Draft terms of reference for an environmental impact statement

Richmond-Julia Creek Vanadium Project

November 2022

COORDINATOR-GENERAL

Queensland Government

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Part A About these draft terms of reference

1. Introduction

1.1 This document outlines the draft terms of reference (TOR) for the Richmond-Julia Creek Vanadium project (the project), proposed by Richmond Vanadium Technology Pty Limited (the proponent) and being assessed under the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

1.2 The proposed project is located within the North-West Minerals Province, approximately 45 kilometres (km) north-west of Richmond, North-West Queensland.

1.3 The project proposes to extract up to 4.2 million tonnes per annum (mtpa) of vanadium ore. The ore would be processed on site to produce 790,000 tonnes per annum (tpa) of vanadium concentrate over 25 years. Further refinement of the vanadium concentrate would produce 12,701 tonnes of high-grade vanadium flake, which is used for development of emerging redox flow batteries, steel strengthening, infrastructure projects and general renewable electricity production.

1.4 The proposed project consists of an open cut mine pit, a mine infrastructure area (waste rock dump, tailings dam, processing infrastructure), water storage and supply pipelines, access roads, sewerage, wastewater treatment facilities and other infrastructure.

2. Statutory basis

2.1 The Coordinator-General has declared the project to be a 'coordinated project for which an environmental impact statement (EIS) is required' under section 26(1)(a) of the SDPWO Act. This declaration initiates the statutory environmental impact assessment procedure of Part 4 of the SDPWO Act, for which the proponent is required to prepare an EIS for the project.

2.2 The draft TOR set out the matters the proponent is to address in an EIS for the project and will be finalised by the Coordinator-General under section 30 of the SDPWO Act, following the outcomes of public consultation.

3. Accredited EIS process for controlled actions under Commonwealth legislation

3.1 On 24 January 2022, the delegate for the former Australian Minister for the Environment determined the proposed project to be a 'controlled' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC2021/9097), triggering the controlling provision 'listed threatened species and communities (sections 18 and 18A)'.

3.2 The EIS process has been accredited under the bilateral agreement between the Commonwealth and the State of Queensland under section 45 of the EPBC Act relating to environmental assessment, hence the EIS is to state the controlling provisions for the project and describe the particular aspects of the environment that led to the controlled action decision.

3.3 The assessment of the controlling provision, mitigation measures and any offsets for residual impacts are to be described and illustrated in a stand-alone report in the EIS that fully addresses the matters relevant to the controlling provision. Section 16 of this draft TOR, developed in consultation with the Department of Climate Change, Energy, the Environment and Water (DCCEEW), sets out the information which must be included in the EIS relating to MNES.

4. EIS Guidelines

4.1 This draft TOR is to be read in conjunction with the Coordinator-General's *Preparing an environmental impact statement: Guideline for proponents* (see Appendix 2), which provides guidance on the following:

(a) participants in the EIS process

(b) consultation requirements

(c) EIS format and copy requirements.

4.2 In addition, subject-specific policies and guidelines are referenced throughout this draft TOR and are listed in Appendix 2.

5. More information

5.1 For information about the project or the EIS process conducted under the SDPWO Act, visit **www.statedevelopment.qld.gov.au/cg.**

Part B General approach and requirements for an EIS

6. General approach

6.1 The objectives of the EIS are to:

(a) provide a detailed description of the proposed project

(b) ensure that all relevant environmental, social, economic and human health impacts of the project are identified and assessed

(c) detail the management and mitigation measures proposed to avoid, minimise and/or mitigate any adverse impacts including proposed ongoing monitoring

(d) demonstrate that the project is based on sound environmental principles and practices.

6.2 For the purposes of the EIS process, 'environment' is defined in Schedule 2 of the SDPWO Act and includes:

(a) ecosystems and their constituent parts, including people and communities

(b) all natural and physical resources

(c) the qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community

(d) the social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).

6.3 The EIS must address other matters not covered in this draft TOR in the following circumstances where:

(a) studies reveal a matter that had not been foreseen when the draft TOR was finalised

(b) an issue was not previously identified but is in the public interest to be addressed

(c) the Coordinator-General directs the proponent in writing to address a matter as an information request under section 34B of the SDPWO Act

(d) new or amended legislation or policies come into effect after the draft TOR has been finalised, regardless of whether or not the legislation or policies have been listed in the draft TOR[1].

(e) the proponent makes amendments to the proposed project that would result in a change in the nature, timing or location of any impacts.[2]

6.4 Section 15, Climate – Greenhouse Gas Emissions (GHG) of this draft TOR has been prepared in collaboration with the Department of Environment and Science (DES). In accordance with the Queensland Resources Industry Development Plan (QRIDP) (June 2022), DES is developing a draft Industry Decarbonisation Plan Policy, which may change the requirements of Section 15, Climate – Greenhouse Gas Emissions. The proponent will be required to be consistent with the Industry Decarbonisation Plan Policy once finalised.

[1] Note, transitional arrangements or exemptions may apply for individual projects.
[2] The proponent is to notify the Coordinator-General of any amendments to the proposed project as described in the project's initial advice statement.

7. Requirements of an EIS

7.1 The EIS is to:

(a) be prepared in accordance with, and meet the minimum requirements of, Schedule 1 of the State Development and Public Works Organisation Regulation 2020

(b) be prepared in accordance with relevant policies, standards and guidelines, including but not limited to those listed in Appendix 2. Application of such guidelines, standards and policies will be confirmed throughout the development of the EIS in consultation between the Coordinator-General, the proponent and advisory agencies

(c) be prepared and completed by suitably qualified and experienced professionals, relevant to the field of expertise required for each subject matter

(d) provide all available baseline information relevant to the environmental risks of the project including seasonal and long-term variations. Site specific baseline data should be used. Include details about the quality of the information provided, in particular: the source of the information; how recent the information is; how the reliability of the information was tested, and any assumptions, exclusions and limitations.[3] All data, modelling and input/output information used in the EIS to determine the existing environment and/or assess impacts must be provided in an appropriate electronic format (e.g. shapefiles)

(e) present the feasible project options that were considered in selecting the preferred option including the consequences of not proceeding with the project (the 'do nothing' option). Demonstrate why the preferred option has been selected by summarising the comparative environmental, social and economic impacts of each project option, with particular regard to the principles of ecologically sustainable development

(f) provide detailed strategies regarding all matters for the protection, or enhancement (as desirable), of all relevant environmental values in terms of outcomes and possible conditions that can be measured and audited. In general, the preferred hierarchy for managing likely impacts is: (a) to avoid; (b) to minimise or otherwise mitigate; (c) remedy and (d) if necessary, and possible, to offset

(g) include a consolidated commitment register that lists all measures (including monitoring programs and management plans) demonstrated in the EIS assessment to avoid, minimise or otherwise mitigate, remedy or offset project impacts and that would need to be implemented during construction and operation, to meet the predicted project outcomes

(h) include environmental management plans (EMP) for both the construction and operation phases of the project. The EMP should be developed from, and be consistent with, the information in the EIS and set specific commitments to implement best practice environmental management in order to protect the identified environmental values. The EMP is to be presented as a stand-alone document without reference to other parts of the EIS. The contents of the EMP are to comprise:

(i) the project's commitments to acceptable levels of environmental performance, including environmental objectives (i.e. levels of expected environmental harm, performance

[3] Any technical reports supporting the assessment and conclusions made in the EIS should be provided. These reports can be provided as appendices.

standards and associated measurable indicators, including progressive and final rehabilitation, performance monitoring and reporting)

(j) impact prevention and control strategies to satisfy the commitments

(k) corrective actions to rectify any deviation from performance standards.

7.2 Each matter assessed in the EIS (as described in sections 15 and 16 of this draft TOR) is to:

(a) include a concise description of the potential impacts of the project

(b) describe the measures proposed to avoid, minimise or otherwise mitigate, or remedy impacts to meet environmental standards and acceptable outcomes, and where necessary to offset those impacts

(c) demonstrate how monitoring will confirm environmental outcomes, including using baseline data to track environmental outcomes.

7.3 Assess the extent to which the construction, operation, decommissioning and rehabilitation (to the extent known) of the project meets all statutory and regulatory requirements of the state and Commonwealth and that the intended outcomes are consistent with current state and Commonwealth legislation, policies (including passed and uncommenced legislation), plans and guidelines. If there is a conflict, explain how the project can be approved.

7.4 For all the relevant matters, identify and describe the environmental values that are to be protected. Environmental values are specified in the *Environmental Protection Act 1994* (EP Act), the Environmental Protection Regulation 2019 (EP Regulation), environmental protection policies (EPPs), State Planning Policy 2017 (SPP) and relevant guidelines.[4]

7.5 Include, as an appendix to the EIS, a table cross-referencing where each requirement of the draft TOR is addressed in the EIS, to the lowest available subsection.

7.6 Describe the stakeholder engagement activities that have occurred during the preparation of the EIS, identify the issues raised during consultation, and explain how the responses from the community and agencies have and will be incorporated into the design and outcomes of the project.

7.7 The EIS is to be prepared and submitted electronically (USB or large file transfer), inclusive of all plans and documents that form the EIS. The electronic documents submitted are to satisfy the criteria detailed in Table 1 below.

Table 1 Format requirements

Format requirements	
Document size	The EIS and accompanying appendices are to be produced on A4 size and are to be capable of being photocopied. Each PDF file must meet the accessibility requirements described in the *Adobe Acrobat X Pro Accessibility Guide: PDF Accessibility Overview*, available at: www.adobe.com/accessibility/products/acrobat/training.html
Format and style	The format and style of the document is to be appropriate for publication on the Internet.
Plans, maps, diagrams and other illustrative material	All plans, maps, diagrams, and other illustrative material is to be provided at a suitable scale and must be included in a PDF format so that they are legible and easily understood.

[4] Examples are included in Appendix 2.

Format requirements	
	Plans, maps and diagrams are to be located within the appropriate EIS chapter/s, as close as possible to where referenced in the text.
	Plans, maps and diagrams are to be to scale on A4 or A3 size with the scale clearly displayed on each. The plan, map or diagram is also to state the original size (e.g. A1). Each should be in colour, where possible, and have a resolution between 300 and 900 dpi.
Locations	All geographical coordinates throughout the EIS are to be provided in latitude and longitude against the Geocentric Datum of Australia 2020 (GDA2020).
Elevations	Elevations detailed within the EIS are to be provided to Australian Height Datum (AHD). Plans, maps and diagrams included in the EIS should have contours at suitable increments relevant to the scale, location, potential impacts and component of the project.
References	All sources must be appropriately referenced using the Harvard standard. The reference list should include the address of any Internet webpages used as data sources.
Spatial data file format requirements[5]	
File names	File names are to be descriptive and provided in one of the following formats: ESRI file geodatabase (.GDB) - preferred ESRI Shapefiles. GDB/shape
Data attributes	All data is to contain descriptive attributes or columns, including but not limited to the following: • date data was created • version number • who created the data (i.e. the company name) • datum (e.g. GDA2020) • category or stage
Projection	
Projection	Data can be provided in any projection; however geographic information is preferred. The datum shall be GDA2020.
Metadata	
Use standards	ISO 19115:2015 ANZLIC ISO 1.1

[5] Refer to DES *Guideline – Spatial information submission* (see Appendix 2).

Part C EIS content and suggested structure

8. Executive summary

8.1 The executive summary is to describe the project and convey the most important aspects and environmental management options in a concise form. It is to use plain English, avoid jargon, be written as a stand-alone document and structured to align with the EIS.

9. Introduction

9.1 The introduction is to clearly explain the function of the EIS, why it has been prepared and what it sets out to achieve. The introduction is also to include an overview of the structure of the document.

Project proponent

9.2 Describe the following:

(a) the proponent's full name, postal address and Australian Business Number, and details of any joint venture partners and percentage interest

(b) the nature and extent of the proponent's business activities

(c) the proponent's (including directors) experience in developing major projects

(d) the proponent's (including directors) environmental record in Australia, including a list of any breach of, or proceedings against the proponent under a law of the Commonwealth or state, for the protection of the environment or the conservation and sustainable use of natural resources (an environmental law) during the previous ten years

(e) the proponent's environmental, health, safety and community policies

(f) experience, qualifications and certification of all suitably qualified consultants and sub consultants engaged by the proponent to complete the EIS.

The environmental impact assessment process

9.3 Provide an outline of the environmental impact assessment process, including the role of the EIS in the Coordinator-General's decision-making process, noting which milestones have been completed, and an estimated completion date for each remaining EIS stage(s). The information in this section is required to ensure readers are informed of the process to be followed and are aware of any opportunities for input and participation.

9.4 Inform the reader how and when properly made public submissions on the EIS are to be addressed and considered in the assessment and decision-making processes under the SDPWO Act and any other relevant legislation.

9.5 Describe the assessment process under the EPBC Act with the accreditation under the SDPWO Act.

10. Project description

Proposed development

10.1 The EIS must describe and illustrate the following about the project:

(a) project title

(b) nature, location and scale of all project components and activities (on or off mining lease)

(c) expected capital expenditure

(d) rationale for the project

(e) regional and local infrastructure context of the project's footprints (with maps at suitable scales)

(f) relationship to other major projects and/or development of which the proponent should reasonably be aware

(g) workforce numbers to be employed by the project during all project phases and source of local workforce (include peak, direct workforce numbers and estimated proportion of fly-in, fly-out (FIFO)[6] workforce, expressed as annual average full-time equivalent positions created during each phase).

(h) where personnel are to be accommodated during construction and operation of the project

(i) where relevant, the likely recruitment of workers from local and regional communities and workers who will live in regional communities; and rostering arrangements for local, regional and FIFO workers to be adopted

(j) proposed travel arrangements of the workforce to and from work, including use of FIFO workforce or drive-in-drive-out workforce.

10.2 Detail project components or activities that are proposed to be assessed separately to the EIS, including details of the assessment process and approval.

Infrastructure requirements

10.3 This section should detail, with concept and layout plans (in plan and cross-section views), requirements for new infrastructure, or the upgrading, retention, relocation and/or decommissioning of existing infrastructure on and off-site to service the project.

10.4 Provide plans for each project component, with sufficient detail to enable the Coordinator-General and relevant agencies to adequately assess the project in the context of the approvals being sought through the EIS process.

10.5 Infrastructure to be considered is to include, but not be limited to:

(a) resource extraction areas

(b) mine infrastructure area (MIA), including the processing plant, workshops and workforce accommodation

(c) transport corridors, including internal haul and access roads and connections to public roads

(d) proposed road/rail interfaces, rail spur and interfaces between proposed and existing rail, bridges and culverts

(e) stormwater management systems and flood prevention

[6] FIFO is defined in Schedule 1 under the *Strong and Sustainable Resource Communities Act 2017* which means a worker who travels to the project by aeroplane, or another means, from a place that is not a nearby regional community for the project.

(f) telecommunications

(g) water supply, treatment, storage and discharge

(h) energy generation, supply and connections (including any proposed renewable energy sources), generators and fuels (whether gas, liquid and/or solid)

(i) waste storage, treatment and disposal, including solid and hazardous chemical/material waste streams

(j) sewerage systems (including location and size of the sewage treatment plant, the sewage collection system, wet weather storage and pipelines and waste disposal areas associated with the sewage treatment plant, such as proposed effluent irrigation)

(k) tailing dams

(l) waterway barriers or crossings

(m) service corridors and pipelines, including any existing or shared corridors or infrastructure

(n) on-site infrastructure affected by the project[7]

(o) locations of any existing and proposed infrastructure easements and service corridors.

10.6 Describe the timing of requirements for this infrastructure (from pre-construction through to decommissioning and rehabilitation).

10.7 Provide details of the alignment options assessed for the raw water supply pipeline, rail spur, access road, electricity transmission line and telecommunications, including justification for the preferred and final alignments chosen.

10.8 Detail whether the infrastructure is permanent or temporary and nominate if it constitutes waterway barrier works.

10.9 Include names of the required infrastructure service providers and evidence as to whether discussions have been held with these providers, regarding the capacity of existing or proposed infrastructure to accommodate project requirements.

10.10 Map the location and boundaries of the project's footprint including all infrastructure elements and development necessary for the project. Show all key aspects including excavations, stockpiles, areas of fill, subsidence areas, services infrastructure, plant locations, water or tailings storages, buildings, bridges and culvert, haul and access roads, causeways, and stockpile areas. Include discussion of any environmental design features of these facilities including bunding of storage facilities.

10.11 Describe the purpose of all dams or levees proposed on the project area. Show their locations on appropriately scaled maps and provide plans and cross-sections illustrating features such as embankment heights, spillways, discharge points, design storage allowances and maximum volumes. Describe how storage structures and other infrastructure would be sited to avoid or minimise risks from flooding.

10.12 Provide details for all proposed export related infrastructure and activities on strategic port land including berths, storage and loading facilities.

[7] On-site infrastructure may include infrastructure for recreational/tourist purposes, existing farm infrastructure such as buildings, yards, pumps, fences, etc.

Project staging

10.13 Provide a detailed description of the proposed project activities (pre-construction, construction, operation, decommissioning and rehabilitation), including scope of works (on the project area and required infrastructure – new and/or upgraded), disturbance area, physical layout of the project over time, likely timing of the project including any stages and the sequencing of these stages.

Pre-construction

10.14 Describe the pre-construction activities and their location (on or off mining lease) with appropriately scaled maps, including:

(a) pre-disturbance surveys, including geotechnical, contaminated land, flora and fauna, water quality, cultural heritage, air and noise and how this information will be used in the final design and construction of the project

(b) all pre-construction activities including the staging and sequencing (e.g. vegetation clearing, site access, interference with watercourses, waterways, and floodplain areas including wetlands)

(c) proposed infrastructure on and off the mining lease

(d) proposed vegetation clearing, top- and sub-soil removal and stockpiling

(e) project area access arrangements where access to the site is on tenure not held by the proponent

(f) proposed upgrades, realignments, relocation, deviation or restricted access to roads and other infrastructure including water, power and telecommunications

(g) all environmentally relevant activities on and off the mining lease, and all notifiable activities

(h) environmental management measures included as part of the project design

(i) existing infrastructure and easements on the potentially affected land.

Construction

10.15 Describe the construction activities and their location (on or off mining lease) with appropriately scaled maps, including:

(a) construction timetable, sequencing and staging plans (provide detailed plans, drawings and maps to illustrate these matters, where relevant)

(b) proposed construction methods, associated equipment and techniques

(c) hours and days of operation for proposed construction works

(d) water sources, use, volumes and storage requirements during construction

(e) site drainage, erosion and stormwater management, flood protection and waste-water management

(f) dimensions of earth and rock works and excavations

(g) known locations of new or altered works and structures and infrastructure necessary for the project at all stages of its development, whether on or off the project area or right of way, and intersections required with existing infrastructure (e.g. pipeline, rail, road, power, etc)

(h) disturbance areas

(i) type, amount and source of construction materials required for the project.

Operation

10.16 Describe the operational activities and their location (on or off mining lease) with appropriately scaled maps, including:

(a) proposed mining and processing methods, associated equipment and techniques in areas of different topographic or geo-technical character

(b) proposed sequence and timing of mining each seam/ore body/structural unit within the mining lease, including any proposed ramping of production or staging of development

(c) depth of open cut ore extraction pits and tailing dams

(d) quality and proportion of vanadium ore at each major stage of the project

(e) type and capacity of high-impact plant and equipment utilised to construct and operate the project, their chemical and physical processes

(f) type, volume and rate of chemicals and hazardous materials to be used

(g) waste material management (for example waste rock and tailings)

(h) predicted inventory of the location and quantity of soil stockpiles, and ongoing management

(i) proposed extractive and processing methods, associated equipment and techniques

(j) any new or expanded quarry and screening operations (for example, from off-site locations) required to service the project

(k) water sources, use, volumes and storage requirements during different staging of operations.

Rehabilitation and mine closure

10.17 Describe the rehabilitation and mine closure activities, including their location (on or off mining lease) with appropriately scaled maps, including:

(a) proposed scheduling and extent of rehabilitation works with maps at suitable scales showing the location of disturbance areas, relevant Environmentally Relevant Activity (ERA) infrastructure and associated disturbance areas and the sequence of mining and progressive rehabilitation (i.e. the method and timing of restoration of areas disturbed during construction/operation)

(b) proposed methods or techniques for rehabilitating the land to achieve the rehabilitation goals for each proposed final land use proposed in the rehabilitation program

(c) for each final land use area, provide a description and map of the area (including name, size in hectares, disturbance type e.g. hardstand, stockpile, pit etc.), and final proposed tenure

(d) closure and decommissioning stage, works, water sources and use requirements to be undertaken for removal of plant, equipment, concrete footings, hardstand and storage tanks and actions taken to clean up, manage and dispose of contaminated soils.

10.18 Identify the type, quantity, origin, routes, delivery modes, storage and laydown requirements for materials required during the pre-construction, construction and operation of the project for works:

(a) at the mine site

(b) at off-lease areas, to the degree it is required for subsequent approval processes

(c) for the product delivery route.

11. Site description

11.1 Provide property descriptions for all land impacted by the project (including adjacent properties) and details of proposed tenure arrangements for all properties impacted by the project. Include details of any easements, roads and railways (existing and/or proposed, public and private), leases, reserves, unallocated state land, native title land (claims under consideration and decided) and Indigenous cultural practice areas, approved Indigenous Land Use Agreements (ILUAs), permits to occupy, mining and exploration tenures, stock routes, conservation tenures, state forest, native forest and timber reserves, and legally secured offset areas.

11.2 Describe and illustrate with suitably scaled maps all transport corridors, private roads, local and state-controlled roads, pipelines, private and government owned corporation energy infrastructure, rail, air services,[8] maritime and other infrastructure or services in the region relevant to or impacted by the project (permanently or temporarily), including its construction and operation activities.

11.3 Describe and illustrate the topography of the project area and surroundings on maps and highlight any significant features. Include and name watercourses, lakes, springs and unmapped features in accordance with the *Water Act 2000* (Qld) (Water Act). When mapping watercourses, lakes, springs and unmapped features identify any existing relevant watercourse identification maps.[9]

11.4 Describe and illustrate specific information about each component of the project including the precise location of the project area and construction activities in relation to any waterbodies, waterways providing for fish passage,[10] protected areas (including but not limited to conservation parks, nature refuges, national parks), forest reserves, state forests, matters of national, state and local significance, relevant mapped areas identified in the North West Queensland Regional Plan (e.g. priority agricultural areas), regional biodiversity corridors and regional biodiversity value areas, the location of any proposed buffers surrounding the working areas, lands identified for conservation (either through retention in their current natural state or to be rehabilitated) and Traditional Owner land and cultural practice areas. Include maps at a catchment scale illustrating the relationship between the project location and upstream and downstream riverine, estuarine and coastal ecosystems.

11.5 Describe and map in plan and cross-sections the geology and landforms of the project area and surrounds, including the boundaries of water catchment areas. Show geological structures, such as aquifers, faults and economic resources (such as agricultural and mining

[8] As defined in the State Development Assessment Provisions.
[9] Watercourse identification maps (WIP) can be found on the Business Queensland website at: **https://www.business.qld.gov.au/industries/mining-energy-water/water/maps-data/watercourse-map**. Determining the type of water feature using the WIP is important for applying relevant provisions of the *Water Act 2000*, Water Plans and regulatory documents.
[10] Waterways is defined in Schedule 1 under the *Fisheries Act 1994* which includes a river, creek, stream, watercourse, drainage feature or inlet of the sea.

projects) that could have an influence on, or be influenced by, the project and its construction and operational activities.

11.6 Describe, map and illustrate land, soil types and profiles of the project area at a scale relevant to the proposed project. Identify soils that would require specific management due to wetness, erodibility, depth, acidity, salinity or other features.

11.7 Describe the site in the context of planning schemes, regional plans, state policies and government priorities for the project area.

11.8 Describe the findings of the Queensland Agricultural Land Audit[11] and any land identified as strategic cropping land, priority agricultural area, priority living area or strategic environmental area for the project area.

11.9 Describe tourist destinations and sites used for recreation in and adjoining the product delivery routes.

12. Project rationale and alternatives

12.1 Demonstrate the need and scale of the project considering the regional, state and national context. The demonstrated need should also take into account existing mines and other major resource projects proposed for the region.

12.2 Describe the objectives and rationale for the project, including strategic, economic, environmental and social implications, technical feasibility and commercial drivers.

12.3 Present feasible alternatives of the project's configuration including conceptual, technological, scale and locality alternatives that may improve environmental outcomes. Describe how these alternatives have been considered and why the project is the preferred option.

12.4 Describe the expected benefits and opportunities associated with the project and the relevant recipients of these benefits and opportunities (supported by relative evidence).

12.5 Describe and evaluate the comparative environmental, social and economic impacts of each alternative, with particular regards to the principles of ecologically sustainable development.

12.6 Justify the preferred option using a cost-benefit analysis as described at Section 15 - Economics. Identify and describe interdependencies of each component of the project, particularly in regard to how infrastructure requirements relate to the viability of the project.

12.7 Describe how the selected project configuration (including individual infrastructure within each project component detailed in section 1.4) results in best-case outcomes for each impact to the most important environmental values over alternative project configurations.

12.8 For unproven elements of a resource extraction or processing process, technology or activity, identify and describe any global leading practice environmental management that relate to the elements, where available. Demonstrate that the design of the project and its predicted outcomes are consistent with best practice environmental management during construction, operation, and decommissioning of the proposed project.

12.9 Discuss the consequences of not proceeding with the project.

[11] The Queensland Agricultural Land Audit identifies land important to current and future production and the constraints to development, highlighting the diversity and importance of Queensland's agricultural industries. For more information visit **https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/agribusiness/agricultural-land-audit/land-audit.**

13. Legislative requirements and project approvals

13.1 Identify all government approvals required for the project, administering authority responsible for each approval, and all approvals for which conditions are being sought through this EIS process. Sufficient information and assessment are required for conditions of approval to be drafted and for the administering authority to decide whether an approval is to be granted. Explain how the EIS process (and the EIS itself) informs the issue of approvals/ leases/licences/permits/consents required for the project and clearly identify any approvals that are separate to the EIS process.

13.2 Provide a table indicating all key approvals, stages, timing considerations and associated public notification requirements. Identify the name of the local government and planning scheme area traversed by the project, any proposed material changes of use and operational works assessment benchmarks for all activities associated with this project under the scheme during pre-construction, construction and operation of the project.

13.3 Provide an assessment against the relevant planning schemes, regional plans, state policies and government priorities for the project area and the region. Consider the provisions relative to the project and address where required, providing evidence where provisions do not apply.

13.4 Consider the provisions of the *Regional Planning Interests Act 2014* (Qld) (RPI Act) and whether a regional interests development approval (RIDA) is required pursuant to the RPI Act. The EIS is to provide, where relevant, the information necessary and in sufficient detail to support an application for a RIDA. The assessment and supporting information, where relevant, is to be sufficient for the administering authority to decide whether a RIDA could be granted. Assessment criteria, environmental attributes, information and approval requirements are specified in the North West Queensland Regional Plan, the RPI Act, the Regional Planning Interests Regulation 2014 and relevant guidelines.

13.5 Identify if any approval would be needed to undertake works under the *Fisheries Act 1994* (Qld) (Fisheries Act).

13.6 Describe any approvals or entitlements required under the Water Act, Water Regulation 2016, the *Water Plan (Greater Artesian Basin and Other Regional Aquifers) 2017* (GABORA Plan) and Water Plan (Gulf) 2007 (Gulf Water Plan)[12] and address relevant legislative requirements and water volume limitations.

13.7 Describe any proposal to place project infrastructure on state land, including justification for proposed use of state land over other land, with reference to any relevant legislation as necessary. For any new infrastructure, demonstrate compliance with relevant legislation and standards.

13.8 The SPP and the State Development Assessment Provisions (SDAP)[13] prescribed in the Planning Regulation 2017 (Planning Regulation) set out the matters of interest to the state for development assessment. The EIS is to:

(a) identify the SPP and SDAP state codes relevant to the project

(b) demonstrate the project's consistency with the relevant SPP

[12] GABORA Water Plan refers to the *Water Plan (Great Artesian Basin and Other Regional Aquifers) 2017* and any draft plan and Gulf Water Plan refers to Water Plan (Gulf) 2007 and any draft plan.
[13] Further information on SDAP requirements can be accessed from: **https://planning.dsdmip.qld.gov.au/planning/better-development/the-development-assessment-process/the-states-role/state-development-assessment-provisions.**

(c) demonstrate the project satisfies the information requirements by providing an assessment against the most up to date version of the relevant SDAP state codes.

13.9 The EIS is to provide, where relevant, the information required under section 125 of the EP Act in support of the project's application for any required ERAs. Any ERA to be conducted as part of the project should be listed separately with the appropriate ERA number, activity name and required threshold (see Schedule 2, EP Regulation for a list of ERAs).

13.10 The assessment and supporting information for an ERA, where relevant, is to be sufficient for the administering authority to decide whether an approval should be granted.[14] Environmental values, information and approval requirements are specified in the EP Act, the EP Regulation, EPP and relevant guidelines.

13.11 Describe the accredited assessment process under the bilateral agreement between the Australian Government and the State of Queensland.

14. Stakeholder consultation

14.1 In preparing the EIS, consult with directly affected landholders, relevant stakeholders including local, state and Australian government agencies, Aboriginal and Torres Strait Islander peoples and potentially and directly affected communities, and indirectly affected key stakeholders.

14.2 Describe in a stakeholder engagement report, the stakeholder engagement activities that have occurred during the preparation of the EIS, identify the issues raised during the consultation, and explain how the responses from stakeholders have been incorporated into the design and outcomes of the project.

15. Assessment of project specific matters

15.1 This section sets out the scope of project-specific matters that are to be given detailed treatment in the EIS. Assessment of each matter is to consider the potential direct and indirect impacts of the project at the local and/or regional scale.

15.2 The proponent is to engage with the Office of the Coordinator-General throughout the development of the EIS to clarify the scope of assessment of each project-specific matter.

[14] For technical information requirements see **https://www.business.qld.gov.au/running-business/environment/licences-permits/applying/technical.**

Land

Objectives

The design, construction, operation and decommissioning activities of the project are to ensure:

(a) the activity is operated in a way that protects the environmental values of land, including soils, subsoils, landforms and associated flora and fauna

(b) the activity is operated in a way that protects the environmental and resource values of protected areas, state forests, national parks or other privately owned lands with particular environmental and forest production values

(c) the choice of the site, at which the activity is to be carried out, avoids or minimises environmental harm on areas of high conservation value and special significance and sensitive land uses at adjacent places

(d) the location for the activity on a site protects all environmental and resource values relevant to adjacent sensitive uses located within and adjacent to the project area

(e) the design of the facility permits the site at which the activity is to be carried out to operate in accordance with best practice environmental management

(f) the impacts on priority agricultural areas, strategic cropping land, state forests and other privately-owned lands with nature conservation or forest production values are avoided, minimised and/or mitigated

(g) the land disturbed by mining activities will be rehabilitated progressively as it becomes available, to minimise the risks of environmental impacts and reduce cumulative areas of disturbed land

(h) the activity is operated in a way that disturbed land will be rehabilitated or restored to a safe, stable and non-polluting condition; the land is safe and structurally stable, there is no environmental harm being caused by anything on or in the land, and the land can sustain a post-mining land use

(i) the progress and outcomes of progressive rehabilitation activities will be monitored and reported on to demonstrate how successful they have been in achieving progress towards the agreed final land use, and to inform corrective action where required.

The performance outcomes corresponding to these objectives are in Schedule 8, Part 3 of the EP Regulation.

Land use and tenure

Existing environment

15.3 Describe the following:

(a) the existing and proposed land uses and infrastructure in and around the project area that may be impacted by the project, including but not limited to the number of private properties, Traditional Owner land, cultural practice areas, state leasehold land, reserves, unallocated state land, stock route network, watercourses, protected areas, road reserves and easements that may be impacted by the project. This should be supported by maps with lot on plan descriptions

(b) the landscape and visual amenity, in and around the project site

(c) townships and urban areas located near the project site

(d) planning schemes and regional plans relevant to the project site

(e) any locational factors influencing the choice of the project site.

15.4 Describe and map the extent of any known agriculture, horticulture, petroleum, mining and exploration activities or quarries of commercial significance, including, but not limited to:

(a) petroleum and other pipeline infrastructure

(b) registered exploration permits and applications for exploration permits

(c) mineral development licences and applications for mineral development licences

(d) mining leases and applications for mining leases, including access arrangements

(e) geothermal and GHG storage tenures

(f) known economic resources and their future availability

(g) active, disused, or abandoned mine workings within the project area and surrounds

(h) agricultural land considered as a priority agricultural area and/or strategic cropping land, and any other matters identified in the RPI Act and RPI Regulation

(i) findings of the Queensland Agricultural Land Audit and AgTrends Spatial web mapping app.[15]

Impact assessment

15.5 The assessment of impacts on land is to be in accordance with DES *Application requirements for activities with impacts to land* and DES *Land – EIS information guideline* (see Appendix 2). Demonstrate that the project can meet the environmental objectives and performance outcomes relevant to land in Schedule 8 of the EP Regulation.

15.6 Identify all state and regional planning interests potentially impacted by the project, and the source of mapping to identify those interests. Where mapping is not available, identify the methodology followed to prepare the mapping and its scale.

15.7 Identify any existing or proposed incompatible land uses within and adjacent to the site, including the impacts on economic resources and the future availability and viability of the resource including extraction, processing and transport location to markets.

15.8 Describe potential impacts of the proposed land uses, taking into consideration the proposed measures that would be used to avoid or minimise potential impacts.

15.9 Detail how the construction and operation phases of the project will change existing and potential land uses of the project site and adjacent areas.

15.10 Demonstrate that the project can meet the required outcome and prescribed solutions under the regional planning interest's framework for the relevant attributes identified in the North West Regional Plan.

15.11 Address impacts on any identified agriculture, horticulture, petroleum, mining and exploration activities, including any consultation undertaken with tenement holders, with respect to accessing land, impact assessment and mitigation measures. For any impacts on mining and exploration activities, liaise with any authorised tenement holder whose mining interests

[15] **https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/agribusiness/agtrends-spatial**

overlay the development footprint to advise of the proposal and ascertain any future exploration activities.

15.12 Identify existing and potential native title rights and interests impacted by the project. Detail and illustrate on maps the following native title considerations:

(a) current tenure of all land or waters within the project area (which may include creeks)

(b) land or waters where native title has been determined to exist by the Federal Court

(c) land or waters that are covered by a native title determination application

(d) land or waters that are covered by a registered ILUA.

15.13 Describe any proposed tenure to be applied for as part of this project.

15.14 Describe the proposed land acquisition approach/es with stakeholders and state government agencies, including anticipated timelines, necessary to secure tenure for the project. Include any compulsory acquisition process potentially applicable to each tenure impacted. Describe any existing or proposed tenures impacted by the project which will entitle payment of lawfully required compensation and the corresponding parties who will receive or pay compensation for each tenure.

15.15 Identify any infrastructure or access tracks associated with the project to be located within, or which may have impacts on, the stock route network managed under the *Stock Route Management Act 2002* (Qld) (Stock Route Management Act).

15.16 Include a detailed assessment of the likely potential impacts to agricultural interests, including agricultural land of SPP significance to the agricultural state interest. This assessment is to demonstrate how the project is consistent (or otherwise) with protecting Agricultural Land Classification Class A and Class B land for sustainable agricultural use, in accordance with state interest – agriculture 2 (a)-(c).

15.17 Describe the potential direct and indirect impacts on the natural and cultural resources and values of all protected areas in the project area arising from the construction and operation of the project.[16]

15.18 Describe, using graphics and figures, temporary and permanent changes to the landscape and the visual impacts of the project on communities, particularly those living in townships.

15.19 Address the cumulative impacts of the proposed land uses in conjunction with existing and potential future impacts to the land. This includes impacts from contaminants, materials or wastes associated with existing development and possible future development (as described by approved plans and existing project approvals).

Mitigation measures

15.20 Describe proposed mitigation measures to avoid, mitigate or minimise impacts on existing and proposed land uses.

15.21 Identify the potential for managing impacts on existing and potential native title rights and interests by ILUAs or other measures in accordance with the *Native Title Act 1993* (Qld) (Native Title Act) and consistent with the *Queensland Native title work procedures* (see Appendix 2).

[16] 'Natural resources' and 'cultural resources' within the definitions under the *Nature Conversation Act 1992*. 'Protected areas' within the definition under the Environmental Offsets Regulation 2014.

15.22 Demonstrate how the project will maintain the ongoing functionality and connectivity of the stock route network.

15.23 Describe the proposed mitigation measures to avoid or minimise impacts on agricultural land uses. Demonstrate how any adverse impacts will be mitigated to ensure there is no net loss in the availability and utility of that land for an agricultural use. This would include land directly impacted by and adjacent to project activities.

15.24 Describe the proposed mitigation measures to avoid or minimise landscape and visual amenity impacts.

Topography, geology and soils

Existing environment

15.25 Describe and map the geology of the project site, with reference to the physical and chemical properties of surface and sub-surface materials and geological structures within the proposed areas of disturbance.

15.26 Describe the geological properties that could impact upon ground stability and influence the nature and location of project activities.

15.27 Identify and investigate areas of salinity, sodic, dispersive and cracking clay soils, and potential for actual areas of acid sulfate soils. Where potential areas are identified, further investigations (including field surveys) should be undertaken in accordance with accepted industry guidelines and requirements of the *SPP – State interest guideline emissions and hazardous activities*, and the *National Guidance for the management of acid sulfate soils in inland aquatic ecosystems.*

15.28 Identify and investigate the soil types associated with water movement, salinity, sodicity and cracking clay soils, as well as areas of potential and actual acid sulfate soils.

15.29 Detail any known or potential sources of contaminated land, including any area which has been or is being used for a 'Notifiable Activity' as listed in Schedule 3 of the EP Act, is potentially contaminated, or is on the Environmental Management Register or Contaminated Land Register.

15.30 Provide details, including maps, existing soil conservation works (contour banks, waterway discharge points etc.) and existing erosion control works, in particular, those approved as project plans or property plans approved under the provisions of the *Soil Conservation Act 1986* (Qld) (Soil Conservation Act).

Impact assessment

15.31 The assessment of impacts on topography, geology and soils is to be in accordance with the DES *Land – EIS information guideline*, *Guideline for soil survey along linear features*, *Guidelines for surveying soil and land resources, Australian soil and land survey field handbook, Queensland Soil and Land Resource Survey Information Guideline* and *Queensland Land Resource Assessment Guidelines – Volume 1: Soil and land resource assessment* (see Appendix 2). If any quarry material is needed for construction, refer to the DES *Quarry material – EIS information guideline* (see Appendix 2).

15.32 Describe how any proposed land use may result in land becoming contaminated.

15.33 Identify activities or operations likely to impact on existing erosion control works and any soil conservation works.

Mitigation measures

15.34 Detail measures proposed to be taken during the construction and project operation to avoid and minimise land degradation. Land degradation includes but is not limited to soil erosion, the expression of salinity, waterlogging, and mass movement by gravity of soil or rock.

15.35 Describe the actions to be undertaken to avoid, identify, remediate or manage land that is contaminated or becomes contaminated.

15.36 Describe the measures to avoid, minimise or mitigate potential impacts of the project on soil values.

15.37 Where potential and actual acid sulfate soils have been identified, prepare an acid sulfate soil management plan in accordance with accepted industry guidelines and the requirements of the *SPP – State interest guideline emissions and hazardous activities* that appropriately manages the disturbance of acid sulfate soils to avoid or minimise the mobilisation and release of acid, iron, or other contaminants.

15.38 Describe how current and/or expected technologies will be applied when surface mining.

15.39 Propose detailed mitigation measures for any significant impacts that would result from subsidence including impacts on infrastructure, land, hydrology, flora and fauna.

15.40 For surface mines and projects with activities that disturb the land surface, show how the landform during and post mining will be stable and non-eroding over time, including how it will meet any requirements of project or property plans approved under the Soil Conservation Act.

Rehabilitation and mine closure

Impact assessment

15.41 Address the rehabilitation requirements of the EP Act including the provisions requiring a proposed progressive rehabilitation and closure plan (PRCP). Demonstrate that the proposed rehabilitation is consistent with DES *Guideline – Progressive rehabilitation and closure plans* (see Appendix 2) and best practice approaches about the strategies and methods for progressive and final rehabilitation.

15.42 Demonstrate that the rehabilitation of the environment disturbed by construction, operation and decommissioning of the project can meet the environmental objectives and performance outcomes in Schedule 8A of the EP Regulation.

15.43 Provide a proposed PRCP for the project in accordance with DES *Submission of a progressive rehabilitation and closure plan* (see Appendix 2). The plan must show how and where activities will be carried out on land in a way that maximises the progressive rehabilitation of the land to a stable condition, and provide for the condition to which the holder must rehabilitate the land before the environmental authority may be surrendered. The PRCP must consist of two components:

(a) rehabilitation planning part

(b) PRCP schedule.

Rehabilitation planning part

15.44 Provide the rehabilitation planning part of the proposed PRCP, by addressing the following:

(a) describe each resource tenure, including the area of each tenure

(b) describe the relevant activities and the likely duration of the relevant activities

(c) include a detailed description, including maps, of how and where the relevant activities are to be carried out

(d) include details of the consultation undertaken in developing the proposed PRCP

(e) include details of how ongoing consultation will be undertaken to discuss rehabilitation to be carried out under the plan

(f) state the extent to which each proposed post-mining land use or non-use management area is consistent with the outcome of consultation with the community in developing the plan and any strategies or plans for the land of a local government, the state government or the Australian Government

(g) for each proposed post-mining land use, state the proposed methods or techniques for rehabilitating the land to a stable condition in a way that supports the rehabilitation milestones under the proposed PRCP schedule

(h) identify the risks of a stable condition for land identified as a proposed post-mining land use not being achieved, and detail measures to manage or minimise these risks

(i) for each proposed non-use management area, state the reasons why the area cannot be rehabilitated to a stable condition because of either of the below:

(i) carrying out rehabilitation of the land would cause a greater risk of environmental harm than not carrying out the rehabilitation, or

(ii) the risk of environmental harm as a result of not carrying out rehabilitation of the land is confined to the area of the relevant resource tenure and the proponent considers, having regard to each public interest consideration, that it is in the public interest for the land not to be rehabilitated to a stable condition.

(j) include copies of reports or other evidence relied on for each proposed non-use management area

(k) for each proposed non-use management area, state the proposed methodology for achieving best practice management of the area to support the management milestones under the proposed PRCP schedule for the area

(l) include other information requirements outlined in the DES *Guideline – Progressive rehabilitation and closure plans* (see Appendix 2).

15.45 Show a comparison of pre-activity site topography and the expected final topography of the site with any excavations, waste areas and dam sites on suitably scaled maps.

15.46 Show a comparison and provide modelling results of pre-activity, during operations and expected final landform of the site in relation to the river floodplains and flood levels up to and including the 'probable maximum flood level' based on the Bureau of Meteorology's 'probable maximum precipitation' forecast for the locality on suitably scaled maps. The maps and modelling are to detail where final voids, mined areas, subsidence, and uncompacted overburden and workings prior to disturbance, during operations and at the end of operations would lie in relation to the river floodplains and flood levels.

PRCP schedule

15.47 Provide a proposed PRCP schedule[17] which describes time-based milestones for achieving each post-mining land use or non-use management areas for the proposed project. Present

[17] DES *Progressive rehabilitation and closure plans* (see Appendix 2) contains further information about how to develop a PRCP schedule.

the proposed PRCP schedule in the table template included in DES *Submission of a progressive rehabilitation and closure plan* (see Appendix 2).

15.48 The proposed PRCP schedule, must identify:

(a) all land within the resource tenure as either a post-mining land use or non-use management area

(b) when land becomes available for rehabilitation or improvement

(c) rehabilitation milestones to achieve a post-mining land use

(d) management milestones to achieve a non-use management area

(e) milestone criteria that demonstrate when each milestone has been completed

(f) completion dates for each milestone to be achieved

(g) a final site design

(h) all milestone criteria must be consistent with the SMART principles.[18]

15.49 Develop a plan of a proposed scheduling and extent of rehabilitation works that would minimise the amount of land disturbed at any one time and minimise the residual loss of land and water bodies with ecological or productive value.

Flora and fauna

Objectives

The design, construction, operation and decommissioning activities of the project are to:

(a) avoid, minimise and/or mitigate adverse impacts to flora and fauna (including wetlands)

(b) avoid significant residual impacts to matters of national environmental significance and matters of state environmental significance, mitigate impacts where they cannot be avoided, and offset any residual impacts

(c) manage the impacts on the environment by seeking to achieve ecological sustainability, including protected wildlife and habitat

(d) ensure critical habitat receives special management considerations and protection through a management plan for the proposed project

(e) identify and appropriately safeguard matters of state environmental significance to support healthy and resilient ecosystems

(f) ensure the sustainable, long-term conservation of biodiversity

(g) protect all environmental values relevant to adjacent and receiving environmentally sensitive areas

(h) ensure waterway barrier works in fish habitats are constructed to maintain connectivity, habitat values and fish passage.

[18] SMART milestones are:
•**S**pecific – it is clear what must be done
• **M**easurable – it must be possible to know when it has been achieved
• **A**chievable – it is capable of being achieved
• **R**easonable/relevant – there is a clear connection between the milestone and the desired outcomes. The requirement is reasonable
• **T**ime Specific – it is clear when the milestone will be completed.

Existing environment

15.50 Identify and describe matters of state environmental significance (MSES),[19] state and regionally significant biodiversity and natural environmental values of the terrestrial and aquatic ecosystems likely to be impacted by the project. This is to include watercourses impacted by groundwater drawdown or diversion; watercourses floodplain ecology (especially as it relates to potential changes from project activities such as watercourse diversions, water storage facilities such as dams and levees, and groundwater drawdown impacts); groundwater-dependent ecosystems and high ecological significance wetlands. Where MSES have been addressed in the section on MNES, specific cross referencing is recommended.

15.51 The location of fauna and flora of cultural, state and national environmental significance in the project area, and in surrounding areas, are to be shown on maps in relation to their habitat and connectivity in the landscape. Include maps, upstream and downstream of the project, showing areas of:

(a) regulated vegetation maps showing regional ecosystems, essential habitat, wetlands, watercourse and drainage features (over the project and adjoining areas)

(b) protected wildlife habitat

(c) wetlands of high ecological significance

(d) waterways providing for fish passage

(e) protected areas.

15.52 Provide a detailed description of all native fish species:

(a) known to occur within the area impacted by the project (as identified through on-ground studies), and

(b) identified as likely to occur (via desktop assessment).

15.53 Describe, using relevant literature, habitat mapping and the results of surveys, the natural and existing upstream and downstream movement and habitat requirements of all aquatic and terrestrial flora and fauna in the project site. Describe the sensitivity to change of aquatic and terrestrial flora and fauna groups and of significant species.

Impact assessment

15.54 Using maps at suitable scales, illustrate the context of the project in relation to surrounding MSES and protected areas. This includes the location of:

(a) existing and proposed infrastructure

(b) proposed buffers (including firebreak and safety buffers)

(c) existing and proposed access tracks required for construction and maintenance

(d) any other areas of disturbance required to undertake the project.

15.55 Describe the potential direct and indirect impacts on the biodiversity and natural environmental values of affected areas such as breeding, roosting, nesting and foraging habitat, arising from the construction, operation and decommissioning of the project (including potential/likely and

[19] MSES are a component of the biodiversity state interest that is defined under the State Planning Policy (SPP) and defined under the Environmental Offsets Regulation 2014. MSES includes certain environmental values that are protected under Queensland legislation.

known impacts) in accordance with DES guidelines (see Appendix 2). The assessment is to include, but not be limited to, the following:

(a) all significant flora and fauna species and ecological communities (e.g. Julia Creek dunnart, grey falcon) in both terrestrial and aquatic environments and in sensitive areas, biodiversity values, connectivity and supporting ecological processes, including MSES and MNES. Where MSES have been addressed in the section on MNES, specific cross referencing is recommended.

(b) flora and fauna of cultural significance to Aboriginal and Torres Strait Islander peoples

(c) terrestrial and aquatic ecosystems (including groundwater-dependent ecosystems) and their interaction

(d) alterations to riparian vegetation, habitat availability, connectivity and bank and channel morphology

(e) waterways providing for fish and fauna passage (including temporary and permanent impacts), including an assessment against SDAP State code 18

(f) the existing integrity of ecological processes, including habitats of listed threatened, near-threatened or special least-concern species

(g) connectivity of habitat and ecosystems

(h) integrity of landscapes and places, including wilderness and similar natural places

(i) chronic, low-level exposure to contaminants or the bioaccumulation of contaminants

(j) direct and indirect impacts on terrestrial and aquatic species and ecosystems whether due to vegetation clearing, hydrological changes, discharges of contaminants to water, air or land, noise and other relevant matters

(k) edge effects from cleared vegetation and access to food resources

(l) actions of the project that require an authority under the *Nature Conservation Act 1992* (Qld) (NC Act), Water Act, *Vegetation Management Act 1999* (Qld) (VM Act)[20], *Fisheries Act 1994* (Qld) (Fisheries Act) and the EP Act

(m) biological diversity including listed flora and fauna species and regional ecosystems

(n) conservation tenures and/or biodiversity offset areas approved by the state or Australian governments

(o) direct and indirect impacts on native fauna during construction and operation of the project due to their proximity to the project area (e.g. lighting, noise, waste).

15.56 Describe the cumulative impacts of the proposed project, in conjunction with existing development and possible future development (as described by approved plans and existing project approvals), to ecosystem resilience, flora and fauna and impacts to the relevant floodplain ecology.

15.57 Identify and discuss where proposed vegetation clearing is exempt or considered accepted development for the project under the Planning Regulation. Assess proposed vegetation clearing against SDAP State code 16, addressing the relevant assessment benchmarks for a coordinated project for all other purposes. Note that all vegetation, including Category X areas

[20] This is notwithstanding that the *Vegetation Management Act 1999* does not apply to mining projects on resource tenements. Refer also to **https://www.qld.gov.au/environment/land/management/vegetation/exemptions**

(under the VM Act), on state land tenures is assessable unless an exemption or Acceptable Development Vegetation Clearing Code applies. If exemptions apply, information to justify these exemptions and evidence to demonstrate that clearing areas were assessed is required.

15.58 For any infrastructure that constitutes waterway barrier works, provide cross-sections of the waterway that show the barrier in relation to the bed and banks and long-sections that show the barrier in relation to the bed upstream and downstream of the structure. Describe how the barrier and hydrological conditions provide for bi-directional fish passage.

15.59 Describe the potential disruption to flows in waterways and tributaries and demonstrate how the chosen method minimises and mitigates potential impacts on aquatic and riparian habitat (including sediment dams, levees, temporary diversions). Reference is to be made to DAF *Guidelines for Fish Salvage* (see Appendix 2), for example if any dewatering is required. The description is to include:

(a) proposed fauna passage through any diversions

(b) proposals for the reinstatement of the waterways after construction has ceased, if applicable.

15.60 Describe the potential impacts on ecological function and connectivity, including any impacts downstream/off-site resulting from altered flow paths, changes in flow velocity and changes in inundation periods.

15.61 Describe, illustrate and assess where any proposed infrastructure, including tailing storage facilities or dams, voids and waste rock dumps, disturbed and rehabilitated areas, would lie in relation to the extent to any modelled flood level, including the probable maximum flood level.

Mitigation measures

15.62 Describe how the achievement of the flora and fauna objectives are to be monitored and audited, and how corrective actions are to be managed for all phases of the project.

15.63 Demonstrate how the proposal avoids native vegetation clearing, or where avoidance is not reasonably possible, minimises clearing to conserve vegetation, avoid land degradation and maintain ecological processes.

15.64 Propose practical measures (based on demonstrated successful methodologies) to avoid, minimise, mitigate and/or offset direct or indirect impacts on ecological environmental values, including measures for protecting or enhancing natural values and assess how the nominated quantitative indicators and standards may be achieved for nature conservation management. In particular, address measures to protect or preserve any listed threatened, near threatened or special least concern species. Provide a salvage and relocation plan for impacted species including MSES.

15.65 Assess the need for safety fire breaks and the need for buffer zones and the retention, rehabilitation or planting of movement corridors. The assessment must take into account the role of buffer zones in maintaining and enhancing riparian vegetation and wetlands to promote habitat connectivity, enhance water quality and provide habitat.

15.66 Demonstrate that the project will avoid the need for waterway barriers or propose measures to mitigate impacts on affected waterways, drainage features and wetlands. Include mitigation strategies for construction and operation stages of the project.

15.67 Propose rehabilitation criteria, in relation to natural values, that would be used to measure progressive rehabilitation of disturbed areas. Describe how the achievement of the objectives will be monitored and audited, and how corrective actions will be managed. Proposals for

rehabilitation of disturbed areas must incorporate, in suitable habitat, provision of low shrubs, ground level hollow logs, stick piles, nest hollows, ground litter, fish passage and terrestrial and aquatic habitat as appropriate.

Offsets

15.68 After demonstrating that all reasonable on-site avoidance and mitigation measures have been applied, identify whether the project will result in a significant residual impact (SRI) on MSES, requiring an offset with reference to the *Queensland Environmental Offsets Policy, Queensland Environmental Offsets Policy: Significant Residual Impact Guideline* or the *Significant Residual Impact Guideline for matters of state environmental significance and prescribed under the Sustainable Planning Act 2009 – Queensland Environmental Offsets Policy* (see Appendix 2) and the Queensland Environmental Offsets framework.

15.69 Address both state and commonwealth offset obligations, and clearly identify where there are overlaps across jurisdictions. Identify, describe and illustrate the extent (such as in a map and table) of any SRI overlap between MNES and MSES.

15.70 Describe and quantify any SRI and demonstrate any proposed offset sites and their capacity and habitats, or alternative offsets, are consistent with the latest version of the *Queensland Environmental Offsets Policy* (see Appendix 2).

15.71 Provide as an appendix to the EIS an offset strategy which outlines the proposed offset delivery approach to address the project's SRI on MSES and MNES. The offset delivery approach is to include:

(a) both state and commonwealth offset obligations, and clearly identify any overlaps across jurisdictions

(b) identify and illustrate the extent of any SRI overlap between MNES and MSES

(c) for staged offsets, take into account the full extent of potential impacts on prescribed environmental matters for the entire project as part of the SRI test

(d) an assessment of the vulnerability of any proposed offset site/s under climate change scenarios (e.g. reduced water availability, increased bushfire risk).

15.72 Describe any active restoration actions that would be undertaken to improve, enhance and manage native vegetation or threatened species habitat on a proposed offset site (note: applying high intensity management to low condition sites is most relevant to habitat reconstruction).

15.73 Describe any proposed measures that would be used to avoid, minimise or mitigate any impact on agricultural values when meeting environmental offset requirements required for the project.

Biosecurity

Objectives

The construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate the spread of terrestrial and aquatic weeds, terrestrial and aquatic pest animals, disease, pathogens and contaminants

(b) control and manage existing terrestrial and aquatic weeds, terrestrial and aquatic pest animals and diseases

(c) comply with relevant provisions of the *Biosecurity Act 2014* (Qld) (Biosecurity Act), Australian Government animal and pest strategies, biosecurity plans, Weeds of National Significance and designated pests under the *Public Health Act 2005* (Qld) (Public Health Act).

Existing environment

15.74 Survey terrestrial and aquatic pest animals and weeds in those areas identified as containing listed flora, fauna and ecological communities of MNES or MSES.

15.75 Describe the current distribution and abundance of terrestrial and aquatic pest animals and weeds in the project area and surrounds. This includes prohibited and restricted matters listed in the Biosecurity Act and Biosecurity Regulation 2016, Weeds of National Significance, pests declared under Richmond Shire local law and designated pests under the Public Health Act (see Appendix 2 for relevant guidelines).

Impact assessment

15.76 Describe the project's construction and operational impacts on the spread of terrestrial and aquatic pest animals, terrestrial and aquatic weed species and disease within the project area, construction access routes and into adjoining properties (where relevant).

Mitigation measures

15.77 Propose detailed measures using best practice to control and limit the spread of pests, weeds and diseases surrounding the project area and adjacent areas. Detail any relevant local government area biosecurity plans.

15.78 All proposed measures are to be in accordance with any relevant biosecurity surveillance or prevention measures authorised under the Biosecurity Act and any requirements under the VM Act.

Water quality

Objectives

The design, construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate adverse impacts to water quality

(b) protect environmental values of waters

(c) protect environmental values of wetlands

(d) protect environmental values of groundwater and associated surface ecological systems

(e) maintain or enhance water quality to achieve water quality objectives.

The performance outcomes corresponding to these objectives are in Schedule 8, Part 3 of the EP Regulation.

Existing environment

15.79 With reference to the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 (EPP (Water and Wetland Biodiversity)) and section 9 the EP Act identify the environmental values of surface (including wetlands) and groundwaters within the project area, its surrounds and immediately downstream/down-gradient areas that may be affected by the project activities, including any human uses and culturally significant values of water.

15.80 Describe historic and existing surface water and groundwater quality in terms of physical, chemical and biological characteristics of surface waters and groundwater within and surrounding the project area which may be affected.

15.81 Include a description of water quality variability within the study area associated with climatic and seasonal factors, variability of freshwater flows and extreme events using suitable reference locations and sufficient data to adequately establish baseline condition and define natural variation, including seasonal variation.

15.82 The assessment is to include a literature review supplemented by a suitable sampling program supported by sufficient site-specific baseline data. These additional matters are to be discussed:

(a) the relationship of water quality to flow, using local catchment examples

(b) water quality issues (such as stratification, eutrophication and deoxygenation) within and downstream from existing storages in the system

(c) the confirmed or likely causes of present water quality impacts (if any)

(d) the suitability of existing raw water quality for proposed on-site uses and any treatment required

(e) correlate groundwater quality results with surface water data to define interactions

(f) characterise baseline groundwater quality variability and its suitability for environmental and human use

(g) identify any water quality variations along the length of any alluvium upstream and downstream of infrastructure, or surface water locations

(h) surface water quality samples must include as a minimum, electrical conductivity, pH, sulphate, fluoride, dissolved oxygen, turbidity, total suspended solids, nutrients,

dissolved and total metals and metalloids, total recoverable hydrocarbons and major anions and cations. Groundwater indicators must include the same indicators (except turbidity and total suspended solids) as a minimum and should allow for all water quality objectives for local groundwater to be assessed.

Impact assessment

15.83 The assessment of impacts on water is to be in accordance with DES guideline *Application requirements for activities with impacts to water*, *Water – EIS information guideline*, *Monitoring and sampling manual, Queensland Water Quality Guidelines*, *Using monitoring data to assess groundwater quality and potential environmental impacts* and *Technical guideline – Licensing wastewater releases to Queensland water* (see Appendix 2). Demonstrate the project can meet the environmental objectives and performance outcomes in Schedule 8, Part 3 of the EP Regulation.

15.84 Define the relevant water quality objectives applicable to the environmental values and demonstrate how these will be met by the project during construction, operation, decommissioning and following project completion. Where water quality objectives are not available, local water quality objectives must be derived according to the latest water quality guidelines (see Appendix 2). Spatially identify any semi-permanent or permanent streams and pools, stock watering locations, groundwater aquifers (including where surface water interactions are likely) and locations of other environmental values.

15.85 Identify the predicted quantity and quality (including location, timing and duration) of all potential and/or proposed discharges of water and wastewater sewage by the project, whether as point sources (such as controlled and uncontrolled discharges from regulated dams) or diffuse sources (such as seepage from waste rock dumps/waste management areas or irrigation to land of treated sewage effluent). Provide stream flow data and information on discharge water quality, including any potential variation in discharge water quality that will be used in combination with proposed discharge rates to estimate in-stream dilution and water quality. Chemical and physical properties of any wastewater, including concentrations of constituents, at the point of entering natural surface waters must be discussed along with toxicity of effluent constituents to human health, flora and fauna.

15.86 Describe the potential impacts of any discharges on the quality and quantity of receiving waters (including groundwater) taking into consideration the assimilative capacity of the receiving environment given existing water quality and other potential point source discharges in the catchment. The assessment is to include, but not be limited to, the following:

(a) options for controlled discharge at times of natural stream flow must be investigated to ensure that adequate flushing of wastewater is achieved

(b) provide water quality limits that are appropriate to maintain background water quality and protect other water uses

(c) the necessary streamflow conditions in receiving waters under which controlled discharges will be allowed

(d) consider the resultant quality and hydrology of receiving waters and the practices and procedures that would be used to avoid or minimise impacts

Refer to DES *Receiving environment monitoring program guideline for use with environmentally relevant activities under the EP Act* (see Appendix 2).

15.87 Demonstrate how the project will protect environmental values and achieve water quality objectives and ensure that environmental impacts would be avoided or minimised through the

implementation of management strategies that comply with the management hierarchy and management intent of the EPP (Water and Wetland Biodiversity 2019).

15.88 Describe the impacts of the project on upstream and downstream water quality, environmental values and the water quality objectives of the Water Plan (Gulf) 2007, the relevant environmental attributes of the North West Queensland Regional Plan and policies and guidelines outlined in Appendix 2. Information is to be supported with references to relevant legislation, policies and guidelines.

15.89 Describe the cumulative impacts of the proposed project, in conjunction with existing development and possible future development (as described by approved plans and existing project approvals), to water quality.

Mitigation measures

15.90 Describe and include in the EMP, avoidance, mitigation strategies and contingency plans for:

(a) potential accidental discharges of contaminants and sediments during construction and operation

(b) stormwater run-off from the project facilities and associated infrastructure

(c) flooding of relevant river systems and the effects of cyclones and other extreme events

(d) erosion and sedimentation during construction, operation and decommissioning of the project, with reference to the International Erosion Control Association's Best Practice Erosion and Sediment Control (see Appendix 2), including the use of development free buffers

(e) management of acid sulfate, sodic and dispersive soils

(f) impacts to other properties and the environment during flood events

(g) the treatment and disposal processes for all wastewater produced as a result of the project, including construction activities

(h) the proposed management of existing, altered and/or constructed waterbodies including any watercourse, waterway, lake or spring in the project area to maintain water quality

(i) avoiding and minimising impacts occurring to groundwater.

15.91 Describe how monitoring would be used to demonstrate that objectives were being assessed, audited and met. For example, provide measurable criteria, standards and/or indicators that will be used to assess the condition of the ecological values and health of surface water environments. Propose corrective actions to be used if objectives are not likely to be met.

Water resources

Objectives

The design, construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate adverse impacts to water resources

(b) ensure equitable, sustainable and efficient use of water resources

(c) maintain environmental flows, water quality objectives, in-stream habitat diversity, viability of terrestrial, riverine, wetland, lacustrine and naturally occurring inputs from riparian zones to support aquatic biotic communities

(d) protect or enhance the condition, environmental values and natural functions of waterways, watercourses, lakes, springs, aquifers and other natural water systems and watercourses – including the stability of beds and banks of waterways and watercourses

(e) protect the volumes and quality of water resources so that current lawful uses (such as entitlement holders and stock and domestic users) and other beneficial uses of water (such as spring flows, wetlands and groundwater-dependent ecosystems) are not adversely impacted by the development.

Existing environment

15.92 Describe water related environmental values, existing surface water resources and adjoining waterways and groundwater aquifer systems within the study area in terms of water levels, recharge and discharge processes and the flow directions.

15.93 Describe existing and potential users and uses of water in areas potentially affected by the proposed project, including municipal, agricultural, industrial, mining, recreational and environmental uses of water.

15.94 Describe any existing and/or constructed waterbodies including any watercourse, waterway lake or spring within and adjacent to the project.

15.95 Describe the quality, quantity and significance of groundwater in the project area and any surrounding area potentially affected by the project's activities. The EIS is to:

(a) characterise the nature, type, geology/stratigraphy and depth to and thickness of the aquifers, their hydraulic properties and value as water supply sources

(b) analyse the movement of underground water to and from the aquifers, including how the aquifer(s) interacts with other aquifers and surface water, and the effect of geological structures on this movement

(c) characterise the quality and volume of the groundwater including seasonal variations of groundwater levels

(d) provide surveys, location and source of existing groundwater supply facilities (e.g. bores, wells, or excavations).

Impact assessment

15.96 The assessment of impacts on water is to be in accordance with DES Water – *EIS information guideline* and *DAFF Environmental impact assessment companion guide* (see Appendix 2).

15.97 Provide details of proposed monitoring, impoundment, extraction, discharge (including associated and non-associated groundwater extraction), injection, use or loss of surface water or groundwater (including volumes and rates).

15.98 Provide details whether the project would take water from, or affect recharge to, aquifers of the Great Artesian Basin.

15.99 Provide details of existing and proposed changes to stormwater regimes, including changes to flow paths/patterns such as significant diversion or interception of overland flow and locations of interference/disturbance of watercourses and floodplain areas. Include maps of suitable scale showing the location of diversions, changes to flow and other water-related infrastructure in relation to mining infrastructure including water storages, sediment dams, tailings dam and other mine affected water dams, pipes, water treatment plants, levees, drains, diversions, bunds, monitoring points and release points. Detail any significant diversion or interception of overland flow, including the effects of subsidence.

15.100 Describe watercourse diversion design, operation and monitoring based on current engineering practice and relevant guidelines including Department of Regional Development, Manufacturing and Water (DRDMW) *Works that interfere with water in a watercourse – watercourse diversions* (see Appendix 2).

15.101 Provide an assessment of the impact on the receiving environment and aquatic and ecological communities from any interference with waters such as redirection of flood waters through the installation of levees or construction of other facilities and infrastructure such as the waste rock dump, tailings dam and any proposed water storage infrastructure.

15.102 Describe any quantitative standards and indicators which will be used to describe the ecological values and health of surface water environments.

15.103 State how any proposed exercise of underground water rights for the life of the project would be carried out on site and describe the aquifers affected or likely to be affected; movement of underground water to and from the aquifer; area where the water level is expected to decline; the predicted quantities of water to be taken or interfered with; and the environmental values that will be affected.

15.104 Develop hydrological models as necessary to describe the inputs, movements, exchanges and outputs of surface water and groundwater that may be affected by the project. The models should address the range of climatic conditions that may be experienced at the site throughout all phases of the project, and adequately assess the potential cumulative impacts of the project on water resources including to the post-decommissioning phase:

(a) changes in flow regimes from diversions, water take and discharges

(b) alterations to riparian vegetation and bank and channel morphology

(c) direct and indirect impacts arising from the project

(d) management of mine-affected water.

15.105 Develop groundwater conceptual models as necessary to represent groundwater recharge and discharge process, surface-groundwater interaction, and impact pathways from current and proposed extraction of groundwater, including the supporting data, investigation and analysis. If warranted, a numerical groundwater flow model, consistent with conceptual model, should also be developed for impact assessment. The model should be peer-reviewed by an independent suitably qualified person(s) consistent with the *Australian groundwater modelling guidelines* (see Appendix 2). The models should include a site water balance (including any voids) to determine the upper and lower bounds of future water levels after mine closure, and

the calculated trends of water quality in the voids over time. The model should be capable of simulating:

(a) quantity of associated and non-associated water extracted over time from the project

(b) drawdown or pressure impact in the target formations (formation from which vanadium ore is extracted), as well as the surrounding aquifers, from direct and indirect extraction of groundwater

(c) change in groundwater level or pressure over time at specific locations of interest in relation to environmental values.

15.106 Provide information on the proposed water usage by the project, including details about:

(a) the ultimate supply required to meet the demand for full production, including timing of demands

(b) the quality and quantity of all water supplied to the site during the construction and operational phases based on minimum yield scenarios for water reuse, rainwater reuse and any bore water volumes

(c) a water balance analysis

(d) a site plan outlining actions to be taken in the event of failure of the main water supply.

15.107 Determine the potable water demand for the project, including the temporary demands during the construction period. Include details of any existing town water supply to meet such requirements. Detail should also be provided to describe any proposed on-site water storage and treatment for use by the site office during construction and operational phases.

15.108 Describe the options for supplying water to the project and assess any potential consequential impacts in relation to any relevant water plan (the GABORA Water Plan and the Gulf Water Plan) and associated planning documents including the objectives of the water plans and relevant water management protocol.

15.109 Describe the cumulative impacts of the proposed project, in conjunction with existing development and possible future development (as described by approved plans and existing project approvals) to water resources, including management of impacts on underground water rights under the Water Act.

Mitigation measures

15.110 Provide detailed designs for all infrastructure utilised in the treatment of on-site water including how any on-site water supplies are to be treated, contaminated water is to be disposed of and any decommissioning requirements and timing of temporary water supply/treatment infrastructure is to occur.

15.111 Provide a water management plan, for the life of the project, which details management strategies of mine-affected water, sediment-only-affected water and drainage from areas not disturbed by mining activities. Any water taken off site for further use must also be accounted for and must be consistent with the General Use Approval for associated water.

15.112 Describe measures that would be used to avoid, minimise or mitigate any impacts on surface water and groundwater resources. For example, detailed measures to reduce evaporation rates for water storages such as the use of suspended and floating covers, planting trees for windbreaks, and constructing deep storages with minimal surface area.

15.113 Describe how the achievement of the water resources objectives would be monitored, audited, reported, and how corrective/preventative actions would be managed. Propose a network of

groundwater monitoring bores before and after the commencement of the proposed project that would be suitable for the purposes of monitoring groundwater quality and hydrology impacts that may occur as a result of the resource activity. Include details on investigation timeframes and actions if exceedances are detected.

15.114 Provide a policy outline of compensation, mitigation and management measures where impacts are identified. Describe how 'make good' provisions would apply to any water users that may be adversely affected by the project.

Air

Objectives

The design, construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate adverse air impacts to sensitive receptors

(b) protect or enhance the environmental values of the airshed.

The performance outcomes corresponding to these objectives are in Schedule 8, Part 3 of the EP Regulation.

Existing environment

15.115 Describe the existing air quality environment that may be affected by the project in the context of environmental values.

15.116 Discuss the existing local and regional air shed environment, including:

(a) background/ambient levels and sources of particulates, gaseous and odorous compounds, any major constituent and contaminants. Include all available data from any site-specific air monitoring, the National Pollutant Inventory (NPI) reporting, and/or ambient air quality monitoring undertaken by the Queensland Government.

(b) pollutants

(c) baseline monitoring results, sensitive receptors.

15.117 Provide baseline data on local meteorology and ambient levels of pollutants for later modelling of air quality. Parameters should include air temperature, wind speed and directions, atmospheric stability, mixing depth and other parameters necessary for input to the model.

15.118 The assessment of environmental values is to describe and map at a suitable scale the location of all sensitive air receptors adjacent to all project components. An estimate of typical background air quality levels should be based on surveys at representative sites where data from existing DES monitoring stations cannot be reliably extrapolated.

Impact assessment

15.119 The assessment of impacts on air from all components of the project (i.e. on-mine site and off-mine site) is to be in accordance with DES *Air – EIS information guideline* and *Application requirements for activities with impacts to air* (see Appendix 2).

15.120 Demonstrate the project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.

15.121 Describe the characteristics of the contaminants or materials released, and the release rates as a result of the construction and operation of the project, including point source and fugitive

emissions (e.g. dust emissions from the transport of vanadium product, equipment and pipe leaks, storage tanks and wastewater collection, treatment and disposal systems), treatment and discharge systems. An emissions inventory (point source and fugitive) during construction, commissioning, operations, maintenance, closure and a range of possible/likely upset conditions is to be included.

15.122 Predict the potential impacts of the releases to air from project activities on environmental values of the receiving environment using established and accepted methods.

15.123 The description of impacts should take into consideration the assimilative capacity of the receiving environment and the practices and procedures that would be used to avoid or minimise impacts. The impact prediction is to:

(a) address residual impacts on the environmental values (including appropriate indicators and air quality objectives) of the air receiving environment, with reference to sensitive receptors, using recognised quality assured methods. This should include all relevant values potentially impacted by the activity, under the EP Act, EP Regulation and Environmental Protection (Air) Policy 2019 (EPP (Air))

(b) address the cumulative impact of the release with other known releases of contaminants, materials or wastes associated with existing development and possible future development (as described by approved plans and existing project approvals)

(c) quantify the human health risk and amenity impacts associated with emissions from the project for all contaminants whether or not they are covered by the National Environmental Protection (Ambient Air Quality) Measure or the EPP (Air).

Mitigation measures

15.124 Detail the measures to avoid, minimise and manage impacts on air quality and how the proposed project activities would be consistent with best practice environmental management.

15.125 Address the compatibility of the proposed project's air emissions with existing or potential land uses in surrounding areas.

15.126 Describe how the achievement of the air objectives would be monitored, audited and reported, and how corrective/preventative actions would be managed for the life of the project.

15.127 Describe the proposed mitigation measures to manage dust emissions arising from the transport of vanadium product from the project site to the point of export and/or refining.

Noise and vibration

Objectives

The design, construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate adverse noise and vibration impacts to sensitive receptors

(b) protect or enhance the environmental values of the acoustic environment

The performance outcomes corresponding to these objectives are in Schedule 8, Part 3 of the EP Regulation.

Existing environment

15.128 Describe the existing noise and vibration sources within the project area.

15.129 Describe and illustrate the locations of any sensitive receptors that are listed in Schedule 1 of the Environmental Protection (Noise) Policy 2019 (EPP (Noise)) and estimate typical background noise and vibration levels based on surveys at representative sites. Also describe any other environmental values that could be impacted by emissions from the proposed project.

15.130 If the project could adversely impact on the noise and vibration environment, undertake baseline monitoring at a selection of sensitive receptors potentially affected by the project. Describe the results of any baseline monitoring.

Impact assessment

15.131 The assessment of impacts on noise and vibration is to be in accordance with DES *Noise and vibration – EIS information guideline* and *Application requirements for activities with noise impacts* (see Appendix 2).

15.132 Describe the characteristics of noise and vibration sources that would be emitted by the project (point source, fugitive emissions and general emissions) during construction, commissioning, upset conditions, operation and closure phases.

15.133 Describe the project's noise and vibration impacts on sensitive receivers in accordance with Schedule 1 of the EPP (Noise). The EIS must address the compatibility of the project's noise emissions with existing or potential land uses in surrounding areas. Taking into account the practices and procedures that would be used to avoid or minimise impacts, the impact prediction is to address the:

(a) activity's consistency with the objectives

(b) potential impacts of any low-frequency (<200 Hz) noise emissions.

15.134 Demonstrate the project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.

15.135 Describe the cumulative impacts of the project, in conjunction with existing development and possible future development (as described in approved plans and existing project approvals), to the existing noise and vibration environment.

Mitigation measures

15.136 Describe how the environmental management objectives for noise and vibration would be monitored, audited and reported, and how corrective/preventative actions would be managed for the life of the project.

15.137 Describe how the proposed activity would be managed to be consistent with best practice environmental management, including the control of background creep in noise as outlined in the EPP (Noise).

15.138 Describe any expected exceedances of the acoustic quality objectives following the provision and/or application of avoidance and mitigation measures, and how any residual impacts would be addressed

Waste management

Objectives

The design, construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate adverse impacts of hazardous contaminants and waste generated by the project

(b) manage any waste transported, generated, or received as part of carrying out the activity in a way that protects all environmental values

(c) ensure waste infrastructure has the capacity to adequately accommodate waste from the project or is appropriately upgraded.

The performance outcomes corresponding to these objectives are in Schedule 8, Part 3 of the EP Regulation.

Existing environment

15.139 Describe existing waste infrastructure including location, capacity and accepted waste streams relevant to the project.

Impact assessment

15.140 The assessment of impacts on waste is to be in accordance with DES *Waste – EIS information guideline* and *Application requirements for activities with waste impacts* (see Appendix 2).

15.141 Describe all the expected waste streams[21] including hazardous contaminants, generated by project activities during the construction, operation, rehabilitation and decommissioning.

15.142 Describe the quantity, and physical and chemical characteristics, including form (liquid, solid, gas), environmental hazard rating, and toxicity of each significant waste, as well as any attributes that may affect its dispersal in the environment, and its associated risk of causing environmental harm.

15.143 Identify and investigate the geochemical and physical characterisation of waste rock, tailings and spoil, including the risk of acid or neutral mine drainage. Provide details of the physical sampling program including test pits, and the static and kinetic testing of soil samples. Assess the potential risks associated with this waste stream and describe the management of progressive placement and any disposal strategy to minimise any potential impacts on environmental values of the proposed project area.

15.144 Use a material/energy flow analysis to provide details of natural resource use efficiency (such as energy and water), integrated processing design, and any co-generation of power and by-product reuse.

15.145 Provide details of any proposed reuse and/or disposal of treated wastewater and sewage wastes.

[21] Waste streams for resource projects would typically include waste rock, tailings and course rejects from mining and mineral processing, and brackish, saline or mine affected water.

Mitigation measures

15.146 Detail waste management planning for the project, especially how these plans are to be applied to prevent or minimise environmental impacts from waste for each stage of the project. Waste management planning is to include detail of all identified waste types, waste volumes and proposed locations for waste disposal.

15.147 Assess and describe the proposed management measures against the preferred waste management hierarchy, namely: avoid waste generation; cleaner production; recycle; reuse; reprocess and reclaim; waste to energy and treatment; disposal. This includes the generation and storage of waste.

15.148 Identify end of waste options using the relevant parts of the DES End of Waste framework under the Waste Reduction and Recycling Act 2011 and comply with relevant parts of the DES *Guidelines – Waste Reduction and Recycling Act 2011 – End of Waste (EOW)* (see Appendix 2).

15.149 Describe how nominated quantitative standards and indicators may be achieved for waste management, and how the achievement of the objectives would be monitored, audited and reported, and how corrective/preventative actions would be managed.

15.150 Define and describe objectives and practical measures for protecting or enhancing environmental values from impacts from waste streams.

15.151 If the production of hazardous contaminants and waste is unavoidable, describe proposed treatment and/or storage of hazardous contaminants until they can be disposed at an approved facility.

Transport

Objectives

The design, construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate adverse impacts to the condition and operation of existing and planned transport infrastructure

(b) maintain the safety, efficiency and operational integrity of all affected transport modes for the project workforce and other transport system

(c) ensure impact mitigation works are compatible with transport infrastructure planning.

Existing environment

15.152 Provide a detailed description of background traffic growth and existing traffic data.

15.153 Include a description of the existing and future (as planned by state or local government) transport network and corridors including detailed maps to appropriate scales showing relevant:

(a) construction laydown areas

(b) road and railway corridors

(c) road and rail infrastructure

(d) airports, airstrips

(e) sea ports

(f) nearby mines.

Impact assessment

15.154 Provide a detailed description and tabular summaries of the total transport activities associated with all stages of the project (from pre-construction through to decommissioning). The information is to include:

(a) expected annual volumes, weights, origins and destinations of materials, products, hazardous goods and wastes

(b) details concerning road transportation for each major transport task (e.g. fuel, plant and equipment, consumables, hazardous goods, wastes) including heavy vehicle classification, load size (highlighting over-mass and over-sized loads), number of trips, service frequency and duration and maps of routes to be used

(c) details concerning rail transportation including number of trips, load size, service frequency and duration

(d) traffic generated by workforce personnel and service providers for all phases of the project.

15.155 Identify any project area access points to/from public roads including their suitability for the proposed use and required upgrades in accordance with relevant local and/or state policies, standards and manuals.

15.156 Present the transport assessment in separate sections for each project-affected mode (road, rail, air services, port and maritime) as appropriate for each phase of the project.

15.157 Provide a detailed assessment by a Registered Professional Engineer of Queensland of how the existing and future safety, condition and performance of transport infrastructure (e.g. existing and future local and state controlled roads, railway corridors, port and air services) will be impacted by the project from pre-construction through to decommissioning.

15.158 Provide a detailed road impact assessment in accordance with the latest Department of Transport and Main Roads (DTMR) *Guide to Traffic Impact Assessment* (GTIA), including any practice notes, guidelines and documents referred to in the GTIA. This assessment must assess the project's impacts on all impact types (road safety, access and frontage, intersection delay, road link capacity, pavement, and transport infrastructure) as detailed in GTIA. Particular emphasis is to also be placed on the following sections of GTIA:

(a) section 8.4.2 Heavy Vehicle Routes

(b) section 9 Road Safety

(c) section 13 Pavement.

15.159 Demonstrate how the project complies with the Queensland *Level Crossing Safety Strategy 2012-2021* and *2019 Update: On Track to Zero Harm* (see Appendix 2) on new road/rail interfaces and the impacts on existing road/rail interfaces

15.160 Demonstrate that any necessary transport impact mitigation works will not compromise existing and future transport infrastructure corridors planning and works, with reference to the latest version of DTMR's Queensland Transport and Roads Investment Program and the Development Assessment Mapping System. Where accelerated pavement impacts or safety issues are identified, demonstrate proposed mitigation measures such as the implementation of Road Compensation Agreements and Road Use Management Plans with the road authority.

15.161 Provide a detailed assessment of the project's impacts on local government roads in accordance with the relevant local government's impact assessment methodology.

15.162 Identify, assess and address the project's impacts on all existing and future railway corridors, particularly project interfaces or interferences with existing and future railway corridors in accordance with relevant standards and requirements such as the SDAP, the Guide for Development in a Transport Environment: Rail, the Manual of Uniform Traffic Control Devices, Part 7: Railways and railway manager standards. This is to include the construction and operation impacts of the project. Traffic data should be provided for development generated traffic during construction and operation, background traffic growth and timelines for development staging, construction and delivery.

Mitigation measures

15.163 Demonstrate how project impacts will be mitigated. Mitigation measures are to be prepared in consultation with relevant transport authorities (e.g. Richmond Shire Council, DTMR, Civil Aviation Safety Authority, Maritime Safety Queensland, Townsville Port Authority, Aurizon and Queensland Rail).

15.164 Demonstrate how the project impacts will be mitigated in accordance with the GTIA and any practice notes, guidelines and documents referred to in the GTIA.

Social

Objectives

The construction, operation and closure of the project are to:

(a) avoid, minimise and/or mitigate adverse social impacts arising from the project

(b) enhance benefits for local and regional communities, including Aboriginal and Torres Strait Islander peoples.

Existing environment

15.165 Identify and describe people, communities, and key stakeholders[22] directly or indirectly affected by the project.

15.166 Include a social baseline study of the project's potentially affected communities[23] using the latest qualitative and quantitative data and supplementing it through stakeholder engagement processes.

15.167 The social baseline study should include:

(a) an analysis of community characteristics such as community culture and values, demographic profile, community history, community well-being, land ownership and utilisation of natural resources

(b) assessment of the capacity and accessibility of infrastructure, facilities and services, including health and emergency services

(c) an analysis of the existing housing and accommodation market

[22] Refer to Appendix 1 of the SIA Guideline for a list of key stakeholders.
[23] Potentially affected communities are those local and/or regional communities that may be directly or indirectly affected by the project, whether negatively or positively.

(d) a profile of the local and regional labour market

(e) relevant data contained in local and state government publications, reports, plans, and documentation, including regional and community plans

(f) details of other resource and infrastructure projects in the area, both planned and currently operating, based on publicly accessible information.

Impact assessment and mitigation measures

15.168 In consultation with the Office of the Coordinator-General (OCG) prepare a social impact assessment (SIA) for the project that is consistent with the requirements of the Coordinator-General's Social Impact Assessment Guideline (March 2018) (SIA Guideline) (see Appendix 2).

15.169 The SIA is to describe the potential impacts (positive and negative) of the proposed project that is informed by an inclusive and collaborative community and stakeholder engagement program[24], consistent with the SIA Guideline.

15.170 Describe the outcomes of consultation with directly affected people, communities and key stakeholders including but not limited to landholders, Aboriginal and Torres Strait Islander peoples, local governments, state agencies, local and regional commerce and community development groups, social and public service providers (e.g. Queensland Health and Queensland Emergency Services).

15.171 Address and describe the type, level and significance of the project's social impacts (beneficial and adverse), based on the outcomes of community engagement processes and the social baseline study.

15.172 Describe any potential impacts on the use of and access to recreational, natural and culturally important areas, waterways and landscapes (Aboriginal and non-Aboriginal) potentially affected by the project.

15.173 Include in the SIA a summary of the workforce profile for the construction and operational phases of the project. This is to be informed by analysis of the capacity of towns within the 125 km radius of the project to:

(a) provide workers for the construction and operational phases of the project

(b) receive workers and their families who move to these towns

(c) ensure local employment benefits are maximised for the project.

15.174 Identify in the SIA measures for prioritising the recruitment of workers from local and regional communities, with specific regard to Aboriginal and Torres Strait Islander peoples, and the proposed methodologies for workforce recruitment. This includes describing how the recruitment hierarchy in section 9(3A) of the *Strong and Sustainable Resource Communities Act 2017* (Qld) (SSRC Act) will be implemented.

15.175 The information included in the EIS (including SIA) will inform the Coordinator-General's decision under section 12 of the SSRC Act on whether personnel employed during the construction phase of the project should be protected by the SSRC Act's anti-discrimination and 100 per cent FIFO provisions.

[24] It is recommended that the proponent is to commence engaging at the earliest possible stage with all potentially affected stakeholders to discuss and explain the project and to identify and respond to issues and concerns identified as social impacts.

15.176 Consider the impact of new technologies on the operation of the project including possible impacts on the proposed workforce composition, potential new labour requirements and opportunities for local training and development (where relevant).

15.177 The SIA must include a social impact management plan (SIMP), developed in consultation with potentially affected people, communities and key stakeholders, identifying mitigation and management measures for project impacts and information on how the project would enhance social benefits in accordance with the SIA guideline. In particular the SIMP must:

(a) provide management measures for barriers that may impact choice for people in local and regional communities to engage in project employment opportunities, and for workers to permanently reside in local and regional communities during the construction and operational phases of the project

(b) provide management measures to accommodate workers to ensure availability and affordability of local and regional housing is not adversely impacted

(c) include a target for obtaining a local workforce and set the maximum proportion of FIFO workers for the project. This is to be supported by a rationale to ensure local benefit.

15.178 The SIMP must include management measures for the five key matters listed in the SIA Guideline; and describe the framework to monitor the effectiveness of proposed management measures, including timeframes and key performance indicators for implementing these measures. The framework must identify roles and responsibilities, and relevant stakeholders.

15.179 The SIMP should consider potential partnerships and opportunities for linkages with other projects planned or operating in the area and possible alignment with existing strategies that would benefit the management of any cumulative social impacts.

Cultural heritage

Objectives

The design, construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate adverse impacts on Aboriginal and Torres Strait Islander peoples' cultural heritage

(b) achieve the purposes of the *Aboriginal Cultural Heritage Act 2003*

(c) ensure that the nature and scale of the project does not compromise the cultural heritage significance of a heritage place or heritage area.

Existing environment

15.180 Identify the Traditional Owners of the land within the project area.

15.181 Undertake a cultural heritage assessment and describe the existing cultural heritage values of Aboriginal and Torres Strait Islander peoples that may be affected by the project and the environmental values of the cultural landscapes of the affected area in terms of the physical and cultural integrity of the landforms.

15.182 For aspects of non-Indigenous historical heritage identified through the *Queensland Heritage Act 1992* (Qld) (Queensland Heritage Act), undertake a study of, and describe, the known and potential historical cultural, archaeological, underwater cultural heritage artefacts and landscape heritage values of the area potentially affected by the project in accordance with the *Non-Indigenous cultural heritage – EIS information guideline* (see Appendix 2). Identify values

at local and state thresholds and assess the significance of identified values using recognised criteria.

Impact assessment and mitigation measures

15.183 Detail potential impacts on Aboriginal and Torres Strait Islander peoples' cultural heritage in accordance with DES *Aboriginal and Torres Strait Islander cultural heritage – EIS information guideline* (see Appendix 2).

15.184 Unless section 86 of the *Aboriginal Cultural Heritage Act 2003* (Qld) (ACH Act) applies, the proponent is to develop a Cultural Heritage Management Plan (CHMP) or plans in accordance with the requirements of Part 7 of the ACH Act and any associated agreements that have been reached. The CHMP must be informed by the results of a cultural heritage study.

15.185 Provide strategies to mitigate and manage all impacts on cultural heritage values of Aboriginal and Torres Strait Islander peoples and non-Indigenous cultural heritage values. Include a strategy to address unexpected archaeological discoveries and cultural places in accordance with the relevant part of the non-Indigenous cultural heritage guideline in Appendix 2.

Economic

Objectives

The construction, operation and decommissioning of the project are to:

(a) avoid or mitigate adverse economic impacts arising from the project

(b) capitalise on opportunities potentially available for capable local businesses and communities

(c) create a net economic benefit to the region and state.

Existing environment

15.186 Describe the existing economic environment consistent with the Coordinator-General's *Economic Impact Assessment Guideline* (April 2017) (see Appendix 2). The analysis is to describe the local and regional economies likely to be impacted by the project and identify the relevant stakeholders, and include:

(a) map/s illustrating the local and regional economies that could be potentially impacted by the project

(b) population of relevant local government areas

(c) the regional economy's key industries and their contribution to regional output

(d) relevant economic indicators (e.g. energy prices)

(e) existing and proposed resource projects in the region.

15.187 Describe the preferred project delivery model (including funding sources) and expected timeframes, outlining assumptions on economic externalities that have the potential to impact on the delivery model and/or expected timeframes.

Impact assessment and mitigation measures

15.188 Identify the net economic impacts of the project on the local and regional area and the state ensuring the analysis is consistent with the Coordinator-General's *Economic Impact Assessment Guideline* (April 2017).

15.189 The economic impact assessment is to address matters including, but not limited to:

(a) labour demand, including the ability for labour (including specialists) to be drawn from the existing local, regional and state workforce, and the potential effects this may have on local and regional businesses

(b) raw input demand, including the ability for existing local, regional and state suppliers to provide relevant raw and manufactured inputs

(c) anticipated impacts the project will have on water prices, grazing, agriculture, domestic and industrial energy prices, wages, economic growth, renewable energy projects

(d) the anticipated value of offsets required for all components of the project.

15.190 Quantify the employment and value-added contribution of the project to the local, regional and state economies in a regional impact assessment using computable general equilibrium modelling. The assessment is to estimate the changes in key indicators including:

(a) gross regional product

(b) gross state product

(c) employment by industry

(d) water prices for residential, mining, agriculture and industrial users

(e) gross value added by industry.

15.191 Undertake a cost-benefit analysis (CBA) which identifies the structure of the project and the relevant direct costs and benefits from the project.

(a) The CBA is to consider:

(i) key construction inputs and milestones

(ii) the project timeline

(iii) relevant renewal costs related to the project (including projected repair/replacement of infrastructure)

(iv) operational costs, including all input costs of production

(v) costs associated with environmental management, monitoring, mitigation and offsets associated with the project

(vi) benefits, including revenue projections (and stipulating unit/price assumptions)

(vii) expected project life and any residual value over the assessment period.

(b) The CBA should also consider all direct private, indirect, and external social costs and benefits. These would include:

(i) external net benefits to the project

(ii) external net costs (to third parties, community, local and state government) as a direct result of the project

(iii) all beneficiaries (e.g. individuals, the community, local and state government) of the project.

15.192 Compare the estimated costs and benefits of the site's proposed final land uses to demonstrate that a variety of configurations have been investigated to optimise the final landform design against the estimated costs and benefits of the following alternative land uses:

(a) full rehabilitation of the site with no final void(s) and non-use management areas

(b) rehabilitation with partial backfilling of void(s)

(c) usual practice such as overburden waste dumps and stockpiles

(d) alternative location and configuration of infrastructure and structures.

15.193 Identify any existing or proposed incompatible land uses within and adjacent to the site, including the impacts on economic resources and the future availability and viability of the resource including extraction, processing and transport location to markets.

Climate

Objectives

The design, construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate the risk of, and adverse impacts to the project from projected climate change (e.g. changing patterns of temperature, rainfall, hydrology and extreme weather events), with particular reference to any additional environmental management measures required, and how those measures may change over time

(b) contribute toward Queensland's emission reduction and renewable energy targets by developing and implementing decarbonisation measures for the project.

Existing environment

15.194 Describe the extremes of climate (e.g. drought, floods and bushfires) relevant to the project area.

Impact assessment and mitigation measures

15.195 Conduct the assessment in accordance with DES *Climate – EIS Information Guideline* and *Air – EIS information guideline* (see Appendix 2).

15.196 Describe the project area's climate patterns that are relevant to the environmental impact assessment, particularly the proposed project's discharges to water and air, and propagation of noise.

15.197 Climate information is to be presented in a statistical form including long-term averages and extreme values reflecting extreme weather events (e.g. droughts, floods and bushfires), as necessary. It should also be illustrated by bar charts, wind rose diagrams or other relevant graphic means as necessary.

15.198 Assess the project's vulnerabilities to projected climate change (e.g. changing patterns of temperature, rainfall, hydrology, and extreme weather events). The assessment of climate hazards and risks should reference relevant climate projection data (e.g. Queensland Future Climate high-resolution climate projection data[25]) and employ an appropriate climate risk assessment methodology.

15.199 Describe the adaptation strategies and/or activities designed to minimise climate change impacts to the project, subsequent land uses on that site (e.g. rehabilitation projects) and

[25] Available from **https://longpaddock.qld.gov.au/qld-future-climate/dashboard**.

surrounding land uses. Adaptation activities are to be designed to avoid perverse outcomes, such as increased emissions of GHGs or maladaptive outcomes for surrounding land uses.

Note: The QRIDP, released in June 2022, includes an action to require industry to develop plans to decarbonise operations. The QRIDP states that the Queensland Government, led by DES, will work with the resources industry to develop a decarbonisation plan policy that:

- results in substantial and consistent reductions in Scope 1 and 2 emissions
- is outcomes-based, allowing companies to achieve least-cost abatement from across their portfolio of Queensland assets
- includes transparent and regular reporting on progress
- is adaptive, providing a basis for future actions to ensure new technologies, approaches and progress can be taken into account
- enables the energy system to plan Queensland's renewable energy requirements.

This section, requiring consideration of GHG emissions attributed to the Richmond-Julia Creek Vanadium project, has been prepared in collaboration with DES. DES is developing the draft Industry Decarbonisation Plan Policy in accordance with the QRIDP, which will be subject to industry and community consultation. Accordingly, this section may change prior to finalisation of the TOR for the project. The proponent will be required to be consistent with the Industry Decarbonisation Plan Policy once finalised.

Greenhouse gas emissions

Existing environment

15.200 Discuss the existing local and regional air shed environment of GHGs.

Impact assessment and mitigation measures

15.201 Provide an inventory of projected annual emissions for the life of the project for each GHG, with total emission expressed in 'CO_2 equivalent terms' for the following categories as per the National Greenhouse and Energy Reporting Scheme (NGER Scheme):

(a) scope 1 emissions – direct emissions of GHGs from sources within the boundary of the facility and as a result of the facilities (including emissions from vegetation clearing, diesel use and fugitive emissions)

(b) scope 2 emissions – emissions of GHGs from the production of electricity, heat or steam that the facility will consume, but that are physically produced by another facility

(c) scope 3 emissions – emissions of GHGs which occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business.

15.202 For the life of the project, estimate the following, including a brief description of the methods used to make the estimates:

(a) emissions from associated upstream activities, including the fossil fuel-based electricity to be used during construction, operation and decommissioning

(b) emissions resulting from ancillary activities, such as transportation of products and consumables, and energy use at the project site.

15.203 Estimate both unmitigated emissions and predicted emissions after all avoidance and mitigation measures have been accounted using an appropriate methodology in accordance with Australian and international guidelines.

15.204 Assess the potential impacts of the project on the state and national GHG inventories including Queensland's published emissions targets.

15.205 Provide a decarbonisation plan[26] for the life of the project, which includes the following:

(a) how the project will be developed and operated to meet Queensland and Australia's published emission targets

(b) measures to reduce emissions from other projects or across other tenures held by the proponent in Queensland may be used to show how the projects cumulatively contribute to Queensland and Australia's published emissions targets

(c) a detailed assessment and explanation of feasible alternatives that were considered to avoid or reduce the project's emissions (including the option of not proceeding)

(d) a description of:

(i) measures (preferred and alternatives) proposed to avoid and/or minimise Scope 1 and Scope 2 GHG emissions of the project

(ii) opportunities and commitments for offsetting GHG emissions through accredited and verified offsets that represent genuine emissions reductions within Australia (i.e. will be recognised in the National Greenhouse Accounts)

(iii) opportunities to reduce GHG emissions through renewable energy use and innovation

(iv) any voluntary initiatives or research into reducing the lifecycle and embodied energy carbon intensity of the project's processes

(v) any additional carbon offsetting options for emissions that cannot be reduced (including, but not limited to, through carbon offsets, vegetation management)

(e) a process for regularly reviewing new technologies to identify opportunities to further reduce GHG emissions and use energy efficiently, consistent with best practice environmental management

(f) an assessment of the practicality, effectiveness and risks for each avoidance and mitigation measure, and clear evidence that mitigation and avoidance measures have been factored into the economic feasibility of the project

(g) a commitment to:

(i) periodic energy audits that measure progress towards improving energy efficiency

(ii) monitoring and transparent public reporting of GHG emissions as per the NGER Scheme, as well as public reporting on the success of mitigation measures outlined in the decarbonisation plan

(iii) ongoing training and capacity building around decarbonisation options, technology and reporting.

[26] As per requirements in section 6.4, should a new policy or legislation be passed to regulate GHGs the proponent must meet all requirements of the policy that apply to the project.

Hazards, health and safety

Objectives

The design, construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate the risk of, and adverse impacts from, natural and human-made hazards to protect human life and property

(b) enhance the community's resilience to natural hazards.

Existing environment

15.206 Describe the likelihood and severity of hazards and health and safety risks in the vicinity of the project including, but not limited to cyclone, flooding, bushfire, earthquakes, landslide, heatwave.

Impact assessment

15.207 Describe the potential risks to people, property, waterways, flora and fauna that may be associated with the project in the form of a risk assessment for all components of the project and in accordance with relevant standards. The assessment is to include:

(a) the safety of employees during design and planning of the project

(b) potential hazards, accidents, spillages, fire, structural failure and abnormal events that may occur during all stages of the project, including estimated probabilities of occurrence

(c) the identification of all hazardous substances (including liquefied petroleum gas (LP gas), sulphuric acid, diesel fuel, and hazardous waste) and any explosives to be used, transported, stored, processed or produced and the rate of usage. Where the storage of hazardous chemicals exceeds the threshold limits in schedule 15 of the Workplace Health and Safety Regulation 2011, the mine site would require a licence for operating as a Major Hazard Facility

(d) potential hazards posed by wildlife interactions, natural events (for example, cyclone, flooding, bushfire, earthquakes[27], landslide, heatwave[28]) and implications related to climate change. Identify the cumulative impact of a number of natural hazards occurring at the one time. Describe possible adaptation strategies (preferred and alternative) based on climate change projections for the proposed project area.

(e) how the project may potentially affect hazards away from the project area (for example, changing flooding characteristics, bushfire, landslide).

15.208 The hazard analysis and risk assessment must be undertaken in accordance with:

(a) AS/NZS ISO 31000:2018 *Risk management – Guidelines* and with HB 203:2012 *Managing environment related risk* (see Appendix 2)

(b) refer to relevant Local Disaster Management Group Plans and Queensland Emergency Risk Management Framework, including state risk assessment plans for heatwave,

[27] The State Earthquake Risk Assessment includes probabilities of major seismic events for all local government areas and is to be used to inform risk consideration and management.
[28] Use State Heatwave Risk.

earthquake and severe wind (see **https://www.disaster.qld.gov.au/qermf/Pages/Assessment-and-plans.aspx**).

15.209 Assess the vulnerability of the area to natural and induced hazards, including drought, severe wind, heat, floods, storms, bushfires and cyclones. Consider the relative frequency and magnitude of these events together with the risk they pose to the construction, operation and decommissioning of the proposed project, as well as the rehabilitation of the site.

15.210 Describe natural hazards that may affect the site with at least a one per cent annual exceedance probability or 100-year average reoccurrence interval level, including mapping of the potential hazard areas at the site.

Mitigation measures

15.211 Describe the proposed procedures and safeguards built into the design and management/ operational practices to:

(a) reduce the potential for chemical leaks and spills

(b) enable the detection of spills and leaks and management measures to be implemented to rectify

(c) provide procedures for managing water in containment areas

(d) outline an inventory and describe the characteristics and management involved in the handling, storage, spill management, transport and disposal of all chemicals, products/by-products and potential contaminants as a result of construction, operation, maintenance, commissioning and decommissioning.

15.212 Include identification of buffer zones and all means that will be incorporated to ensure human health and the environment are not impacted by chemical leaks and spills.

15.213 Detail measures required to ensure that the project avoids the release of hazardous materials as a result of a natural hazard event/s.

15.214 Detail measures required to manage mosquitoes in accordance with Queensland Health guidelines.

15.215 Provide details on the safeguards that will reduce the likelihood and severity of natural and induced hazards, consequences and risks to persons, waterways, flora and fauna within and adjacent to the project area/s, including any need for safety fire breaks and buffer zones in consideration of fauna movement, riparian and wetland corridors. Identify the residual risk following application of mitigation measures. Present an assessment of the overall acceptability of the impacts of the project with consideration to the residual uncertainties and risk profile.

15.216 Provide an outline of the proposed integrated emergency management planning procedures (including evacuation plans, if required) for the range of situations identified in the risk assessment developed in this section. The emergency plan is to detail:

(a) a bushfire management plan, certified by a suitably qualified person, in consultation with the Queensland Fire and Emergency Services, for the construction and operational phases. The bushfire management plan is to include:

(i) a bushfire hazard analysis

(ii) mitigation strategies to achieve the relevant development outcomes in Part E of the *State Planning Policy – Natural Hazards, Risk and Resilience*

(iii) details of the proposed ongoing management of fuel loads across the project area through grazing or mechanical means, including the asset protection zone

(b) a safety and emergency management plan for the construction and operational phases. The safety and emergency management plan is to include:

(i) evacuation plans

(ii) safety management plans and emergency response procedures in consultation with the state and regional emergency service providers (including Queensland Fire and Emergency Services) and provide an adequate level of training to staff who will be tasked with emergency management activities.

15.217 Describe how the achievement of the hazards, health and safety objectives would be monitored, audited and reported, and how corrective/preventative actions would be managed.

15.218 Detail any consultation undertaken with the relevant state, district and local emergency response authorities and organisations, including the Local Disaster Management Group.

Flooding and regulated structures

Objectives

The design, construction, operation and decommissioning of the project are to:

(a) avoid, minimise and/or mitigate the risk of, and adverse impacts from, flooding or dam failure to protect human life, property and the environment.

(b) ensure the design of the facility permits the site, at which the activity is to be carried out, to operate in accordance with best practice environmental management.

Existing environment

15.219 Describe the likelihood and history of flooding on-site and in proximity to the site, including the extent, levels and frequency and current flood risk for a range of annual exceedance probabilities up to the probable maximum flood for potentially affected waterways in accordance with requirements of the *Queensland Government Regulated structures - EIS Information Guideline 2020*.

Impact assessment

15.220 Use flood modelling (and any additional data) to assess how the project may potentially change flooding and run-off characteristics on-site and both upstream and downstream of the site. The flood modelling assessment should consider local and regional flooding and all infrastructure associated with or near the project including levees, roads and linear infrastructure and all proposed measures to avoid or minimise impacts.

15.221 Performance outcomes for dams or levees are to be developed with reference to guidelines prepared by industry, the Australian National Committee on Large Dams and DES *Guideline – Structures which are dams or levees constructed as part of the environmentally relevant activities* (see Appendix 2).

15.222 Conduct the impact assessments on regulated structures in accordance with DES *Regulated structures – EIS information guideline*, *Guideline – Structures which are dams or levees constructed as part of environmentally relevant activities* and *Manual for assessing consequence categories and hydraulic performance of structures* (see Appendix 2).

15.223 List and describe all dams and levees proposed on the project area and undertake a consequence category assessment of each dam or levee according to the criteria outlined in the DES *Manual for assessing consequence categories and hydraulic performance of structures* (see Appendix 2). The assessment must be undertaken for the three different failure event scenarios described in DES manual, e.g. for seepage, overtopping and dam break. Regulated structures must comply with the DES *Manual for assessing consequence categories and hydraulic performance of structures* (see Appendix 2) in accordance with Schedule 8, Division 2 of the EP Regulation.

15.224 Following the consequence category assessment, determine the consequence category ('low, significant, or high') according to Table 1 of DES *Manual for assessing consequence categories and hydraulic performance of structures* and provide certified copies of the consequence category determination for each of the proposed dams or levees assessed.

15.225 Describe the purpose of all dams or levees proposed on the project area. Show their locations on appropriately scaled maps, and provide plans and cross-sections, illustrating such features as embankment heights, spillways, discharge points, design storage allowances, and maximum volumes.

Mitigation measures

15.226 Illustrate how any regulated structure on site would be managed during periods of high incidental rainfall and/or flooding on site so that any potential impacts to land or water are minimised.

15.227 Describe management measures to minimise impacts of flooding to mine infrastructure and manage mine pit water post-flooding.

15.228 Describe how storage structures and other infrastructure would be sited to avoid or minimise risks from flooding.

15.229 Describe how risks associated with dam or storage failure, seepage through the floor, embankments of the dams, and/or with overtopping of the structures will be avoided, minimised or mitigated to protect people, property and the environment.

16. Matters of national environmental significance (MNES)

Note

The project was referred on 7 December 2021 to DCCEEW (EPBC 2021/9097).

On 24 January 2022, the delegate for the former Australian Minister for the Environment determined the proposed project to be a 'controlled action' under the EPBC Act.

The controlling provision is listed threatened species and communities (sections 18 and 18A).

The project will be assessed by EIS under the bilateral agreement between the Australian Government and the State of Queensland (section 45 of the EPBC Act).

The MNES section of the EIS is to be a stand-alone chapter that:

- focuses solely on the cumulative impact/s of the project on the controlling provision listed above
- contains sufficient information to be read alone and provides references to further detailed information contained in appendices to the EIS.

If it is necessary to make use of material that is considered to be of a confidential nature, the proponent is to consult with the OCG and DCCEEW on the preferred presentation of that material, before it is published.

General content

16.1 The MNES section is to take into consideration the *EPBC Act significant impact guidelines* (see Appendix 2).

16.2 The proponent is to ensure that the MNES section assesses compliance of the action with principles of Ecologically Sustainable Development and the objects of the EPBC Act (see Chapter 1, Part 1 of the EPBC Act).

Specific content

Note

Where 'action' is used below, it is to mean the project in the MNES section of the EIS.

The appendices of the EIS are to include a stand-alone report providing an assessment of impacts of the project on relevant controlling provisions.

Where a controlling provision does not apply to a proposed action, the information requirements in the TOR are not required in the assessment.

General information

16.3 Provide the background and context of the action including:

(a) the title of the action

(b) the full name and postal address of the designated proponent

(c) a clear outline of the objective of the action

(d) the location of the action

(e) the background to the development of the action

(f) how the action relates to any other actions (of which the proponent should reasonably be aware) that have been, are currently, or will be, taken or that have been approved in the region affected by the action. This must include, but not be limited to, the Saint Elmo Vanadium Project (EPBC2017/8007), Mount James Wind Farm, Hughenden (proposed) (EPBC2022/09211), Copper String Transmission Line Project (EPBC2019/8416). A map showing relevant regional projects must be provided.

(g) the current status of the action

(h) the consequences of not proceeding with the action.

Description of the action

16.4 All components of the action are to be described in detail, including construction, operation, maintenance, decommissioning and rehabilitation. This is to include the precise location of all works to be undertaken (including off-site works and infrastructure), structures to be built or elements of the action that may have impacts on MNES.

16.5 The description of the action is to also include details on how the works are to be undertaken (including stages of development and their timing) and design parameters for those aspects of the structures or elements of the action that may have relevant impacts. At a minimum, this description is to also include details of:

(a) all infrastructure proposed to be constructed and construction methods

(b) ancillary infrastructure proposed to be constructed and upgrades of existing ancillary infrastructure

(c) location of the mine infrastructure area, waste rock dump, tailings dam, water supply dams, truck load-out facilities and run of min pad/stockpiles

(d) off-site infrastructure and the current status of these to support the action

(e) treatment of contaminated land, including method of treatment, disposal of waste and contaminated material, standards and minimum thresholds required for removal/disposal

(f) maximum life of the action, including construction, operation, decommissioning and rehabilitation

(g) number of jobs for the life of the action, including number of jobs for Aboriginal and Torres Strait Islander employees

(h) associated works and supporting infrastructure deemed necessary as part of the action or safety works

(i) other activities including but not limited to, changes to hydrological flow, material storage, construction camp and facilities and dust control management, waste management generally and management of spills/contaminants/pollutants (e.g. prevention from entering waterways and groundwater)

(j) any changes that have been made to the project since the referral documentation was submitted.

16.6 The description of the action is to provide the total size (in hectares) of the project area and the total size (in hectares) of the disturbance footprint. If the disturbance footprint is the same as the project area, the MNES section is to include a statement to this effect.

16.7 The MNES section must include a map (or maps) which clearly identify all components of the action and their location within the project area.

Feasible alternatives

16.8 Outline any feasible alternatives to the action to the extent reasonably practicable, including:

(a) if relevant, the alternative of taking no action

(b) a comparative description of the impacts of each alternative on listed threatened species and communities

(c) sufficient detail to make clear why any alternative is preferred to another

(d) short, medium and long-term advantages and disadvantages of the feasible alternatives.

Description of the environment

16.9 Describe the environment of the project area and surrounding areas (i.e. adjacent, upstream and/or downstream) that may be affected by the action. At a minimum, this section is to include details of:

(a) terrestrial and aquatic ecosystems, including key vegetation communities and relevant watercourses

(b) native flora and fauna, both terrestrial and aquatic

(c) pest species and weeds

(d) important habitat areas, recognised populations and habitat, and aggregations of listed species

(e) current and historical land uses

(f) condition of the environment

(g) surface water and groundwater hydrology and quality, including but not limited to Flagstone Creek, Flinders River, Hazlewood Creek, Rathole Creek, and the Stawell (Cambridge Creek) River, relevant wetlands in the region and groundwater depth across the project area

(h) groundwater dependent ecosystems of potentially affected rivers, creeks and wetlands, including but not limited to Flagstone Creek, Flinders River, Hazlewood Creek, Rathole Creek, Stawell (Cambridge Creek) River, and relevant wetlands in the region

(i) soil types and characteristics in the project area and broader region including presence and extent of cracking clay soils

(j) occurrence or potential for acid sulfate soils

(k) topography and elevation across the project site

(l) cultural heritage values, people and communities and other relevant social considerations

(m) historical anthropogenic uses of the project area (if relevant) and existing condition of the overall environment within, adjacent to, downstream and upstream of the project area.

Relevant impacts

16.10 All relevant impacts of the action are to be assessed in accordance with relevant DCCEEW policies and guidelines, and information provided in the Species Profile and Threats (SPRAT)

Database, including but not limited to habitat clearance, fragmentation and degradation, introduction and increase in numbers of pests, changes to hydrological regimes (including flow changes), impacts to water quality (including indirect and facilitated impacts), waste and chemical pollution and GHG emissions.

16.11 The MNES section is to include a description of all relevant impacts of the action (direct, indirect, cumulative[29] and facilitated), including the magnitude, duration and frequency of the impacts. Relevant impacts are the impacts that the action will have, or is likely to have, on MNES. All stages and components of the action must be addressed, and the following information provided:

(a) a detailed assessment of the nature and extent of the likely short-term and long-term relevant impacts

(b) a statement, with supporting evidence, whether any relevant impacts are likely to be unknown, unpredictable or irreversible

(c) any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

16.12 The MNES section is to provide a detailed assessment of any likely impact that the action may have on (at the local, regional, state, national and international scale) the MNES above.

16.13 The MNES section is to identify and assess the cumulative impacts on MNES (terrestrial and aquatic) created by the project and the activities of other existing and proposed adjacent, upstream and downstream relevant developments, water users and land users. This must include at a minimum, cumulative impacts of other projects impacting on the Julia Creek Dunnart and other relevant MNES including, but not limited to the Saint Elmo Vanadium Project (EPBC2017/8007), Mount James Wind Farm, Hughenden (proposed) (EPBC2022/09211), Copper String Transmission Line Project (EPBC2019/8416). Details of these projects can be found on DCCEEW's EPBC Public Notices website[30].

16.14 Establish and describe clear spatial and temporal boundaries for the assessment of cumulative impacts.

16.15 The MNES section is to address the potential cumulative impact of the action on ecosystem resilience. The cumulative effects of climate change impacts on the environment must also be considered in the assessment of ecosystem resilience. Where relevant to the potential impact, a risk assessment is to be conducted and documented.

Avoidance, mitigation and management measures

16.16 The MNES section is to include detailed descriptions of measures proposed to be undertaken by the proponent to avoid, mitigate and manage relevant impacts of all stages of the action on MNES. The proposed measures are to be based on best available practices, appropriate standards and supported by scientific evidence (e.g. outcomes of successful field trials, research papers, other projects, etc.). The MNES section is to include:

(a) proposed measures to be undertaken to avoid and mitigate the relevant impacts of the action on MNES, including those required by other Australian Government, state and local government approvals

[29] Cumulative impact assessment is to assess all relevant impacts of the project (five proposed actions); and the project and development and other activities in the area.
[30] EPBC Public Notices website - **https://www.dcceew.gov.au/environment/epbc/public-notices**

(b) an assessment of the predicted effectiveness of the proposed measures

(c) any statutory or policy basis for the proposed measures, including reference to the SPRAT Database and relevant approved conservation advice/s, and a discussion on whether the proposed measures are not inconsistent with relevant recovery plans and threat abatement plans

(d) details of ongoing management, including monitoring programs to support an adaptive management approach and determine the effectiveness of the proposed measures

(e) details on measures, if any, proposed to be undertaken by state and local government, including the name of the agency responsible for approving each measure

(f) information on the timing, frequency and duration of the measures to be implemented

(g) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

16.17 The MNES section is to not just state proposed management plans and/or broad objectives to describe avoidance, mitigation and management measures. The MNES section is to include detailed measures that will be implemented to avoid, mitigate and manage impacts on MNES. Committed language (i.e. 'will') rather than non-committal language (i.e. 'may', 'where possible', 'if required', etc.) must be used.

16.18 The SPRAT Database, and associated statutory documents, may provide some relevant mitigation measures for listed threatened species and ecological communities. All proposed measures for MNES is to consider the 'SMART' principle:

(a) S – Specific (what and how)

(b) M – Measurable (baseline information, number/value, auditable)

(c) A – Achievable (timeframe, money, personnel)

(d) R – Relevant (conservation advice/s, recovery plans, threat abatement plans)

(e) T – Time-bound (specific timeframe to complete).

16.19 An outline of an Environmental Management Plan (EMP) that sets out the framework for management, mitigation and monitoring of relevant impacts of the proposed actions, including any provisions for independent environmental auditing, may be included as an appendix to the EIS.

Environmental offsets

Note

According to the EPBC Act *Environmental Offsets Policy* (2012) (Offsets Policy), environmental offsets are measures that compensate for the residual adverse impacts of an action on the environment. Offsets provide environmental benefits to counterbalance the impacts that remain after avoidance and mitigation measures. It is important to consider environmental offsets early in the assessment process and correspondence with DCCEEW regarding offsetting is highly encouraged.

It is DCCEEW's standard practice that if environmental offsets are required, a draft Offset Strategy and/or a draft Offset Area Management Plan (OAMP) are included in the EIS for assessment and approval. Further, it is DCCEEW's expectation that the environmental offset is legally secured under relevant Queensland legislation prior to the commencement of the action. Where this is not achievable, DCCEEW will recommend to the Minister (or delegate) that the conditions of approval require the environmental offset/s or the OAMP be approved, and legally secured, prior to the commencement of the action.

16.20 The MNES section is to include an assessment of the likelihood of residual significant impacts occurring on MNES after avoidance, mitigation and management measures have been applied.

16.21 If it is determined that a residual significant impact is likely and offset sites have not been legally secured, include a draft Offset Strategy as an appendix to the EIS that provides, at a minimum:

(a) specific details of the nature of the conservation gain to be achieved for relevant MNES, including the creation, restoration and revegetation of habitat in the proposed offset area/s

(b) details of the environmental offset/s (in hectares) to compensate for the residual significant impacts of the proposed action on relevant MNES, and/or their habitat. This should be broken down into attributes (e.g. breeding and foraging habitat) and detail how the environmental offset(s) meets the principles of the EPBC Act Environmental Offsets Policy (2012) (EPBC Act Offset Policy), including the Offsets Assessments Guide, in particular how the proposed environmental offset/s will achieve an overall conservation outcome for the EPBC protected matter

(c) specific details of the nature of the conservation gain to be achieved for relevant MNES, including the creation, restoration and revegetation of habitat in the proposed offset area(s)

(d) details of the potential offset area/s (including a map) to compensate for the residual significant impacts of the proposed action on relevant MNES

(e) the methodology, with justification and supporting evidence, used to inform the inputs of the Offsets Assessment Guide in relation to the project area for each relevant MNES, including:

(i) total area of habitat (in hectares); and

(ii) habitat quality (e.g. using the Queensland Government *Guide to determining terrestrial habitat quality: Methods for assessing habitat quality under the Queensland Environmental Offsets Policy*. Before undertaking habitat quality

assessments consult with OCG regarding which version of the guide should be used.

(f) the methodology, with adequate justification and supporting evidence, used to inform the inputs of the Australian Government's Offsets Assessment Guide in relation to each potential offset area/s for each relevant MNES, including:

(i) time over which loss is averted (max. 20 years);

(ii) time until ecological benefit;

(iii) risk of loss (%) without offset;

(iv) risk of loss (%) with offset; and

(v) confidence in result (%).

(g) evidence that the relevant MNES, and/or their habitat, can be present in the potential offset area/s

(h) information about how the potential offset area/s provides connectivity with other relevant habitats and biodiversity corridors

(i) details and execution timing of the mechanism to legally secure the environmental offset/s (under Queensland legislation or equivalent) to provide enduring protection for the potential offset area/s against development incompatible with conservation.

16.22 Where offset area/s have been nominated, include a draft OAMP as an appendix to the EIS which includes information to demonstrate how the environmental offset/s compensate for the significant residual impact of the action on relevant MNES, and/or their habitat, in accordance with the principles of the Offsets Policy and all requirements of the Offsets Assessment Guide. The draft OAMP is to include:

(a) specific, committal and measurable environmental outcomes which detail the nature of the conservation gain to be achieved for relevant MNES, including the creation, restoration and revegetation of habitat in the proposed offset area/s

(b) details, with supporting evidence, to demonstrate how the environmental offset/s compensate for residual significant impacts of the proposed action on relevant MNES, and/or their habitat, in accordance with the principles of the Offsets Policy and all requirements of the Offsets Assessment Guide including:

(i) time over which loss is averted (max. 20 years)

(ii) time until ecological benefit

(iii) risk of loss (%) without offset

(iv) risk of loss (%) with offset

(v) confidence in result (%)

(c) a description of the offset area/s, including location, size, condition, environmental values present and surrounding land uses

(d) baseline data, including from field validation surveys, and quantifiable ecological data on habitat quality and other supporting evidence that documents the presence of the relevant MNES, and the quality of their habitat within the environmental offsets

(e) an assessment of the site habitat quality for the offset area/s using appropriate methodology, with justification and supporting evidence (e.g. using the Queensland

Government *Guide to determining terrestrial habitat quality: Methods for assessing habitat quality under the Queensland Environmental Offsets Policy*)

(f) details of how the offset area/s will provide connectivity with other habitats and biodiversity corridors and/or will contribute to a larger strategic offset for the relevant MNES

(g) maps and shapefiles to clearly define the location and boundaries of the offset area/s, accompanied by the offset attributes (e.g. physical address of the offset area/s, coordinates of the boundary points in decimal degrees, the relevant MNES that the environmental offset/s compensates for, and the size of the environmental offset/s in hectares)

(h) specific offset completion criteria derived from the site habitat quality to demonstrate the improvement in the quality of habitat in the offset area/s over a 20-year period

(i) details of the management actions, and timeframes for implementation, to be carried out to meet the offset completion criteria

(j) interim milestones that set targets at 5-yearly intervals for progress towards achieving the offset completion criteria

(k) details of the nature, timing and frequency of monitoring to inform progress against achieving the 5-yearly interim milestones (the frequency of monitoring must be sufficient to track progress towards each set of milestones, and sufficient to determine whether the offset area/s are likely to achieve those milestones in adequate time to implement all necessary corrective actions)

(l) proposed timing for the submission of monitoring reports which provide evidence demonstrating whether the interim milestones have been achieved

(m) timing for the implementation of corrective actions if monitoring activities indicate the interim milestones will not or have not been achieved

(n) risk analysis and a risk management and mitigation strategy for all risks to the successful implementation of the OAMP and timely achievement of the offset completion criteria, including a rating of all initial and post-mitigation residual risks in accordance with a risk assessment matrix

(o) evidence of how the management actions and corrective actions take into account relevant approved conservation advice/s and are consistent with relevant recovery plans and threat abatement plans

(p) details of the legal mechanism to legally secure the proposed offset area/s, such that legal security remains in force over the offset area/s for at least 20 years to provide enduring protection for the offset area/s against development incompatible with conservation

(q) all proposed management actions, monitoring approach and corrective actions must be written using committed language (e.g. 'will' and 'must').

16.23 The draft OAMP must be prepared by a suitably qualified person and in accordance with DCCEEW's *Environmental Management Plan Guidelines* (2014).[31]

[31] DCCEEW expects that an EPBC Act protected matter is present in the proposed environmental offset/s if it is present in the project area to align with the EPBC Act Offsets Policy.

16.24 The draft OAMP is to provide evidence, derived from field validation surveys and vegetation assessments, to demonstrate that an EPBC Act protected matter (e.g. listed threatened species or ecological community) is or can be present in the proposed environmental offset/s. Field validation surveys are to be undertaken in accordance with Australian Government guidelines, state guidelines and/or best practice survey methodologies.

16.25 Supporting evidence is to be included in the draft OAMP to justify how proposed management action/s are additional to the existing requirements of the landholder in managing their land (e.g. weed and pest management requirements under the Queensland *Biosecurity Act 2014*, existing grazing regimes, etc.) as required by the principles of the EPBC Act Offsets Policy.

16.26 The draft OAMP is to include robust scientific evidence (e.g. published research, pilot studies, previously successful projects/programs, etc.) to demonstrate the success of proposed measures to create, revegetate, regenerate and/or improve habitat (e.g. tree planting, nest boxes, artificial hollows, etc.) in the proposed environmental offset/s for a listed threatened species or ecological community.

16.27 Where the proposed environmental offset/s supports an offset for multiple MNES, proposed management action/s for one EPBC Act protected matter must not be detrimental (i.e. have an impact) to other EPBC Act protected matters.

16.28 Where an environmental offset/s is proposed, with a completed Offsets Assessment Guide calculation, all inputs must be supported by robust scientific evidence and/or supporting evidence (e.g. historical grazing regimes, satellite imagery, statements from landholders, etc.).

Listed threatened species and communities (sections 18 and 18A)

16.29 The MNES section is to address, at a minimum, impacts on listed threatened species and communities listed for the action at Appendix 1.[32]

Information requirements

16.30 The structure of the assessment of listed threatened species and communities in the MNES section for the action must be the following:

(a) description

(b) desktop analysis

(c) survey effort

(d) survey outcomes

(e) habitat assessment

(f) impact assessment[33]

(g) avoidance, mitigation and management measures[34]

(h) rehabilitation requirements

(i) significant impact assessment.[35]

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[32] This may not be a complete list of listed threatened species and ecological communities that will or are likely be impacted by the action. It is the proponent's responsibility to ensure that any listed threatened species and ecological communities at the time of the controlled action decision, which will or are likely to be impacted by the project, are assessed for the Minister's consideration. Any listing events (e.g. the listing or up-listing of a species) that occur after the controlled action decision (24 January 2022) do not affect the assessment and approval process.
[33] The impact assessment must meet the requirements outlined in the 'Relevant Impacts' sections 16.10-16.15 above.
[34] As outlined at the 'Avoidance, Mitigation and Management Measures' sections 16.16-16.19 above.
[35] As outlined at the 'Environmental Offsets' sections 16.20-16.28 above.

Description

16.31 Describe each listed threatened species and ecological communities (including EPBC Act listing status, distribution, habitat, life history, etc.); these descriptions are to align with the information in the SPRAT Database and relevant DCCEEW documents.[36]

Desktop analysis

16.32 Describe the desktop assessment methodology used to inform the field surveys within, adjacent to and/or downstream of the project area. The MNES section must identify and describe known historical records of listed threatened species and ecological communities in the broader region. All known records must be supported by an appropriate source (i.e. Australian and state government databases, published research, publicly available survey reports, etc.), the year of the record and a brief description of the habitat in which the record was identified.

Survey effort

16.33 Provide details of the scope, methodology, timing and effort of field surveys (which must be undertaken by qualified species experts with demonstrated experienced in detecting the relevant listed threatened species and ecological communities) within, adjacent to, downstream and/or upstream of the project area. Provide details of:

(a) how surveys were undertaken in accordance with relevant Australian Government and state guidelines or best practice survey guidelines at the time of the surveys; and

(b) if relevant, the justification for divergence from relevant Australian Government and state guidelines or best practice survey guidelines at the time of the surveys.

16.34 Surveys are to be of a suitable standard, including the scope, timing and spatial and temporal replication, to be able to detect cryptic or difficult to detect terrestrial and aquatic species. Surveys are to also target areas upstream, downstream and adjacent to the project area, particularly for species which regularly disperse through the landscape or aquatic environments (particularly seasonally) and/or have large home ranges.

Survey outcomes

16.35 State the total number of records (individuals and evidence of presence) of listed threatened species and ecological communities within, adjacent to, upstream and/or downstream of the project area. All records are to include the year of the record and a brief description of the habitat in which the record was identified.

Habitat assessment

16.36 Provide a robust assessment of the potential habitat available within, adjacent to, upstream and/or downstream of the project area for listed threatened species and ecological communities. This is to include the assessment of specific habitat requirement/s relevant to each listed threatened species and ecological community (e.g. breeding, foraging, dispersal, known important habitat, suitable habitats, roosting, etc.).

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[36] DCCEEW strongly recommends that the habitat assessment is undertaken in line with the habitat descriptions outlined in SPRAT Database and relevant DCCEEW documents. However, the proponent may deviate from the information available in the SPRAT Database when undertaking the habitat assessments if appropriate. Any variation in habitat assessment approach must be discussed with DCCEEW prior to the submission of the environmental impact statement and must be supported by scientific evidence including published research, independent expert advice and information derived from field surveys (DCCEEW does not accept the consideration of Queensland Regional Ecosystem (RE) mapping to determine habitat for listed threatened species).

Habitat assessments are to be derived from information obtained from:

(a) field surveys and vegetation assessments (e.g. hollow-bearing tree surveys)

(b) the SPRAT Database

(c) relevant DCCEEW statutory documentation (e.g. approved conservation advice/s, recovery plans, listing advice/s, draft referral guidelines, etc)

(d) published research and other relevant sources.

16.37 Detailed mapping of habitat type/s for relevant listed threatened species and ecological communities that are found to be, or may potentially be, present within, adjacent to, upstream and/or downstream of the project area are to be included in the MNES section, and must:

(a) be specific to the habitat assessment undertaken for each listed threatened species and ecological community

(b) include an overlay of the disturbance footprint

(c) include known records of individuals (or evidence of individuals) derived from desktop analysis and/or field surveys.

16.38 The MNES section must not just consider Queensland Regional Ecosystem (RE) mapping to determine habitat for listed threatened species; habitat assessments are to consider and align with the information in the Central Queensland threatened species habitat descriptions, SPRAT Database and relevant DCCEEW documents. However, some Queensland REs align with the descriptions for some ecological communities and therefore the use of Queensland REs is acceptable in these cases.

16.39 Provide the total amount of each type of habitat (in hectares) within, adjacent to, upstream and downstream of the project area for each listed threatened species and ecological community.

16.40 The number of features that provide suitable habitat (e.g. number of tree hollows) for listed threatened species should be provided.

16.41 Provide a description of the habitat quality for relevant listed threatened species and communities in the project area.

16.42 The MNES section must also include a detailed habitat assessment for the listed threatened species and communities in Appendix 1 and any other listed threatened species and/or ecological communities identified during desktop analysis and/or field surveys.

16.43 DCCEEW considers it is not unreasonable that a species may use a project area at some point in time if the vegetation and/or habitat feature/s to support its requirements are present. As such, even if a listed threatened species and/or community is not recorded during field surveys, the potential for occurrence of listed threatened species and communities is to also be considered and assessed in the MNES section.

Impact assessment[37]

16.44 Describe and assess all relevant impacts (direct, indirect, facilitated and cumulative) to listed threatened species and ecological communities and any other listed threatened species and

[37] Impact assessment must include the indirect, facilitated and cumulative impacts the action will have on listed threatened species and ecological communities in downstream catchment areas and wetlands, including estuarine, coastal and marine environments.

communities that are found to be or may potentially be present in areas that may be impacted by the action.[38]

16.45 Identify which component/s and stage/s of the action and/or consequential actions are of relevance to each listed threatened species and/or ecological community.

16.46 For threatened ecological communities (where relevant), the total direct impact (in hectares) to each identified patch within and adjacent to the project area is to be provided in the MNES section compared to its current extent. Further, the impact assessment for ecological communities is to include a discussion on the post-impact viability of each individual patch within and adjacent to the project area to be directly impacted from fragmentation as a result of vegetation clearance.

16.47 Provide the total amount of each type of habitat (in hectares) in the disturbance footprint for each listed threatened species and ecological community.

16.48 Assess the impacts of habitat fragmentation in the proposed action area and surrounding areas, including consideration of species' movement patterns.

16.49 Assess the likely duration of impacts to MNES as a result of the proposed action.

16.50 Discuss whether the impacts are likely to be repeated, for example as part of maintenance.

16.51 Discuss whether any impacts are likely to be unknown, unpredictable or irreversible.

16.52 Assess the impacts of noise, vibration, dust and vehicle strike resulting from the construction and operation of the project to habitat in the project area and surrounding areas.

16.53 Identify which component/s and stage/s of the action and/or consequential actions are of relevance to each listed threatened species and/or ecological community.

16.54 Assess how the action impacts the outcomes, objectives, and targets of relevant reports and documents including, but not limited to:

(a) *The Reef 2050 Long-Term Sustainability Plan* (2018)

(b) *Reef 2050 Water Quality Improvement Plan 2017-2022* (2018)

(c) *Cumulative Impact Management Policy* (2018)

(d) *Net Benefit Policy* (2018).

Avoidance, mitigation and management measures

16.55 Describe all relevant species-specific measures proposed to avoid, mitigate and manage potential impacts on listed threatened species and ecological communities.[39]

16.56 The MNES section must not just state proposed management plans and/or broad objectives to describe avoidance, mitigation and management measures.[40] The MNES section is to include detailed measures that will be implemented to avoid, mitigate and manage impacts on listed threatened species and ecological communities. Committed language (i.e. 'will') rather than non-committal language (i.e. 'may', 'where possible', 'if required', etc.) must be used.

[38] The impact assessment must meet the requirements outlined in the 'Relevant Impacts' sections 16.10-16.15 above.
[39] As outlined at the 'Avoidance, Mitigation and Management Measures' sections 16.16-16.19 above.
[40] Appropriate measures may be detailed on the SPRAT Database for relevant listed threatened species and ecological communities. All proposed measures must consider the 'S.M.A.R.T' principle.

Rehabilitation requirements

16.57 Include rehabilitation acceptance criteria, including for the restoration of habitat for relevant listed threatened species and communities.

16.58 Provide a summary of the procedures, including contingency measures, that will be undertaken to achieve the rehabilitation acceptance criteria.

16.59 Provide a summary of a monitoring program to determine the success of rehabilitation activities implemented by the proponent.

16.60 Describe the details of any rehabilitation activities proposed to be undertaken as required by Commonwealth, state or territory, and local government legislation. Attach relevant Commonwealth, state or territory, and local government approvals and permits as supporting documents to the preliminary documentation.

Statutory requirements

16.61 Where relevant, discuss how the proponent has had regard to relevant approved conservation advice/s.

16.62 The MNES section must demonstrate, with supporting evidence, that the action will not be inconsistent with Australia's obligations under:

(a) the Biodiversity Convention

(b) the Convention on Conservation of Nature in the South Pacific (Apia Convention)

(c) the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

(d) a recovery plan or threat abatement plan.

Significant impact assessment[41]

16.63 After consideration of proposed avoidance, mitigation and management measures, provide an assessment of the likelihood of residual significant impacts on relevant listed threatened species and ecological communities. The significant impact assessment is to consider the DCCEEW's *Significant impact guidelines 1.1* (2013).

16.64 The MNES section must provide a clear and definitive conclusion (i.e. 'likely' or 'unlikely'), including the extent and nature, of residual significant impacts on relevant listed threatened species and ecological communities to align with the *EPBC Act Environmental Offsets Policy* (2012).

Other approvals and conditions

16.65 The MNES section is to include information on any other approvals or requirements for approvals and any conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action. This is to include:

(a) details of any local or state government planning scheme, or plan or policy under any local or state government planning system that deals with the proposed action, including:

(i) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy

[41] As outlined at the 'Environmental Offsets' sections 16.20-16.28 above.

(ii) how the scheme provides for the prevention, minimisation and management of any relevant impacts

(b) a description of any approval that has been obtained from a state, territory or Australian government agency or authority (other than an approval under the EPBC Act), including any conditions that apply to the action

(c) a statement identifying any additional approval that is required

(d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

Environmental record of person(s) proposing to take the action

16.66 The information provided must include details of any proceedings under a Commonwealth, state or territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

(a) the person proposing to take the action

(b) for an action for which a person has applied for a permit, the person making the application.

16.67 If the person proposing to take the action is a corporation, details of the corporation's environmental policy and planning framework must also be included.

Economic and social matters

16.68 The economic and social impacts of the action, both positive and negative, are to be analysed in the MNES section. Matters of interest may include:

(a) details of any public consultation activities undertaken, including any consultation with Aboriginal and Torres Strait Islander stakeholders, and their outcomes

(b) projected economic costs (e.g. capital investment) and benefits of the action, including the basis for their estimation through cost/benefit analysis or similar studies

(c) employment opportunities expected to be generated by the action (including construction and operational phases), including number of jobs for Aboriginal and Torres Strait Islander employees.

16.69 Consultation with Aboriginal and Torres Strait stakeholders must be undertaken in accordance with the *Engage Early – Guidance for proponents on best practice Indigenous engagement for environmental assessments under the EPBC Act* (2016).

16.70 Economic and social impacts are to be considered at the local, regional and national levels. Details of the relevant cost and benefits of alternative options to the action, as identified above, are to also be included.

Principles of Ecologically Sustainable Development (ESD)

16.71 Provide a discussion of how the project will conform to the principles of ESD, as described under Part 1, Section 3A of the EPBC Act:

(a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations

(b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation

(c) the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations

(d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making

(e) improved valuation, pricing and incentive mechanisms should be promoted.

Information sources provided in the MNES section

16.72 For information given in the MNES section, the MNES section is to state:

(a) the source of the information

(b) how recent the information is

(c) how the reliability of the information was tested

(d) what uncertainties (if any) are in the information.

17. Appendices to the EIS

17.1 Appendices are to provide the complete technical evidence used to develop assumptions, statements and findings in the main text of the EIS.

17.2 No significant issue or matter is to be mentioned for the first time in an appendix—it is to be addressed in the main text of the EIS.

17.3 Include a table listing the section and sub-section of the EIS where each requirement of the TOR is addressed.

17.4 Include a list citing all reference material used or relied on in the EIS.

17.5 Include a glossary of terms and a list of acronyms and abbreviations.

Part D Acronyms and abbreviations

Table 2 Acronyms and abbreviations

Acronym/abbreviation	Definition
ACH Act	*Aboriginal Cultural Heritage Act 2003* (Qld)
AHD	Australian height datum
ABN	Australian Business Number
Biosecurity Act	*Biosecurity Act 2014* (Qld)
Biosecurity Regulation	Biosecurity Regulation 2016 (Qld)
CBA	cost-benefit analysis
CHMP	Cultural Heritage Management Plan
DAF	Department of Agriculture and Fisheries
DCCEEW	Australian Government Department of Climate Change, Energy, the Environment and Water (formerly known as DAWE - the Australian Government Department of Agriculture, Water and the Environment)
DES	Department of Environment and Science
DPI	dots per inch
DTMR	Department of Transport and Main Roads
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning
e.g.	for example
EIS	environmental impact statement
EMP	environmental management plan
EOW	end of waste
EP Act	*Environmental Protection Act 1994* (Qld)
EP Regulation	Environmental Protection Regulation 2019 (Qld)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EPPs	Environmental protection policies
ERA	Environmentally relevant activity
ESD	Ecologically sustainable development
FIFO	fly-in, fly-out
Fisheries Act	*Fisheries Act 1994* (Qld)
GABORA Water Plan	*Water Plan (Great Artesian Basin and Other Regional Aquifers) 2017*
GDA2020	geocentric datum of Australia 2020
GHG	greenhouse gas
GTIA	Guide to Traffic Impact Assessment
Gulf Water Plan	*Water Plan (Gulf) 2007*

Acronym/abbreviation	Definition
ha	hectare
Hz	hertz
i.e.	that is
ILUA	Indigenous Land Use Agreement
km	kilometre
MIA	mine infrastructure area
MNES	matters of national environmental significance
MSES	matters of state environmental significance
mtpa	million tonnes per annum
Native Title Act	*Native Title Act 1993* (Qld)
NC Act	*Nature Conservation Act 1992* (Qld)
NPI	National Pollutant Inventory
OAMP	offset area management plan
OCG	Office of the Coordinator-General
PDF	portable document format
Planning Act	*Planning Act 2016* (Qld)
Planning Regulation	Planning Regulation 2017
PRCP	progressive rehabilitation and closure plan
Public Health Act	Public Health Act 2005 (Qld)
Qld	Queensland
Queensland Heritage Act	*Queensland Heritage Act 1992* (Qld)
RE	regional ecosystem
RIDA	regional interests development approval
RPI Act	*Regional Planning Interests Act 2014* (Qld)
SDAP	State Development Assessment Provisions
SDPWO Act	*State Development and Public Works Organisation Act 1971* (Qld)
SIA	social impact assessment
SIMP	social impact management plan
SIA Guideline	Coordinator-General's Social Impact Assessment Guideline 2018
Soil Conservation Act	*Soil Conservation Act 1986* (Qld)
SPP	State Planning Policy
SRI	significant residual impact
Stock Route Management Act	*Stock Route Management Act 2002* (Qld)
SSRC Act	*Strong and Sustainable Resource Communities Act 2017* (Qld)
TOR	terms of reference
USB	universal serial bus

Acronym/abbreviation	Definition
VM Act	*Vegetation Management Act 1999* (Qld)
Water Act	*Water Act 2000*
Water Plan	Water Plan (Gulf) 2007
WRR Act	*Waste Reduction and Recycling Act 2011* (Qld)

Appendix 1. MNES listed threatened species and communities (sections 18 and 18A)

Table 3 lists the threatened ecological species relevant to the controlled action under the EPBC Act, which at a minimum, is to be included in the impact assessment in the MNES section.

Note: The list at Table 3 may not be a complete list of listed threatened species and ecological communities that will or are likely be impacted by the action. It is the proponent's responsibility to ensure that any listed threatened species at the time of the controlled action decision, which will or are likely to be impacted by the action, are assessed for the Australian Minister for the Environment and Water's consideration. Any listing events (e.g. the listing or up-listing of a species) that occur after the controlled action decision (24 January 2022) are not required to be considered in the assessment.

Table 3 Relevant threatened species for EPBC2021/9097

Species name	Status under the EPBC Act
Birds	
Gouldian Finch (*Erythrura gouldiae*)	Endangered
Grey Falcon (*Falco hypoleucos*)	Vulnerable
Painted Honeyeater (*Grantiella picta*)	Vulnerable
Star Finch (eastern), Star Finch (southern) (*Neochmia ruficauda ruficauda*)	Endangered
Mammals	
Ghost Bat (*Macroderma gigas*)	Vulnerable
Julia Creek Dunnart (*Sminthopsis douglasi*)	Vulnerable
Plant	
Pink Gidgee (*Acacia crombiei*)	Vulnerable

Appendix 2. Policies and guidelines

General

Queensland Government, *DAFF Environmental impact assessment companion guide,* Version 1.0, 2018, Department of Agriculture, Fisheries and Forestry, **https://www.publications.qld.gov.au/dataset/daff-environmental-impact-assessment-companion-guide**

Queensland Government, *Guideline – Model mining conditions,* ESR/2016/1936, Version 6.02, 2017, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0033/88926/rs-gl-model-mining-conditions.pdf**

Queensland Government, *Preparing an environmental impact statement – Guideline for proponents,* 2020, Department of State Development, Tourism and Innovation, **https://www.statedevelopment.qld.gov.au/__data/assets/pdf_file/0027/33498/preparing-an-eis-guideline-for-proponents.pdf**

Queensland Government, *Guideline – Spatial information submission,* ESR/208/4337, Version 4.03, 2021, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0027/90288/rs-gl-spatial-information.pdf**

Land

Australian Government, *Mine closure – Leading practice sustainable development program for the mining industry,* 2016, Department of Foreign Affairs and Trade, **https://www.industry.gov.au/sites/default/files/2019-05/lpsdp-mine-closure-handbook-english.pdf**

Australian Government, *Mine rehabilitation – Leading practice sustainable development program for the mining industry,* 2016, Department of Foreign Affairs and Trade, **https://www.industry.gov.au/sites/default/files/2019-04/lpsdp-mine-rehabilitation-handbook-english.pdf**

International Erosion Control Association, *Best Practice Erosion and Sediment Control*, 2008, **https://austieca.com.au/publications/best-practice-erosion-and-sediment-control-bpesc-document**

National Committee on Soil and Terrain, *Australian Soil and Land Survey Field Handbook,* 3rd edition, 2009, **https://www.publish.csiro.au/book/5230/**

NJ McKenzie, MJ Grundy, R Webster, AJ Ringrose-Voase, *Guidelines for surveying soil and land resources,* 2nd edition, 2008, **https://www.publish.csiro.au/book/5650/**

Queensland Government, *Application requirements for activities with impacts to land*, ESR/2015/1839, Version 4.03, 2021, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0024/88008/era-gl-land-impacts.pdf**

Queensland Government, *Contaminated land – EIS information guideline*, ESR/2020/5300, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0013/140008/eis-tm-contaminated-land-information-guide.pdf**

Queensland Government, *DAFF Environmental impact assessment companion guide,* Version 1.0, 2018, Department of State Development, Infrastructure, Local Government and Planning, **https://www.publications.qld.gov.au/dataset/daff-environmental-impact-assessment-companion-guide/resource/7b1825c4-5e42-4cf8-aa2d-7fa55c2f5e4c**

Queensland Government, *EIS Information guideline – Rehabilitation*, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/word_doc/0034/87946/tor-guideline-rehabilitation.docx**

Queensland Government, *Guideline – Progressive rehabilitation and closure plans (PRC Plans)*, ESR/2019/4964, Version 2.00, 2021, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0026/95444/rs-gl-prc-plan.pdf**

Queensland Government, *Land – EIS information guideline*, ESR/2020/5303, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0006/140010/eis-tm-land-information-guide.pdf**

Queensland Government, *Mined Land Rehabilitation Policy*, Department of Environment and Heritage Protection, Department of Natural Resources and Mines, Queensland Treasury, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0035/87659/mined-land-rehabilitation-policy.pdf**

Queensland Government, *Native title work procedures*, **https://www.resources.qld.gov.au/qld/atsi/native-title-work-procedures/work-procedures**

Queensland Government, *Quarry material – EIS information guideline*, ESR/2020/5306, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0017/113480/eis-tm-quarry-material-information-guide.pdf**

Queensland Government, *Queensland Land Resource Assessment Guidelines – Volume 1: Soil and land resource assessment*, 2021, Department of Environment and Science, Department of Resources **https://nla.gov.au/nla.obj-2994319522/view**

Queensland Government, *Queensland Soil and Land Resource Survey Information Guideline*, VEG/2018/4460, Version 2.00, 2021, Department of Resources, **https://www.resources.qld.gov.au/?a=109113:policy_registry/guideline-soil-land-resource-survey.pdf&ver=2.00**

Queensland Government, *RPI Act Statutory guideline 11/16 – Companion guide,* 2019, Department of State Development, Infrastructure, Local Government and Planning, **https://dsdmipprd.blob.core.windows.net/general/rpi-guideline-11-16-dilgp-companion-guide.pdf**

Queensland Government, *State development assessment provisions,* Version 2.6, 2020, Department of State Development, Manufacturing, Infrastructure and Planning, **https://dsdmipprd.blob.core.windows.net/general/sdap-version-2.6.pdf**

Queensland Government, *State Planning Policy*, 2017, Department of Infrastructure, Local Government and Planning, **https://dsdmipprd.blob.core.windows.net/general/spp-july-2017.pdf**

Queensland Government, *Submission of a progressive rehabilitation and closure plan,* ESR/2019/4957, Version 3.00, 2021, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/word_doc/0028/95446/rs-ap-prc-plan.docx**

Soil Science Australia, *Guideline for soil survey along linear features,* 2015, **https://nla.gov.au/nla.obj-1203473164/view**

Flora and fauna

Queensland Government, *Aquatic ecology – EIS information guideline*, ESR/2020/5295, Version 1.00, 2021, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0018/153261/eis-tm-aquatic-ecology-information-guide.pdf**

Queensland Government, Biodiversity planning assessments available at **https://www.qld.gov.au/environment/plants-animals/biodiversity/planning**

Queensland Government, *Biosecurity – EIS information guideline*, ESR/2020/5297, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0010/140005/eis-tm-biosecurity-information-guide.pdf**

Queensland Government, *EIS information guideline – Groundwater dependent ecosystems*, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/word_doc/0034/87937/tor-guideline-groundwater-dependent-ecosystems.docx**

Queensland Government, *Flora survey guidelines – Protected plants,* NSC/2016/2534, Version 2.01, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0028/99901/gl-wl-pp-flora-survey.pdf**

Queensland Government, *Guide to determining terrestrial habitat quality – Methods for assessing habitat quality under the Queensland environmental offsets policy,* Version 1.3, 2020, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0017/102833/habitat-quality-assessment-guide-v1-3.pdf**

Queensland Government, *Guidelines for fish salvage,* 2018, Department of Agriculture and Fisheries, **https://www.daf.qld.gov.au/business-priorities/fisheries/habitats/policies-guidelines/factsheets/guidelines-for-fish-salvage**

Queensland Government, *Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland,* Version 5.1, Department of Environment and Science, **https://www.publications.qld.gov.au/dataset/redd/resource/6dee78ab-c12c-4692-9842-b7257c2511e4**

Queensland Government, *Queensland environmental offsets policy – Significant residual impact guideline,* 2014, Department of Environment and Heritage Protection, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0017/90404/significant-residual-impact-guide.pdf**

Queensland Government, *Queensland environmental offsets policy,* EPP/2021/1658, Version 1.10, 2021, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0021/235335/offsets-policyv1-10.pdf**

Queensland Government, *Significant Residual Impact Guideline for matters of state environmental significance and prescribed activities assessable under the Sustainable Planning Act 2009 – Queensland Environmental Offsets Policy,* 2014, Department of State Development, Infrastructure and Planning, **https://dsdmipprd.blob.core.windows.net/general/dsdip-significant-residual-impact-guideline.pdf**

Queensland Government, *Terrestrial ecology – EIS information guideline*, ESR/2020/5309, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0024/145095/eis-tm-terrestrial-ecology-information-guide.pdf**

Queensland Government, *Terrestrial vertebrate fauna survey field data sheets*, 2018, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0030/68259/fauna-survey-datasheets.pdf**

Queensland Government, *Terrestrial vertebrate fauna survey guidelines for Queensland,* Version 3.0, 2018, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0022/68224/fauna-survey-guidelines.pdf**

Queensland Government, *What is a waterway?; What is a waterway barrier work?; What is not a waterway barrier work?* Department of Agriculture and Fisheries, **https://www.daf.qld.gov.au/business-priorities/fisheries/habitats/policies-guidelines/factsheets/what-is-a-waterway**

Water

Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australian and New Zealand, Fresh and marine water quality guidelines, 2000, **https://www.waterquality.gov.au/anz-guidelines/resources/previous-guidelines/anzecc-armcanz-2000**

Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australian and New Zealand, Water quality monitoring guidelines, 2000, **https://www.waterquality.gov.au/anz-guidelines/resources/previous-guidelines/water-quality-monitoring**

Barnett B, Townley LR, Post V, Evans RE, Hunt RJ, Peeters L, Richardson S, Werner AD, Knapton A and Boronkay A, *Australian groundwater modelling guidelines,* 2012, Australian Government, **https://www.groundwater.com.au/media/W1siZiIsIjIwMTIvMTAvMTcvMjFfNDFfMzZfOTYwX0F1c3RyYWxpYW5fZ3JvdW5kd2F0ZXJfbW9kZWxsaW5nX2d1aWRlbGluZXMucGRmIl1d/Australian-groundwater-modelling-guidelines.pdf**

Australian Government, *Information guidelines for proponents preparing coal seam gas and large coal mining development proposals,* 2018, Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development, **https://iesc.environment.gov.au/system/files/resources/012fa918-ee79-4131-9c8d-02c9b2de65cf/files/iesc-information-guidelines-may-2018.pdf**

Environment Protection and Heritage Council & Natural Resource Management Ministerial Council. *National guidance for the management of acid sulfate soils inland aquatic ecosystems,* 2011, **https://www.waterquality.gov.au/sites/default/files/documents/management-acid-sulfate-soils-inland-aquatic-ecosystems.pdf**

Queensland Government, *Application requirements for activities with impacts to water*, ESR/2015/1837, Version 4.04, 2021, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0029/87851/era-gl-water-impacts.pdf**

Queensland Government, *Guideline: Works that interfere with water in a watercourse for a resource activity – watercourse diversions authorised under the Water Act 2000,* OSW/2019/4599, Version 2.00, 2019, Department of Natural Resources, Mines and Energy, **https://www.rdmw.qld.gov.au/?a=109113:policy_registry/watercourse-diversions-water-act.pdf**

Queensland Government, *Model water conditions for coal mines in the Fitzroy Basin,* ESR/2016, Version 6.02, 2017, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0026/89612/rs-gl-water-conditions-mines-fitzroy.pdf**

Queensland Government, *Monitoring and sampling manual – Environmental Protection (Water) Policy 2009*, 2018, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0031/89914/monitoring-sampling-manual-2018.pdf**

Queensland Government, *Receiving environment monitoring program guideline,* ESR/2016/2399, Version 2.01, 2015, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0014/90131/era-gl-receiving-environment-monitoring-program.pdf**

Queensland Government, *Salinity risk assessment guidelines for Queensland*, Department of Resources. Contact **soil.enquiry@resources.qld.gov.au** for a copy of this document or for more information about contemporary salinity risk assessment protocols.

Queensland Government, *Technical guideline: Wastewater release to Queensland waters,* ESR/2015/1654, Version 2.04, 2022, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0031/88636/pr-gl-wastewater-to-waters.pdf**

Queensland Government, *Using monitoring data to assess groundwater quality and potential environmental impacts*, Version 2, 2021, Department of Environment and Science, **https://www.publications.qld.gov.au/dataset/groundwater-quality-assessment-guideline/resource/472cc88a-000a-4bb8-a60d-204cfe7e0238**

Queensland Government, *Water – EIS information guideline,* ESR/2015/1561, Version 3.01, 2013, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0025/145096/eis-tm-water-information-guide.pdf**

Air

Aurizon, *Coal dust management plan,* 2019, **https://www.aurizon.com.au/-/media/project/aurizon/files/sustainability/coal-dust-management-plan-revised-2019---for-consultation.pdf**

Climate Change Authority, *Industry action on climate change mitigation in Australia,* 2019, **https://www.climatechangeauthority.gov.au/publications/three-stocktake-reports-actions-mitigate-emissions-industry-and-governments-australia-and-taking-place-internationally**

Australian Government, *National greenhouse accounts factors,* 2020 (or updates as they become available), Department of Industry, Science, Energy and Resources, **https://www.industry.gov.au/sites/default/files/2020-10/national-greenhouse-accounts-factors-2020.pdf**

Lindsay Delevingne, Will Glazener, Liesbet Gregoir and Kimberley Henderson, *Climate risk and decarbonization: What every mining CEO needs to know,* 2020, **https://www.mckinsey.com/business-**

functions/sustainability/our-insights/climate-risk-and-decarbonization-what-every-mining-ceo-needs-to-know

Mineral Council of Australia, *Climate action plan*, 2020, **https://www.minerals.org.au/sites/default/files/MCA%20Climate%20Action%20Plan_22_June_20.pdf**

Queensland Government, *Air – EIS information guideline*, ESR/2020/5294, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0009/140004/eis-tm-air-information-guide.pdf**

Queensland Government, *Application requirements for activities with impacts to air*, ESR/2015/1840, Version 4.04, 2021, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0037/87769/era-gl-air-impacts.pdf**

Australian Government, *Estimating emissions and energy from coal mining guideline,* 2021, Clean Energy Regulator, **http://www.cleanenergyregulator.gov.au/DocumentAssets/Documents/Estimating%20emissions%20and%20energy%20from%20coal%20mining%20guideline.pdf**

Noise and vibration

Queensland Government, *Application requirements for activities with noise impacts,* ESR/2015/1838, Version 3.05, 2021, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0027/87705/era-gl-noise-impacts.pdf**

Queensland Government, *Noise and vibration – EIS information guideline,* ESR/2020/5305, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0029/87941/eis-tm-noise-vibration-information-guide.pdf**

Queensland Government, *Transport Noise Management Code of Practice Volume 1 – Road Traffic Noise*, Department of Transport and Main Roads, 2013, **https://www.tmr.qld.gov.au/-/media/busind/techstdpubs/Environment-management/Transport-Noise-Management/TransportNoiseMgmt.pdf?la=en**

Waste

Queensland Government, *Application requirements for activities with waste impacts,* ESR/2015/1836, Version 5.02, 2021, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0038/87986/era-gl-waste-impacts.pdf**

Queensland Government, *Guidelines – Waste Reduction and Recycling Act 2011 – End of Waste (EOW),* ESR/2016/3323, Version 1.01, 2016, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0029/85790/wr-eow-guideline.pdf**

Queensland Government, *Waste – EIS information guideline,* ESR/2020/5311, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0010/140014/eis-tm-waste-information-guide.pdf**

Transport

Aurizon, *Coal dust management plan,* 2019, **https://www.aurizon.com.au/-/media/project/aurizon/files/sustainability/coal-dust-management-plan-revised-2019---for-consultation.pdf**

Australian Level Crossing Assessment Model (ALCAM) available at **https://www.alcam.com.au/**

Queensland Government, *Guide for Development in Transport Environment: Rail*, Department of Transport and Main Roads, 2015, **https://www.tmr.qld.gov.au/-/media/busind/techstdpubs/Rail/guide-for-dev-in-railway/Guidetodevelopmentinatransportenvironment_rail_june2015.pdf?la=en**

Queensland Government, *Guide to traffic impact assessment,* 2018, Department of Transport and Main Roads, **https://www.tmr.qld.gov.au/-/media/busind/techstdpubs/Road-planning-and-design/Guidelines-to-Traffic-Impact-Assessment/gtia-1218.pdf?la=en**

Queensland Government, *Queensland level crossing safety strategy 2012-2021,* 2012, Department of Transport and Main Roads, **https://www.tmr.qld.gov.au/Safety/Rail-safety/Level-crossing-safety**

Queensland Government, *2019 Update: On Track to Zero Harm,* 2019, Department of Transport and Main Roads, **https://www.tmr.qld.gov.au/-/media/Safety/railsafety/2019-update-qld-lx-strategy.pdf?la=en**

Queensland Government, *Transport – EIS information guideline*, ESR/2020/5310, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0009/140013/eis-tm-transport-information-guide.pdf**

Social and economic

Australian Government, *Engage early – Guidance for proponents on best practice Indigenous engagement for environmental assessments under the Environment Protection and Biodiversity Conservation Act 1999,* 2016, Department of the Environment, **https://www.awe.gov.au/sites/default/files/documents/engage-early-indigenous-engagement-guidelines.pdf**

Queensland Government, *Aboriginal and Torres Strait Islander cultural heritage – EIS information guideline*, ESR/2020/5296, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0018/113481/eis-tm-atsi-heritages-information-guide.pdf**

Queensland Government, *Aboriginal and Torres Strait Islander cultural heritage – EIS information guideline*, ESR/2020/5296, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0018/113481/eis-tm-atsi-heritages-information-guide.pdf**

Queensland Government, *Economic impact assessment guideline,* 2017, Coordinator-General, Department of State Development, **https://www.statedevelopment.qld.gov.au/__data/assets/pdf_file/0012/33420/economic-impact-assessment-guideline.pdf**

Queensland Government, *Non-Indigenous cultural heritage – EIS information guideline*, ESR/2020/5302, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0014/140009/eis-tm-heritage-information-guide.pdf**

Queensland Government, *Social impact assessment guideline,* 2018, Coordinator-General, Department of State Development, Manufacturing, Infrastructure and Planning, **https://www.statedevelopment.qld.gov.au/__data/assets/pdf_file/0017/17405/social-impact-assessment-guideline.pdf**

Queensland Resources Council, *Code of practice for local content,* 2013, **https://www.qrc.org.au/wp-content/uploads/2016/07/Local-Content-Code-of-Practice.pdf**

Climate

Queensland Government, climate change science resources available at **https://www.qld.gov.au/environment/climate/climate-change/resources/science** and Queensland Future Climate Dashboard available at **https://longpaddock.qld.gov.au/qld-future-climate/dashboard,** Department of Environment and Science

Hazards, health and safety

Institute of Public Works Engineering Australasia (Queensland), *Queensland Urban Drainage Manual*, 4th edition, 2017.

ISO, 31000:2018, *Risk management – Guidelines,* 2nd edition, 2018, **https://www.iso.org/standard/65694.html**

ISO, HB 203:2012, *Managing environment-related risk,* 2012, Standards Australia

Queensland Government, *Climate – EIS information guideline*, Version 1.00, 2020, Department of Environment and Science, https://www.qld.gov.au/__data/assets/pdf_file/0011/140006/eis-tm-climate-information-guide.pdf

Flooding and regulated dams

Queensland Government, *Manual for assessing consequences categories and hydraulic performance of structures*, ESR/2016/1933, Version 5.02, 2016, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0023/90266/era-mn-assessing-consequence-hydraulic-performance.pdf**

Queensland Government, *Regulated structures – EIS information guideline*, ESR/2020/5307, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0008/140012/eis-tm-regulated-structures-information-guide.pdf**

Queensland Government, *Guideline – Structures which are dams or levees constructed as part of environmentally relevant activities*, ESR/2016/1934, Version 9.01, 2019, Department of Environment and Science, **https://environment.des.qld.gov.au/__data/assets/pdf_file/0031/89383/era-gl-structures-dams-levees-eras.pdf**

Matters of national environmental significance

Autralian Government, *Environmental Management Plan Guidelines*, 2014, Department of Environment, **https://www.dcceew.gov.au/sites/default/files/documents/environmental-management-plan-guidelines.pdf**

Australian Government, *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy,* 2012, Department of Sustainability, Environment, Water, Population and Communities, **https://www.awe.gov.au/sites/default/files/documents/offsets-policy_2.pdf**

Australian Government, Guidelines for EPBC Act listed species available at **https://www.awe.gov.au/environment/epbc/policy-statements**

Australian Government, *Matters of national environmental significance – Significant impact guidelines 1.1,* Version 1.1, Department of the Environment, **https://www.awe.gov.au/sites/default/files/documents/nes-guidelines_1.pdf**

Australian Government, *Significant impact guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources,* Version 1.3, Department of the Environment, **https://www.awe.gov.au/environment/epbc/publications/significant-impact-guidelines-13-coal-seam-gas-and-large-coal-mining-developments-impacts**

Queensland Government, *Matters of national environmental significance – EIS information guideline*, ESR/2020/5304, Version 1.00, 2020, Department of Environment and Science, **https://www.qld.gov.au/__data/assets/pdf_file/0007/140011/eis-tm-mnes-information-guide.pdf**

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