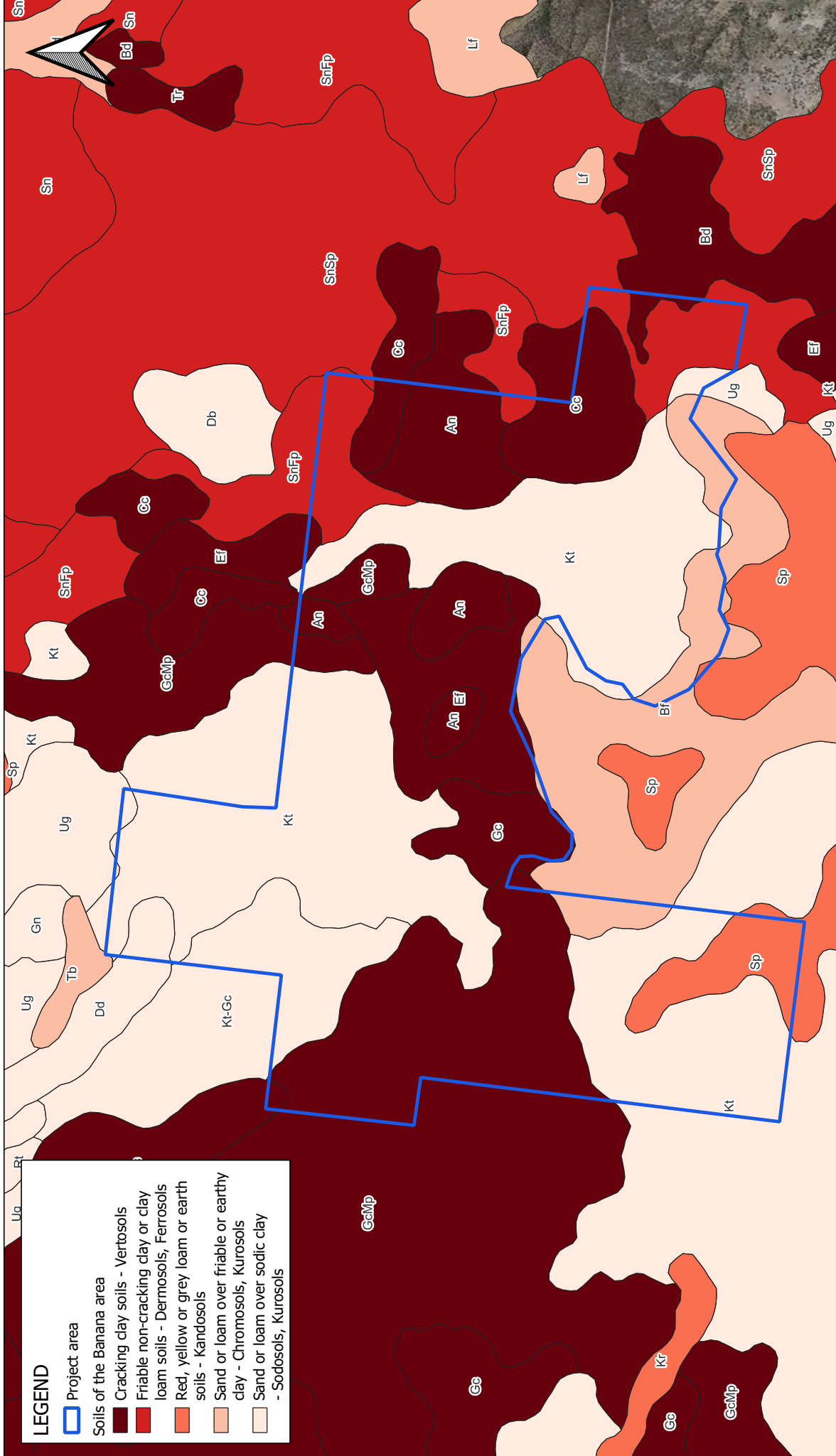
| Soil profile class | Dominant soil order | Landform | Parent material | Description | Area |
|--|---------------------|---|---|--|--------------|
| Sand or loam over friable or earthy clay | | | | | |
| Thalberg (Tb) | Chromosol - Brown | Undulating rises to level plains | Unconsolidated Cainozoic alluvial colluvial sediments | Thalberg is a hard setting, very deep (>1.5 m), brown or red, duplex soil, with a 0.2 to 0.5 m thick, fine sandy clay loam or clay loam fine sandy topsoil, that occasionally has a pale or sporadically bleached A2 horizon. The topsoil overlies a prismatic or blocky structured, fine sandy light medium or medium clay subsoil that has a neutral or alkaline soil reaction trend. Thalberg is formed on Cainozoic, alluvial-colluvial sediments. | 0.03 |
| Bluff (Bf) | Kurosol - Red | Steep escarpments | Deeply weathered Tertiary sedimentary rocks | Bluff is a moderately deep to deep (0.5-1.2 m), red, brown or grey, strongly acid duplex soil, with a stony, sandy loam to clay loam topsoil, 0.1 to 0.35 m thick, overlying a strongly acid, sometimes mottled, medium clay subsoil. Bluff has an acid soil reaction trend and is formed on deeply weathered, Tertiary, sedimentary rocks. | 91.33 |
| Total | | | | | 91.36 |
| Friable non-cracking clay or clay loam soils - Dermosols, Ferrosols | | | | | |
| Santo, fertile phase (SnFp) | Dermosol - Red | Undulating low hills to gently undulating rises | Permian and Devonian intermediate volcanic rocks | Santo fertile phase is shallow or moderately deep (0.3 to 0.9 m), structured, red or brown, non-cracking clay with a moderately thick (0.1 to 0.2 m), light clay or light medium clay topsoil that overlies a blocky structured, light clay to medium clay subsoil. Santo fertile phase has a neutral or alkaline soil reaction trend and is formed on Permian, intermediate, volcanic rocks. | 58.64 |
| Santo, stony phase (SnSp) | Dermosol - Red | Dissected rolling low hills to rolling rises | Permian and Devonian intermediate volcanic rocks | Santo stony phase is a shallow to moderately deep (0.2-0.8 m), stony, red or brown, uniform or gradational soil with a 0.05 to 0.25 m thick, clay loam fine sandy to light medium clay topsoil that overlies a blocky structured light clay to medium clay subsoil. Santo stony phase has a neutral to alkaline soil reaction trend and is formed on Permian, intermediate, volcanic rocks. | 65.17 |

REPORT

| Soil profile class | Dominant soil order | Landform | Parent material | Description | Area |
|--|---------------------|--------------------------------------|---|--|---------------|
| Total | | | | | 123.81 |
| Red, yellow or grey loam or earth soils - Kandosols | | | | | |
| Spier (Sp) | Kandosol - Red | Level to undulating plateau surfaces | Deeply weathered Tertiary sedimentary rocks | Spier is a deep to very deep (1.1->1.5 m), massive, red gradational soil with a fine sandy loam to clay loam topsoil that grades into a clay loam fine sandy to fine sandy light medium clay subsoil. Spier is formed on Tertiary sandstone and has a neutral or acid soil reaction trend. | 73.03 |
| Total | | | | | 73.03 |
| Sand or loam over sodic clay - Sodosols, Kurosols | | | | | |
| Desdemona (Dd) | Sodosol - Brown | Undulating rises to level plains | Unconsolidated Cainozoic alluvial-colluvial sediments | Desdemona is a very deep (>1.5 m), brown, sodic duplex soil with a thick or very thick (0.4-0.9 m), sandy topsoil that has a sporadically bleached A2 horizon. The topsoil overlies a brown, sometimes mottled, fine sandy light or light medium clay subsoil with a coarse prismatic structure. Desdemona has a neutral soil reaction trend and is formed on unconsolidated Cainozoic alluvial-colluvial sediments. | 19.01 |
| Kokotungo (Kt) | Sodosol - Brown | Undulating rises to level plains | Unconsolidated Cainozoic alluvial-colluvial sediments | Kokotungo is a very deep (>1.5 m), brown or grey, sodic duplex soil with a moderately thick to thick (0.1-0.5 m), clay loamy topsoil that has a sporadically bleached A2 horizon, that overlies a light medium of medium clay, prismatic structured subsoil. Kokotungo has mainly an alkaline soil reaction trend. | 940.11 |

| Soil profile class | Dominant soil order | Landform | Parent material | Description | Area |
|--|---------------------|---|---|---|---------------|
| Ulogie (Ug) | Sodosol - Brown | Undulating rises to level plains | Unconsolidated Cainozoic alluvial-colluvial sediments | Ulogie is a very deep (>1.5 m), brown or grey, strongly sodic, duplex soil with a moderately thick to thick (0.15-0.5 m), fine sandy loam to clay loam sandy topsoil that has a sporadically bleached A2 horizon. The topsoil overlies a coarse columnar structured, fine sandy light medium or medium clay subsoil that is sometimes mottled. Ulogie has variable subsoil pH so that the soil reaction trend is equally acid, neutral or alkaline, and is formed on Cainozoic, alluvial-colluvial sediments. | 12.41 |
| Total | | | | | 971.53 |
| Cracking clay soils - Vertosols | | | | | |
| Annandale (An) | Vertisol - Black | Gently undulating plains and rises | Tertiary basalt | Annandale is a moderately deep (0.4-0.85 m), black, fine to coarse self-mulching, strongly cracking clay soil that is formed on basalt. Weakly developed normal gilgai can be present on the deeper profiles. | 164.78 |
| Beldeeen (Bd) | Vertisol - Black | Undulating low hills to gently undulating rises | Permian and Devonian intermediate volcanic rocks | Beldeeen is a moderately deep to very deep (0.7->1.5 m), black, cracking clay soil formed on Permian volcanic rocks. It usually has well developed linear gilgai that have fine self-mulching mounds, with pedat or coarse self-mulching topsoils in the depressions. | 7.76 |
| Clancy (Cc) | Vertisol - Black | Gently undulating plains and rises | Tertiary basalt | Clancy is a shallow to moderately deep (0.3-0.9 m), black, very coarse self-mulching, strongly cracking clay soil with an alkaline soil reaction trend that is formed on basalt. | 114.35 |
| Earlsfield (Ef) | Vertisol - Black | Undulating rises to level plains | Unconsolidated Cainozoic alluvial-colluvial sediments | Earlsfield is a very deep (>1.5m), black, dark brown or grey, cracking clay soil with a very fine self-mulching topsoil. The subsoil is strongly sodic (ESP>15), with high levels of soluble salts (EC >0.8 dS/m) below 0.8m. It has a predominantly acid soil reaction trend and is formed on unconsolidated, alluvial-colluvial sediments. | 153.01 |

| Soil profile class | Dominant soil order | Landform | Parent material | Description | Area |
|---|---|----------------------------------|---|--|---------------|
| Greycliffe, melonhole phase (GcMp) | Vertisol - Grey | Undulating rises to level plains | Unconsolidated Cainozoic alluvial-colluvial sediments | Greycliffe melonhole phase is a very deep (>1.5 m), grey cracking clay with well-developed melonhole gilgai. It is strongly sodic (ESP >15) with high levels of soluble salts (EC1:5 >0.8dS/m) in the upper 0.3 to 0.5 m of the subsoil and has mainly an acid soil reaction trend. | 353.01 |
| Greycliffe (Gc) | Vertisol - Grey | Undulating rises to level plains | Unconsolidated Cainozoic alluvial-colluvial sediments | Greycliffe is a very deep (>1.5 m), grey or brown cracking clay soil with a pedal to coarse self-mulching topsoil and an acid soil reaction trend. The upper subsoil is strongly sodic (ESP >15), and has high to very high levels of soluble salts (0.8 to 2.5 dS/m). Greycliffe has widely spaced, melonhole gilgai separated by inter-gilgai flats up to 50 m in width. | 68.9 |
| Total | | | | | 861.81 |
| Complex of sand or loam over sodic clay with cracking clay soils | | | | | |
| Kokotungo-Greycliffe complex (Kt-Gc) | Sodosol - Brown and Vertisol - Grey complex | Undulating rises to level plains | Unconsolidated Cainozoic alluvial-colluvial sediments | Refer to Kokotungo and Greycliffe above. | 118.37 |
| Total | | | | | 118.37 |



LEGEND

- Project area
- Soils of the Banana area
- Cracking clay soils - Vertosols
- Friable non-cracking clay or clay loam soils - Dermosols, Ferrosols
- Red, yellow or grey loam or earth soils - Kandosols
- Sand or loam over friable or earthy clay - Chromosols, Kurosol
- Sand or loam over sodic clay - Sodosols, Kurosol

Credits:
 Soils - soils of the Banana area central Queensland - BAN © State of Queensland (Department of Environment and Science) 2020, Includes material © State of Queensland (Department of Resources); © Planet Labs Netherlands B.V. reproduced under licence from Planet and Geoplex, all rights reserved, 2022.

Coordinate system: GDA94 / MGA zone 56 EPSG:28356

CLIENT: EDIFY ENERGY

FIGURE 4: SOILS OF THE BANANA AREA

0 1 2 3 4 5 km

1:30,000

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DATE: 07/04/2022

AUTHOR: Anton

4.5 Land use

Land use in the project area is predominantly beef cattle fattening and breeding on introduced pastures. Progressive land clearing is evident in aerial imagery from the early 1950's and probably earlier as substantial clearing can be seen in the earliest aerial photography of the area.

Significant soil preparation has been undertaken in past years to improve the success of sowed pastures. The process of soil preparation has included mechanical tilling and/or blading to at least 60 cm in depth (pers comm. Maynard 2022). This has been undertaken at least twice in gilgai lands to enable water penetration. It is noted that gilgai will reform over time, but these works have likely impacted underground habitats for subterranean species.

Pastures were tall and dense at the time of the survey and mostly consisted of a monoculture of sabi grass (*Urochloa mosambiquensis*).

4.6 Wetlands and watercourses

The site is located within the Dawson River sub-basin which is in the Fitzroy basin of the Northeast Coast drainage division of Queensland (Figure 5).

Drainage from the site is variable but in general terms the direction of watercourse is the following:

- The southern extent of Lot 39 is drained by one of the large watercourses in the project area and its smaller tributaries (Plate 2a) following a westerly path toward a large dam north of Dooney Smooth Road. The central part of Lot 39 also drains west but slightly downstream of the dam and flows into a long linear billabong associated with Callide Creek (Lake Victoria).
- Water from Lot 18, Lot 28, most of Lot 29 and the western half of Lot 37 drain in a northwest direction (Plate 2b) and eventually combine with the Don River approximately 6.5 km from the site. Water from Lot 32, Lot 33, and most of the eastern half of Lot 37 drain north (Plate 2c) combining with the Don River further upstream approximately 6.5 km north of the site.
- The eastern half of Lot 37 is the only area which drains in a southerly direction. Watercourses and drainage lines in this area ultimately join Gerard Creek, approximately 4.5 km south-southeast of the site.

All watercourses on the site are small (Strahler Order one or two) and classified as ephemeral systems with intermittent flashy flow regimes. The direction and quantity of flow off the site are affected by numerous in-stream dams which have been constructed for agricultural purposes. It is believed that the dams provide a year-round water supply except in drought years. Several earthen dams constructed on sodic soils are in relatively poor condition with banks having substantial rill erosion, but all contained water at the time of this survey.

Non-fluvial flows in the western half of the project area have produced gilgai wetlands of various sizes in the west of the project area. These small wetlands range in ephemerality with some of the smaller water bodies found to be dry during the survey.



2a Watercourse in south-west of Lot 39 draining south-west

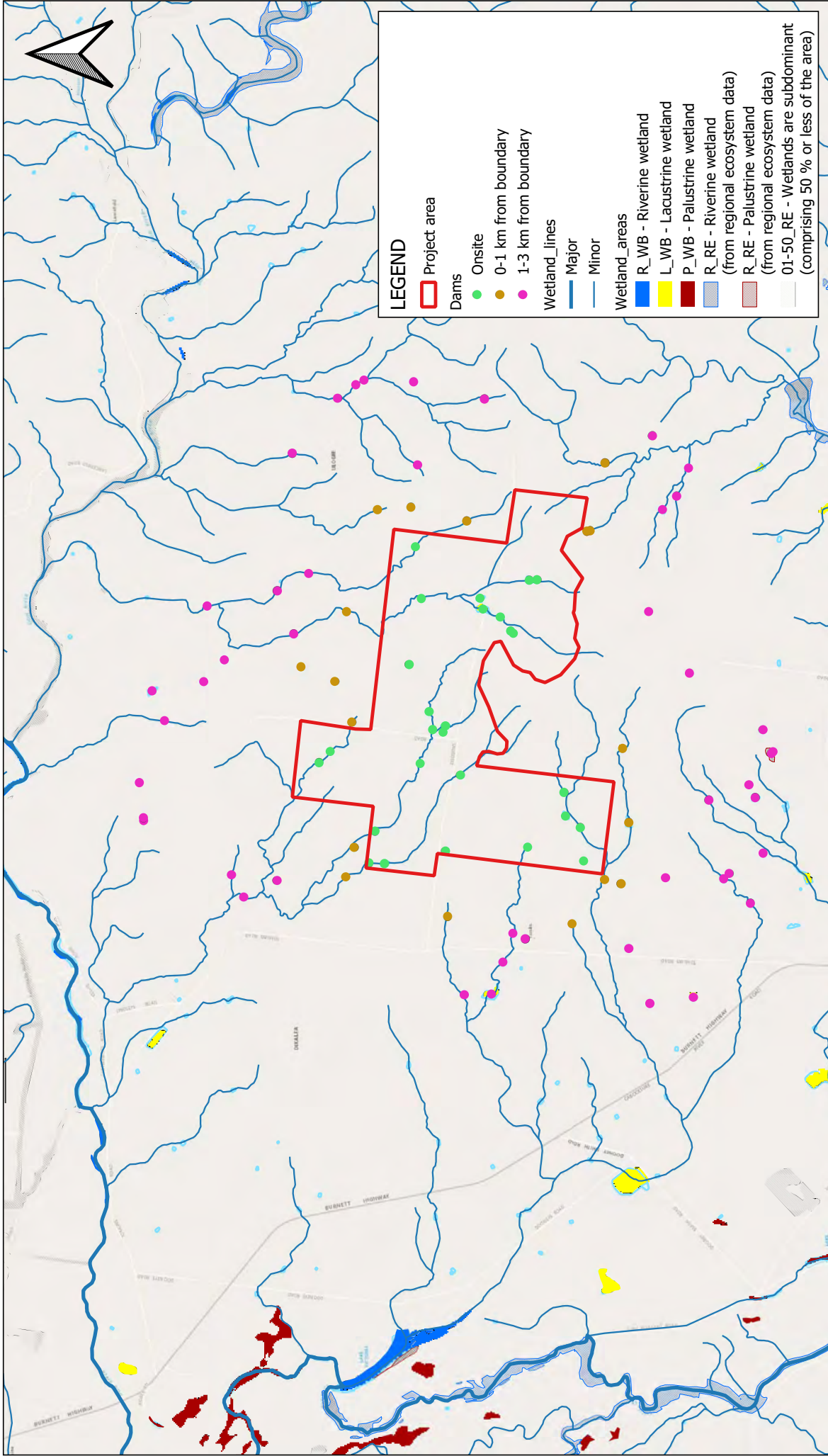


2b Watercourse in the north of Lot 18 draining northwest



2c Watercourse in the north of Lot 29 draining north

Plate 2 Project area watercourses



Credits:

Derived from Watercourse lines - Queensland © State of Queensland (Department of Resources) 2021, Wetland data - version 5 - wetland lines - Queensland © State of Queensland (Department of Environment and Science) 2020, Wetland data - version 5 - wetland areas - Queensland © State of Queensland (Department of Environment and Science) 2020, Queensland basemap colour, web service © State of Queensland (Department of Resources) 2021

Coordinate system: GDA94 / MGA zone 56 EPSG:28356

CLIENT: EDIFY ENERGY

FIGURE 5: WATER RESOURCES



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AUTHOR: Anton

DATE: 07/04/2022

4.7 Vegetation communities

The EPBC Act protected matter search returned five threatened ecological communities listed under the EPBC Act in the search area, namely:

- Coolibah - black box woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions
- Poplar box grassy woodland on alluvial plains
- Weeping myall woodlands
- Brigalow (*Acacia harpophylla* dominant and co-dominant)
- Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions

The poplar box grassy woodland TEC was not previously returned during PMST searches undertaken by RPS (2018) as the community was listed in 2019. This community has the potential to occur in the local area however it was not identified during site surveys and does not occur in the project area.

Field investigations confirmed the presence of the Brigalow (*Acacia harpophylla* dominant and co-dominant) TEC within the project area as described in Section 4.7.3.

Six vegetation communities were verified in the project area during the field investigations as described in the following sections. Photographs of the communities are provided along with the spatial extent of each community in Table 8 and Figure 6.

Table 9 Vegetation community extent within the project area

| Community | Extent in project area | % in project area |
|---|------------------------|-------------------|
| <i>Urochloa mozambiquensis</i> grassland | 1947.6 | 85.2 |
| Gilgai depressions and rises | 220.8 | 9.7 |
| <i>Acacia harpophylla</i> woodland and fringing woodlands | 78.7 | 3.4 |
| <i>Eucalyptus crebra</i> woodland | 12.3 | 0.5 |
| <i>Eucalyptus cambageana</i> woodland | 11.5 | 0.5 |
| <i>Acacia rhodoxylun</i> woodland | 10.8 | 0.5 |
| <i>Casuarina christata</i> woodland | 3.0 | 0.1 |

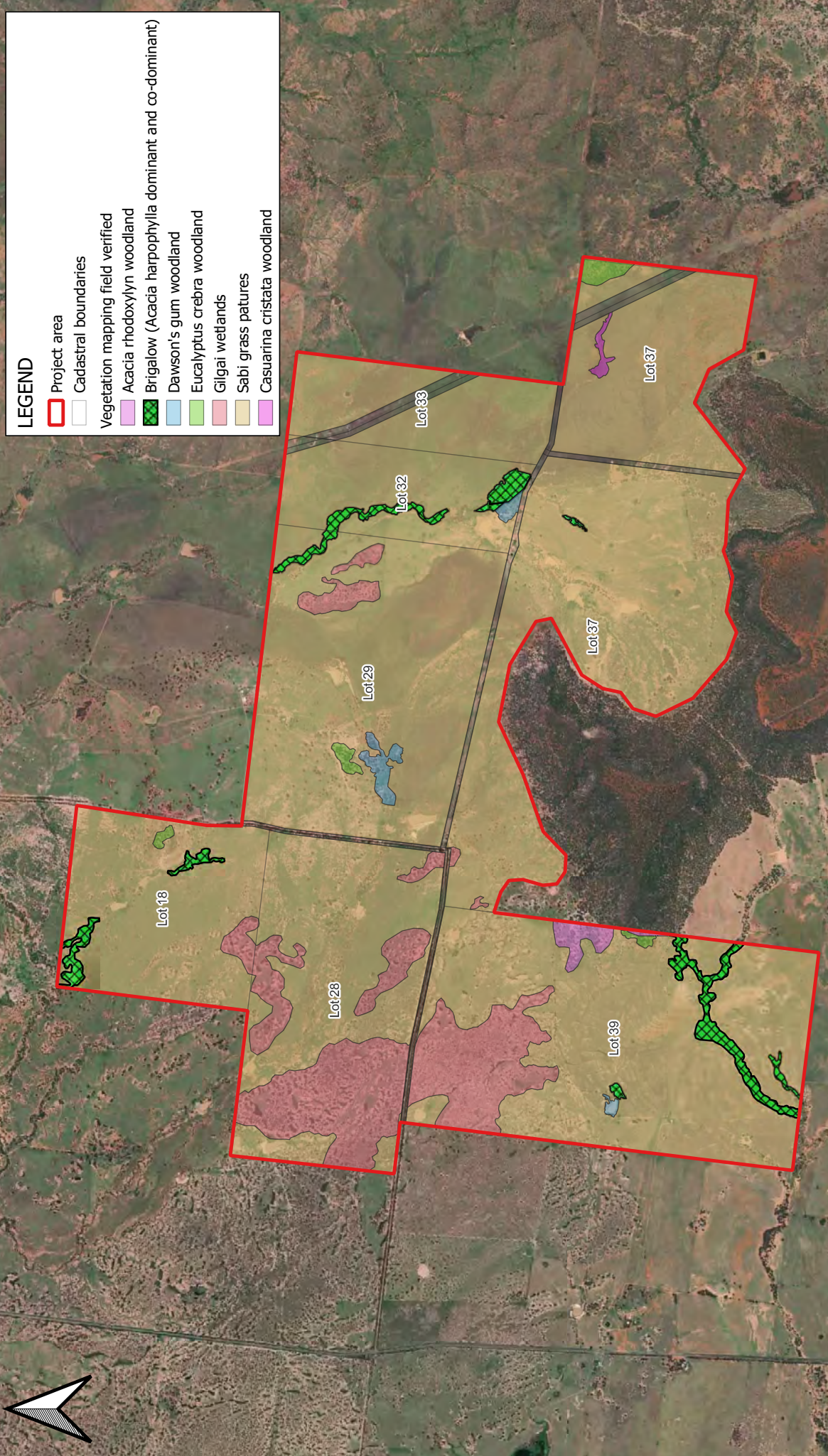
4.7.1 Exotic pastures

The dominant vegetation community within the project area is the sabi grass (*Urochloa mosambiquensis*) pastureland which occupies approximately 1,967.60 ha of the site (Plate 3). The community contains some isolated trees and occasional shrubby areas and occurs over all the dominant soil orders (i.e. kurosols, dermosols, kandosols, sodosols and vertosols). Isolated trees within the pasturelands include brigalow (*Acacia harpophylla*), Dawson's gum (*Eucalyptus cambageana*), mountain coolabah (*Eucalyptus orgadophila*), coolabah (*Eucalyptus coolabah*) and Queensland bottle tree (*Brachychiton rupestris*). Where isolated shrubs are present they are species that typically grow in brigalow communities such as scrub wilga (*Geijera parviflora*), Queensland ebony (*Diospyros humilis*), currant bush (*Carissa ovata*), various canthiums (*Psyrax* spp) and holly bush (*Alectryon diversifolius*).

The grass cover consists of a thick monoculture of sabi grass with occasional small patches of guinea grass (*Megathyrsus maximus*), buffel grass (*Cenchrus ciliaris*), Indian bluegrass (*Bothriochloa pertusa*) or black speargrass (*Heteropogon contortus*). Native grasses were very uncommon in the pastures and a diverse range of seeds for granivorous species such as squatter pigeon was not present.

There were few areas of bare ground in this community but stony rises, beneath trees and around dams lacked cover. The bare areas on stony rises are considered natural whilst the areas around dams are the result of the disturbance and compaction of surface soils by cattle. The stocking regime and season therefore influences the density of the herb layer at these sites.

Prior to vegetation clearing (i.e. before the 1950's) the vegetation across the site was probably a brigalow – Dawson's gum woodland to open forest. Remnants of these communities have been retained or have regrown along the adjacent road corridors.



LEGEND

- Project area
- Cadastral boundaries
- Vegetation mapping field verified
- Acacia rhodoxylon woodland
- Brigalow (Acacia harpophylla dominant and co-dominant)
- Dawson's gum woodland
- Eucalyptus crebra woodland
- Gilgai wetlands
- Sabi grass pastures
- Casuarina cristata woodland

Credits:
 Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS,
 USDA, USGS, AeroGRID, IGN, and the GIS User Community

Coordinate system: GDA94 / MGA zone 56 EPSG:28356

CLIENT: EDIFY ENERGY

FIGURE 6: FIELD VERIFIED VEGETATION



DOCUMENT: P:\Projects\202104_Edify Energy\09.

AUTHOR: Anton

DATE: 07/06/2023



Plate 3 Pasture grasslands

4.7.2 Gilgai depressions and rises

Cleared gilgai lands occupy of approximately 220 ha of the project area and represent a variation of the cleared pasture lands due to the soil type and landform. There is a distinct aquatic vegetation community within the depressions and although the rises are still typically dominated by sabi grass there is a greater diversity of salt-tolerant flora species on the mounds and inter-gilgai flats (Plate 4).

Approximately half of the gilgai depressions contained water to approximately 50 cm deep and supported a dense layer of aquatic plants which typically exceeded 70% cover. The plants included various *Cyperus* spp., velvet knotweed (*Persicaria attenuata*), sourgrass (*Paspalum conjugatum*), *Caldesia oligococca*, Nardoo (*Marsilea drummondii*), blue hyacinth (*Monocoria cyanea*), rice sedge (*Cyprus difformis*), round-leaf cassia *Chaemacrista rotundifolia*, *Eliocaris* sp, slender canegrass (*Dinebra decipiens*) and *Aponogeton queenslandicus*.

The gilgai mounds and inter-gilgai flats contained a mid-dense cover of sabi grass with a range of salt-tolerant species such as lagoon saltbush (*Atriplex muelleri*), roly-poly (*Salsola australis*), ruby salt bush (*Enchylaena tomentosa*), currant bush and Australian dropseed (*Sporobolus australasicus*). This ground layer is sparser than other areas of the site due to the subsurface saline soils which are exposed during the formation of gilgai landforms in the area.

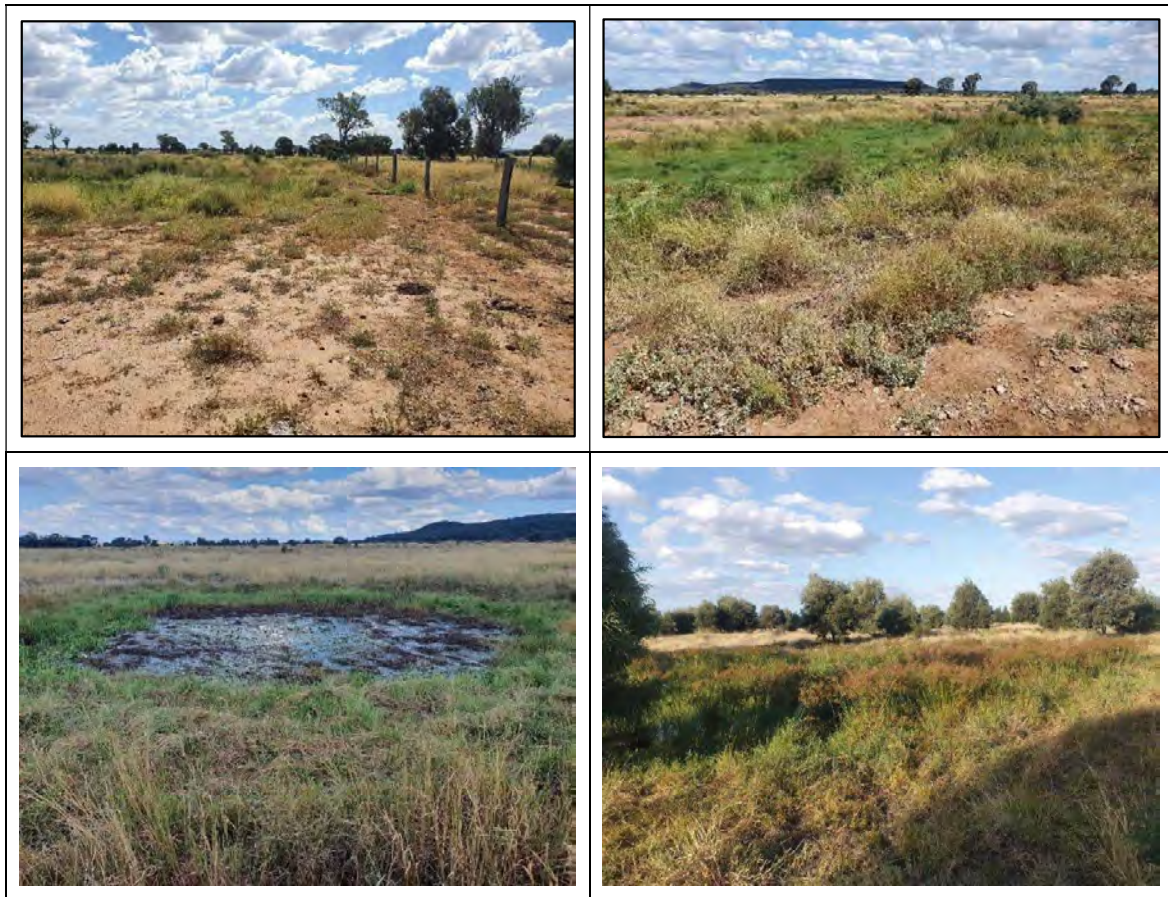


Plate 4 Cleared gilgai wetlands and rises

4.7.3 Brigalow (*Acacia harpophylla* dominant and co-dominant) woodlands

Brigalow (*Acacia harpophylla* dominant and co-dominant) woodlands TEC occupy approximately 78.7 ha of the project area. These woodlands are mostly located along watercourses where riparian vegetation has been retained during clearing and a few small, isolated patches elsewhere. The major areas of the TEC are located on the larger watercourses on Lot 32 / Lot 29 (approx. 10 ha) and Lot 39 (approx. 17 ha).

In the northern parts of Lot 32 / Lot 29 riparian vegetation of the main watercourse consists of a brigalow and belah (*Casuarina cristata*) woodland some vine thicket elements including broad-leaved bottle tree (*Brachychiton australis*), Queensland ebony (*Lysiphyllum hookeri*), scrub ironbark (*Acacia fasciculifera*), bitterbark (*Alstonia constricta*), wild prune (*Sersalisia sericea*) and scrub wilga (*Geijera parviflora*). The ground layer is dominated by a dense layer of sabi grass and Guinea grass, spiked mallow (*Malvastrum americanum*) and occasionally currant bush as a low shrub (Plate 5a).

The watercourse cuts through the highly dispersive Kokotungo (Kt) sodosols and the vegetation appears to stabilise the watercourse banks (Plate 5b). A larger patch of this community also occurs in the south of Lot 32 but there is a distinct mid-dense secondary tree layer dominated by scrub wilga and sandalwood (*Santalum lanceolatum*) and mixed shrub-layer of holly bush, wild prune, blush boxwood (*Elaeodendron australe*), hairy acalypha (*Acalypha nemorum*) and weeping koda. The ground layer has been disturbed by hooved animals and is now dominated by Guinea grass, Devil's horsewhip (*Achyranthes aspera*), currant bush (*Carissa ovata*) and Harrisia cactus (*Harrisia* sp) among other introduced species (Plate 5c). This ecosystem was the only vegetation community observed in the project area with a medium – high density of course woody debris (Plate 5c and Plate 5d).

The watercourse traversing the southern extent of Lot 39 does not contain the vine thicket elements to the same extent and is described as a brigalow fringing open forest with Dawson’s gum, poplar box (*Eucalyptus populnea*) and Moreton Bay ash (*Corymbia tessellaris*). The shrub layer includes currant bush, weeping koda (*Ehretia membranifolia*), holly bush (*Alectryon diversifolius*) and bitterbark (*Alstonia constricta*). The ground layer includes Sabi grass, guinea grass, Australian dropseed, ruby salt bush, galvanised burr (*Sclerolaena birchii*), *Cissus* sp. The EPBC Act endangered species, *Solanum johnsonianum*, was recorded within this watercourse (Plate 5f).

A complete assessment of the diagnostic characteristics and condition thresholds was not undertaken to confirm classification as the Brigalow (*Acacia harpophylla* dominant and co-dominant) listed threatened ecological community under the EPBC Act (Figure 6) as the proponent will seek to avoid these woodlands. Consequently it is assumed that all brigalow woodlands identified are the TEC.

| | |
|---|--|
|  |  |
| <p>5a Brigalow and belah riparian woodland</p> | <p>5b Gully erosion on Kokotungo (Kt) sodosols</p> |
|  |  |
| <p>5c Brigalow and belah with secondary tree and mixed shrubs</p> | <p>5d Coarse woody debris in Brigalow forest</p> |



Plate 5 Brigalow woodlands and fringing woodlands

4.7.4 Eucalyptus crebra woodlands and Eucalyptus cambageana woodlands

An area of approximately 50 ha in the western area of lot 29 comprises two communities a narrow-leaved ironbark woodland (Plate 6a) and a Dawson’s gum woodland (Plate 6b). These communities are distinct but have a similar structure and locality. The canopy consists of narrow-leaved ironbark (*E. crebra*) or Dawson’s gum and Queensland bottle tree. The community includes a sparse to very sparse shrub layer of mostly currant bush, holly bush and nipan (*Capparis lasiantha*) and a sparse to dense monoculture of sabi grass in the ground layer. Other species observed in this community include crow’s ash (*Flindersia australis*).

Within these communities there was a clear patchiness of the ground cover driven by grazing intensity and the preferred shade areas used by cattle. This property had been destocked at the time of the survey and it seems a recovery of the grass density was underway.



Plate 6 Narrow-leaved ironbark woodland and Dawson’s gum woodland

4.7.5 Casuarina christata woodlands

A woodland dominated by belah and containing Moreton Bay ash (*Corymbia tessellaris*), variable-barked bloodwood (*Corymbia erythrophloia*) and boonaree (*Alectryon oleifolius*) lines a small watercourse in the far eastern extent of Lot 37 (Plate 7). A secondary tree layer of emu apple (*Owenia acidula*) and boonaree occurs and the ground layer consists of a buffel grass. Like other vegetation on the site, this community lacks coarse woody debris. There is no brigalow in this community and therefore it is not the brigalow (*Acacia harpophylla* dominant and co-dominant) TEC.



Plate 7 Belah woodland

4.7.6 Acacia rhodoxylm woodland

A small *Acacia rhodoxylm* woodland of approximately 10.84 ha is located approximately midway along the eastern boundary of Lot 39. The community occurs on the western side of an ironstone mesa among a thin layer of consolidated colluvium from the partially eroded mesa.

Acacia rhodoxylm is clearly the dominant canopy species with occasional *Flindersia australis* and *Alphitonia excelsa*. A sparse shrub layer consists of *C.ovata* and *A.constricta*. The ground layer is mid-dense to dense (exceeding 50% cover) but still dominated by *U.mozambiquensis* with occasional *M.maximus*.

4.8 Threatened flora

The PMST report returned 12 threatened flora species, 11 of which were previously assessed by RPS (2018). Two of these species, *Solanum dissectum* (Endangered under the EPBC Act) and *Solanum johnsonianum* (Endangered under the EPBC Act) were previously identified as having potential to occur on the site and were targeted in suitable habitat during this survey.

Black ironbox (*Eucalyptus raveretiana*) was not retrieved in the PMST report retrieved by RPS (2018). This is likely to reflect changes in the known distribution of the species as it was listed as Vulnerable under the EPBC Act prior to 2018. Suitable habitat for the species is not present on the site and field surveys confirmed the species absence. The closest area of potential habitat for black ironbox is most likely along the Don River and its larger tributaries which is located approximately 6 km north of the site.

4.8.1 Solanum johnsonianum and Solanum dissectum

S. johnsonianum is an erect perennial sub-shrub growing 0.15 to 0.3 m high (Bean, 2004; Queensland Herbarium, 2012). The species regenerates from rhizomes beneath the soil surface and can flower and fruit rapidly in response to rain (Fensham et al 2019). The species is restricted to relatively small area with nine documented populations distributed over approximately 100 km, from north-west of Theodore to north of

Jambin (Bean, 2004; Queensland Herbarium, 2012). Fensham et al. (2019) estimated the extent of occurrence of *S. johnsonianum* to be 4,962 km² using confirmed herbarium records. *S. johnsonianum* is distributed within communities dominated or co-dominated by *Acacia harpophylla* (Brigalow), on heavy cracking soils. Associated species include *Eucalyptus thozetiana* with understorey of *Geijera parviflora* (Bean, 2004; Queensland Herbarium, 2012).

S. dissectum is an erect, perennial sub-shrub to a maximum height of 1 m (Department of Environment and Heritage Protection, 2021). The species regenerates from rhizomes beneath the soil surface and can flower and fruit rapidly in response to rain (Fensham et al 2019). The species has a small and restricted distribution in central Queensland, bounded by Banana, Dululu, Moura and Thangool although there are also records from an area approximately 40 km south of Blackwater (Queensland Herbarium 2012). Habitat is broadly described as open forest and woodland dominated by brigalow (*Acacia harpophylla*) and/or lapunyah (*Eucalyptus thozetiana*) on solodic clay soils (Queensland Herbarium 2012).

The preferred brigalow forest in which *S. dissectum* and *S. johnsonianum* occur typically possesses a dense tree canopy and a sparse ground layer of herbaceous vegetation where both species grow. Fensham et al (2019) in their extensive study on *S. adenophorum*, *S. dissectum*, *S. elachophyllum* and *S. johnsonianum* found that *S. dissectum* and *S. johnsonianum* did not persist in cleared brigalow habitat. They also found that the species does not occur in areas where exotic grass cover exceeds 40% and due to feedback mechanisms between exotic grasses, fire and canopy cover found that the species does not occur in areas with less than 50% canopy cover.

Based on the known habitat requirements targeted surveys for both *Solanum* spp. initially targeted brigalow habitats with some canopy cover and within these habitats targeted areas where exotic grass cover was less than 40%.

Targeted surveys successfully confirmed the presence of *Solanum johnsonianum* within the project area which occurred as an isolated population of 72 plants located in the southern extent of Lot 39 (Figure 7). Supporting habitat was a fringing riparian brigalow woodland and the population was found in dappled shade beneath a large tree in the upper bank of the watercourse. These plants were mostly in the vegetative phase of development although some larger individuals were only beginning to form buds but were readily identifiable as *Solanum johnsonianum*, which was subsequently confirmed by the Queensland Herbarium (Appendix C). The population occurred in one of the few habitats in the project area considered suitable for either *S. johnsonianum* or *S. dissectum* due to the following:

- No history of clearing
- A retained canopy providing shade to dappled soft light
- No history of mechanical disturbance (i.e. blading or tilling)
- Minimal encroachment from introduced pasture grasses (i.e. sabi grass).

Aside from the watercourse in which the population was found other watercourses and the site more broadly consisted of unsuitable habitat due to the density of sabi grass, the observed disturbance from pastoral activities and anecdotal information provided by landowners describing the cropping practices on the land such as surface blading of the soils. Notwithstanding, since this population was located within a watercourse with a retained brigalow canopy it should be excluded from development with adequate buffers to development applied to protect instream and riparian habitats. Conservatively, this measure could also be applied to other brigalow-lined watercourses even though exotic grasses dominate the ground layer of other watercourses.

4.9 Threatened fauna

The PMST report returned 26 threatened fauna species, four of which were not previously assessed by RPS (2018). The species being assessed here for the first time are:

- Coxen's Fig-Parrot (*Cyclopsitta diophthalma coxeni*) – EPBC Act listing of Endangered.
- Grey Falcon (*Falco hypoleucos*) – EPBC Act listing of Vulnerable.

- White-throated Needletail (*Hirundapus caudacutus*) – EPBC Act listing of Vulnerable.
- Yellow-bellied Glider (south-eastern) (*Petaurus australis australis*) – EPBC Act listing of Vulnerable.

Coxen's fig parrot occurs in rainforest habitats including subtropical rainforest, dry rainforest, littoral and developing littoral rainforest, and vine forest (Coxen's Fig-Parrot Recovery Team 2001; Holmes 1990; Templeton 1992). These habitats are not present in the project area and consequently the species is considered unlikely to occur.

Grey falcon is essentially confined to the arid and semi-arid zones where rainfall is less than 500 mm per annum (Schoenjahn 2018). The species is generally absent in areas east of the great dividing range in Queensland (Barrett et al. 2003; Schoenjahn 2018), aside from the occasional vagrant animal. Preferred habitat consists of timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses (Garnett et al. 2011; Schoenjahn 2013, 2018; Janse et al. 2015; Ley and Tynan 2016). The site is located to the east of the Great Dividing Range and receives a mean annual rainfall of 630.1 mm with only a 10% chance of receiving less than 500 mm in any given year. The species is therefore unlikely to occur within the project area.

White-throated needletail is a primarily aerial species that occupies airspace over forests, woodlands, farmlands, plains, lakes, coasts and towns (Pizzey and Knight 2010) and frequently forages over hilltops and timbered areas (DAWE 2022a). The species is widespread over eastern and south-eastern Australia and owing to its mobility can utilise the aerial space over almost any habitat including developed areas. Therefore this species has the potential to forage over the project area but is unlikely to be affected by the proposed action.

Yellow-bellied glider (south-eastern) occurs at altitudes from sea level to 1,400 m above sea level and has a widespread, patchy distribution along the eastern ranges of Queensland and NSW to eastern and southern Victoria and across to the far south-east of South Australia. Preferred habitat includes eucalypt dominated woodland and forests and forests, including wet and dry sclerophyll forests (Kavanagh et al. 1995; Rees et al. 2007). The species requires large tracts of forests to maintain sub-population viability because the trees used as foraging substrates are dispersed and use of trees can vary through time and space (Woinarski et al. 2014). No areas of suitable habitat occur in the project area as patches of vegetation are too small and disconnected and do not contain recognised sap trees utilised by the species. Consequently the subspecies is unlikely to occur.

4.9.1 Ornamental snake habitat assessment and survey

The natural habitat of ornamental snake consists of woodland or open forest associated with moist areas, especially gilgai (melon-hole) mounds and depressions and an abundance of frogs.

Associated vegetation includes communities dominated by brigalow (*Acacia harpophylla*), gidgee (*Acacia cambagei*), Blackwood (*Acacia argyrodendron*) or Coolibah (*Eucalyptus coolabah*); however the species has been recorded in a paddock dominated by buffel grass (*Cenchrus ciliaris*) about one kilometre from a gilgaied patch of Brigalow regrowth, during drought (Agnew 2010 pers. comm.).

Sites where Ornamental Snakes have been recorded in abundance share the following habitat characteristics (Agnew pers. comm 2010 cited in DAWE 2022):

- Contains shallow water with aquatic vegetation or inundated fringing groundcover. Especially occurs in flooded gilgais where the dominant aquatic macrophyte is bog hyacinth.
- Contains a range of gilgai sizes and depths although deep gilgai should be broad with gently sloping banks.
- Soils possess a high clay content, deep cracking characteristics and high water retention.
- Ground timber is common.
- Frogs are abundant, particularly *Cyclorana* spp.
- Habitats typically exceed 10 hectares in area and are within, or connected, to larger areas of remnant vegetation.

- Refuge habitat for use during dry periods is present. Typically this habitat is deep cracking clay on gilgai mounds.

The area of *Acacia harpophylla* woodland with SEVT understorey on Lot 32 provides poor quality habitat for ornamental snake as surface soils consist of a self-mulching clay with no evidence of deep cracks or gilgai formation. The patch is small (5.12 ha) and has no connectivity with large patches of remnant vegetation. Consequently species persistence in this area is considered unlikely.

The majority of gilgais are in the west of the site and form part of an extensive complex of around 2,100 ha extending to the west of which 220 ha (10.5%) occurs in the project area. The larger gilgai complex contains a 310-ha patch of brigalow which is located approximately 2.7 km from the site. Another area of cleared gilgai approximately of 14 ha is located on Lot 29 but has no connectivity with other gilgai landforms or remnant vegetation.

Assessment of the onsite gilgai confirmed the presence of several attributes associated with ornamental snake habitat:

- The gilgai mounds and depressions range in size from approximately 10 m² to almost 0.5 ha and all had gently sloping sides.
- The larger depressions contained water (approximately half of all gilgai) up to 0.6 m deep and contained a diversity of aquatic plants including the indicator species *Monochoria cyanea* (refer Section 4.7.2).
- The soils present in the gilgai mounds were self-mulching at the surface with a deeply cracking subsoil providing potential refugial habitat for the species.
- Several known prey items were confirmed to occur including a high abundance of striped burrowing frog (*Cyclorana alboguttata*) along with lower abundances of eastern snapping frog (*Cyclorana novaehollandiae*), eastern dwarf tree frog (*Litoria fallax*), bumpy rocket frog (*Litoria inermis*), striped rocket frog (*Litoria nasuta*), ruddy tree frog (*Litoria rubella*) and green tree frog (*Litoria caerulea*).

Targeted surveys from 7th to 11th February 2022 did not detect any ornamental snakes, however five ornamental snakes were detected within the project area during surveys from 13th to 16th February 2023. The recorded locations are presented in Figure 7.

Squatter pigeon habitat assessment and survey

Three squatter pigeons and 54 ha of breeding and foraging habitat were identified over the course of the habitat assessment and targeted survey. All identified birds were located on Lot 39 and confirmed during either waterbody survey or active search. Slow driving transects along farm tracks failed to yield any individuals despite being a highly successful survey method at other sites.

Squatter pigeon habitat consists of remnant or regrowth open forest to woodland communities with a patchy, tussock grass understorey on well-draining, gravelly, sandy or loamy soils with that support the subspecies' breeding and foraging requirements (Squatter pigeon workshop 2011). Their foraging habitat occurs in communities dominated by *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* species and within 3 km of a permanent or seasonal waterbody (Squatter pigeon workshop 2011). The species prefers to forage (and dust bathe) on bare ground under an open canopy of trees where the ground layer is patchy and cover rarely exceeds 33% of the ground area (Squatter pigeon workshop 2011). Breeding habitat on stony rises within 1 km of a suitable water resource where the subspecies nests in shallow depressions, thus requiring well-draining soils (Squatter pigeon workshop 2011).

Several areas of suitable foraging habitat for squatter pigeon (southern) were identified during the habitat assessment (Figure 7). These areas consisted of woodland to open woodlands dominated by either brigalow, Dawson's gum or narrow leaved ironbark with a patchy ground layer of native grasses and forbs. All suitable foraging habitats identified in the project area occurred on either Kandosols, Chromosols, Kurosols or Sodosols and contained a sandy or stony surface layer (refer Figure 4 for soil types). The foraging habitat was found to be limited by the extensive areas of unsuitable clay soils and the lack of suitable woodland and forest communities remaining on the suitable sandy and gravelly substrate. A further limiting factor at sites that would otherwise be suitable is the lack of native tussock grasses which had been

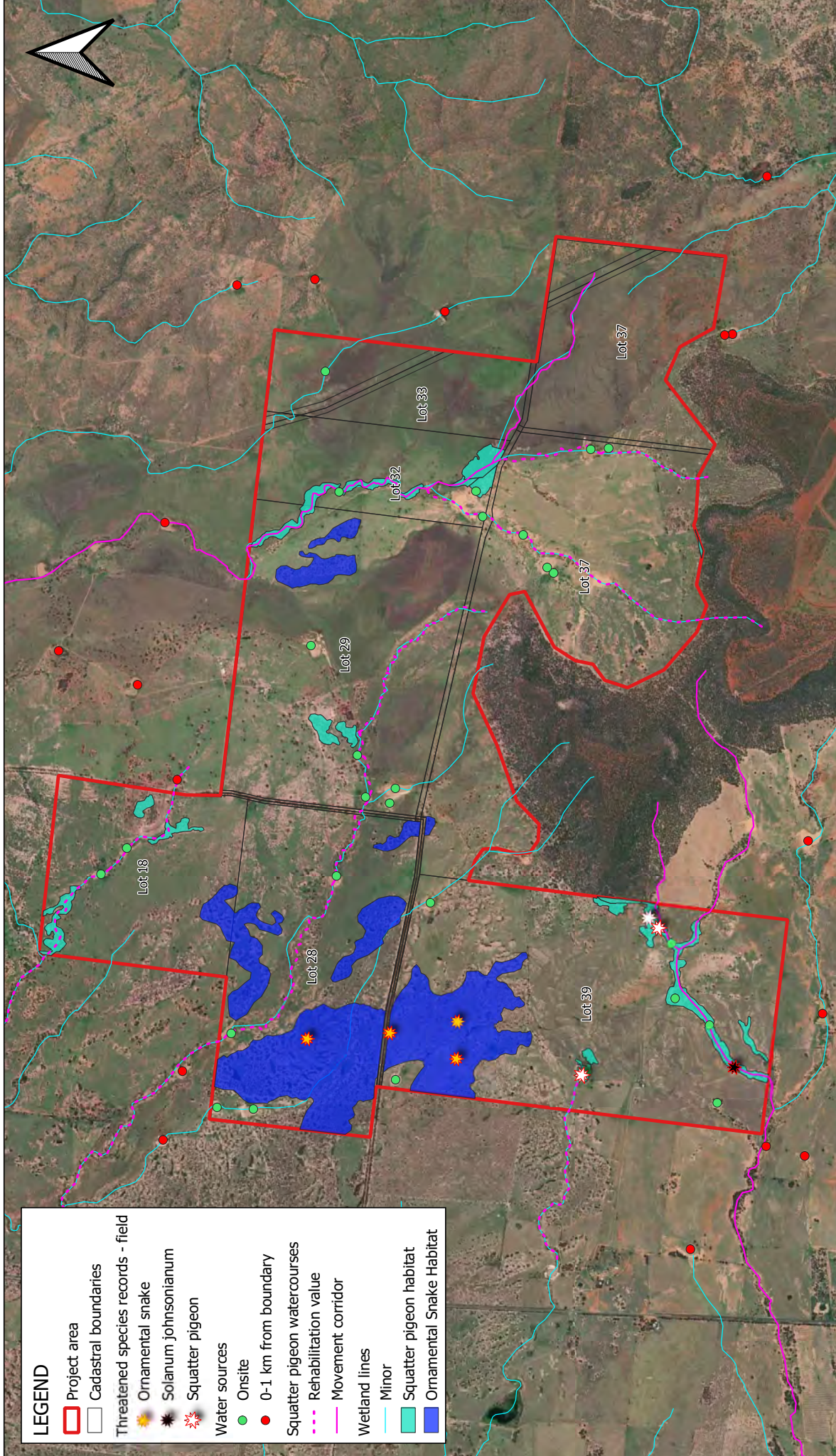
replaced by a monoculture of sabi grass at most sites. An assessment of water resources confirmed that the entire site is within 3 km of a suitable hydration point and therefore access to water is unlikely to be a factor that limits squatter pigeon presence on the site.

Two potential areas of breeding habitat were identified within the project area (Figure 7). The first area was in a narrow-leaved ironbark woodland located immediately adjacent to the eastern boundary of Lot 18. This community is approximately 1.6 ha in area with dams located 170 m to the south-east and 500 m to the north-west. The second area is located on the eastern boundary of Lot 39 in an area where three vegetation communities converge (i.e. narrow-leaved ironbark woodland, rosewood woodland and brigalow woodland). These areas are all located on stony colluvium which have washed down from the adjacent ironstone jump-up to the east. A dam is located approximately 350 m west south-west of the habitat and is connected to the site by a narrow, brigalow-fringed watercourse. Surveys in this area confirmed the presence of two squatter pigeons which were flushed from the ground and flew south-west along the watercourse. No other suitable squatter pigeon breeding habitat was identified in the project area.

Dispersal habitat for the squatter pigeon consists of forest or woodland between patches of foraging or breeding habitat and suitable waterbodies. Suitable water resources for squatter pigeon occur within the project area and primarily take the form of constructed in-stream dams. There are also numerous other dams located within 3 km the project area and in the same watercourses that flow through the project area (Figure 7). Squatter pigeon would therefore primarily utilise watercourse corridors for movement particularly those with wooded riparian areas. The most important of these watercourses from a dispersal perspective are presented in Figure 7.

LEGEND

- ▭ Project area
- Cadastral boundaries
- ★ Threatened species records - field
- ★ Ornamental snake
- ★ Solanum johnsonianum
- ★ Squatter pigeon
- Water sources
- Onsite
- 0-1 km from boundary
- ▭ Squatter pigeon watercourses
- ▭ Rehabilitation value
- ▭ Movement corridor
- ▭ Wetland lines
- ▭ Minor
- ▭ Squatter pigeon habitat
- ▭ Ornamental Snake Habitat



Credits:
 Derived from Watercourse lines - Queensland © State of Queensland (Department of Resources) 2021, Wetland data - version 5 - wetland lines - Queensland © State of Queensland (Department of Environment and Science) 2020, Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Coordinate system: GDA94 / MGA zone 56 EPSG:28356

CLIENT: EDIFY ENERGY

FIGURE 7: THREATENED SPECIES HABITAT MAPPING

0 1 2 3 4 5 km

1:28,000

DOCUMENT: E:\Terra Solutions\PROJECTS -

DATE: 09/03/2023

AUTHOR: AF

4.10 Migratory fauna

The PMST report returned 15 migratory fauna species, two of which were not assessed by RPS (2018). The species being assessed here for the first time are:

- Fork-tailed swift (*Apus pacificus*)
- Estuarine crocodile (*Crocodylus porosus*)

The fork-tailed swift is a non-breeding migrant from Asia to all states and territories of Australia (Higgins 1999). The species is found across a range of habitats, from inland plains to wooded areas, where it is exclusively aerial. They also occur over settled areas, including towns, urban areas and cities (DAWE 2022b). Due to the broad distribution of the species, its exclusively aerial nature and capacity to utilise the airspace above developed areas the proposed action will not impact the species.

Estuarine crocodile occurs in Australian coastal waters, estuaries, lakes, inland swamps and marshes (Webb et al. 1987) from Rockhampton in Queensland through coastal Northern Territory and to around Broome in Western Australia. Water needs to be deep enough to submerge and requires areas of open sand or mud banks for thermoregulation (Cogger, 2000). Preferred nesting habitats include floating rafts of vegetation and freshwater wetlands and riverbanks that are not influenced by the tides (Webb et al. 1987). The project area does not contain suitable habitat for estuarine crocodile.

The remaining species were previously assessed by RPS (2018) and are unlikely to be impacted by the proposed action.

5 CONCLUSION

The fauna habitat values of the project area and surrounds have been substantially altered by a history of vegetation clearing, grazing and pasture development with *U.mozambiquensis*. The limited contemporary habitat values are the product of long-term and cyclical habitat modification typical of agricultural landscapes which continue to operate in the area.

These activities have caused a substantial reduction in the available habitat types and significant simplification of flora and fauna habitat structure. This is evident within the project which consists of widespread cleared areas and small areas of native on elevated sites and lining some watercourses.

The simplification of habitats from a structurally complex remnant community into one with depauperate habitat values has undoubtedly impacted the diversity and abundance of native biota through:

- Provision of favourable conditions for introduced flora and fauna including predatory species such as cats and foxes.
- A long history of cattle access and pasture development resulting in altered fire regimes, trampling of ground layer vegetation and removal of key microhabitats such as coarse woody debris that are required by a range of species.
- The replacement of a diverse ground layer of native perennial and annual grasses and herbs with a monoculture of pasture grass with the primary purpose of cattle fattening.

Given the historical and contemporary disturbance to habitat values within the project area the site was expected to yield a low diversity of taxa. This premise was supported by the field survey which confirmed that the species present consisted primarily of species that are widespread and adaptable to disturbance.

The processes that have impacted species diversity more broadly have also reduced the habitat availability and quality for the target species (ornamental snake, squatter pigeon, *Solanum johnsonianum*, *Solanum dissectum*).

The detection of five ornamental snakes within the project area indicates that in this location, the species is highly resilient to the degraded habitat (i.e. minimal surface microhabitats and lack of canopy) and threatening processes experience over the last 70 years (cattle, blading of soils). The time between significant periods of soil disturbance appear to have been sufficient for population recovery from a source population or at least some individuals survived in-situ.

Squatter pigeon forages and nests in areas with a sparse cover of native tussock grasses and forbs. Naturally this type of habitat may have been more widespread in the project area but since the development and spread of sabi grass pastures it is now restricted to small areas within some watercourses and in elevated areas with shallow, stony surface soils (refer Section 4.10.2 and Figure 7). Three squatter pigeons were detected during targeted surveys, all of which were located on Lot 39 amongst a patchy ground layer of native tussock grasses and forbs.

S.johnsonianum and *S.dissectum* grow in brigalow woodland on solodic clay soils. Previous studies have confirmed that the species does not persist in cleared brigalow habitat and does not grow in otherwise suitable habitat where the exotic grass cover is present. Habitat for these species was found to be highly restricted to certain watercourses that were not subject to exotic grass invasion. Targeted surveys successfully confirmed the presence of *Solanum johnsonianum* within the project area which occurred as an isolated population of 72 plants located in the southern extent of Lot 39 (Figure 7).

Other MNES occurring within the project area consisted of approximately 78.7 ha of brigalow woodland. A complete assessment of the diagnostic characteristics and condition thresholds was not undertaken to confirm classification as the Brigalow (*Acacia harpophylla* dominant and co-dominant) listed threatened ecological community under the EPBC Act (Figure 6) as the proponent seeks to avoid these woodlands. Consequently it is assumed that all brigalow woodlands identified are the TEC.

6 REFERENCES

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Appendix A

EPBC Act Protected Matters Report



EPBC Act Protected Matters Report

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

Report created: 08-Apr-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

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

| | |
|---|------|
| World Heritage Properties: | None |
| National Heritage Places: | None |
| Wetlands of International Importance (Ramsar) | None |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 5 |
| Listed Threatened Species: | 38 |
| Listed Migratory Species: | 15 |

Other Matters Protected by the EPBC Act

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

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

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

| | |
|---|------|
| Commonwealth Lands: | None |
| Commonwealth Heritage Places: | None |
| Listed Marine Species: | 20 |
| Whales and Other Cetaceans: | None |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Australian Marine Parks: | None |
| Habitat Critical to the Survival of Marine Turtles: | None |

Extra Information

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

| | |
|---|------|
| State and Territory Reserves: | 1 |
| Regional Forest Agreements: | None |
| Nationally Important Wetlands: | None |
| EPBC Act Referrals: | 5 |
| Key Ecological Features (Marine): | None |
| Biologically Important Areas: | None |
| Bioregional Assessments: | None |
| Geological and Bioregional Assessments: | None |

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[[Resource Information](#)]

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

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

| Community Name | Threatened Category | Presence Text | Buffer Status |
|--|---------------------|---------------------------------------|-----------------|
| Brigalow (Acacia harpophylla dominant and co-dominant) | Endangered | Community known to occur within area | In feature area |
| Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions | Endangered | Community likely to occur within area | In feature area |
| Poplar Box Grassy Woodland on Alluvial Plains | Endangered | Community likely to occur within area | In feature area |
| Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions | Endangered | Community likely to occur within area | In feature area |
| Weeping Myall Woodlands | Endangered | Community likely to occur within area | In feature area |

Listed Threatened Species

[[Resource Information](#)]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|--|-----------------------|--|---------------------|
| BIRD | | | |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area | In feature area |
| Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714] | Endangered | Species or species habitat may occur within area | In buffer area only |
| Erythrotriorchis radiatus Red Goshawk [942] | Vulnerable | Species or species habitat likely to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|-----------------------|--|---------------------|
| Falco hypoleucos Grey Falcon [929] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Geophaps scripta scripta Squatter Pigeon (southern) [64440] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Grantiella picta Painted Honeyeater [470] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| Hirundapus caudacutus White-throated Needletail [682] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Neochmia ruficauda ruficauda Star Finch (eastern), Star Finch (southern) [26027] | Endangered | Species or species habitat likely to occur within area | In feature area |
| Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area | In feature area |
| Poephila cincta cincta Southern Black-throated Finch [64447] | Endangered | Species or species habitat may occur within area | In feature area |
| Rostratula australis Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area | In feature area |
| Turnix melanogaster Black-breasted Button-quail [923] | Vulnerable | Species or species habitat may occur within area | In feature area |
| MAMMAL | | | |
| Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331] | Endangered | Species or species habitat likely to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---------------------|--|---------------------|
| Macroderma gigas Ghost Bat [174] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Petauroides volans Greater Glider [254] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104] | Endangered | Species or species habitat likely to occur within area | In feature area |
| Pteropus poliocephalus Grey-headed Flying-fox [186] | Vulnerable | Foraging, feeding or related behaviour may occur within area | In feature area |
| PLANT | | | |
| Arthraxon hispidus Hairy-joint Grass [9338] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| Bulbophyllum globuliforme Miniature Moss-orchid, Hoop Pine Orchid [6649] | Vulnerable | Species or species habitat likely to occur within area | In buffer area only |
| Cadellia pentastylis Ooline [9828] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Cossinia australiana Cossinia [3066] | Endangered | Species or species habitat likely to occur within area | In feature area |
| Cycas megacarpa [55794] | Endangered | Species or species habitat likely to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|--|-----------------------|--|---------------------|
| Dichanthium queenslandicum King Blue-grass [5481] | Endangered | Species or species habitat may occur within area | In buffer area only |
| Dichanthium setosum bluegrass [14159] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Eucalyptus raveretiana Black Ironbox [16344] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326] | Vulnerable | Species or species habitat known to occur within area | In buffer area only |
| Samadera bidwillii Quassia [29708] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Solanum dissectum [75720] | Endangered | Species or species habitat known to occur within area | In feature area |
| Solanum johnsonianum [84820] | Endangered | Species or species habitat known to occur within area | In feature area |
| REPTILE | | | |
| Delma torquata Adorned Delma, Collared Delma [1656] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Denisonia maculata Ornamental Snake [1193] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Egernia rugosa Yakka Skink [1420] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Elseya albagula Southern Snapping Turtle, White-throated Snapping Turtle [81648] | Critically Endangered | Species or species habitat likely to occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|--|---------------------|--|-----------------|
| Furina dunmalli Dunmall's Snake [59254] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Rheodytes leukops Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle, White-eyed River Diver [1761] | Vulnerable | Species or species habitat likely to occur within area | In feature area |

Listed Migratory Species [[Resource Information](#)]

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---------------------|--|-----------------|
| Migratory Marine Birds | | | |
| Apus pacificus Fork-tailed Swift [678] | | Species or species habitat likely to occur within area | In feature area |

Migratory Marine Species

| | | | |
|--|--|--|-----------------|
| Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774] | | Species or species habitat likely to occur within area | In feature area |
|--|--|--|-----------------|

Migratory Terrestrial Species

| | | | |
|--|------------|---|-----------------|
| Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651] | | Species or species habitat may occur within area | In feature area |
| Hirundapus caudacutus White-throated Needletail [682] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Monarcha melanopsis Black-faced Monarch [609] | | Species or species habitat may occur within area | In feature area |
| Motacilla flava Yellow Wagtail [644] | | Species or species habitat may occur within area | In feature area |
| Myiagra cyanoleuca Satin Flycatcher [612] | | Species or species habitat known to occur within area | In feature area |
| Rhipidura rufifrons Rufous Fantail [592] | | Species or species habitat known to occur within area | In feature area |

Migratory Wetlands Species

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|-----------------------|--|---------------------|
| Actitis hypoleucos Common Sandpiper [59309] | | Species or species habitat may occur within area | In feature area |
| Calidris acuminata Sharp-tailed Sandpiper [874] | | Species or species habitat may occur within area | In feature area |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area | In feature area |
| Calidris melanotos Pectoral Sandpiper [858] | | Species or species habitat may occur within area | In feature area |
| Gallinago hardwickii Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area | In feature area |
| Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area | In feature area |
| Pandion haliaetus Osprey [952] | | Species or species habitat likely to occur within area | In buffer area only |

Other Matters Protected by the EPBC Act

| Listed Marine Species | | | [Resource Information] |
|--|---------------------|--|--------------------------|
| Scientific Name | Threatened Category | Presence Text | Buffer Status |
| Bird | | | |
| Actitis hypoleucos Common Sandpiper [59309] | | Species or species habitat may occur within area | In feature area |
| Anseranas semipalmata Magpie Goose [978] | | Species or species habitat may occur within area overfly marine area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|-----------------------|--|-----------------|
| Apus pacificus Fork-tailed Swift [678] | | Species or species habitat likely to occur within area overfly marine area | In feature area |
| Bubulcus ibis as Ardea ibis Cattle Egret [66521] | | Species or species habitat may occur within area overfly marine area | In feature area |
| Calidris acuminata Sharp-tailed Sandpiper [874] | | Species or species habitat may occur within area | In feature area |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area overfly marine area | In feature area |
| Calidris melanotos Pectoral Sandpiper [858] | | Species or species habitat may occur within area overfly marine area | In feature area |
| Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425] | | Species or species habitat likely to occur within area overfly marine area | In feature area |
| Gallinago hardwickii Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area overfly marine area | In feature area |
| Haliaeetus leucogaster White-bellied Sea-Eagle [943] | | Species or species habitat likely to occur within area | In feature area |
| Hirundapus caudacutus White-throated Needletail [682] | Vulnerable | Species or species habitat may occur within area overfly marine area | In feature area |
| Merops ornatus Rainbow Bee-eater [670] | | Species or species habitat may occur within area overfly marine area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|--|-----------------------|--|---------------------|
| Monarcha melanopsis Black-faced Monarch [609] | | Species or species habitat may occur within area overfly marine area | In feature area |
| Motacilla flava Yellow Wagtail [644] | | Species or species habitat may occur within area overfly marine area | In feature area |
| Myiagra cyanoleuca Satin Flycatcher [612] | | Species or species habitat known to occur within area overfly marine area | In feature area |
| Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area | In feature area |
| Pandion haliaetus Osprey [952] | | Species or species habitat likely to occur within area | In buffer area only |
| Rhipidura rufifrons Rufous Fantail [592] | | Species or species habitat known to occur within area overfly marine area | In feature area |
| Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area overfly marine area | In feature area |

Reptile

| | | | |
|--|--|--|-----------------|
| Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774] | | Species or species habitat likely to occur within area | In feature area |
|--|--|--|-----------------|

Extra Information

| State and Territory Reserves | | | [Resource Information] |
|------------------------------|-------------------|-------|--|
| Protected Area Name | Reserve Type | State | Buffer Status |
| Bell Creek | Conservation Park | QLD | In buffer area only |

| EPBC Act Referrals | [Resource Information] |
|--------------------|--|
|--------------------|--|

| Title of referral | Reference | Referral Outcome | Assessment Status | Buffer Status |
|---|-----------|-----------------------|-----------------------------|---------------------|
| Controlled action | | | | |
| Callide Wind Farm | 2021/9057 | Controlled Action | Further Information Request | In buffer area only |
| Construct and operate 447km high pressure gas transmission pipeline | 2009/4976 | Controlled Action | Post-Approval | In buffer area only |
| Smoky Creek Solar Photovoltaic Farm | 2021/9030 | Controlled Action | Further Information Request | In feature area |
| ZeroGen Integrated Gasification Combined Cycle Power Plant and CO2 Capture, Transport and Storage | 2009/5195 | Controlled Action | Completed | In buffer area only |
| Not controlled action | | | | |
| Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia | 2015/7522 | Not Controlled Action | Completed | In feature area |

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact Us](#) page.

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Appendix B

WildNet Search Results



WildNet species list

Search Criteria: Species List for a Specified Point

Species: All

Type: All

Queensland status: All

Records: All

Date: Since 1980

Latitude: -24.0443

Longitude: 150.4092

Distance: 15

Email: anton@terrasolutions.com.au

Date submitted: Friday 08 Apr 2022 14:05:15

Date extracted: Friday 08 Apr 2022 14:10:02

The number of records retrieved = 295

Disclaimer

Information presented on this product is distributed by the Queensland Government as an information source only. While every care is taken to ensure the accuracy of this data, the State of Queensland makes no statements, representations or warranties about the accuracy, reliability, completeness or suitability of any information contained in this product.

The State of Queensland disclaims all responsibility for information contained in this product and all liability (including liability in negligence)

for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

Information about your Species lists request is logged for quality assurance, user support and product enhancement purposes only.

The information provided should be appropriately acknowledged as being derived from WildNet database when it is used. As the WildNet Program is still in a process of collating and vetting data, it is possible the information given is not complete. Go to the WildNet database webpage

(<https://www.qld.gov.au/environment/plants-animals/species-information/wildnet>) to find out more about WildNet and where to access other WildNet information products approved for publication. Feedback about WildNet species lists should be emailed to wildlife.online@des.qld.gov.au.

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|------------|-----------------|--------------------------------------|--------------------------------------|---|---|---|---------|
| animals | amphibians | Bufo | <i>Rhinella marina</i> | cane toad | Y | | | 2 |
| animals | amphibians | Hylidae | <i>Litoria caerulea</i> | common green treefrog | | C | | 2 |
| animals | amphibians | Limnodynastidae | <i>Platyplectrum ornatum</i> | ornate burrowing frog | | C | | 2 |
| animals | birds | Acanthizidae | <i>Acanthiza chrysorrhoa</i> | yellow-rumped thornbill | | C | | 1 |
| animals | birds | Acanthizidae | <i>Acanthiza nana</i> | yellow thornbill | | C | | 2 |
| animals | birds | Acanthizidae | <i>Acanthiza pusilla</i> | brown thornbill | | C | | 2 |
| animals | birds | Acanthizidae | <i>Gerygone olivacea</i> | white-throated gerygone | | C | | 2 |
| animals | birds | Acanthizidae | <i>Sericornis frontalis</i> | white-browed scrubwren | | C | | 2 |
| animals | birds | Acanthizidae | <i>Smicrornis brevirostris</i> | weebill | | C | | 1 |
| animals | birds | Accipitridae | <i>Aquila audax</i> | wedge-tailed eagle | | C | | 2 |
| animals | birds | Accipitridae | <i>Aviceda subcristata</i> | Pacific baza | | C | | 1 |
| animals | birds | Accipitridae | <i>Elanus axillaris</i> | black-shouldered kite | | C | | 1 |
| animals | birds | Accipitridae | <i>Haliaeetus leucogaster</i> | white-bellied sea-eagle | | C | | 1 |
| animals | birds | Accipitridae | <i>Haliaastur sphenurus</i> | whistling kite | | C | | 1 |
| animals | birds | Alcedinidae | <i>Ceyx azureus</i> | azure kingfisher | | C | | 1 |
| animals | birds | Anatidae | <i>Anas superciliosa</i> | Pacific black duck | | C | | 2 |
| animals | birds | Anatidae | <i>Nettion coromandelianus</i> | cotton pygmy-goose | | C | | 1 |
| animals | birds | Anhinga | <i>Anhinga novaeollandiae</i> | Australasian darter | | C | | 3 |
| animals | birds | Ardeidae | <i>Ardea intermedia</i> | intermediate egret | | C | | 1 |
| animals | birds | Ardeidae | <i>Egretta novaeollandiae</i> | white-faced heron | | C | | 3 |
| animals | birds | Artamidae | <i>Artamus cinereus</i> | black-faced woodswallow | | C | | 2 |
| animals | birds | Artamidae | <i>Cracticus nigrogularis</i> | pie'd butcherbird | | C | | 3 |
| animals | birds | Artamidae | <i>Gymnorhina tibicen</i> | Australian magpie | | C | | 4 |
| animals | birds | Artamidae | <i>Strepera graculina</i> | pie'd currawong | | C | | 4 |
| animals | birds | Cacatuidae | <i>Cacatua galerita</i> | sulphur-crested cockatoo | | C | | 5 |
| animals | birds | Cacatuidae | <i>Calyptorhynchus banksii</i> | red-tailed black-cockatoo | | C | | 2 |
| animals | birds | Cacatuidae | <i>Eolophus roseicapilla</i> | galah | | C | | 1 |
| animals | birds | Cacatuidae | <i>Nymphicus hollandicus</i> | cockatiel | | C | | 1 |
| animals | birds | Campephagidae | <i>Coracina novaeollandiae</i> | black-faced cuckoo-shrike | | C | | 3 |
| animals | birds | Campephagidae | <i>Lalage leucomela</i> | varied triller | | C | | 2 |
| animals | birds | Campephagidae | <i>Lalage tricolor</i> | white-winged triller | | C | | 3 |
| animals | birds | Charadriidae | <i>Vanellus miles novaeollandiae</i> | masked lapwing (southern subspecies) | | C | | 2 |
| animals | birds | Columbidae | <i>Geopelia humeralis</i> | bar-shouldered dove | | C | | 2 |
| animals | birds | Columbidae | <i>Geopelia placida</i> | peaceful dove | | C | | 4 |
| animals | birds | Columbidae | <i>Ocyphaps lophotes</i> | crested pigeon | | C | | 3 |
| animals | birds | Columbidae | <i>Ptilinopus superbus</i> | superb fruit-dove | | C | | 2 |
| animals | birds | Coraciidae | <i>Eurystomus orientalis</i> | dollarbird | | C | | 1 |
| animals | birds | Corcoracidae | <i>Corcorax melanorhamphos</i> | white-winged chough | | C | | 3 |
| animals | birds | Corvidae | <i>Corvus orru</i> | Torresian crow | | C | | 4 |
| animals | birds | Cuculidae | <i>Centropus phasianinus</i> | pheasant coucal | | C | | 2 |
| animals | birds | Cuculidae | <i>Chalcites basalis</i> | Horsfield's bronze-cuckoo | | C | | 1 |
| animals | birds | Cuculidae | <i>Chalcites lucidus</i> | shining bronze-cuckoo | | C | | 1 |
| animals | birds | Cuculidae | <i>Eudynamys orientalis</i> | eastern koel | | C | | 2 |
| animals | birds | Cuculidae | <i>Scythrops novaeollandiae</i> | channel-billed cuckoo | | C | | 2 |
| animals | birds | Dicruridae | <i>Dicrurus bracteatus</i> | spangled drongo | | C | | 3 |
| animals | birds | Estrildidae | <i>Taeniopygia bichenovii</i> | double-barred finch | | C | | 4 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|-------|-------------------|--------------------------------------|---------------------------|---|----|---|---------|
| animals | birds | Eurostopodidae | <i>Eurostopodus argus</i> | spotted nightjar | | C | | 2 |
| animals | birds | Falconidae | <i>Falco berigora</i> | brown falcon | | C | | 3 |
| animals | birds | Falconidae | <i>Falco cenchroides</i> | nankeen kestrel | | C | | 4 |
| animals | birds | Halcyonidae | <i>Dacelo leachii</i> | blue-winged kookaburra | | C | | 1 |
| animals | birds | Halcyonidae | <i>Dacelo novaeguineae</i> | laughing kookaburra | | C | | 3 |
| animals | birds | Halcyonidae | <i>Todiramphus macleayi</i> | forest kingfisher | | C | | 3 |
| animals | birds | Halcyonidae | <i>Todiramphus sanctus</i> | sacred kingfisher | | C | | 1 |
| animals | birds | Hirundinidae | <i>Petrochelidon nigricans</i> | tree martin | | C | | 1 |
| animals | birds | Maluridae | <i>Malurus melanocephalus</i> | red-backed fairy-wren | | C | | 5 |
| animals | birds | Megaluridae | <i>Poodytes gramineus</i> | little grassbird | | C | | 1 |
| animals | birds | Megapodiidae | <i>Alectura lathamii</i> | Australian brush-turkey | | C | | 2 |
| animals | birds | Meliphagidae | <i>Lichmera indistincta</i> | brown honeyeater | | C | | 1 |
| animals | birds | Meliphagidae | <i>Manorina melanocephala</i> | noisy miner | | C | | 1 |
| animals | birds | Meliphagidae | <i>Meliphaga lewinii</i> | Lewin's honeyeater | | C | | 3 |
| animals | birds | Meliphagidae | <i>Melithreptus albogularis</i> | white-throated honeyeater | | C | | 1 |
| animals | birds | Meliphagidae | <i>Philemon citreogularis</i> | little friarbird | | C | | 1 |
| animals | birds | Meliphagidae | <i>Philemon corniculatus</i> | noisy friarbird | | C | | 1 |
| animals | birds | Meropidae | <i>Merops ornatus</i> | rainbow bee-eater | | C | | 3 |
| animals | birds | Monarchidae | <i>Carteromis leucotis</i> | white-eared monarch | | C | | 2 |
| animals | birds | Monarchidae | <i>Grallina cyanoleuca</i> | magpie-lark | | C | | 1 |
| animals | birds | Monarchidae | <i>Myiagra cyanoleuca</i> | satin flycatcher | | SL | | 2 |
| animals | birds | Monarchidae | <i>Myiagra inquieta</i> | restless flycatcher | | C | | 1 |
| animals | birds | Motacillidae | <i>Anthus novaeseelandiae</i> | Australasian pipit | | C | | 2 |
| animals | birds | Nectariniidae | <i>Dicaeum hirundinaceum</i> | mistletoebird | | C | | 4 |
| animals | birds | Oriolidae | <i>Oriolus sagittatus</i> | olive-backed oriole | | C | | 2 |
| animals | birds | Oriolidae | <i>Sphecotheres vieilloti</i> | Australasian figbird | | C | | 3 |
| animals | birds | Otididae | <i>Ardeotis australis</i> | Australian bustard | | C | | 3 |
| animals | birds | Pachycephalidae | <i>Colluricincla harmonica</i> | grey shrike-thrush | | C | | 1 |
| animals | birds | Pachycephalidae | <i>Colluricincla megarhyncha</i> | little shrike-thrush | | C | | 2 |
| animals | birds | Pachycephalidae | <i>Pachycephala pectoralis</i> | golden whistler | | C | | 2 |
| animals | birds | Pachycephalidae | <i>Pachycephala rufiventris</i> | rufous whistler | | C | | 4 |
| animals | birds | Pardalotidae | <i>Pardalotus striatus</i> | striated pardalote | | C | | 5 |
| animals | birds | Pelecanidae | <i>Pelecanus conspicillatus</i> | Australian pelican | | C | | 1 |
| animals | birds | Petroicidae | <i>Petroica rosea</i> | rose robin | | C | | 2 |
| animals | birds | Phalacrocoracidae | <i>Microcarbo melanoleucos</i> | little pied cormorant | | C | | 1 |
| animals | birds | Phalacrocoracidae | <i>Phalacrocorax varius</i> | pied cormorant | | C | | 1 |
| animals | birds | Podargidae | <i>Podargus strigoides</i> | tawny frogmouth | | C | | 2 |
| animals | birds | Podicipedidae | <i>Tachybaptus novaehollandiae</i> | Australasian grebe | | C | | 1 |
| animals | birds | Pomatostomidae | <i>Pomatostomus temporalis</i> | grey-crowned babbler | | C | | 1 |
| animals | birds | Psittacidae | <i>Alisterus scapularis</i> | Australian king-parrot | | C | | 2 |
| animals | birds | Psittacidae | <i>Aprosmictus erythropterus</i> | red-winged parrot | | C | | 3 |
| animals | birds | Psittacidae | <i>Platycercus adscitus</i> | pale-headed rosella | | C | | 2 |
| animals | birds | Psittacidae | <i>Trichoglossus chlorolepidotus</i> | scaly-breasted lorikeet | | C | | 2 |
| animals | birds | Psittacidae | <i>Trichoglossus moluccanus</i> | rainbow lorikeet | | C | | 3 |
| animals | birds | Rallidae | <i>Gallinula tenebrosa</i> | dusky moorhen | | C | | 1 |
| animals | birds | Rhipiduridae | <i>Rhipidura albiscapa</i> | grey fantail | | C | | 6 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|----------------|------------------|--|--------------------------------|---|----|---|---------|
| animals | birds | Rhipiduridae | <i>Rhipidura leucophrys</i> | willie wagtail | | C | | 7 |
| animals | birds | Rhipiduridae | <i>Rhipidura rufifrons</i> | rufous fantail | | SL | | 3 |
| animals | birds | Strigidae | <i>Ninox boobook</i> | southern boobook | | C | | 2 |
| animals | birds | Timaliidae | <i>Zosterops lateralis</i> | silveryeye | | C | | 3 |
| animals | mammals | Emballonuridae | <i>Saccolaimus flaviventris</i> | yellow-bellied sheath-tail bat | | C | | 1 |
| animals | mammals | Macropodidae | <i>Notamacropus dorsalis</i> | black-striped wallaby | | C | | 2 |
| animals | mammals | Macropodidae | <i>Wallabia bicolor</i> | swamp wallaby | | C | | 2 |
| animals | mammals | Phalangeridae | <i>Trichosurus vulpecula</i> | common brushtail possum | | C | | 2 |
| animals | mammals | Potorodidae | <i>Aepyrymnus rufescens</i> | rufous bettong | | C | | 2 |
| animals | mammals | Pseudocheiridae | <i>Pseudocheirus peregrinus</i> | common ringtail possum | | C | | 2 |
| animals | mammals | Pteropodidae | <i>Pteropus alecto</i> | black flying-fox | | C | | 2 |
| animals | reptiles | Diplodactylidae | <i>Oedura tryoni</i> | southern spotted velvet gecko | | C | | 4 |
| animals | reptiles | Diplodactylidae | <i>Strophurus williamsi</i> | soft-spined gecko | | C | | 2 |
| animals | reptiles | Elapidae | <i>Demansia psammophis</i> | yellow-faced whipsnake | | C | | 2 |
| animals | reptiles | Gekkonidae | <i>Heteronotia binoei</i> | Bynoe's gecko | | C | | 2 |
| animals | reptiles | Scincidae | <i>Carlia pectoralis sensu lato</i> | | | C | | 2 |
| animals | reptiles | Scincidae | <i>Carlia schmeitzii</i> | | | C | | 2 |
| animals | reptiles | Scincidae | <i>Cryptoblepharus pulcher pulcher</i> | robust rainbow-skink | | C | | 2 |
| animals | reptiles | Scincidae | <i>Ctenotus spaldingi</i> | elegant snake-eyed skink | | C | | 2 |
| animals | reptiles | Scincidae | <i>Ctenotus taeniolatus</i> | straight-browed ctenotus | | C | | 2 |
| animals | reptiles | Scincidae | <i>Ctenotus taeniolatus</i> | copper-tailed skink | | C | | 2 |
| animals | reptiles | Scincidae | <i>Liburnascincus mundivensis</i> | outcrop rainbow-skink | | C | | 2 |
| animals | reptiles | Scincidae | <i>Morethia taenioleura</i> | fire-tailed skink | | C | | 2 |
| fungi | Agaricomycetes | Polyporaceae | <i>Pycnoporus coccineus</i> | | | C | | 1/1 |
| plants | land plants | Aizoaceae | <i>Zaleya galericulata subsp. galericulata</i> | | | C | | 1/1 |
| plants | land plants | Anacardiaceae | <i>Euroschinus falcatus</i> | Burdekin plum | | C | | 1 |
| plants | land plants | Anacardiaceae | <i>Pleiogynium timorense</i> | | | C | | 1 |
| plants | land plants | Anacardiaceae | <i>Schinus terebinthifolius</i> | | | C | | 1 |
| plants | land plants | Annonaceae | <i>Melodorum leichhardtii</i> | | Y | C | | 1/1 |
| plants | land plants | Apocynaceae | <i>Alstonia constricta</i> | bitterbark | | C | | 1 |
| plants | land plants | Apocynaceae | <i>Alyxia magnifolia</i> | | | C | | 1 |
| plants | land plants | Apocynaceae | <i>Alyxia ruscifolia</i> | | | C | | 1 |
| plants | land plants | Apocynaceae | <i>Carissa ovata</i> | currantbush | | C | | 1 |
| plants | land plants | Apocynaceae | <i>Cascabela thevetia</i> | yellow oleander | Y | C | | 2/2 |
| plants | land plants | Apocynaceae | <i>Cryptostegia grandiflora</i> | rubber vine | Y | C | | 4/3 |
| plants | land plants | Apocynaceae | <i>Hoya australis</i> | | | C | | 1 |
| plants | land plants | Apocynaceae | <i>Parsonia straminea</i> | monkey rope | | C | | 1 |
| plants | land plants | Apocynaceae | <i>Parsonia velutina</i> | hairy silkpod | | C | | 1 |
| plants | land plants | Apocynaceae | <i>Secamone elliptica</i> | | | C | | 1 |
| plants | land plants | Aponogetonaceae | <i>Aponogeton queenlandicus</i> | | | SL | | 1/1 |
| plants | land plants | Araliaceae | <i>Polyscias elegans</i> | celery wood | | C | | 2/1 |
| plants | land plants | Araucariaceae | <i>Araucaria cunninghamii</i> | hoop pine | | C | | 1 |
| plants | land plants | Aristolochiaceae | <i>Aristolochia elegans</i> | calico-flower | Y | C | | 1/1 |
| plants | land plants | Asteraceae | <i>Calotis dentex</i> | white burr daisy | Y | C | | 1/1 |
| plants | land plants | Asteraceae | <i>Eclipta prostrata</i> | white eclipta | Y | C | | 1/1 |
| plants | land plants | Asteraceae | <i>Gnaphalium polycaulon</i> | | | C | | 1/1 |
| plants | land plants | Asteraceae | <i>Olearia canescens</i> | | | C | | 1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|-------------|-------------------|--|-----------------------|---|---|---|---------|
| plants | land plants | Asteraceae | <i>Ozothamnus cassinioides</i> | | | C | | 1 |
| plants | land plants | Asteraceae | <i>Ozothamnus diosmifolius</i> | white dogwood | | C | | 1 |
| plants | land plants | Asteraceae | <i>Senecio brigalowensis</i> | | | C | | 2/2 |
| plants | land plants | Asteraceae | <i>Senecio quadridentatus</i> | cotton fireweed | | C | | 1/1 |
| plants | land plants | Asteraceae | <i>Synedrellopsis grisebachii</i> | | Y | C | | 1/1 |
| plants | land plants | Boraginaceae | <i>Ehretia membranifolia</i> | weeping koda | | C | | 1 |
| plants | land plants | Brassicaceae | <i>Rorippa eustylis</i> | | | C | | 1/1 |
| plants | land plants | Brassicaceae | <i>Sisymbrium thellungii</i> | African turnip-weed | Y | C | | 1/1 |
| plants | land plants | Byttneriaceae | <i>Seringia collina</i> | | | C | | 1/1 |
| plants | land plants | Cactaceae | <i>Opuntia stricta</i> | | Y | C | | 1 |
| plants | land plants | Capparaceae | <i>Capparis arborea</i> | brush caper berry | | C | | 1 |
| plants | land plants | Capparaceae | <i>Capparis shanesiana</i> | | | C | | 1/1 |
| plants | land plants | Casuarinaceae | <i>Allocasuarina luehmannii</i> | bull oak | | C | | 1 |
| plants | land plants | Celastraceae | <i>Denhamia oleaster</i> | | | C | | 1 |
| plants | land plants | Celastraceae | <i>Elaeodendron australe</i> | | | C | | 1 |
| plants | land plants | Celastraceae | <i>Siphonodon australis</i> | ivorywood | | C | | 1 |
| plants | land plants | Chenopodiaceae | <i>Dysphania glomulifera</i> subsp. <i>glomulifera</i> | | | C | | 1/1 |
| plants | land plants | Combretaceae | <i>Terminalia porphyrocarpa</i> | | | C | | 1 |
| plants | land plants | Cucurbitaceae | <i>Cucumis dipsaceus</i> | star cucumber | Y | C | | 1/1 |
| plants | land plants | Cucurbitaceae | <i>Sicyos australis</i> | | | C | | 1 |
| plants | land plants | Cyperaceae | <i>Bolboschoenus fluviatilis</i> | | | C | | 1/1 |
| plants | land plants | Cyperaceae | <i>Bulbostylis barbata</i> | | | C | | 1/1 |
| plants | land plants | Cyperaceae | <i>Eleocharis pallens</i> | pale spikerush | | C | | 1/1 |
| plants | land plants | Dioscoreaceae | <i>Dioscorea transversa</i> | native yam | | C | | 1 |
| plants | land plants | Ebenaceae | <i>Diospyros fasciculosa</i> | grey ebony | | C | | 2 |
| plants | land plants | Ebenaceae | <i>Diospyros geminata</i> | scaly ebony | | C | | 1 |
| plants | land plants | Ebenaceae | <i>Diospyros humilis</i> | small-leaved ebony | | C | | 2/1 |
| plants | land plants | Erythroxylaceae | <i>Erythroxylum australe</i> | cocaine tree | Y | C | | 1 |
| plants | land plants | Euphorbiaceae | <i>Acalypha capillipes</i> | small-leaved acalypha | | C | | 1 |
| plants | land plants | Euphorbiaceae | <i>Croton insularis</i> | Queensland cascarilla | | C | | 1 |
| plants | land plants | Euphorbiaceae | <i>Croton phebalioides</i> | narrow-leaved croton | | C | | 1 |
| plants | land plants | Euphorbiaceae | <i>Excoecaria dallachyana</i> | scrub poison tree | | C | | 1 |
| plants | land plants | Euphorbiaceae | <i>Ricinocarpos ledifolius</i> | scrub wedding bush | | C | | 1/1 |
| plants | land plants | Goodeniaceae | <i>Goodenia rosulata</i> | | | C | | 1/1 |
| plants | land plants | Goodeniaceae | <i>Goodenia rotundifolia</i> | | | C | | 1 |
| plants | land plants | Hemerocallidaceae | <i>Geitonoplesium cymosum</i> | scrambling lily | | C | | 1 |
| plants | land plants | Hernandiaceae | <i>Gyrocarpus americanus</i> | | | C | | 1 |
| plants | land plants | Lamiaceae | <i>Basilicum polystachyon</i> | | | C | | 1/1 |
| plants | land plants | Lamiaceae | <i>Clerodendrum floribundum</i> | | | C | | 1 |
| plants | land plants | Lamiaceae | <i>Glossocarya hemiderma</i> | | | C | | 2 |
| plants | land plants | Lauraceae | <i>Cassytha filiformis</i> | dodder laurel | | C | | 1 |
| plants | land plants | Leguminosae | <i>Acacia acradenia</i> | | | C | | 1 |
| plants | land plants | Leguminosae | <i>Acacia aulacocarpa</i> | | | C | | 1 |
| plants | land plants | Leguminosae | <i>Acacia crassa</i> | | | C | | 1 |
| plants | land plants | Leguminosae | <i>Acacia decora</i> | pretty wattle | | C | | 1/1 |
| plants | land plants | Leguminosae | <i>Acacia fasciculifera</i> | scaly bark | | C | | 1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|-------------|-----------------|---|---------------------------|---|----|---|---------|
| plants | land plants | Leguminosae | <i>Acacia harpophylla</i> | brigalow | | C | | 2/1 |
| plants | land plants | Leguminosae | <i>Acacia salicina</i> | doolan | | C | | 2/1 |
| plants | land plants | Leguminosae | <i>Acacia spania</i> | | | NT | | 1/1 |
| plants | land plants | Leguminosae | <i>Aeschynomene indica</i> | budda pea | | C | | 1/1 |
| plants | land plants | Leguminosae | <i>Archidendropsis thozetiana</i> | | | C | | 1 |
| plants | land plants | Leguminosae | <i>Cassia tomentella</i> | | | C | | 3/3 |
| plants | land plants | Leguminosae | <i>Crotalaria incana subsp. incana</i> | | Y | | | 1/1 |
| plants | land plants | Leguminosae | <i>Crotalaria verrucosa</i> | | | C | | 1/1 |
| plants | land plants | Leguminosae | <i>Hovea longipes</i> | brush hovea | | C | | 2/1 |
| plants | land plants | Leguminosae | <i>Lablab purpureus</i> | lablab | Y | | | 1/1 |
| plants | land plants | Leguminosae | <i>Leucaena leucocephala subsp. glabrata</i> | | Y | | | 1/1 |
| plants | land plants | Leguminosae | <i>Senna gaudichaudii</i> | | | C | | 1 |
| plants | land plants | Leguminosae | <i>Swainsona luteola</i> | dwarf darling pea | | C | | 1/1 |
| plants | land plants | Leguminosae | <i>Vachellia bidwillii</i> | | | C | | 1 |
| plants | land plants | Leguminosae | <i>Vicia monantha subsp. triflora</i> | | Y | | | 1/1 |
| plants | land plants | Loganiaceae | <i>Strychnos psilosperma</i> | strychnine tree | | C | | 1 |
| plants | land plants | Malvaceae | <i>Abutilon oxycarpum</i> | | | C | | 1 |
| plants | land plants | Malvaceae | <i>Hibiscus sp. (Emerald S.L. Everist 2124)</i> | | | C | | 1/1 |
| plants | land plants | Meliaceae | <i>Melia azedarach</i> | white cedar | | C | | 1 |
| plants | land plants | Meliaceae | <i>Turraea pubescens</i> | native honeysuckle | | C | | 1 |
| plants | land plants | Menispermaceae | <i>Sarcopetalum harveyanum</i> | pearl vine | | C | | 1 |
| plants | land plants | Menispermaceae | <i>Tinospora smilacina</i> | snakevine | | C | | 1 |
| plants | land plants | Moraceae | <i>Ficus macrophylla forma macrophylla</i> | Moreton Bay fig | | C | | 1 |
| plants | land plants | Moraceae | <i>Ficus obliqua</i> | | | C | | 1 |
| plants | land plants | Moraceae | <i>Ficus virens</i> | | | C | | 2 |
| plants | land plants | Moraceae | <i>Trophis scandens subsp. scandens</i> | | | C | | 1 |
| plants | land plants | Myrtaceae | <i>Backhousia angustifolia</i> | narrow-leaved backhousia | | C | | 1 |
| plants | land plants | Myrtaceae | <i>Corymbia erythrophloia</i> | variable-barked bloodwood | | C | | 1 |
| plants | land plants | Myrtaceae | <i>Corymbia tessellaris</i> | Moreton Bay ash | | C | | 1 |
| plants | land plants | Myrtaceae | <i>Eucalyptus coolabah</i> | coolabah | | C | | 3/2 |
| plants | land plants | Myrtaceae | <i>Eucalyptus melanophloia</i> | | | C | | 2 |
| plants | land plants | Myrtaceae | <i>Eucalyptus tereticornis</i> | | | C | | 1 |
| plants | land plants | Myrtaceae | <i>Gossia bidwillii</i> | | | C | | 2 |
| plants | land plants | Myrtaceae | <i>Melaleuca bracteata</i> | | | C | | 1 |
| plants | land plants | Nymphaeaceae | <i>Nymphaea gigantea</i> | | | C | | 1/1 |
| plants | land plants | Oleaceae | <i>Jasminum didymum</i> | | | C | | 1 |
| plants | land plants | Oleaceae | <i>Jasminum didymum subsp. racemosum</i> | | | C | | 1/1 |
| plants | land plants | Oleaceae | <i>Jasminum simplicifolium</i> | | | C | | 1 |
| plants | land plants | Oleaceae | <i>Notelaea microcarpa</i> | | | C | | 1 |
| plants | land plants | Petiveriaceae | <i>Rivina humilis</i> | | Y | | | 1 |
| plants | land plants | Phyllanthaceae | <i>Breynia oblongifolia</i> | | | C | | 1 |
| plants | land plants | Phyllanthaceae | <i>Flueggea leucopyrus</i> | | | C | | 1 |
| plants | land plants | Phyllanthaceae | <i>Phyllanthus hebecarpus</i> | | | C | | 1/1 |
| plants | land plants | Picrodendraceae | <i>Dissiliaria baloghioides</i> | hauer | | C | | 1 |
| plants | land plants | Picrodendraceae | <i>Petalostigma pubescens</i> | quinine tree | | C | | 1 |
| plants | land plants | Pittosporaceae | <i>Pittosporum spinescens</i> | | | C | | 1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|-------------|------------------|--|------------------------|---|----|---|---------|
| plants | land plants | Plantaginaceae | <i>Callitriche sonderi</i> | | | C | | 1/1 |
| plants | land plants | Poaceae | <i>Alloteropsis cimicina</i> | | | C | | 1/1 |
| plants | land plants | Poaceae | <i>Ancistrachne uncinulata</i> | hooky grass | | C | | 1 |
| plants | land plants | Poaceae | <i>Aristida</i> | | | | | 1 |
| plants | land plants | Poaceae | <i>Calyptochloa gracillima</i> subsp. <i>gracillima</i> | | | C | | 1/1 |
| plants | land plants | Poaceae | <i>Enneapogon</i> | | | | | 1 |
| plants | land plants | Poaceae | <i>Heteropogon contortus</i> | black speargrass | | C | | 1 |
| plants | land plants | Poaceae | <i>Hymenachne amplexicaulis</i> 'Olive' | | Y | | | 2/2 |
| plants | land plants | Poaceae | <i>Oplismenus aemulus</i> | creeping shade grass | | C | | 1 |
| plants | land plants | Poaceae | <i>Panicum larcomianum</i> | giant Parramatta grass | Y | | | 1/1 |
| plants | land plants | Poaceae | <i>Sporobolus fertilis</i> | | | C | | 1/1 |
| plants | land plants | Poaceae | <i>Thyridolepis xerophila</i> | | | C | | 1 |
| plants | land plants | Polygonaceae | <i>Duma florulenta</i> | | | C | | 1 |
| plants | land plants | Polygonaceae | <i>Polygonum plebeium</i> | small knotweed | | C | | 1/1 |
| plants | land plants | Polygonaceae | <i>Macadamia integrifolia</i> | macadamia nut | | | V | 1/1 |
| plants | land plants | Proteaceae | <i>Cheilanthes sieberi</i> | | | C | | 4 |
| plants | land plants | Pteridaceae | <i>Drypetes deplanchei</i> | grey boxwood | | C | | 1 |
| plants | land plants | Putranjivaceae | <i>Alphitonia excelsa</i> | soap tree | | C | | 1 |
| plants | land plants | Rhamnaceae | <i>Atractocarpus chartaceus</i> | | | C | | 1 |
| plants | land plants | Rubiaceae | <i>Cyclophyllum coprosmoides</i> var. <i>coprosmoides</i> | | | C | | 2/2 |
| plants | land plants | Rubiaceae | <i>Dentella repens</i> | dentella | | C | | 2/2 |
| plants | land plants | Rubiaceae | <i>Psydrax odorata</i> | | | C | | 1 |
| plants | land plants | Rubiaceae | <i>Triflorensia ixoroides</i> | | | C | | 3/2 |
| plants | land plants | Rubiaceae | <i>Acronychia laevis</i> | glossy acronychia | | C | | 1 |
| plants | land plants | Rutaceae | <i>Coatesia paniculata</i> | | | C | | 1 |
| plants | land plants | Rutaceae | <i>Dinosperma erythrococtum</i> | | | C | | 1 |
| plants | land plants | Rutaceae | <i>Flindersia australis</i> | crow's ash | | C | | 2 |
| plants | land plants | Rutaceae | <i>Flindersia schottiana</i> | bumpy ash | | C | | 1 |
| plants | land plants | Rutaceae | <i>Flindersia xanthoxyla</i> | yellow-wood | | C | | 1 |
| plants | land plants | Rutaceae | <i>Geijera parviflora</i> | wilga | | C | | 1 |
| plants | land plants | Rutaceae | <i>Geijera salicifolia</i> | brush wilga | | C | | 1 |
| plants | land plants | Rutaceae | <i>Micromelum minutum</i> | clusterberry | | C | | 1 |
| plants | land plants | Rutaceae | <i>Murraya paniculata</i> 'Exotica' | | Y | | | 1 |
| plants | land plants | Rutaceae | <i>Sarcamelicope simplicifolia</i> subsp. <i>simplicifolia</i> | yellow aspen | | C | | 1 |
| plants | land plants | Rutaceae | <i>Santalum lanceolatum</i> | | | SL | | 1 |
| plants | land plants | Santalaceae | <i>Alectryon diversifolius</i> | scrub boonaree | | C | | 1/1 |
| plants | land plants | Sapindaceae | <i>Atalaya hemiglauca</i> | | | C | | 1 |
| plants | land plants | Sapindaceae | <i>Atalaya salicifolia</i> | | | C | | 1 |
| plants | land plants | Sapindaceae | <i>Cupaniopsis anacardioides</i> | tuckeroo | | C | | 1 |
| plants | land plants | Sapindaceae | <i>Dodonaea stenophylla</i> | | | C | | 2/1 |
| plants | land plants | Sapindaceae | <i>Elaeostachys xylocarpa</i> | white tamarind | | C | | 2/1 |
| plants | land plants | Sapotaceae | <i>Planchonella cotinifolia</i> var. <i>pubescens</i> | | | C | | 1 |
| plants | land plants | Sapotaceae | <i>Planchonella pohimaniiana</i> | | | C | | 1 |
| plants | land plants | Sapotaceae | <i>Pleioluma queenslandica</i> | | | C | | 1 |
| plants | land plants | Sapotaceae | <i>Eremophila mitchellii</i> | | | C | | 1 |
| plants | land plants | Scrophulariaceae | <i>Nicotiana glauca</i> | tree tobacco | Y | | | 1/1 |
| plants | land plants | Solanaceae | | | | | | 1/1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---------|-------------|-----------------|--|--------------------------|---|----|---|---------|
| plants | land plants | Solanaceae | <i>Solanum</i> | | | | | 1/1 |
| plants | land plants | Solanaceae | <i>Solanum dissectum</i> | | | E | E | 3/3 |
| plants | land plants | Solanaceae | <i>Solanum ellipticum</i> | potato bush | | C | | 1/1 |
| plants | land plants | Solanaceae | <i>Solanum johnsonianum</i> | | | E | E | 6/5 |
| plants | land plants | Solanaceae | <i>Solanum parvifolium</i> subsp. <i>parvifolium</i> | | | C | | 1/1 |
| plants | land plants | Solanaceae | <i>Solanum seforthianum</i> | | Y | | | 1 |
| plants | land plants | Solanaceae | <i>Solanum stelligerum</i> | Brazilian nightshade | | C | | 1 |
| plants | land plants | Sparrmanniaceae | <i>Grewia latifolia</i> | devil's needles | | C | | 1 |
| plants | land plants | Sterculiaceae | <i>Argyrodendron trifoliolatum</i> | dysentery plant | | C | | 1 |
| plants | land plants | Sterculiaceae | <i>Brachychiton australis</i> | booyong | | C | | 2 |
| plants | land plants | Sterculiaceae | <i>Brachychiton populneus</i> | broad-leaved bottle tree | | SL | | 1 |
| plants | land plants | Sterculiaceae | <i>Brachychiton rupestris</i> | | | C | | 1 |
| plants | land plants | Stylidiaceae | <i>Stylidium eglanulosum</i> | | | SL | | 1/1 |
| plants | land plants | Verbenaceae | <i>Glandularia aristigera</i> | | Y | | | 1 |
| plants | land plants | Verbenaceae | <i>Lantana camara</i> | lantana | Y | | | 3/1 |
| plants | land plants | Verbenaceae | <i>Lantana montevidensis</i> | creeping lantana | Y | | | 1 |
| plants | land plants | Vitaceae | <i>Cayratia acris</i> | hairy grape | | C | | 2 |
| plants | land plants | Vitaceae | <i>Cissus oblonga</i> | | | C | | 1 |
| plants | land plants | Vitaceae | <i>Clematicissus opaca</i> | | | C | | 1 |

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*.

The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*.

The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).

This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.

This number is output as 999 if it equals or exceeds this value.

Appendix C

Herbarium confirmation of *Solanun johnsonianum*



Queensland
Government

Department of
Environment and Science

Queensland Herbarium

Brisbane Botanic Gardens Mt Coot-tha • Toowong 4066 Queensland • Australia
Telephone +61 7 3199 7699 • Facsimile +61 7 3876 1278
e-mail Queensland.Herbarium@qld.gov.au
<http://www.qld.gov.au/herbarium>

| | |
|----------------|---------------|
| Enquiries | Jason Halford |
| Telephone | 07 3199 7666 |
| Your reference | |
| Our reference | JJH:ss 80/22 |

25 February 2022

Mr Simon Danielsen
Astrebla Ecological Services
47/20 Sanflex Street
DARRA QLD 4076

Dear Simon,

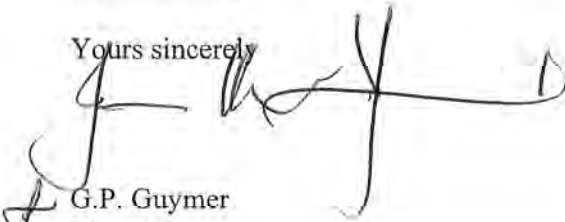
The botanical specimen received by the Queensland Herbarium on 15 February 2022, has been identified as:

2230 # *Solanum johnsonianum*, confirmed. This species is listed as
Endangered under Queensland's *Nature Conservation Act 1992*.

This specimen has been kept for incorporation into the Herbarium collection, with thanks.

Thank you for your payment. The amount of \$121.00 (GST inclusive) has been paid for this identification.

Yours sincerely



G.P. Guymer
Director

Appendix J Incident Report Form

| | | | | |
|--|--|--|--|--|
| 1. Project No & Name: | | Log No: | | |
| 2. Location | Date | Time | | |
| 3. Type of Incident | Near Miss Environmental Damage to Equipment Other _____ | First Aid Injury Lost Time Injury Hazard Restricted Duties Injury | Dangerous Event Medical Treatment Injury Complaint | |
| 4. Incident Details (attach additional pages if required) | | | | |
| 5. Details of person(s) involved | Name: _____ †Male †Female Date of Birth: _____ Contact No: _____ Residential Address: _____ | | | |
| 6. Employment Basis | Full-time Casual | Part-time Other _____ | Sub-Contractor | |
| 7. Employment Type | Admin Tradesperson Other: _____ | Professional Labourers & related workers | Apprentice/Trainee Plant & Machine Operators/Drivers | |
| 8. Medical Treatment Taken | Did injury occur †Yes †No Was first aid treatment given †Yes †No | | | |
| 9. Equipment/Machinery Details | Make and Model: _____ Plant/Rego No: _____ Was the equipment/machinery †repaired? †returned to service? †written off? †other _____ | | | |
| 10. Witnesses (attach statements) | 1. Printed Name _____ Position _____ | | 2. Printed Name _____ Position _____ | |
| | 3. Printed Name _____ Position _____ | | 4. Printed Name _____ Position _____ | |
| | | | | |
| | | | | |
| 11. Report Raised By | Printed Name _____ | | Signature _____ | |
| | Position _____ Date _____ | | | |
| 12. Manager Review | Printed Name _____ | | Signature _____ | |
| | Position _____ Date _____ | | | |
| 13. HSE Advisor | Is further investigation required? †Yes †No | | Related First/Aid Incident | |
| | Report No: _____ | | | |

REPORT

| | Printed Name | Signature | Date |
|-----------------------|--------------------------|-----------|-----------|
| 14. Closed Out By: | | | |
| | Printed Name Position | Date | Signature |

Appendix K Weekly Inspection Checklist

Environmental Management Plan Weekly Checklist

| EMP ELEMENT | Yes/No/NA | Date | Initial |
|--|-----------|------|---------|
| SURFACE AND GROUNDWATERS | | | |
| Are erosion and sediment controls in place at the site adequate for the works being undertaken? Do control measures require maintenance? | | | |
| Have overburden stockpiles and disturbed areas been stabilised where necessary? | | | |
| Are stabilised entry and exit points provided? | | | |
| Is any soil being transported onto public roads or highways? | | | |
| Are bunds in place to segregate clean and dirty water? Are drainage structures stabilised to minimise erosion? | | | |
| Has surface and groundwater monitoring been undertaken? | | | |
| FLORA AND FAUNA | | | |
| Have any protected species been identified? | | | |
| Have any animals been injured or killed during activities? | | | |
| CONTAMINATED LAND | | | |
| Are vehicles and plant in good operating condition (i.e. no oil or fuel leaks?) | | | |
| Are controls in place for refuelling or maintenance to prevent soil or water contamination from spills or leaks? | | | |
| Are chemicals stored in a covered and bunded impervious area? | | | |
| Is there evidence of any spills greater than 20 L at the site? | | | |
| Is any imported fill certified as clean (free of hazardous contaminants and not ASS)? | | | |
| Has any contaminated soil been encountered at the site? | | | |
| VEGETATION MANAGEMENT | | | |
| Are all works confined to the limits of the site? | | | |
| Has clearing of vegetation and ground disturbance been minimised where practicable? | | | |
| BUSHFIRE | | | |
| Any unauthorised burning at the site? | | | |
| NOISE/DUST IMPACTS | | | |
| No unnecessary use of horns or other audible signals on mobile plant or equipment? | | | |
| No unnecessary revving or idling of engines on mobile and stationary machines? | | | |
| Site kept neat and tidy? | | | |
| Dust reduction measures implemented and adequate for conditions? | | | |
| WASTE MANAGEMENT | | | |
| General wastes stored in covered bins? | | | |
| Recyclable materials segregated for recycling? | | | |
| Regulated wastes (i.e. waste oil) only removed from site by a regulated waste contractor? Are waste tracking documents available? | | | |
| Have any wastes been disposed of onsite? | | | |
| Wastes protected from rainfall and stormwater contact? | | | |
| DOCUMENTATION | | | |
| Is a copy of the EMP readily available? | | | |
| Sight evidence of waste tracking paperwork, certification of fill, weed hygiene declarations and disposal receipts. | | | |
| Incident reporting and procedures - have all incidents have been documented on the "Incident Report Form" and correctly reported and investigated? | | | |
| Sight evidence of vehicle and equipment maintenance has been undertaken as per the manufacturer's instructions. | | | |
| Review Project manager has records of daily site observations, actions and notifications in diary. | | | |
| Sight evidence of staff induction training. | | | |

Appendix L Powerlink Generic Requirements

**Queensland Electricity Entity Standard
for Safe Access to High Voltage Electrical Apparatus**

**November
2023**

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Queensland *Electricity Entity* Standard
for Safe Access to *High Voltage Electrical Apparatus*

Book No.

Issued to: _____

Signature of Receiver: _____

Date: _____

Issued by: _____

NOTE: - This *Standard Shall* be returned to the ISSUER
on request or on termination of employment.

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Amendment History

| Date | Summary of Changes |
|------------------|--|
| 1 May 2008 | First edition of new Queensland <i>Electricity Entity Procedures for Safe Access to High Voltage Electrical Apparatus</i> |
| 29 March 2010 | Annual review. <i>Validation</i> process added to Appendix C. <i>Access / Test Permit</i> Forms added. Other minor changes throughout the document. |
| 28 May 2012 | Annual review. Changes to <i>Operator Earths</i> requirements prior to issue of <i>Access/Test Permits</i> . Reviewed use of the word “Should” and it was removed and replaced as applicable to comply with Queensland Electricity Legislation and Codes. Other minor changes throughout the document. |
| 28 February 2013 | Mid-term review. Clarify the definition of “Work Area” and application of “ <i>Work Area</i> ” in <i>Clause 5.3</i> |
| 28 August 2015 | Annual review. Update and align with QLD Legislation changes etc. |
| 31 October 2018 | Annual review, Update and align with QLD Legislation changes etc. |
| 30 November 2023 | Prescribed review. Minor changes throughout the document. |

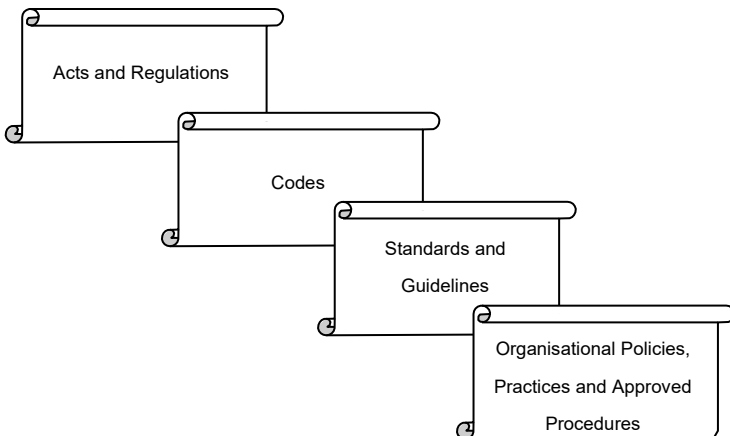
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Foreword

The Queensland *Electricity Entity Standard for Safe Access to High Voltage Electrical Apparatus* has been developed to support the objectives of the Queensland Electrical Safety Act & Regulation, National Electricity Network Safety Code (ENA DOC 001-2019) and the National Guidelines for Safe Access to Electrical and Mechanical Apparatus (ENA DOC 003 - 2021).

In developing this *Standard*, Powerlink Queensland, Ergon Energy and Energex (Energy Queensland) adopted the National Guidelines for Safe Access to Electrical and Mechanical Apparatus (ENA DOC 003 - 2021) as the replacement for the superseded Queensland Government document - “*High Voltage Isolation and Access Basic Principles*”. The Queensland *Electricity Entity Standard for Safe Access to High Voltage Electrical Apparatus* has been developed through consultative mechanisms within *Electricity Entity*, and Industry Union representatives.

This *Standard* fits within the following framework.



This *Standard* is an essential part of providing a safe system of work for all persons to safely access the *HV* system.

The key elements are:-

- The application of *Operator Earths* and *Working Earths*
- *Other Precautions* provided at the *Work Area*
- The documented isolation and access procedures

Where this *Standard* exceeds regulatory requirements, this *Standard Shall* take precedence.

Acknowledgements

Queensland *Electricity Entity High Voltage Switching & Access Reference Group*:-



- Tony Niven
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- Leanne Maurice
- Wayne Cardinal



- Russell Gordon
- Dan Russell



- Ken Appleton
- John Fry
- Michael Parker



- Andrew Humphreys
- Ian Rix
- Troy Coleman
- Tim Rogers



BE PART OF
A REAL CHANGE

- Stuart Hermann
- Jeff Smith
- Robert McDowall

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1 PRELIMINARY

1.1 Application

The Queensland *Electricity Entity Standard* for Safe Access to *High Voltage Electrical Apparatus* details the minimum general requirements for work to be carried out under an *Access / Test Permit* on *Electricity Entity* assets and may be supplemented by *Electricity Entity Approved Procedures*.

This *Standard* *Shall* be issued or made available to all persons who may be associated with planning, designing, constructing, commissioning, operating, and maintaining the *Electricity Entity's High Voltage Electrical Apparatus*.

It is the responsibility of all such persons to make themselves thoroughly conversant with this *Standard* and any supplementary *Electricity Entity Approved Procedures*.

Consequently, it is expected that each person concerned *Shall*, at all times, strictly observe the requirements of this *Standard* and any supplementary *Electricity Entity Approved Procedures*, thereby assisting in minimising risk.

1.2 Notification / Investigation of breaches associated with this *Standard*

Any departure from the requirements of this *Standard* could lead to serious injury or death, not only to the electrical worker who fails to observe them, but also to other workers. Additionally, this may result in damage to important *Electrical Apparatus*.

The *Electricity Entity* *Shall* be notified in accordance with the *Electricity Entity* policy for any breach associated with this *Standard*.

The *Electricity Entity* *Shall* investigate and report all breaches in accordance with their policy and share as appropriate at the Industry Forum.

1.3 Introduction

Safety is of paramount importance. This *Standard* is provided to support a safe system for work on or *Near High Voltage Electrical Apparatus* associated with the transmission and distribution of electricity.

It is essential that all personnel strictly adhere to the requirements of this *Standard* to ensure safe working conditions and practices are established and maintained. Whenever a person has concern for safety of personnel or *Electrical Apparatus*, they *Shall* cease work and advise relevant personnel.

Before commencing work on or *Near High Voltage Electrical Apparatus*, one of the following types of *Permits Shall* be issued:-

- a) an *Access Permit* for work on or *Near High Voltage Electrical Apparatus*
- b) a *Test Permit* for testing where *Lethal Currents* are involved.

An *Access / Test Permit Shall* only be issued after the associated *High Voltage Electrical Apparatus* has been *Isolated*, proved *De-energised*, *Earthed* and short-circuited.

1.4 Standard Scope

This Standard for Safe Access to *High Voltage Electrical Apparatus* Shall apply to all personnel who work on or *Near Electricity Entity High Voltage Electrical Apparatus*.

This *Standard* does not apply to:-

- a) *High Voltage Live Work*
- b) *Low Voltage Work*
- c) Not Electrically Connected *Electrical Apparatus* (NEC)
- d) *Switching* to reconfigure the *High Voltage System*
- e) Work outside *Exclusion Zones*
- f) Non Access Work (NAW)
- g) Isolation of Mechanical Apparatus.

1.5 Dependant documents and review requirements

The following *Standards* and *Procedures* are closely related to the *Queensland Electricity Entity Standard for Safe Access to High Voltage Electrical Apparatus* (this document) and such are to also be reviewed as part of the periodic review of this document.

- a. Not Electrically Connected *Electrical Apparatus* (NEC)
- b. Non Access Work (NAW)
- c. Creation of a *Disconnection Point*

1.6 References

- Queensland Electrical Safety Legislation (Act, Regulation & Codes of Practice)
- ENA National Electricity Network Safety Code
- ENA National Guidelines for Safe Access to Electrical and Mechanical Apparatus
- *Electricity Entity* Electrical Safety Rules and Procedures

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2 DEFINITIONS

Note: - Where defined words / phrases are used in this *Standard* they will be shown in italics and start with capital letters.

Access Permit (Access Authority) – a document that forms part of a safe system to work, to provide electrically safe access to *High Voltage Electrical Apparatus*.

Applicant – a trained person who applies to an *Outage Co-ordinator* requesting an *Access / Test Permit*.

Approved – having appropriate organisation endorsement in writing for a specific function.

Authorisation – The approval or delegated authority to execute and/or perform the role identified as requiring *Authorisation*.

Authorised Person – a person with technical knowledge or sufficient experience who has been *Approved* (via the appropriate *authorisation*) or has the delegated authority to act on behalf of the organisation, to perform the duty concerned.

Barrier – a rope, tape, barricade or alternative erected in accordance with this *Standard*.

Cable – an insulated *Conductor*, or two or more such *Conductors*, laid together, whether with or without fillings, reinforcements or protective coverings. (Note: - *Cable* for the purpose of these Guidelines also means aerial bundled *Cables*.)

Cancellation of an Access / Test Permit – an *Access / Test Permit* has been *Surrendered* and authorisation for access to work on or *Near*, or test, *Electrical Apparatus* has been terminated.

Competent – means a person who has acquired, through training, qualifications, experience or a combination of these, the knowledge and skill to carry out the task.

Conductor – a wire, *Cable* or form of metal designed for carrying electric current.

Control Authority – an organisation that is responsible for the control of the *Electrical Apparatus* concerned.

Control Measures – *Policies, Standards, Procedures* or actions to eliminate, avoid or minimise risks.

De-energised – separated from all sources of *Supply* but not necessarily *Isolated, Earthed*, discharged or out of commission.

Delegated Switching Operator (HV Distribution Simple Systems only) – an Authorised *Switching Operator* Authorised to perform duties on behalf of the *Switching Co-ordinator* within nominated boundaries on EQL HV Distribution Simple Systems.

Disconnected – means that the parts are not connected to an electrical source. I.e., Disconnection may be achieved by de-energising, isolating, separating or breaking connections. A part that is *Disconnected* may still require discharging to remove all electric and other energy. *Disconnected* is not a *Disconnection Point*.

Disconnection Point – An adequate break created by the removal or absence of *Conductors* and deemed no longer a source of inadvertent energisation.

The break *Shall:-*

- not be able to be re-established by normal *Switching* operations, and
- maintain *Exclusion Zone* appropriate to the voltage or maintain

electrical non-flashover distance appropriate to the voltage as defined by the *Electricity Entity*, and

- be created in accordance with the *Tri-entity document* for the creation of a *Disconnection Point*.

Do Not Operate Board (DNOB) (Do Not Operate Tag (DNOT)) – A Safety Sign bearing the words "Do Not Operate" used to identify *Isolation Points* or *Operator Earths*. Refer *Clause 3.10.1* and *Appendix B Sample Signs and Tags*.

Earthed – electrically connected to the general mass of earth by a *Conductor* to ensure and maintain the effective dissipation of electrical energy.

Earthing Switch – a permanently installed device which, when closed, ensures that the *Electrical Apparatus* at that point is *Earthed*.

Earths – *Approved* earthing devices applied for the earthing and short-circuiting of *Electrical Apparatus*.

Electric Line – a wire or *Conductor* or associated equipment used for transmitting, transforming, or supplying electricity at a voltage greater than extra *Low Voltage*.

However, an *Electric Line* does not include -

- a) a wire or *Conductor* directly used in converting electricity into another form of energy; or
- b) a wire or *Conductor* within the internal structure of a building.

Electrical Apparatus – any *Electrical Equipment* or *Electric Line* the *Conductors* of which are *Live* or can be made *Live*.

Electrical Equipment – any apparatus, appliance, *Cable*, *Conductor*, fitting, insulator, material, meter or wire that -

- a) is used for controlling, generating, supplying, transforming or transmitting electricity at a voltage greater than extra *Low Voltage*; or

- b) is operated by electricity at a voltage greater than extra *Low Voltage*;
or
- c) is part of an electrical installation located in an area in which the atmosphere presents a risk to health and safety from fire or explosion;
or
- d) is, or is part of, a cathodic protection system.

Electricity Entity – For the purpose of this *Standard*: Powerlink, Energex and Ergon Energy (Energy Queensland).

Emergency Switching – Immediate *Switching* for safeguarding personnel, preventing damage to *Electrical Apparatus*, restoring *Supply* or providing access for emergency repair of *Electrical Apparatus*.

Energised – connected to any source of electrical energy.

Exclusion Zone – *Exclusion Zone*, for a person, operating plant or vehicle for *Electrical Apparatus*, means the minimum allowable distance from the *Electrical Apparatus* for the person, plant or vehicle in the *Electrical Safety Regulations*.

Exposed – bare; or not effectively insulated; or not effectively guarded by either a fixed *Barrier* or an *Earthed* metal shield.

Hazardous Condition Warning Tag – a warning *Sign* indicating a particular hazard or hazardous condition. Operation of a device with this tag affixed is not likely to be life threatening although it may result in injury, equipment damage or an outage. Refer *Clause 3.10.2* and *Appendix B Sample Signs and Tags*.

High Voltage (HV) – a nominal voltage exceeding 1,000 volts alternating current or exceeding 1,500 volts direct current.

Individual of Work Group – a person authorised to carry out work under an *Access / Test Permit*.

Instructed Person – a person who is acting under the supervision of an

authorised person for the Electrical Apparatus.

Isolated – *Disconnected* from all possible sources of electricity *Supply* and rendered incapable of being made *energised* without premeditated and deliberate action.

Isolation Point – An adequate break *Approved* by the *Electricity Entity* that prevents any inadvertent energisation, for example from lightning, *Switching* or back energisation. (A *DNOB* Shall be attached at the *Isolation Point*.)

Lethal Current – current in excess of 40 mA alternating current or 150 mA direct current through the human body.

Live – *Energised* or subject to hazardous induced or capacitive voltages.

Live Work – all work performed on components of *Electrical Apparatus*, not *Isolated*, not proved *De-Energised* and not *Earthed*.

Low Voltage – a nominal voltage exceeding 50 volts alternating current or 120 volts direct current, but not exceeding 1,000 volts alternating current or 1,500 volts direct current.

Manual Switching – all *Switching* not performed via *Remote Control*.

Near – a situation where there is a reasonable possibility of a person, either directly or through any conducting medium, coming within the relevant *Exclusion Zones*.

Nearby – *Electrical Apparatus* which is outside the scope of the *Access / Test Permit*, but identified by the *Switching Operator* as a potential electrical hazard at the *Work Area* e.g., adjacent *HV* overhead strung bus.

Not Electrically Connected – *Electrical Apparatus* *Disconnected* from all sources of *Supply* by the removal or absence of *Conductors*, appropriate to the voltage and insulating medium and, not able to be *Energised* by *Switching* and identified in accordance with an *Electricity Entity Approved Procedure*.

Operating Plant (Mobile Plant) – cranes, elevating work platforms, tip trucks or similar plant, any equipment fitted with a jib or boom and any device capable of raising or lowering a load.

Operator Earth (*Access Authority Earth*) – *Approved* earthing and short-circuiting equipment applied to *Electrical Apparatus* (with *DNOB* attached), as a requirement for the issue of an *Access / Test Permit*, to ensure the *Electrical Apparatus* is *Earthed*.

Other Precautions – safety *Signs*, *Barriers* and other *Approved* measures applied at the *Work Area* to contribute to the electrical safety of the work group prior to or after the issue of an *Access / Test Permit*.

Outage Co-ordinator – an *Authorised Person* who negotiates and determines access / test requirements with an *Applicant*, and arranges for the production and issue of *Switching Sheets* and related *Access / Test Permits*.

Overhead Line – any aerial *Conductor* or *Conductors* with associated supports, insulators and other apparatus, erected, or in the course of erection, for the purpose of the conveyance of electrical energy.

Permanent Earthing Point – a permanent earth connection such as a *Substation* earthing grid, steel tower, *High Voltage* earth or *Low Voltage* neutral on a bonded earth network.

Permit to Work Tag (PTW) – a safety *Sign* attached to a point of isolation (such as dampers, valves and switchgear) bearing the words “Do Not Operate” signifying that this is a point of isolation.

Phasing Out – a test to determine whether *Electrical Apparatus* phasing is correct to allow connection.

Procedure – the documentation of a systematic series of actions (or activities) directed to achieve a desired result.

Recipient (*Authorised Person In Charge*) – an *Authorised Person* to whom an

Access / Test Permit has been issued and is the person responsible for compliance with the requirements of the *Access / Test Permit*.

Remote Control – a facility for indirectly initiating the operation of *Electrical Apparatus* remotely from the *Electrical Apparatus*.

Safety Observer (when working *Near Exposed Electrical Apparatus*) – a person *Competent* for the task and specifically assigned the duty of observing and warning against unsafe approach to *Electrical Apparatus* or other unsafe conditions.

Safety Precautions – *Isolation Points, Disconnection Points* and *Operator Earths* provided to guard against and reduce the effects of inadvertent re-energisation while working under an *Access / Test Permit* and identified on the *Switching Sheet* and *Access / Test Permit* by a unique alphabetic character (not I or O) unless not required by an *Electricity Entity Approved Procedure*.

Shall – is to be interpreted as mandatory.

Sign – a board, label, tag or other delineated space used to convey a message.

Standard – written definition, limit, or rule, *Approved* and monitored for compliance by an authoritative agency or professional or recognised body as a minimum acceptable benchmark. (This *Standard*)

Substation – a switchyard, terminal station or place, at which *High Voltage Supply* is switched, converted or transformed.

Supply – provide electrical energy.

Surrender of an Access / Test Permit – documented by the *Recipient* that all persons signed on the *Access / Test Permit* have ceased work and have signed off the *Access / Test Permit* as recognition that their access to the *Electrical Apparatus* has been relinquished.

Suspension of an Access Permit – that all persons signed on an *Access Permit* have ceased work and have signed off the *Access Permit* as recognition that their work is suspended and *Shall* not recommence until access is granted by the *Switching Co-ordinator* and they have re-signed on the *Access Permit*.

Switching (Electrical Operating Work) – work involving the operation of *Switching* devices, links, fuses or other connections intended for ready removal or replacement, making and breaking bridges via *Live Work* as part of an operating process, proving electrical *Conductors De-energised*, *Earthing* and short-circuiting, locking and tagging of *Electrical Apparatus* and erection of *Barriers* and *Signs*. Note: Making and breaking bridges via *Live Work* requires authorisation specific to *Live Work*.

Switching Co-ordinator – an *Authorised Person* who co-ordinates *Switching*, performs *Switching by Remote Control*, approves the issue of *Access / Test Permits* and issues *Access / Test Permits*.

Switching Operator – an *Authorised Person* who performs *Switching*, and issues *Access / Test Permits*.

Switching Operator's Assistant – an *Authorised Person* who assists a *Switching Operator* perform *Switching*.

Switching Sheet – a document that is part of a safe system of work. Each *Switching Sheet* *Shall* have a unique reference number and *Shall* list a process of isolation and access in step by step sequence.

Switching Sheet Authoriser – a trained person who authorises a *Switching Sheet* to proceed on a nominated date and time.

Switching Sheet Checker – an *Authorised Person* who verifies that *Switching Sheets* are correct.

Switching Sheet Writer – a trained person who writes a *Switching Sheet* to provide isolation and access to *Electrical Apparatus*.

Test Permit – a documented form of authorisation that allows access to *HV Electrical Apparatus* for testing and minor works associated with testing, and the removal of *Operator Earths*.

Validation – a documented process between organisations to ensure *HV Electrical Apparatus* is suitable for the purpose of isolating and earthing and is correctly identified and in the correct sequence to enable safe access and testing.

Work Area – the defined area where work is to be carried out under an *Access / Test Permit*.

Work Group Member – this includes *Individuals of Work Group*, and *Instructed Persons* required to sign on an *Access / Test Permit*.

Working Earth – *Approved* earthing and short-circuiting equipment, applied to *Electrical Apparatus*, additional to *Operator Earths* following the issue of an *Access / Test Permit*.

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3 WORKING ON *ELECTRICITY ENTITY* ASSETS

3.1 Responsibilities of the Employer

Any Employer wanting to perform work or testing on an *Electricity Entity's* assets under this *Standard* Shall first seek approval from the relevant *Electricity Entity*.

The Employer *Shall* be responsible for:-

- a) ensuring all persons requiring access to *High Voltage Electrical Apparatus* to perform work or testing are *Authorised* and trained to perform the roles for which they are responsible or are *Instructed Persons* under the supervision of an *Authorised Person*.
- b) ensuring regular audits for compliance with this *Standard* are carried out.

The *Electricity Entity* *Shall* consider, and if appropriate, approve training packages that meet the objectives of this *Standard*.

3.2 Training and Assessment for Authorised Roles

The Employer is responsible for ensuring that all people performing authorised roles receive training and are assessed as *Competent* before authorisation / re-authorisation. The Employer is responsible for maintaining a register of all *Authorised Persons* with details of any restrictions.

The *Electricity Entity* *Shall* maintain records of approvals and the Employer *Shall* submit records of *Authorised Persons* and any associated restrictions.

3.2.1 Period of Authorisation

An *Authorised Person* under this *Standard* *Shall* be assessed as *Competent* to perform such tasks and be reassessed at intervals not exceeding three years to ensure their competency is maintained. A breach of this *Standard* may lead to the withdrawal of a person's authorisation(s) by the *Electricity Entity* or the Employer.

3.2.2 Authorised Persons

The following roles require Authorisation under this *Standard*:-

- a) *Switching Co-ordinator*
- b) *Outage Co-ordinator*
- c) *Switching Sheet Checker*
- d) *Switching Operator*
- e) *Switching Operator's Assistant*
- f) *Recipient*
- g) Individual of Workgroup
- h) *Delegated Switching Operator (Distribution Only)*

Authorisation under this *Standard* may be restricted according to:-

- i) Voltage level
- j) Location
- k) Type of *Electrical Apparatus*
- l) Any other factor, as determined by the *Electricity Entity* (E.g., Electrical Licence).

An appropriately *Authorised Person* may perform multiple designated functions.

The Employer *Shall* maintain a record of individual authorisations that identifies authorisations, restrictions, and expiry dates.

3.3 Trained Roles

The following are Trained Roles for this *Standard*:-

- a) *Switching Sheet Writer*
- b) *Switching Sheet Authoriser*
- c) *Applicant*

The Employer is responsible for ensuring that all people performing trained roles receive training, are assessed as Competent and re-assessed as

Competent periodically.

3.4 Auditing

The *Electricity Entity / Employer Shall* have an effective audit process to allow auditing of compliance with this *Standard*. The Employer *Shall* ensure that they audit activities on a periodic basis and make results available to the *Electricity Entity* upon request. Processes *Shall* be in place to ensure all completed field copies of *Switching Sheets, Access / Test Permits* and associated documents are forwarded for auditing.

3.5 Changes to Standard

The *Queensland Electricity Entity High Voltage Switching & Access Reference Group Shall* commence a review of this *Standard* on the two year anniversary of the signatures' or as agreed by the *Reference Group*. *Electricity Entity* employees have the opportunity to provide comments for improvements to this *Standard*. These comments can be submitted to the *Electricity Entity's High Voltage Switching & Access Reference Group* in accordance with the *Electricity Entity's Procedures*.

Changes endorsed by the *Queensland Electricity Entity High Voltage Switching & Access Reference Group* and *Approved* by a nominated representative from each *Electricity Entity Shall* be given revision numbers and issued by the *Electricity Entities* to the appropriate personnel for inclusion in their *Standard*.

3.6 Document Control

All documentation associated with this *Standard Shall* be subject to document control standards.

3.7 Identification of *Electrical Apparatus*

The *Electricity Entity* Shall ensure that all *Electrical Apparatus* nominated as a *Switching Sheet* item is clearly identified by *Signs*. Discrepancies that exist between the *Switching Sheet* apparatus description and the signage *Shall* be reported to the *Control Authority* and corrected as soon as practicable.

3.8 Safety Equipment

Inspection and testing of safety equipment and tools used in relation to work associated with this *Standard* Shall be in accordance with the *Electricity Entity's Electrical Safety Rules or Procedures, Queensland Electrical Safety Act and Queensland Electrical Safety Regulations*.

3.9 Risk Management

A documented risk management process *Shall* be in place to address risks associated with work practices, the work environment, and the use of materials, *Operating Plant (Mobile Plant)*, tools and equipment.

Such a process *Shall* :-

- a) identify the hazard
- b) assess the risk
- c) determine and implement *Control Measures* and
- d) monitor and review the effectiveness of the risk management process.

3.10 Tags / Boards

3.10.1 **Do Not Operate Board (DNOB) (Do Not Operate Tag (DNOT))**

Any device used to control and / or maintain a point of isolation, or *Operator Earth* Shall have a *DNOB* affixed.

DNOBs attached to *Isolation Points* Shall only be applied and removed by a *Switching Operator* as an operation on a *Switching Sheet* or under the direction of a *Switching Co-ordinator*.

Operator Earths with *DNOBs* attached, in addition to being applied and removed by a *Switching Operator* as an operation on a *Switching Sheet* or under the direction of a *Switching Co-ordinator* may also be removed under the direction of a *Recipient* under an *Access / Test Permit* in accordance with this *Standard*.

When multiple *DNOBs* are attached to an *Isolation Point* or *Operator Earth* the integrity of these points must be maintained. This could be achieved by the application of an approved multi-lockout device.

3.10.2 **Hazardous Condition Warning Tag**

In situations where the operation of *Switching* equipment (e.g., isolators, earth switches or circuit breakers) is likely to be hazardous, a *Hazardous Condition Warning Tag* Shall be used to warn of known operational problems that are not likely to be life threatening.

When a *Hazardous Condition Warning Tag* is warranted, the *Control Authority* Shall be advised and Shall record the reason for the application of the tag.

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4 ISOLATION OF ELECTRICAL APPARATUS FOR WORK

4.1 General

Electrical Apparatus is *Isolated* when electrical non-flashover distance appropriate to the voltage as defined by the *Electricity Entity*, exists between the *Electrical Apparatus* and the remainder of the *High Voltage* system.

Neutral earthing resistors and reactors normally form part of the *High Voltage* system. When bypassed and/or *Isolated* by *Approved* means they become part of the earthing system and *Exclusion Zones* no longer apply.

Isolation *Shall* extend to *Remote Controls* associated with *Isolation Points*, and to *Low Voltage* sources of *Supply* capable of back energising the *HV* system.

Any *Switching* leading to the issue of an *Access / Test Permit* or to the restoration of the network following *Cancellation* of all *Access / Test Permits* *Shall* be carried out in accordance with a *Switching Sheet*.

If *Isolation Points* change during the course of work, under an *Access / Test Permit*, then prior to *Isolation Points* being altered, all current related *Access / Test Permits* *Shall* be *Surrendered* and *Cancelled* and new *Access / Test Permits* issued reflecting the new *Isolation Points*.

4.2 Isolation Points

The *Electricity Entity* *Shall* assess and approve *Electrical Apparatus* suitable for use as *Isolation Points*.

All *Isolation Points* associated with an *Access / Test Permit* *Shall* be clearly marked using *DNOBs*. Where possible the *DNOB* *Shall* be physically attached to the *Isolation Points*. Where it is impossible to physically attach a *DNOB* to an *Isolation Point*, a *DNOB* *Shall* be placed in a prominent position and as close as possible to the *Isolation Point* such that operating the device cannot be accomplished without encountering the *DNOB*.

Where it is possible, the *Electrical Apparatus* used for isolation purposes *Shall* be secured in the open position by locking or other *Approved* means. Where possible, primary control circuits *Shall* be electrically *Isolated* through use of a dedicated isolating switch / circuit breaker, or the removal of links / fuses.

Electrical Apparatus Shall be *Isolated* before the application of earthing, unless the design of *Electrical Apparatus* does not allow this to occur. In this situation *Approved Procedures Shall* be used.

4.3 Integrity of Isolation Points

The integrity of all *Isolation Point(s)* *Shall* be confirmed by the *Electricity Entity Approved Procedure*.

Where the integrity of the *Isolation Point* could be jeopardised, all work *Shall* immediately cease. The *Access / Test Permit Shall* be *Suspended* or *Surrendered* and *Cancelled* and work *Shall* not continue until clearance is provided by the *Switching Co-ordinator*.

When an *Isolation Point* has been created to prevent a *Low Voltage* source of *Supply* back energising the *HV* system and *Approved* work is taking place on the *Low Voltage Isolation Point*, the integrity of that *HV* and *LV* isolation *Shall* be maintained by an *Electricity Entity Approved Procedure*.

4.4 Remote Controls

For work on *Electrical Apparatus* (other than those that form the *Isolation Point*), the disablement of local, remote and/or automatic control is the responsibility of the local workgroup. Disablement must be via a method to prevent its operation outside the control of the local work group. The removal of fuses or links is acceptable, as is the disconnections of circuitry via a switch.

4.5 Combination Isolation / Earthing

Some types of switchgear incorporate isolation and earthing in a combination three (3) position switch or have configurations that require physical removal of a DNOB from an Isolation Point to place an Operator Earth.

In the above situations only one DNOB is required. It *shall* be placed and removed as operations on a Switching Sheet for the full sequence of Switching.

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5 EARTHING OF ELECTRICAL APPARATUS FOR WORK

5.1 General

Where possible or practicable (providing this does not introduce a hazardous situation) *Electrical Apparatus* *Shall* be proved *De-energised* at the proposed point of application of *Earths*. All phases *Shall* be proved *De-energised* using an *Approved* voltage detector before *Earths* are applied. Correct operation of the voltage detector *Shall* be verified immediately before and after proving *De-energised*. Where the design of *Electrical Apparatus* does not allow the testing to prove *De-energised*, then *Electrical Apparatus* with fault make earthing capability *Shall* be used after first checking other voltage or mechanical indicating devices that *Electrical Apparatus* is *De-energised*.

The purpose of earthing is:-

- a) to enable protection equipment to operate and to limit the rise in potential difference at the *Work Area*, in the event that *Supply* is inadvertently restored
- b) to safely discharge induced or residual voltage.

5.2 Application of *Earths*

Application of *Earths* is considered electrical work and *Shall* only be performed by persons with an appropriate electrical licence.

Earths *Shall* be applied immediately after proving *De-energised*. All *De-energised* phases *Shall* be *Earthed*. Tail(s) of portable *Earths* *Shall* be connected to a *Permanent Earthing Point* before application to the *Electrical Apparatus*. Where a *Permanent Earthing Point* is not available, the tail(s) of portable *Earths* may be connected to an *Approved* earth electrode driven into the ground to a minimum depth defined by the *Electricity Entity*.

Earths *Shall* be applied as close as practicable to any persons required to work on the *Isolated* system so that the *Earths*, where possible, are within sight of

such persons.

Where an earth switch is available, it is preferable to close the earth switch prior to applying or removing portable *Earths*.

Where a set of single-phase portable *Earths* is installed at the *Work Area*, all phases of the portable *Earths* *Shall* be connected individually to a common *Earthing Point*.

For the issue of an *Access / Test Permit*, *Electrical Apparatus* *Shall* not be *Earthed* through fuses or circuit breakers that are able to open / trip in the event of inadvertent energisation. However, when performing *Switching* prior to the issue of an *Access / Test Permit*, *Earthing* through a circuit breaker is permissible without making the circuit breaker inoperable.

Earths *Shall* be in place on *Electrical Apparatus* prior to and during the placement and removal of test leads. Where the design of the *Electrical Apparatus* does not allow this, *Electricity Entity Approved Procedures* *Shall* be used.

5.3 Operator Earths

Operator Earth(s) *Shall* be connected to *High Voltage Conductors* at location(s) that *Shall* enable the *Work Area* to be *De-energised* by the operation of a relevant High Voltage protection scheme in the event of inadvertent re-energisation through an *Isolation Point*. This should be achieved by placing *Operator Earth(s)* electrically adjacent to *Isolation Point(s)*. Where this is not reasonably practicable refer to *Clause 5.5*.

An *Operator Earth* *Shall* be clearly identified by the attachment of a *DNOB* in a prominent position. For a set of three-phase portable *Earths* (trifurcated earth), one *DNOB* *Shall* be attached at the point of common connection of the 3 phases of the portable *Earths* to the earth tail. For single-phase *Earths*, a *DNOB* *Shall* be attached in a prominent position to each phase.

Operator Earths may be (in order of preference):-

- a) an *Earthing Switch*
- b) a portable earth connected to a *Permanent Earthing Point*
- c) a portable earth connected to an earth electrode installed in accordance with *Electricity Entity Approved Procedures*.

The method used *Shall* be adequate for the fault/short circuit current at the location and *Shall* enable protection to operate. The placement or removal of an *Operator Earth Shall* only be carried out if one of the following occurs:-

- d) under the direction of a *Switching Sheet* with the approval of a *Switching Co-ordinator*
- e) under the direction of a *Recipient* of a *Test Permit*
- f) under the direction of a *Recipient* of an *Access Permit* with the approval of a *Switching Co-ordinator* in accordance with this *Standard*.

Operator Earths applied for an *Access Permit Shall* remain in place as required under the *Access Permit* except when required to be temporarily removed to allow testing involving non-*Lethal Current* or progress of work in accordance with this *Standard*. They *Shall* be replaced as soon as possible on the completion of the work or testing involving non-*Lethal Current*.

Where possible, *Operator Earths* associated with an *Access / Test Permit Shall* be restored before an *Access / Test Permit* is *Surrendered*.

When restoration of *Operator Earths* is not practical, the *Recipient Shall* obtain approval from the *Switching Co-ordinator* to leave nominated *Operator Earths* removed. On approval, the *Recipient Shall* record details of all *Operator Earths* not replaced in the Abnormalities Section of the *Access / Test Permit*.

If the location of *Operator Earths* change or are to be changed during the course of work under an *Access / Test Permit*, then prior to *Operator Earths*

being changed, all current relevant *Access / Test Permits* Shall be *Surrendered* and *Cancelled* and new *Access / Test Permits* issued to reflect the new location/s of *Operator Earths*.

If using a circuit breaker in the closed position to earth *Electrical Apparatus* for the issue of an *Access / Test Permit*, the circuit breaker *Shall* be made inoperable.

5.4 Working Earths

The current-carrying capacity of a *Working Earth* *Shall* be adequate to discharge stored or induced charge and to limit rise in potential difference at the *Work Area*.

The *Recipient* *Shall* co-ordinate the placement and removal of *Working Earths*. Only the *Recipient* or an appropriately authorised and licensed *Individual of Work Group (Electrical)* under the direction of the *Recipient* may place or remove *Working Earths*.

The placement and removal of *Working Earths* *Shall* be recorded on the *Access / Test Permit* in the *Working Earth* schedule.

All *Working Earths* associated with an *Access / Test Permit* *Shall*, where practical, be removed before an *Access / Test Permit* is *Surrendered*. When removal of all *Working Earths* is not practical (for example, they are required for the subsequent issue of a new *Access / Test Permit*), the *Recipient* *Shall* obtain approval from the *Switching Co-ordinator* to leave the nominated *Working Earths* connected. On approval, the *Recipient* *Shall* record details of all *Working Earths* not removed in the Abnormalities Section of the *Access / Test Permit*.

Where a *Switching Operator* identifies *Working Earths* are still applied in a *Work Area* and the *Recipient* is not on site, the *Switching Operator* *Shall* make a reasonable effort to contact the *Recipient*. If the *Recipient* is not contactable,

the *Switching Operator Shall* investigate the situation to ensure that no person will be endangered by the removal of the *Working Earths* and ask the *Switching Co-ordinator* for approval to remove these *Earths*.

5.5 Absence of an *Operator Earth* on *High Voltage Electrical Apparatus* Under an *Electrical Access / Test Permit*

Where reasonably practicable *Operator Earths Shall* be applied to *Electrical Apparatus* prior to the issue of an *Access / Test Permit*. Where the design or configuration of specific *Electrical Apparatus* requires earthing practices not covered in this *Standard*, a documented risk assessment and *Electricity Entity Procedure Shall* be developed, endorsed and *Approved* by an appropriately qualified and authorised electrical engineer (RPEQ).

Where an *Operator Earth* has not been applied to *Electrical Apparatus* prior to the issue of an *Access / Test Permit*, the *Recipient Shall* arrange for earthing using the above *Approved* and documented advice to *Earth* the *Electrical Apparatus* before any *Work Crew Member* comes within the *Exclusion Zone* of the *High Voltage Conductors*.

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6 Other Precautions

6.1 General

The requirement for *Other Precautions* Shall be outlined as an item on the *Switching Sheet*. The *Switching Operator* Shall be responsible for initially determining and placing *Other Precautions* at the *Work Area* before issuing the *Access / Test Permit*.

Other Precautions provided by the *Switching Operator* Shall be recorded on the *Access / Test Permit*.

The Recipient Shall be responsible for ensuring that adequate *Other Precautions* are in place and maintained at the *Work Area* to suit the progress of work.

If the *Recipient* alters *Other Precautions*, the *Recipient* Shall record details of the changes on the *Access / Test Permit* and initial the changes.

When an *Access / Test Permit* is *Cancelled*, all *Other Precautions* Shall be removed before the removal of any *DNOB* associated with *Electrical Apparatus*.

6.2 Working under Access / Test Permits in Substation Enclosures

For work under an *Access / Test Permit* in a *Substation* enclosure, the *Work Area* Shall be defined by *Barriers* and *Signs* in accordance with *Appendix A* and be established only after isolation and earthing have been completed.

6.3 Lines Work Areas

Any person wishing to work under an *Access / Test Permit* on one circuit of a double circuit *Overhead Line*, whilst the other circuit remains *Live*, Shall positively identify the circuit to which access is permitted by referring to the circuit identification numbers or *Signs* displayed at the base of the structure before ascending. When work is being carried out on double circuit towers with

one circuit *Live*, a warning device *Shall* be suitably positioned below the tower waist on the *Live* side.

6.4 Breaking / Making Bridges under Access / Test Permit

Where the work under an *Access / Test Permit* involves the connection, cutting or disconnection of *High Voltage Conductors*, then *Approved* bridging leads *Shall* be applied across the proposed *Conductor* break, or *Earths Shall* be applied both sides of (and as close as practicable to) the proposed break and individually connected to a common *Earthing Point* before the break is created. Failure to do so may lead to serious injury or death.

6.5 Nomination of a Safety Observer

The *Recipient Shall* appoint a *Safety Observer* when the work to be performed has the potential to come within the relevant *Exclusion Zone* as defined in the *Electricity Entity's Approved Procedures*.

On appointment of the *Safety Observer*, the *Recipient Shall*:-

- a) identify the *Safety Observer* to the work group and
- b) instruct the work group to follow safety directions given by the *Safety Observer*
- c) instruct the *Safety Observer* that they *Shall* not carry out any work while performing their role of *Safety Observer*

6.6 Fixed Barriers

Fixed physical *Barriers* of *Approved* design may be used to prevent the work group coming within the *Exclusion Zone*. These *Barriers* may be a fixed screen or shield of suitable insulating material or be a metal screen or shield that is permanently *Earthed*.

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7 SWITCHING SHEETS

7.1 General

When an *Access / Test Permit* is required for planned work, a *Switching Sheet* setting out the steps to prepare the *Electrical Apparatus* for access / test *Shall* be written, checked and authorised in accordance with this *Standard*.

In the case of *Emergency Switching*, all *Switching* performed *Shall* be recorded by the *Switching Co-ordinator* and *Switching Operator*.

A *Switching Sheet* *Shall* not be prepared and checked by the same person unless *Emergency Switching* is required.

Refer to *Appendix C* for *Switching* at the *Generation / Transmission / Distribution / Customer Interface*.

7.2 Amendments to a Switching Sheet

Minor amendments are permitted to *Switching Sheets* when both of the following occur:-

- a) the *Switching Co-ordinator* and *Switching Operator* are satisfied that safety *Shall* not be compromised.
- b) sufficient space exists to insert amendment(s) on the *Switching Sheet*, or supplementary page/s is / are created and distributed to be inserted into the *Switching Sheet*.

All copies of the *Switching Operator's* and *Switching Co-ordinator's* *Switching Sheets* *Shall* be amended. All amendments *Shall* be clearly shown to avoid ambiguity or omission. Additional items *Shall* be numbered in a logical sequence.

Where major alterations to the *Switching Sheet* are required, the *Switching Sheet* *Shall* be cancelled and a new *Switching Sheet* prepared, checked and authorised.

7.3 Switching Sheet Requirements

A *Switching Sheet* Shall include the following:-

- a) a unique reference number
- b) the identification of the *Electrical Apparatus* to be worked on
- c) the description of work to be carried out
- d) all *Switching* required (step by step) to isolate, prove *De-energised*, and earth the *Electrical Apparatus* where access / test is required
- e) provision for the recording of the time of the completion of each step carried out
- f) the points of isolation, and associated *DNOBs*
- g) *Disconnection Points* (if applicable)
- h) locations at which *Operator Earths* and their associated *DNOBs* are to be applied
- i) a unique alpha character identifier appended to the *Switching* operation for each *Isolation Point* and *Operator Earth* (do not use I or O) unless not required by an *Electricity Entity Approved Procedure*
- j) requirements for the placement of *Other Precautions*
- k) the issue and receipt of any *Access / Test Permit*
- l) the *Surrender* of any *Access / Test Permit*
- m) the *Cancellation* of any *Access / Test Permit*
- n) the *Suspension* and reinstatement of any *Access Permit* where required
- o) any other relevant information as may be applicable

Switching Sheets Shall use standard terminology, where possible, to describe operating actions.

7.4 Applicant

7.4.1 Responsibility of the Applicant

The *Applicant Shall* be responsible for:-

- a) defining the scope of work
- b) negotiating requirements for the *Access / Test Permit* with the *Outage Co-ordinator*
- c) completing and submitting the request.

7.4.2 Role of the Applicant

When access to or testing of *Electrical Apparatus* is required, a request for an *Access / Test Permit Shall* be submitted to the *Control Authority*. The format of the request and any associated lead-times *Shall* be as specified by the *Electricity Entity*.

The *Applicant Shall* become familiar with the scope and intent of the work / testing to be performed.

The *Applicant's* request *Shall* provide the following information, as a minimum:-

- a) description of *Electrical Apparatus* to be worked on or tested
- b) location of *Work Area*
- c) work / test details
- d) time / date and duration
- e) *Applicant's* name and contact details
- f) *Isolation Points*
- g) *Disconnection Points*
- h) earthing requirements
- i) *Phasing Out /* phase rotation requirements (where applicable)
- j) *Access Permit Suspension* requirements
- k) any special requirements.

If the *Applicant* cannot meet the minimum requirements above, then they *Shall*

seek further direction from the *Control Authority*.

Applicants Shall submit all requests to the *Outage Co-ordinator*.

7.5 Roles and Responsibilities of an *Outage Co-ordinator*

Roles and Responsibilities of the *Outage Co-ordinator Shall* include:-

- a) deciding if formal application is required in line with this *Standard*
- b) negotiating requirements for an *Access / Test Permit* and *Switching Sheet* with the *Applicant* ensuring sufficient information has been provided
- c) confirm the *Switching Sheet* can proceed as prepared on the nominated time/date considering the effects on the network.

7.6 *Switching Sheet Writer*

The *Switching Sheet Writer Shall be responsible* for preparing a *Switching Sheet* to provide safe and appropriate isolation and earthing for the issue of an *Access / Test Permit* to cover the scope of work.

7.7 *Switching Sheet Checker*

The *Switching Sheet Checker Shall* be responsible for:-

- a) ensuring that the *Switching Sheet* provides safe and appropriate isolation and earthing for the issue of an *Access / Test Permit* for the scope of work
- b) verify the format and accuracy of a *Switching Sheet*
- c) endorse the *Switching Sheet* when it is compliant with the requirements.
- d) confirming the *Switching Sheet* can proceed on the nominated time and date considering the effects on the network.

7.8 Switching Sheet Authoriser

The *Switching Sheet Authoriser* Shall be responsible for:-

- a) confirming writer and checker of the *Switching Sheet* are not the same person (excluding *Emergency Switching*)
- b) endorsing the *Switching Sheet* as authorised.
- c) distributing *Switching Sheets* complete with associated *Access / Test Permits* as required.

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8 SWITCHING

8.1 General

The sequence of the *Switching*, including forward and reverse *Switching*, is critical and the instructed sequence of the *Switching Sheet* *Shall* be adhered to at all times. If there are any perceived errors in the *Switching Sheet*, the *Control Authority* *Shall* be contacted for clarification.

All *Switching* *Shall* be performed by a *Switching Operator*; or a *Switching Operator's Assistant* under the direct supervision of a *Switching Operator*.

A trainee *Switching Operator's Assistant* can participate in the process of *Switching* under the direct supervision of a *Switching Operator* when accompanied by an appropriately authorised *Switching Operator's Assistant*.

A trainee *Switching Operator* who is authorised as a *Switching Operator's Assistant* can perform the role of a *Switching Operator* under the direct supervision of a *Switching Operator*.

A trainee *Recipient*, can co-sign the receipt of an *Access/Test Permit* under the direct supervision of an appropriately authorised *Access/Test Permit Recipient*.

Switching operations *Shall* be carried out in accordance with this *Standard* and under the direction of a *Switching Co-ordinator*.

While *Switching* operations are being carried out, only the *Switching Operator*, *Switching Operator's Assistant* or trainee *Switching Operator / Switching Operator's Assistant* *Shall* be in the vicinity of the *Electrical Apparatus* being switched.

8.2 Approval to Proceed

A *Switching Operator* *Shall* obtain approval from the relevant *Switching Co-ordinator* before commencing any *Switching* on a *Switching Sheet*.

The *Switching Co-ordinator* *Shall* verify that the *Switching Sheet* has been

prepared and checked by different people (except for *Emergency Switching*) and assess the potential impact of the *Switching* on the network, before granting approval.

Electrical Apparatus Shall not be *Energised* or re-energised unless:-

- a) all relevant *Access / Test Permits* are *Cancelled* and all persons are clear the *Electrical Apparatus* is in a state suitable for energisation
- b) all equipment, *Operating Plant (Mobile Plant)*, tools and materials are removed as appropriate all *Earths*, short-circuits and equipotential bonds, if used, are removed
- c) appropriate checks and tests are carried out to ensure *Electrical Apparatus* is safe for service
- d) approval is given by the *Control Authority* to energise or re-energise.

8.3 Roles and Responsibilities of a *Switching Co-Ordinator*

A *Switching Co-ordinator* may enquire if a person is appropriately authorised.

The *Switching Co-ordinator* Shall:-

- a) assess the impact of the *Switching* on the network
- b) co-ordinate *Switching* with relevant *Switching Co-ordinators* and organisations
- c) direct and co-ordinate the progress of *Switching* with all *Switching Operators*
- d) approve the issue of an *Access / Test Permit*
- e) issue an *Access / Test Permit*
- f) *Suspend / reinstate Access Permit*
- g) *Cancel* an *Access / Test Permit* except where there is no effective communications with the *Switching Operator* and in this case *Cancellation* Shall be performed in accordance with the *Electricity Entity's Approved Procedures*.

- h) maintain an up-to-date record of the status of all *Switching Sheets* and *Access / Test Permits* as they are executed
- i) maintain an up-to-date record of network configuration and status, including location of *DNOBs* and hazard / warning *Signs*
- j) direct any or all *Switching* to cease if any danger arises to personnel, *Electrical Apparatus* or network security
- k) where applicable, undertake *Switching* via *Remote Control*
- l) on advice of any abnormalities on the *Access / Test Permit*, take appropriate action for reverse *Switching* to be carried out safely.

8.4 Roles and Responsibilities of a *Switching Operator*

While performing *Manual Switching*, a *Switching Operator*, *Shall* be assisted by a *Switching Operator's Assistant*.

The *Switching Operator* *Shall* be responsible for:-

- a) carrying out *Switching*
- b) issuing *Access / Test Permits*
- c) erecting and removing *Other Precautions* if required

A *Switching Operator* *Shall*:-

- d) confirm that they are in possession of the appropriate *Switching Sheet* (check *Switching Sheet* number, time, day, date and details of work)
- e) familiarise themselves with the intent of the *Switching* and understand the consequences of each operation before commencing any *Switching Sheet*
- f) advise the *Switching Co-ordinator* of any *Switching Sheet* errors or anomalies found before commencing *Switching*
- g) obtain approval from the *Switching Co-ordinator* before *Switching* is commenced
- h) record and read back any verbal directions issued by the *Switching*

Co-ordinator for verification

- i) ensure *Electrical Apparatus* is only operated as an item on a *Switching Sheet* or on approval of the *Switching Co-ordinator*
- j) ensure the *Electrical Apparatus* is correctly identified (for *Substation / location* and equipment designation) before performing each operation
- k) record the time of each *Switching* operation performed
- l) ensure any *Electrical Apparatus* with a *DNOB* affixed is only operated as an item on a *Switching Sheet*, or on approval of the *Switching Co-ordinator*
- m) report any *Switching* performed in error, or any problem / anomaly encountered during *Switching*, immediately to the *Switching Co-ordinator* before proceeding further
- n) ensure *Operator Earths* are only applied or removed as an item on a *Switching Sheet* or on approval of the *Switching Co-ordinator*
- o) ensure *Electrical Apparatus* with multiple *DNOBs* attached is not operated; (One *DNOB* may be removed as a *Switching Sheet* item or on approval of the *Switching Co-ordinator*. The operating handle / mechanism of an existing *Isolation Point* is not to be unlocked to apply or remove additional *DNOBs*.)
- p) place *Other Precautions* if required
- q) issue an *Access / Test Permit*
- r) notify the *Switching Co-ordinator* when *Switching* is completed
- s) ensure *Switching* is carried out using *Approved* operating equipment in current test date.

8.5 Roles and Responsibilities of a *Switching Operator's Assistant*

A Switching Operator's Assistant Shall assist the *Switching Operator* by:-

- a) consulting with the *Switching Operator* to become familiar with the

basic intent of the *Switching Sheet*

- b) understanding the consequences of each operation when performing tasks as directed by the *Switching Operator*
- c) advising the *Switching Operator* of any abnormality observed during *Switching* operations (e.g., dangerous situations, switch malfunctions).

8.6 Roles and Responsibilities of a *Switching Operator* in the role of a *Delegated Switching Operator*

The *Delegated Switching Operator* may perform duties within nominated boundaries on *HV Distribution Simple Systems* using approved EQL *Procedures*. There *Shall* only be one *Delegated Switching Operator* assigned to a given *Switching Sheet* at a time. The *Delegated Switching Operator* *Shall* ensure direct communication with a *Switching Co-ordinator* to ensure all approvals are agreed at the commencement of forward *Switching*.

Their duties *Shall* include the following: -

- a) Assess the impact of the *Switching* on the network
- b) Direct and co-ordinate the progress of *Switching* with all *Switching Operators*
- c) *Issue* an *Access Permit* (when applicable)
- d) *Cancel* an *Access Permit* (when applicable)
- e) The *Access Permit* has been signed off as being Surrendered by the *Recipient*
- f) When applicable, consider the impact of items recorded in the Abnormalities Section and take appropriate action
- g) Erecting and removing *Other Precautions* if required
- h) Maintain an up-to-date record of network configuration and status,

including location of *DNOBs*, *Operator Earths* and hazard / warning *Signs* and *Access Permits* as they are executed

- i) Direct any or all *Switching* to cease if any danger arises to personnel, *Electrical Apparatus* or network security
- j) Maintain electrical safety during the *Switching* process.

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9.1 General

An *Access / Test Permit* Shall be issued for all work or testing on or *Near High Voltage Exposed Electrical Apparatus*. A person Shall not work on or test such *Electrical Apparatus* unless signed on to an *Access / Test Permit* for such *Electrical Apparatus*.

An *Access / Test Permit* Shall only be issued after such *Electrical Apparatus* has been *Isolated*, proved *De-energised* and *Earthed*.

An *Access / Test Permit* is not required:-

- a) when urgent human rescue is required, and processes are in place to ensure safety is maintained
- b) for work on withdrawable *Electrical Apparatus* such as circuit breakers and voltage transformers that have been removed and withdrawn from their busbar with shutters closed and locked and *DNOBs* attached.

9.2 Access / Test Permits (Forms)

Each *Access / Test Permit* Shall have a unique reference number. An *Access / Test Permit* Shall be issued directly by a *Switching Operator* on approval of a *Switching Co-ordinator*, or verbally by a *Switching Co-ordinator* or *Switching Operator* via Radio / Phone.

As a minimum, an *Access / Test Permit* Shall include:-

- a) a reference to the associated *Switching Sheet* number
- b) location of the *Work Area*
- c) expected issue time / day / date
- d) expected *Surrender* time / day / date
- e) provision for the *Switching Co-ordinator's* name
- f) identification of the *Electrical Apparatus* to be worked on or tested
- g) a description of work or testing to be carried out or the extent of access

to the *Electrical Apparatus*

- h) a unique alpha character identifier appended to the *Switching* operation for each *Isolation Point* (do not use I or O) unless not required by *Electricity Entity Approved Procedures*
- i) a unique alpha character identifier appended to the *Switching* operation for each *Operator Earth* (do not use I or O) unless not required by *Electricity Entity Approved Procedures*
- j) details of any *Other Precautions* taken to contribute to the electrical safety of the work group
- k) details of *Nearby Exposed Live HV/LV* that may affect the *Work Area*
- l) provision for signing on and off by the work group
- m) provision for the recording of the placement and removal of any *Working Earths*
- n) *Disconnection Points*
- o) an Abnormalities Section for recording anything a *Switching Operator / Switching Co-ordinator* is to be advised of before reversing the *Switching*
- p) provision for declaration of issue and receipt
- q) provision for declaration of *Surrender*
- r) provision for the recording of any associated attachments or supplementary pages
- s) provision for recording temporary *Suspension (Access Permit only)*
- t) provision for transfer
- u) provision for recording temporary removal of *Operator Earths*

The issue, receipt, *Suspension (Access Permit only)*, *Surrender* and *Cancellation* of all *Access / Test Permits* Shall be recorded on their related *Switching Sheets*.

9.3 Test Permit

A *Test Permit* Shall be used where the electrical test may produce *Lethal Current*.

Operator Earths may be removed and replaced under the direction of the *Recipient*. When applying and removing test leads and / or test equipment, the *Operator Earths* (and also *Working Earths* if required) Shall always remain in place.

Minor works may be carried out under a *Test Permit*. Minor works may include:-

- Phase identification of *HV Lines* and *Conductors*
- Circuit Breaker timing tests
- Protection testing
- *HV* Current Transformer and Voltage Transformer oil change / sample.

9.4 Testing Under an Access Permit

Testing is normally carried out under a *Test Permit*. However, where testing devices do not produce *Lethal Currents*, testing may be performed under an *Access Permit* in accordance with this *Standard*.

Some devices used to provide *High Voltage* for testing purposes may only produce small currents that are not lethal to the human body. If such devices are used to charge a length of *Cable* or capacitor to a *High Voltage*, sufficient charge can be stored to produce *Lethal Current*. Where such lethal conditions are created a *Test Permit* Shall be used. If there is any doubt as to whether *Lethal Current* can be created, a *Test Permit* Shall be used.

When applying and removing test leads and / or test equipment, the *Recipient* Shall ensure the *Operator Earths* always remain in place. In addition to *Operator Earths*, *Working Earths* may need to be applied in certain situations. Failure to follow this process may lead to serious injury or death.

9.5 Removal of *Operator Earths* under an *Access Permit*

Operator Earths applied under an *Access Permit* *Shall* only be removed in accordance with this *Standard* to allow testing involving non-*Lethal Currents* or to allow the progress of work.

To remove *Operator Earths* the criteria listed below *Shall* be met:-

- a) the *Recipient* *Shall* request approval from the *Switching Co-ordinator* before proceeding
- b) the *Switching Co-ordinator* *Shall* give clearance that the removal of the *Operator Earths* may proceed. Before approval is granted, the *Switching Co-ordinator* *Shall*:-
 - i) check if other work groups *Shall* be affected and advise affected *Recipients* that *Operator Earths* *Shall* be removed, and to *Suspend* or *Surrender* their *Access Permits*
 - ii) receive and record confirmation from affected *Recipients* that their *Access Permits* have been *Suspended* or *Surrendered*
 - iii) record the removal and replacement of *Operator Earths*.
- c) electrical tests *Shall* not involve *Lethal Current* (or have the ability to create *Lethal Current* in the *Electrical Apparatus* under test)
- d) *Exclusion Zones* for *Electrical Apparatus* not covered by this *Access Permit* *Shall* not be encroached.

On completion of work or test the criteria listed below *Shall* be met:-

- e) the *Recipient* *Shall* ensure that at the conclusion of the test or work, any *Electrical Apparatus* that may have become electrically charged during the course of the test or work, is fully discharged and is in a safe condition before the testing equipment is removed
- f) the *Operator Earths* *Shall* be restored to their original position as soon as possible on completion of work or test

- g) the *Recipient Shall* advise the *Switching Co-ordinator* the *Operator Earths* have been restored to their original position
- h) the *Switching Co-ordinator Shall* inform all affected *Recipients* that they may reinstate their *Access Permits* and resume work
- i) the *Switching Co-ordinator Shall* record the time for re-instatement of *Access Permits*.

9.6 Number of Access / Test Permits Required

Where access involves a large *Work Area*, a single *Access Permit* may be used, provided the *Recipient* can adequately supervise the electrical safety throughout the *Work Area*. This may include, but would not be restricted to, situations where all members of the work group have audible contact or are in visual range of the *Recipient*.

Where the *Work Areas* of concurrent *Access Permits* overlap, a single *Control Authority Shall* control all *Switching*.

No more than one *Test Permit Shall* be on issue for the same *Electrical Apparatus*.

Where a test involves work groups at more than one location, a single *Test Permit* may be used providing the *Recipient* can manage the testing *Procedure* such that the electrical safety at the other location(s) is not compromised:-

- a) the original *Test Permit Shall* remain with the *Recipient*
- b) *Test Permit* Supplementary Pages and a copy of the *Test Permit Shall* be held at the other location(s). The work group at the other location(s) *Shall* use the *Test Permit* Supplementary Pages to sign on and off the *Test Permit*
- c) the *Recipient Shall* be responsible for maintaining up-to-date status for all locations of:-
 - i) *Work Group Members* signing on and off

- ii) a record of earthing.

9.7 Recipient

9.7.1 Responsibilities of the Recipient of an Access Permit

The *Recipient* of an *Access Permit* Shall be responsible for:-

- a) receiving an *Access Permit*
- b) erecting and altering *Other Precautions* in addition to those provided by the *Switching Operator*, and initialing the changes
- c) ensuring all *Work Group Members* sign on / off the *Access Permit*
- d) recording in the Abnormalities Section the absence of a *Work Group Member*, who has not signed off the *Access Permit*. A *Recipient* Shall not sign off on behalf of the absent *Work Group Member*
- e) directing suitably *Authorised Persons* on the placement and removal of *Working Earths* and recording in the *Working Earth* schedule
- f) directing suitably *Authorised Persons* on the removal and replacement of *Operator Earths* for testing with non-*Lethal Current* to allow the progress of work and recording in the *Operator Earth* schedule
- g) supervising electrical safety at the *Work Area*
- h) awareness of any absence of *Work Group Members* from the *Work Area*
- i) reporting a lost or damaged *Access Permit*
- j) transferring an *Access Permit*
- k) *Suspending* and reinstating an *Access Permit*
- l) completing the Abnormalities Section
- m) *Surrendering* an *Access Permit*
- n) if work proceeds for more than one day, briefing the work group regarding the *Access Permit* conditions at the start of each working day
- o) advising an *Instructed Person* in accordance with the requirements of

Clause 9.12 of this Standard

- p) supervising an *Instructed Person* or delegating the responsibility to supervise an *Instructed Person* to an *Individual of Work Group* in accordance with the requirements of *Clause 9.12 of this Standard*.

9.7.2 Responsibilities of the Recipient of a Test Permit

The *Recipient* of a *Test Permit* Shall be responsible for:-

- a) receiving a *Test Permit*
- b) ensuring *Test Permit* Supplementary pages and a copy of the current *Test Permit* is at the other locations (where applicable)
- c) erecting and altering *Other Precautions* in addition to those provided by the *Switching Operator*, and initialing the changes
- d) ensuring all *Work Group Members* sign on / off the *Test Permit*
- e) recording in the Abnormalities Section the absence of a *Work Group Member*, who has not signed off the *Test Permit*. A *Recipient* Shall not sign off on behalf of the absent *Work Group Member*
- f) directing suitably *Authorised Persons* on the removal and replacement of *Operator Earths* and *Working Earths* for testing and recording in the *Operator Earth* and *Working Earth* schedules
- g) supervising electrical safety at the *Work Area*
- h) awareness of any absence of *Work Group Members* from the *Work Area*
- i) reporting a lost or damaged *Test Permit*
- j) transferring a *Test Permit*
- k) completing the Abnormalities Section
- l) *Surrendering a Test Permit*
- m) advising an *Instructed Person* in accordance with the requirements of *Clause 9.12 of this Standard*
- n) if work proceeds for more than one day, briefing the work group

- regarding the *Test Permit* conditions at the start of each working day
- o) supervising an *Instructed Person* or delegating the responsibility to supervise an *Instructed Person* to an *Individual of Workgroup* in accordance with the requirements of *Clause 9.12* of this *Standard*.

9.7.3 Roles of a Recipient of an Access / Test Permit

The *Recipient Shall* undertake the following tasks or ensure that the following conditions have been met before receiving an *Access / Test Permit*:-

- a) confirm the *Access / Test Permit* is endorsed as having been issued
- b) confirm correct *Access / Test Permit* (location of *Work Area*, day and date of access, specified *Recipient* and work / test details)
- c) confirm the *Access / Test Permit* provides access for work / test, as requested, and is appropriate for the work / testing to be undertaken
- d) understand the limits of the *Access / Test Permit* including location of *Nearby Exposed Live HV/LV* at the *Work Area*
- e) confirm the *Safety Precautions* are adequate
- f) confirm *Other Precautions* are adequate

Before allowing persons to sign on to an *Access / Test Permit* to commence work / test, ensure that all persons:-

- g) are instructed as to the *Electrical Apparatus* to be worked on, its identification details and the description of work or testing to be carried out
- h) understand the limits of the *Access / Test Permit* including location of *Nearby Exposed Live HV/LV* at the *Work Area*
- i) are made aware of the *Safety Precautions*
- j) are made aware of *Other Precautions*, including the location of any *Barriers* and signage erected for the purposes of issuing the *Access / Test Permit*
- k) understand their responsibilities under the *Access / Test Permit*.

For supervising electrical safety at the *Work Area*, the *Recipient Shall* ensure that:-

- l) test equipment is connected and removed with *Operator Earths* applied. In addition to *Operator Earths*, *Working Earths* may need to be applied in certain situations. Failure to follow this process may lead to serious injury or death.
- m) electrical testing is conducted in accordance with *Approved Procedures*
- n) any *Earths* applied are only removed for the minimum amount of time possible
- o) at the conclusion of the test, any *Electrical Apparatus* under test that may have become electrically charged during the course of the test, is fully discharged and is in a safe condition before the testing equipment is removed
- p) the *Access / Test Permit* is readily available for the duration of issue
- q) if there is a change in the scope of the work a review of the *Access / Test Permit Shall* be undertaken with the *Switching Co-ordinator* before that work / testing proceeds
- r) where exceptional circumstances exist that require entry or exit to the *Work Area* by means other than the designated entry point, a risk assessment on each activity *Shall* be undertaken
- s) when an *Access / Test Permit* is lost or damaged, the work group has been advised that the *Access / Test Permit* is lost or damaged and any work is to cease until a replacement *Access / Test Permit* is issued and the *Switching Co-ordinator* is advised that the *Access / Test Permit* has been lost or damaged and make arrangements for a replacement *Access / Test Permit*.

In addition to the above the *Recipient Shall* ensure for a *Test Permit* that the *Work Area* is secure and apply *Other Precautions* where required.

The *Recipient Shall* remove and replace *Earths* associated with the *Test Permit*.

The *Recipient* has the authority to stop the work while being absent from the *Work Area*. The *Recipient Shall* only leave the *Work Area* for a short period while work is in progress if the electrical safety of the work group is not compromised.

In situations where an *Access / Test Permit* is on issue and the *Recipient* and work group leave the work-site with the intention of returning and continuing work under that permit (e.g. overnight or in an emergency) then the *Recipient Shall* ensure that *Electricity Entity Approved Procedures* are followed.

For other absences, the *Access / Test Permit Shall* be either transferred, *Suspended (Access Permit only)* or *Surrendered and Cancelled*.

9.8 Approving the issue of an *Access / Test Permit*

Before approving the issue of an *Access Permit*, the *Switching Co-ordinator Shall* ensure that:-

- a) any pre-existing *Test Permit* issued for the *Electrical Apparatus* concerned has been *Surrendered and Cancelled*
- b) there are no altered system conditions that may affect the safety of work under the *Access Permit*.

Before approving the issue of a *Test Permit*, the *Switching Co-ordinator Shall* ensure that:-

- a) any pre-existing *Access / Test Permit*, issued for the *Electrical Apparatus* concerned has been *Suspended, or Surrendered and Cancelled*

- b) there are no altered system conditions that may affect the safety of work under the *Test Permit*.

9.9 Issuing an Access / Test Permit

The *Switching Operator* or *Switching Co-ordinator* issuing an *Access / Test Permit* Shall ensure that:-

- a) all relevant sections of the *Access / Test Permit* are completed
- b) the *Recipient* understands:-
- i) the extent of access to *Electrical Apparatus* to be worked on or tested
 - ii) the location of *Safety Precautions*:-
 - *Isolation Points*
 - *Disconnection Points*
 - *Operator Earths*
 - iii) *Other Precautions* applied at the *Work Area*
 - iv) the risk of any *Nearby Exposed Live HV/LV Conductors*
 - v) any other hazards associated with the *Work Area*
 - vi) the *Access / Test Permit* is endorsed as having been issued

If the *Recipient* is not on site at the time of issue of the *Access / Test Permit*, then:-

- c) *Access / Test Permit* Shall be left in an appropriate location on site and;
- d) The *Switching Co-ordinator* Shall be notified of the location of the *Access / Test Permit* by the *Switching Operator*.

When the *Recipient* arrives on site, they *Shall* notify the *Switching Co-ordinator*:-

- e) *Switching Sheet* number
- f) *Access / Test Permit* number
- g) Name of *Recipient*
- h) Time and date received and
- i) Confirm that they understand the conditions identified in *Clause 9.9 (b)*.

9.10 Access / Test Permits Issued Verbally (via Radio / Telephone)

Where an *Access / Test Permit* is issued verbally, the *Switching Co-ordinator / Switching Operator* and the *Recipient Shall* both maintain a copy of the *Access / Test Permit*. The *Switching Co-ordinator / Switching Operator Shall*:-

- a) confirm that the *Recipient* has a legible copy of the correct *Access / Test Permit*
- b) ensure the *Recipient* understands the extent of access to *Electrical Apparatus* to be worked on or tested
- c) ensure the *Recipient* understands the location of *Safety Precautions*:-
 - *Isolation Points*
 - *Disconnection Points*
 - *Operator Earths*
- d) request that the *Recipient* provides and records details of *Other Precautions* taken to contribute to the electrical safety of the work group, and details of any *Nearby Exposed Live HV/LV* that may affect the *Work Area*
- e) record details as provided by the *Recipient* on the *Switching Co-ordinator's / Switching Operator's* copy
- f) sign the *Access / Test Permit* as being issued on the *Switching Co-*

ordinator's / Switching Operator's copy

- g) record the *Recipient's* name on the *Switching Co-ordinator's / Switching Operator's copy*.

9.11 Roles and Responsibilities of *Individual of Work Group*

The *Individual of Work Group* Shall be responsible for carrying out *Access / Test* requirements as directed by the *Recipient*.

An *Individual of Work Group* required to work under an *Access / Test Permit* Shall:-

- a) understand the limits of the *Access / Test Permit*, including location and Exclusion Zones for *Nearby Exposed Live HV/LV* at the *Work Area*
- b) understand the *Safety Precautions* in place
- c) understand the *Other Precautions*
- d) sign on the *Access / Test Permit* once satisfied with the above
- e) if work proceeds for more than one day under an *Access Permit*, be briefed by the *Recipient* regarding *Access Permit* conditions at the start of each working day
- f) follow any safety directions given by the *Recipient* and / or *Safety Observer*
- g) when entering or leaving the *Work Area*, do so only via the opening in the *Barrier* which defines the *Work Area* unless otherwise *Approved* by the *Recipient* for exceptional circumstances after the *Recipient* has undertaken a risk assessment on each activity
- h) where required, advise or supervise *Instructed Persons* on the avoidance of any hazards
- i) apply and remove *Working Earths* only as directed by the *Recipient* providing the *Individual of Work Group* is suitably *Authorised*

- j) apply and remove *Operator Earths* only as directed by the *Recipient* providing the *Individual of Work Group* is suitably *Authorised*
- k) sign off an *Access / Test Permit* and treat the *Electrical Apparatus* as *Live*.

9.12 Roles and Responsibilities of an *Instructed Person*

An *Instructed Person* Shall be responsible for complying with instructions given by *Authorised Persons* as outlined in this *Standard*.

An *Instructed Person* required to work under an *Access / Test Permit* Shall:

- a) understand the limits of the *Access / Test Permit* including location and Exclusion Zones for *Nearby Exposed Live HV/LV* at the *Work Area*
- b) understand the *Safety Precautions*
- c) understand the *Other Precautions*
- d) sign on the *Access / Test Permit* once satisfied with the above
- e) confirm they understand the instructions given on the work / testing to be undertaken
- f) receive a brief on the access conditions by the *Recipient* at the start of each working day
- g) follow any safety advice and directions given by the *Recipient*, *Individual of Work Group* and / or *Safety Observer*
- h) when entering or leaving the *Work Area*, do so only via the opening in the *Barrier* which defines the *Work Area* unless otherwise *Approved* by the *Recipient* for exceptional circumstances after the *Recipient* has undertaken a risk assessment on each activity
- i) not apply or remove *Working Earths* or *Operator Earths*
- j) sign off an *Access / Test Permit* and treat the *Electrical Apparatus* as *Live*

9.13 Visitors to the *Work Area*

The safety requirements for an *Instructed Person* *Shall* be enacted for any visitor who is not appropriately authorised entering a designated *Work Area* under an *Access / Test Permit*.

9.14 Supplementary Pages and Attachment Pages

When insufficient space exists on an *Access / Test Permit* to record *Isolation Points* description (*Clause 8(a)*) and / or *Operator Earth* locations (*Clause 9*) an attachment page *Shall* be used. The *Recipient* *Shall* indicate the existence of any attachment pages on the related *Access / Test Permit*.

Attachment pages *Shall* be attached to their associated *Access / Test Permits*.

9.15 Temporary Absence from *Work Area*

A person working under an *Access / Test Permit* may only leave the *Work Area* for a short period while work is in progress without signing off, provided that:-

- a) the *Recipient* is advised before leaving
- b) *Access / Test Permit* conditions are not likely to change during the person's absence
- c) the *Access / Test Permit* is not intended to be *Surrendered / Suspended* during the person's absence
- d) the person reports to the *Recipient* on returning to the *Work Area* to ensure that *Access / Test Permit* conditions have not altered.

In all other circumstances, the person *Shall* sign off the *Access / Test Permit*.

9.16 Suspension of an Access Permit

Suspension of an Access Permit Shall be in accordance with this Standard:-

- a) *Suspension Shall* be at the discretion of the *Switching Co-ordinator*
- b) *Suspension Shall* only occur once
- c) before approval is granted, the *Switching Co-ordinator Shall*:-
 - i) check if other work groups will be affected and advise affected *Recipient/s* to *Suspend* or *Surrender* their *Access Permits*
 - ii) confirm with affected *Recipient/s* that their *Access Permits* have been *Suspended* or *Surrendered* and *Cancelled*
 - iii) confirm the status of the *Electrical Apparatus* at the time of the suspension of the work
 - iv) *Cancel* any *Surrendered Access Permits*
- d) the affected *Recipient/s Shall* ensure that all persons working under the *Access Permit* sign off the *Access Permit* and inform them that their permission to work has been suspended until further notice
- e) the *Recipient Shall* notify the *Switching Co-ordinator* that the work has been suspended and the status of the *Electrical Apparatus* at the time of the suspension of the work
- f) the *Switching Co-ordinator Shall* record on the *Switching Sheet* the time of *Suspension* of the *Access Permit*
- g) the affected *Recipient/s Shall* record on the *Access Permit* the time and date of *Suspension*.

9.17 Reinstatement of an *Access Permit*

Reinstatement of an *Access Permit* Shall not recommence until the *Switching Co-ordinator* has:-

- a) confirmed with the affected *Recipient/s* that there are no alterations or modifications to the conditions of work under the *Access Permit*
- b) provided clearance to the affected *Recipient/s* to reinstate the *Access Permit*
- c) the *Switching Co-ordinator* Shall record on the *Switching Sheet* the time and date the *Access Permit/s* is reinstated
- d) the affected *Recipient/s* Shall record on the *Access Permit* the time and date the *Access Permit* is reinstated.

9.18 Transfer of an *Access / Test Permit*

An *Access / Test Permit* may be transferred to another *Recipient* and Shall only occur once. A *Suspended Access Permit* may also be transferred to another *Recipient*.

The outgoing *Recipient* Shall:-

- a) confirm that the incoming *Recipient* is authorised
- b) advise the *Switching Co-ordinator* of the name of the incoming *Recipient* and time and date of transfer
- c) ensure that the incoming *Recipient* is briefed in person of the *Safety Precautions, Other Precautions* and any *Nearby Exposed HV / LV Electrical Apparatus*.

The incoming *Recipient Shall* advise the work group of the change of *Recipient*. Where the original *Recipient* is absent from the *Work Area* or is incapacitated the incoming *Recipient Shall*:-

- d) become familiar with the conditions of the *Access / Test Permit*
- e) confirm the details of the *Access / Test Permit* and the *Safety Precautions, Other Precautions* and any *Nearby Exposed HV / LV Electrical Apparatus*
- f) make a reasonable attempt to advise the outgoing *Recipient* of the transfer
- g) advise their understanding of the *Access / Test Permit* conditions with the *Switching Co-ordinator* and obtain approval for the transfer from the *Switching Co-ordinator*
- h) advise the work group regarding the change of *Recipient*.

9.19 Abnormalities Section

Prior to *Surrendering* the *Access / Test Permit*, the *Recipient Shall* record any abnormalities in the Abnormalities Section of the *Access / Test Permit*.

For example, any *Earths* not removed, unserviceable *Electrical Apparatus*, or absent personnel who have not signed off the *Access / Test Permit Shall* be identified and recorded in this section.

9.20 Surrender of an Access / Test Permit

When work / testing covered by an *Access / Test Permit* is completed, the *Recipient Shall* indicate that permission to work / test is relinquished by *Surrendering* the *Access / Test Permit*.

When an *Access / Test Permit* is to be *Surrendered*, the *Recipient Shall* ensure:-

- a) any *Working Earths* applied during the work have been removed unless recorded in the Abnormalities Section

- b) that all *Operator Earths* removed have been re-applied unless recorded in the Abnormalities Section
- c) all persons signed on the *Access / Test Permit* have signed off
- d) that any person not signed off is notified as soon as possible that the *Access / Test Permit* has been *Surrendered* and that they no longer have access and record their absence in the Abnormalities Section
- e) when applicable, complete the Abnormalities Section
- f) sign to indicate that the *Access / Test Permit* has been *Surrendered*
- g) the *Switching Operator / Switching Co-ordinator* is informed that the *Access / Test Permit* is *Surrendered* and advise of any abnormalities (if applicable).

9.21 Cancellation of an Access / Test Permit

When an *Access / Test Permit* is to be *Cancelled*, the *Switching Co-ordinator* *Shall* confirm that:-

- a) the *Access / Test Permit* has been signed off as being *Surrendered* by the *Recipient*
- b) when applicable, consider the impact of items recorded in the Abnormalities Section and take appropriate action.

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10 APPENDIX A – USE OF BARRIERS & SIGNS TO DEFINE WORK AREAS FOR ACCESS / TEST PERMIT

The *Work Area* within a *Substation* is an area delineating *Electrical Apparatus* that are under an *Access / Test Permit*.

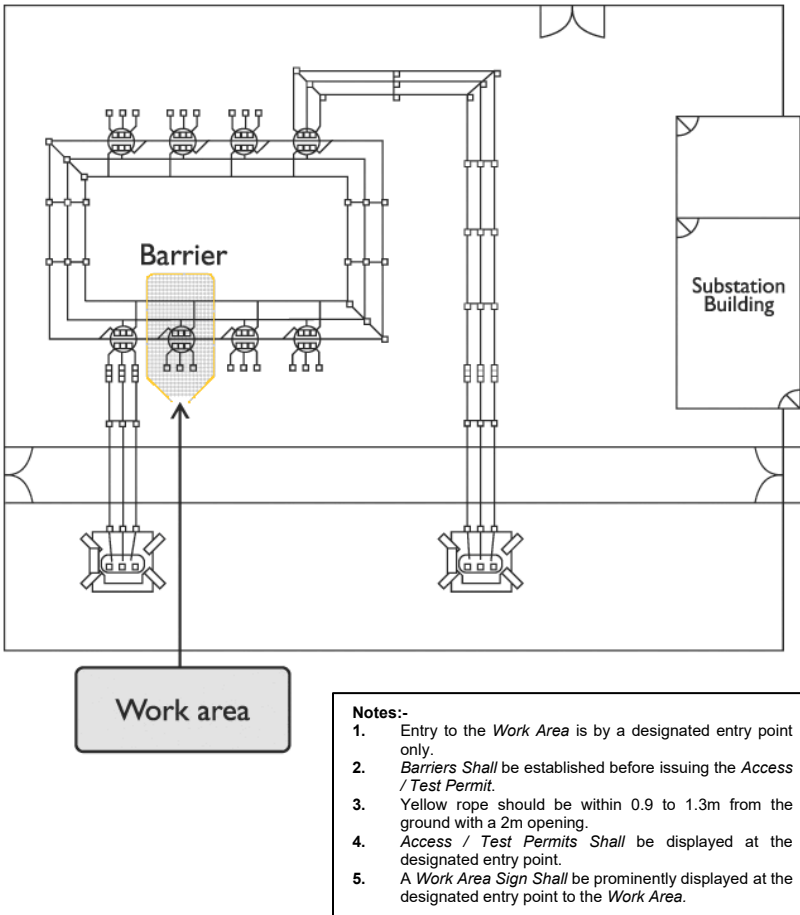
When establishing a *Work Area* the following *Shall* be observed:-

- a) an *Approved Barrier* *Shall* be established indicating as clearly as possible the area in which work can be safely performed
- b) the *Barrier* *Shall* be arranged so that the *Work Area* is accessible without interfering with or stepping over or under the *Barrier*
- c) walls, fences or other impassable permanent *Barriers* can be used as a boundary for the *Work Area*
- d) where practical only one entry to the *Work Area* is provided
- e) a *Work Area Sign* *Shall* be clearly displayed in a prominent position at all entry points to the *Work Area*
- f) the *Access / Test Permit* *Shall* be displayed at the entry point
- g) established *Barriers* are to be moved or re-arranged only in accordance with this *Standard*
- h) If it is possible to move within the *Work Area* in the vicinity of *Exposed Electrical Apparatus* that *Shall* be regarded as *Live*, "*Live HV Conductors Above or Beyond*" *Signs* *Shall* be placed at points showing there is *Electrical Apparatus* which *Shall* be regarded as *Live*, and from which persons *Shall* maintain the relevant *Exclusion Zone*.

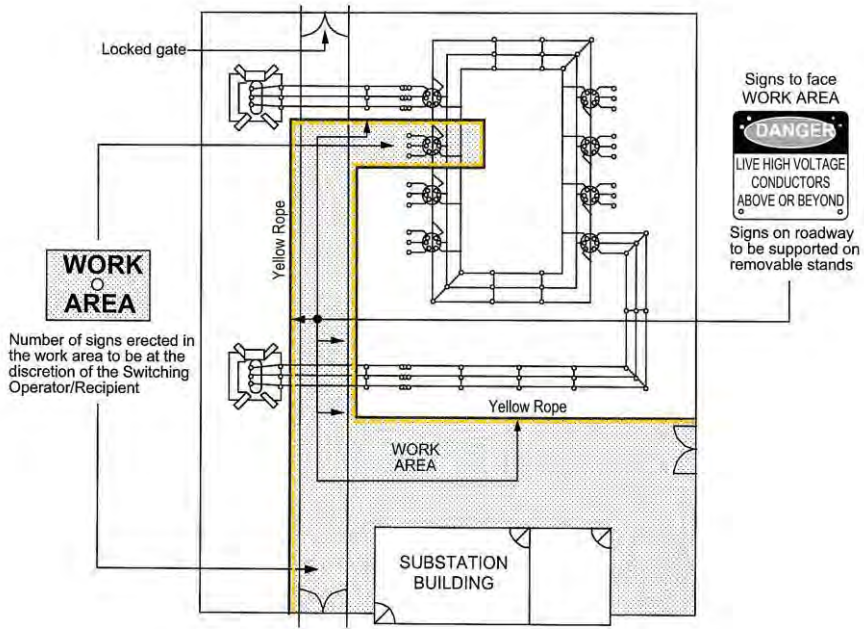
The methods used for defining a *Work Area* in a *Substation* *Shall* be either the '*Barrier in*' or '*Barrier out*' Method. A yellow rope (of no less than 8mm in diameter) and/or *Barrier* as described in Clause 10c) *Shall* be used for this purpose. The rope should be within 0.9 to 1.3 metres from the ground.

The '*Barrier in*' Method typically has an opening of approximately 2 metres as the entrance. This opening may only be increased by the *Recipient / Switching Operator* (for example if *Operating Plant (Mobile Plant)* is required inside the *Work Area*), providing it does not introduce a hazard and the *Work Area* is clearly delineated.

“Barrier in” Method



“Barrier out” Method



Examples of multi-panel taping Indoor Switchgear for *Barrier-out* Method.

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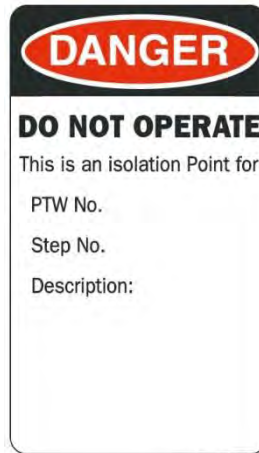
11.1 Do Not Operate Board (DNOB)

DNOBs are affixed to devices to show that they are points of isolation or *Operator Earths* and that they *Shall* not be operated or removed respectively. A DNOB has the same markings on both sides.



11.2 Permit to Work Tag (PTW)

A PTW Tag is identified by a number written on the Tag. It *Shall* not be operated or interfered with under any circumstances.



Form 945 (5/97)

Sample Only

11.3 *Live High Voltage Conductors Above Or Beyond Sign*

Placed at points to indicate that there are *Conductors*, that *Shall* be regarded as *Live* and from which persons *Shall* need to maintain *Exclusion Zone*.



11.4 *High Voltage Testing Sign*

Placed to indicate that *Electrical Apparatus* is under test and that *Lethal Current* may be involved. *Electrical Apparatus* *Shall* be regarded as *Live* and persons *Shall* need to maintain the relevant *Exclusion Zone*.



11.5 *Hazardous Condition Warning Tag*

Warning Tag. (Refer *Clause 3.10.2*)



11.6 *Work Area Sign*

Placed to define the entrance to a *Work Area*.



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12 APPENDIX C – GENERATION / TRANSMISSION / DISTRIBUTION / CUSTOMER INTERFACE / DIRECT CONNECT CUSTOMERS

12.1 General

All Generation / Transmission / Distribution / Customer Interface and Direct Connect Customers *Shall* have a *High Voltage Isolation and Access System* for safe access / testing of their network or *HV Installations*. These systems should be designed to meet or exceed *ENA DOC 003* for use at the interface.

Examples are:-

- a) Permit to Work *Procedure (PTW)*
- b) *Queensland Electricity Entity Standard for Safe Access to High Voltage Electrical Apparatus (this Standard)*
- c) Customer's Safe Systems of Work *Procedures* to allow access to *HV* equipment.

The following principles apply when *High Voltage Access / Testing* is required in the interface area.

12.2 Validation

Validation is required for *Approved* use of *Electrical Apparatus* owned by another organisation for the purpose of isolation and earthing to safely access for work / testing *High Voltage Electrical Apparatus* at the interface.

By completing the *Validation* process for a *Switching Sheet*, an external organisation via its *Authorised Persons*, accepts responsibility for providing the necessary isolation from all sources of *Supply* and earthing to prevent inadvertent energisation of the *Work Area* from that external organisation's *HV* network.

12.3 Choice of Safe Systems of Work Procedures

The *Procedure* used *Shall* be the *Procedure* in which the work group is trained.

Where work groups from both organisations are present, both *Procedures* may be applied providing it does not result in one organisation's *Procedure* affecting the *Procedures* required by the other.

When both the *Safe Systems of Work Procedures* and this *Standard* are applied, then concurrent work on either side of the interface that use the same *Isolation Points* may exist together. This is provided no electrical testing that involves *Lethal Current* (or have the ability to create *Lethal Current*) is carried out by any of the work groups and earthing continuity is not compromised.

As part of the planned work scope at the interface, the following rules *Shall* apply;

- a) *Electrical* testing at the interface can only be carried out by one organisation at any one time, and
- b) During *Electrical* testing (as referred to in *Clause 12.3* there will be no other *Access / Test Permits / PTW* or similar currently issued by the other organisation, and
- c) the *Access / Test Permits / PTW* or similar *Work Areas* from either organisation will not overlap.

12.4 Planning and Co-ordination of Work

Each organisation at the interface *Shall* nominate the contact persons for the planning and co-ordination of work, and set up a system to advise the relevant *Control Authority* of any changes to *Switching Sheet* items or the scope of works.

12.5 Preparation of *Switching Sheets*

Switching Sheets Shall be used for all isolation and earthing in the interface area.

Switching Sheets may be prepared by *Generation, Transmission, Distribution* or *Customer Authorised Persons* with the responsibility for preparation generally falling with the initiator of the outage.

Persons preparing *Switching Sheets* Shall be trained and accredited by the relevant organisation in accordance with that organisation's Policies and *Procedures*.

A *Switching Sheet* involving the operation of *Electrical Apparatus* for isolation and earthing purposes in the interface area will normally be prepared and checked by the initiator of the outage. Before authorisation / approval of the *Switching Sheet*, the *Switching Sheet* items Shall be validated by the other organisation's *Authorised Persons*.

Where work groups from both organisations are present, the *Switching Sheet* Shall have items for the relevant *Control Authority* to give approval to the other organisation's *Switching Co-ordinator* to issue the *Access Permit / Test Permit / PTW* or similar when all forward isolation and earthing has been completed and subsequent *Surrender* of all *Access Permit / Test Permit / PTW* or similar by the other organisation's working group.

12.6 Co-ordination of *Switching*

The co-ordination of the *Switching Sheet* in the interface area *Shall* be performed by the relevant *Control Authority Switching Co-ordinator*. The overall responsible *Switching Co-ordinator* falls with the initiator of the outage unless otherwise agreed.

12.7 Operation of *Electrical Apparatus*

Operation of mechanical and *Electrical Apparatus* for the purpose of isolation and earthing *Shall* only be performed by suitably trained and *Authorised Persons* in accordance with an *Authorised / Approved Switching Sheet*.

12.8 Safeguarding of Isolation and Earthing

Isolation and Earthing Points *Shall* be designated by the relevant organisation.

In general either a *DNOB* or a *PTW Tag* or similar is used.

These *Signs* are not identical and the following safeguards *Shall* apply:-

- a) before commencement of *Switching* the relevant organisation's *Authorised Persons* *Shall* validate their own *Isolation Points* in the *Switching Sheet*
- b) a *DNOB* or *PTW Tag* or similar *Shall* only be placed and removed using an authorised *Switching Sheet* by an *Authorised Person* under the direction of the relevant *Control Authority*
- c) a *DNOB* or *PTW Tag* or similar *Shall* have the words “**DANGER DO NOT OPERATE**” as a minimum in accordance with the appropriate *Australian Standard*.
- d) Consideration should be given to how multiple tags are to be secured to apparatus. This could be achieved by the application of an approved multi-lockout device.

12.9 Testing Across the Interface Boundary

Tests across the interface boundary will involve work groups at more than one location, a single *Test Permit* may be used providing the *Recipient* can manage the testing *Procedure* such that the electrical safety at the other location(s) is not compromised:-

- a) the original *Test Permit* Shall remain with the *Recipient*
- b) *Test Permit* Supplementary Pages and a copy of the *Test Permit* Shall be held at the other location(s). The work group at the other location(s) Shall use the *Test Permit* Supplementary Pages to sign on and off the *Test Permit*
- c) the *Recipient* Shall be responsible for maintaining up-to-date status for all locations of:-
 - i) *Work Group Members* signing on and off
 - ii) a record of earthing
- d) *Work Group Members* signing on from the other organisation will be signed on as *Instructed Persons* or similar
- e) the *Recipient* Shall appoint an *Individual of Work Group* or similar from the organisation holding the permit to be at the remote location to supervise the *Instructed Persons*
- f) Operation of *Electrical Apparatus* for the purpose of the testing Shall only be performed by suitably trained and *Authorised Persons* from the organisation that owns/controls the equipment. This may require an *Instructed Person* to operate their organisation's *Earths*, this would only be allowed in this circumstance if they are trained and hold the appropriate authorisation for this organisation.

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13 APPENDIX D – SAMPLE ACCESS PERMIT TEMPLATE



HV Access Permit

Permit No.

| | | | | |
|--|------------------------|--|------|------|
| 1. Switching Sheet No. | 2. Nominated Issue | Time Date / / | | |
| 3. Issue To | 4. Nominated Surrender | Time Date / / | | |
| 5. Work Area Location | | | | |
| 6. Access to the following High Voltage Electrical Apparatus | | | | |
| 7. Work Details | | | | |
| 8(a). Description of Isolation Points with DNOBs attached | | Isolation Points – Attachment page(s) <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | | | | |
| | | | | |
| | | | | |
| 8(b). Description of Disconnection Points (if applicable) | | | | |
| 9. Location of Operator Earths with DNOBs attached | | Operator Earths – Attachment Page(s) <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | | | | |
| | | | | |
| | | | | |
| 10. Other Precautions | | | | |
| <input type="checkbox"/> Live HV Conductors Above or Beyond Sign <input type="checkbox"/> HV Testing Sign <input type="checkbox"/> Work Area Sign <input type="checkbox"/> Additional Barriers in Place <input type="checkbox"/> Roping Off <input type="checkbox"/> Other (please specify) <input type="checkbox"/> Not Applicable | | | | |
| 11. Nearby Exposed Live HV/LV at the Work Area | | | | |
| <input type="checkbox"/> HV Not Applicable <input type="checkbox"/> LV Not Applicable | | | | |
| 12. Issue of HV Access Permit | | | | |
| | Name (print) | Signature | Time | Date |
| Approval by (Switching Coordinator) | | | | / / |
| Issued by Switching Operator / Coordinator | | | | / / |
| 13. Receipt of HV Access Permit | | | | |
| I am authorised by the Control Authority to receive this HV Access Permit and have confirmed that this Access Permit is appropriate for the work concerned. I Shall brief all members of the Work Group and describe the Isolation Points, the limits of this HV Access Permit, Safety Precautions and Other Precautions provided. I Shall ensure no member of the Work Group commences work until they have signed on this HV Access Permit. I Shall ensure any testing performed under this HV Access Permit does not involve Lethal Current. | | | | |
| | Name (print) | Signature | Time | Date |
| Recipient | | | | / / |

14 APPENDIX E – SAMPLE TEST PERMIT TEMPLATE



Form E of 2

HV Test Permit

Permit No. _____

| | | |
|---|---|--|
| 1. Switching Sheet No. | 2. Nominated Issue | Time |
| | | Date / / |
| 3. Issue To | 4. Nominated Surrender | Time |
| | | Date / / |
| 5. Work Area Location | | |
| 6. Access to the following High Voltage Electrical Apparatus | | |
| 7. Test Details | | |
| 8(a). Description of Isolation Points with DNOBs attached | Isolation Points – Attachment page(s) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | |
| | | |
| 8(b). Description of Disconnection Points (if applicable) | | |
| 9. Location of Operator Earths with DNOBs attached | Operator Earths – Attachment Page(s) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | |
| 10. Other Precautions | | |
| <input type="checkbox"/> Live HV Conductors Above or Beyond Sign | <input type="checkbox"/> HV Testing Sign | <input type="checkbox"/> Work Area Sign |
| <input type="checkbox"/> Roping Off | <input type="checkbox"/> Other (please specify) | <input type="checkbox"/> Additional Barriers in Place |
| | | <input type="checkbox"/> Not Applicable |
| 11. Nearby Exposed Live HV/LV at the Work Area | | |
| | | <input type="checkbox"/> HV Not Applicable |
| | | <input type="checkbox"/> LV Not Applicable |
| 12. Issue of HV Test Permit | | |
| | Name (print) | Signature |
| | Signature | Time |
| | Signature | Date |
| Approval by (Switching Coordinator) | | / / |
| Issued by Switching Operator / Coordinator | | / / |
| 13. Receipt of HV Test Permit | | |
| <i>I am authorised by the Control Authority to receive this HV Test Permit and have confirmed that this Test Permit is appropriate for the work concerned. I shall brief all members of the Work Group and describe the Isolation Points, the limits of this HV Test Permit, Safety Precautions and Other Precautions provided.</i> | | |
| <i>I shall ensure no member of the Work Group commences work until they have signed on this HV Test Permit.</i> | | |
| <i>I shall ensure any testing performed under this HV Test Permit is performed in accordance with the Queensland Electricity Entity Standard for Safe Access to HV Electrical Apparatus.</i> | | |
| | Name (print) | Signature |
| | Signature | Time |
| | Signature | Date |
| Recipient | | / / |

