

# Terms of reference for an environmental impact statement

## Vecco Critical Minerals project

August 2024

**The Department of State Development and Infrastructure connects industries, businesses, communities and government (at all levels) to leverage regions' strengths to generate sustainable and enduring economic growth that supports well-planned, inclusive and resilient communities.**

### Acknowledgement of Country

The department acknowledges the First Nations peoples in Queensland: Aboriginal and Torres Strait Islander peoples and their connections to the lands, winds and waters we now all share. We pay our respect to Elders, past, present and emerging. We also acknowledge the continuous living culture of First Nations Queenslanders – their diverse languages, customs and traditions, knowledges and systems. We acknowledge the deep relationship, connection and responsibility to land, sea, sky and Country as an integral element of First Nations identity and culture.

The Country is sacred. Everything on the land has meaning and all people are one with it. We acknowledge First Nations peoples' sacred connection as central to culture and being. We acknowledge the stories, traditions and living cultures of First Nations peoples and commit to shaping our state's future together. The department recognises the contribution of First Nations peoples and communities to the State of Queensland and how this continues to enrich our society more broadly.

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## Part A About these terms of reference

### 1. Introduction

- 1.1 This document outlines the terms of reference (TOR) for the environmental impact statement (EIS) for the Vecco Critical Minerals project (the project), proposed by Vecco Industrial Pty Ltd (the proponent) and being assessed under the *State Development and Public Works Organisation Act 1971* (SDPWO Act).
- 1.2 Information requirements for all projects are identified in the Coordinator-General's *Preparing an environmental impact statement – Guideline for proponents*,<sup>1</sup> which must be read in conjunction with, and forms part of, this TOR for the Vecco Critical Minerals project.
- 1.3 The proposed project is a greenfield vanadium, high purity alumina (HPA) and molybdenum mine and processing plant approximately 70 kilometres (km) north of Julia Creek in the McKinlay Shire local government area. The project lies within the Julia Creek / Richmond Critical Minerals Zone, established by the *Queensland Critical Minerals Strategy*.
- 1.4 The project would be implemented in the following stages:
  - (a) Stage 1 – extraction of up to 6.7 million tonnes per annum of run-of-mine ore, with an on-site processing plant producing up to 8,000 tonnes per annum (tpa) of vanadium pentoxide and 600 tpa of molybdenum trioxide.
  - (b) Stage 2 – the extraction rate will be maintained, with an upgraded on-site processing plant to add HPA production of up to 4,000 tpa of HPA in addition to the vanadium and molybdenum products.
- 1.5 The project comprises the following:
  - (a) open cut mine
  - (b) a mine infrastructure area consisting of offices, diesel or gas generators, waste heat recovery equipment, water and sewage treatment and fuel storage
  - (c) on-site processing plant, product stockpile, laydown areas, water storage dam for water supply and sediment dams
  - (d) worker accommodation facility
  - (e) access road and internal roads
  - (f) water supply pipeline and pumping infrastructure
  - (g) 10 megawatt solar farm and transmission infrastructure.
- 1.6 Mineral products would be trucked to Townsville for downstream processing. Vanadium would be transported to Vecco Group Pty Ltd's vanadium electrolyte manufacturing facility (pilot facility until a new commercial facility is established), which would be used as an input in the manufacture of vanadium redox flow batteries either domestically or internationally. Where production capacity is met at the facility, excess vanadium is proposed to be exported to North America via the Port of Townsville. HPA and molybdenum will be transported to Townsville for domestic markets.

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<sup>1</sup> Queensland Government, Department of State Development and Infrastructure, *Preparing an environmental impact statement – Guideline for proponents*, 2024 available at <https://www.statedevelopment.qld.gov.au/coordinator-general/coordinator-general-resources>.

## 2. Statutory basis

- 2.1 The Coordinator-General 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, which requires the proponent to prepare an EIS for the project.
- 2.2 This TOR sets out the matters the proponent is to address in an EIS for the project.

## 3. Indigenous recognition and native title

- 3.1 This TOR acknowledges and respects the rights, culture, and interests of Queensland's Aboriginal and Torres Strait Islander peoples.
- 3.2 Accepting statutory processes and regulated decision-making requirements, as far as practicable, the proponent is to demonstrate engagement and consideration of the views of Aboriginal and Torres Strait Islander peoples irrespective of native title status.

## 4. Accredited EIS process under Australian legislation

- 4.1 On 30 May 2024, a delegate of the Australian Minister for the Environment and Water determined the project to be a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC reference 2024/09819). Therefore, the project requires approval under the EPBC Act.
- 4.2 The controlling provision for the project is listed threatened species and communities (sections 18 and 18A). Refer to Appendix 2 for further information on relevant listed threatened species and ecological communities.
- 4.3 On 19 July 2024, a delegate of the Australian Minister for the Environment and Water also decided under section 87 of the EPBC Act that the project will be assessed by accredited assessment under the SDPWO Act. The assessment process is under Part 4 of the SDPWO Act.
- 4.4 The EIS must include an assessment of impacts to matters of national environmental significance (MNES). The MNES assessment must be a stand-alone report provided as an appendix to the EIS that fully addresses matters relevant to the controlling provision under the EPBC Act. The report must include clear cross-references to the EIS where relevant.
- 4.5 Section 10 of the TOR, developed in consultation with the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW), sets out the information which must be included in the EIS relating to MNES.

## 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](http://www.statedevelopment.qld.gov.au/cg).

## Part B EIS content and suggested structure

The content requirements and suggested structure for an EIS is set out in Sections 3 and 4 of *Preparing an environmental impact statement – Guideline for proponents*. This section outlines the project specific content requirements.

### 6. Project description

#### Proposed development

- 6.1 The proposed development requirements are set out in Section 4.4.1 of *Preparing an environmental impact statement – Guideline for proponents*.
- 6.2 In addition, the EIS is to describe:
- (a) proposed mine life and the annual and total quantity of ROM ore and waste rock material to be mined, ore to be processed onsite and vanadium, high purity alumina and molybdenum produced
  - (b) estimated proportion of fly-in, fly-out (FIFO) workforce<sup>2</sup> expressed as annual average full-time equivalent positions created during each phase of the project (pre-construction, construction, operations, decommissioning and rehabilitation)
  - (c) 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
  - (d) proposed travel arrangements of the workforce to and from work, including use of FIFO workforce
  - (e) project components or activities that are proposed to be assessed separately to the EIS process, including details of the assessment process and approval.

#### Design of infrastructure

- 6.3 Detail the location of works to be undertaken, with concept and layout plans, at an appropriate scale, requirements for new infrastructure, and/or the upgrading, retention, relocation and/or decommissioning of existing infrastructure to service the project. Infrastructure to be considered is to include, but is not limited to:

##### Mine site infrastructure requirements

- (a) resource extraction areas, including quarry and borrow pits
- (b) mine infrastructure areas including offices, telecommunications, waste heat recovery equipment, water supply, treatment, storage and discharge, wastewater treatment and disposal, sewerage systems, generators and fuel, material stockpile and laydown areas, helipads, storage of explosives and chemicals
- (c) workforce accommodation

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<sup>2</sup> *Fly-in, fly-out worker* for a **large resource project** 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 - Schedule 1 of the *Strong and Sustainable Resource Communities Act 2017*.

- (d) processing plant, run of mine stockpiles, product stockpiles, reject stockpiles and fines stockpiles
- (e) transport and utility infrastructure and corridors, including necessary access roads and tracks
- (f) renewable energy infrastructure
- (g) dams, levees and diversion channels
- (h) water pipelines and pumping infrastructure
- (i) waterway and watercourse crossing infrastructure
- (j) any onsite infrastructure affected by the project (such as buildings, bores, fences)

#### Ancillary infrastructure requirements

- (k) electricity transmission
  - (l) telecommunication
  - (m) airport
  - (n) railway
  - (o) transport routes
  - (p) port.
- 6.4 Describe the purpose of all dams, levees and diversion channels proposed on or off mining lease. Show their locations and dimensions on appropriately scaled maps and provide plans and cross-sections illustrating features such as embankment heights, length and crest level, spillway type and dimensions, discharge outlets, design storage allowances, discharge capacities (spillway and outlets) and maximum storage volumes. Describe how storage structures and other infrastructure would be sited to avoid or minimise risks from flooding.
- 6.5 Describe the timing of requirements for this infrastructure (from pre-construction through to decommissioning and rehabilitation of the project).
- 6.6 Detail whether the infrastructure is permanent or temporary and nominate if it constitutes waterway barrier works.
- 6.7 Provide details for all proposed export related infrastructure and activities on strategic port land including berths, storage and loading facilities.

### Project phases

- 6.8 Provide a detailed description of each phase of project activities (pre-construction, construction, operation, decommissioning and rehabilitation), including any proposed project staging. Include scope of works (on the project site and required infrastructure – new and upgraded), disturbance area, physical layout of the project over time, likely timing of the project including the sequencing of stages and phases.
- 6.9 For any overlap with matters below, full details of any potential impacts and proposed avoidance and mitigation measures must be provided in accordance with Section 9 requirements.



## Pre-construction

- 6.10 Describe the pre-construction activities, showing the dimensions, location (on or off mining lease) with appropriately scaled maps, including:
- (a) timing, staging and sequencing of pre-construction activities and days and hours of operation (including night-time works)
  - (b) pre-disturbance surveys, including geotechnical, topographic, noise, air, flora and fauna, water quality, cultural heritage, contaminated land, visual amenity and how this information will be used in the final design and construction of the project
  - (c) proposed vegetation clearing and mulching (including footprints, proposed removal techniques, staging use or disposal of cleared vegetation and clear justification for these methods as having the least environmental impact), top- and sub-soil removal and stockpiling and associated management measures
  - (d) proposed temporary and permanent infrastructure
  - (e) interference with watercourses (as described under the *Water Act 2000* (Water Act)), waterways (as described under the *Fisheries Act 1994*), and floodplain areas including wetlands
  - (f) proposed water requirements, including source and location of take, volumes, intended purpose and demand management strategies
  - (g) proposed dewatering, management of site drainage and watercourse and other drainage feature flow
  - (h) proposed placing of materials (concrete and fill material)
  - (i) project site access arrangements where access to the site is on tenure not held by the proponent, including consents and approvals required to access land or purchase land or obtain easements
  - (j) proposed development, upgrades, modifications, realignments, relocation, deviation or restricted access to roads and other infrastructure including water, power and telecommunications
  - (k) all environmentally relevant activities (ERAs) and all notifiable activities and land listed on the Environmental Management Register and Contaminated Land Register
  - (l) effective environmental management measures included as part of the project design
  - (m) proposed earthworks, construction methods, any use of quarry materials from a watercourse, associated equipment, and techniques
  - (n) effective erosion and sediment control measures, water efficiency features, and measures and controls for managing hazards, flooding, actual and potential acid sulfate soils and contaminated land
  - (o) approvals, licences and permits required for the construction works (e.g. operational works, building works, etc.), including clarifying whether conditions for these are being sought through the EIS process
  - (p) the type, quantity, origin, routes, delivery modes, storage and laydown requirements for materials required
  - (q) existing infrastructure and easements on affected land within and adjoining the project area

- (r) biosecurity management of weeds, pests and diseases for pre-construction activities, including where personnel, plant and equipment are introduced to undeveloped areas.

## Construction

- 6.11 Describe the construction activities, showing the dimensions, location (on or off mining lease) with appropriately scaled maps, including:
- (a) timing, staging and sequencing of construction activities and days and hours of operation (including night-time works)
  - (b) construction, environmental and safety standards, methods and site management arrangements
  - (c) proposed construction methods, associated equipment and techniques
  - (d) known locations of new or altered intersections required with existing infrastructure (e.g. water pipeline, road, power, etc.)
  - (e) disturbance areas including buffer zones
  - (f) nature and location of construction workforce accommodation
  - (g) identify and provide the estimated quantity of chemicals or hazardous materials that will be stored onsite, including the relevant dangerous goods codes for that method of storage, storage management locations
  - (h) any activity that is a prescribed ERA
  - (i) general construction requirements including excavation, haul road establishment, bed-levelling, crushing, screening, concrete batching, fuel and chemical storage, workshop facilities, office facilities, on-site mess and ablutions facilities
  - (j) location and access including coordinates of the boundary points in decimal degrees (latitude and longitude to 5 decimal places, GDA2020) of any new or established quarry or extraction operations (i.e. extraction voids, borrow pits and stream bank excavations) as well as any other activities associated with the extraction and screening activity (i.e. screening plant locations, material stock piles) (note: for the purposes of this project, extraction and screening have the meanings identified in Schedule 2 – ERA 16 Environmental Protection Regulation 2019 (EP Regulation))
  - (k) mitigation works within the site and off-site (e.g. sediment and erosion protection, sediment traps, fencing including materials and methods) to protect downstream water quality and environmental values, noting any capacity restrictions of dams under the relevant water plan(s)
  - (l) describe how emergency events (e.g. flood, bushfire, drought, etc.) would be managed during construction
  - (m) any potential disruption to flows in watercourses<sup>3</sup>/waterways<sup>4</sup> and tributaries during construction and any diversion works required including temporary diversions
  - (n) management of fauna and vegetation material generated by clearing for construction

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<sup>3</sup> 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.

<sup>4</sup> 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.

- (o) the type, quantity, origin, routes, delivery modes, storage and laydown requirements for construction machinery and materials required
- (p) water balance for the water supply requirements. For each component of the works, identify and quantify all activities requiring water including but not limited to dust suppression, concrete batching, washdowns, road construction and camp operation. For each water requirement nominate the type of water (potable or recycled), the source, volume, means of access and transport, treatment processes and storage method are to be provided
- (q) any take or interference with water in a watercourse, waterway, lake or spring, overland flow water, and underground water (both direct and indirect)
- (r) stormwater drainage systems and the proposed treatment, disposal and/or re-use arrangements, including any off-site services, stormwater release and monitoring locations with coordinates in decimal degrees (latitude and longitude to 5 decimal places, GDA 2020), and storm water release criteria. The storm water release criteria must provide sufficient justification as to the limits proposed and reference any relevant criteria, such as the Environmental Protection (Water and Wetlands Biodiversity) Policy 2019, or the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*,<sup>5</sup> to demonstrate that any release can be conducted in a sustainable manner that does not result in environmental harm
- (s) solid and liquid waste management
- (t) contaminated land management
- (u) public and workforce safety, medical facilities to be provided on site and provision for access to emergency services, onsite security services
- (v) biosecurity management of construction areas, access routes and ancillary infrastructure, including personnel hygiene stations, vehicle washdown bays, access management; include how any biosecurity event would be managed and rehabilitated
- (w) construction site demobilisation.

## Operation

- 6.12 Describe the operations activities, showing the dimensions, location (on or off mining lease) with appropriately scaled maps, including:
- (a) proposed mine life, amount of resources to be mined and the resource base including total seam thickness and seam depths
  - (b) mining sequence and cross sections showing profiles and geological strata and faults
  - (c) proposed methods, equipment and techniques for resource separation, beneficiation and processing
  - (d) 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
  - (e) type, quality, quantity of mineral mined at each major stage of the project
  - (f) proposed dewatering, management of site drainage and watercourse, waterway and other drainage feature flow

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<sup>5</sup> Refer Appendix 1, Water.

- (g) type and capacity of high-impact plant and equipment utilised to operate the project, their chemical and physical processes
- (h) the type, quantity, origin, routes, delivery modes, storage and laydown requirements for materials and employees
- (i) identify and provide the estimated quantity of chemicals or hazardous materials that will be stored onsite, including the relevant dangerous goods codes for that method of storage, storage management locations
- (j) waste material management (for example waste rock)
- (k) predicted inventory of the location and quantity of soil stockpiles, and ongoing management
- (l) any new or expanded quarry and screening operations (for example, from locations off mining lease) required to service the project
- (m) any take or interference with water in a watercourse, waterway, lake or spring, overland flow water, and underground water (both direct and in-direct)
- (n) water balance for the water supply requirements. For each component of the works, identify and quantify all activities requiring water including but not limited to mining and processing, dust suppression, washdowns and camp operation. For each water requirement nominate the type of water (potable or recycled) the source, volume, means of access and transport, treatment processes and storage method are to be provided. If the project is to be staged, discuss the water requirements for each relevant stage
- (o) transport of products for further processing or export.

#### Decommissioning and rehabilitation

- 6.13 Describe the rehabilitation and mine closure activities, showing the dimensions, 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 ERA infrastructure and associated disturbance areas and the sequence of mining and progressive rehabilitation (i.e. the method and timing of rehabilitation 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 progressive rehabilitation and closure plan
  - (c) for each post mining 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 post mining land use
  - (d) all water needs and the proposed authority under which the water would be taken to do this work by defining the location, source of water take and volumes required
  - (e) closure and decommissioning phase removal of infrastructure and actions to clean up, manage and dispose of contaminated soils.

#### Site description

- 6.14 The site description requirements are set out in Section 4.4.3 of *Preparing an environmental impact statement – Guideline for proponents*.

- 6.15 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 each phase of the project.

## Project rationale and alternatives

- 6.16 The project rationale and alternatives requirements are set out in Section 4.3 of *Preparing an environmental impact statement – Guideline for proponents*.
- 6.17 In addition, the EIS is to provide:
- (a) details of market considerations, design considerations and calculations that led to the proposed mine life and export capacity
  - (b) detail whether the vanadium, HPA and molybdenum product will be for export or local markets, or both
  - (c) detailed justification and options analysis for lower impact alternative sites and/or designs for each project component
  - (d) alignment options assessed for any proposed new or existing infrastructure, including justification for the preferred and final alignment/location chosen
  - (e) options assessed for transport of material and workers to site, including justification for the preferred route chosen with reference to managing workers health and safety, and time taken to travel. The multi-criteria analysis is to assess shared use of common user infrastructure with nearby mines or projects, in accordance with Queensland Government's *Common user infrastructure assessment principles*<sup>6</sup>
  - (f) options assessed for water supply, including justification for preferred option(s).

## 7. Legislative requirements and project approvals

- 7.1 The planning and legislative requirements are set out in Section 4.5 of *Preparing an environmental impact statement – Guideline for proponents*.
- 7.2 In addition, the EIS is to:
- (a) identify any licences, approvals or agreements required to be obtained with or from the Port Authority to export products
  - (b) describe any approvals, authorisations or entitlements required under the Water Act, Water Regulation 2016, Water Plan (Gulf) 2007 (Gulf Water Plan) and Water Plan (Great Artesian Basin and Other Regional Aquifers) 2017 (GABORA Water Plan). Detail any legislative requirements and processes for gaining access to water for the project (including any relevant exemptions), including discussion of the applicable provisions of the Great Artesian Basin and Other Regional Aquifers Water Management Protocol.

## 8. Stakeholder consultation

- 8.1 The stakeholder consultation requirements for preparing an EIS are set out in Section 4.6 of *Preparing an environmental impact statement – Guideline for proponents*.

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<sup>6</sup> Refer to Appendix 1, Project rationale and alternatives.

## 9. Assessment of project specific matters

### Environmental management plans

- 9.1 The EIS must include detailed environmental management plans (EMPs) for both the construction and operational phases of the project. These EMPs must be prepared in accordance with the requirements set out in Section 4.9 of *Preparing an environmental impact statement – Guideline for proponents*.

### Land

#### Objective and outcomes

The design and all phases of the project are to:

- (a) avoid, minimise and/or mitigate any serious environmental harm on sensitive land uses and sensitive receptors
- (b) locate infrastructure and activities to protect adjacent environmental values and sensitivities
- (c) minimise changes to land tenure
- (d) protect the environmental values of land including soils, subsoils, landforms and associated flora and fauna
- (e) enable the operation of the site in accordance with best practice environmental management
- (f) rehabilitate land disturbed by mining activities progressively as it becomes available to minimise the risks of environmental impacts and reduce cumulative areas of disturbed land
- (g) restore disturbed land to a stable 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.

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

### Land use and tenure

#### Existing environment

- 9.2 Describe the following:

- (a) existing and proposed land uses and infrastructure, in and around the project area that may be impacted by the project including numbers of private properties, Traditional Custodians land and cultural practice areas, state leasehold land, reserves, forest consent area, unallocated state land, legally secured offset areas, watercourses/waterways (including stream order information), easements and road reserves. This should be supported by maps with lot on plan descriptions
- (b) identify townships and urban areas located near the project area
- (c) visual amenity, including landscape features, panoramas and views that have, or could be expected to have value to the community in and around the project area
- (d) any tenures overlying and adjacent to the project area

- (e) identify all regional and land use plans, local planning instruments, and overlays relevant to the project
  - (f) State Development Assessment Provisions (SDAP) codes<sup>7</sup> relevant to the project (including those exempt due to coordinated project status)
  - (g) 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 *Environmental Protection Act 1994* (EP Act), is potentially contaminated, or is on the Environmental Management Register or Contaminated Land Register
  - (h) design and locational factors influencing the selection of the project components and the project area.
- 9.3 Describe and map the extent of any known agriculture, mining and exploration activities, timber or quarry material, including, but not limited to:
- (a) mineral exploration permits and applications for mineral exploration permits
  - (b) mining leases and applications for mining leases, including access arrangements
  - (c) findings of the Agricultural Land Audit and AgTrends Spatial web mapping app<sup>8</sup>
  - (d) stock route network.

### **Impact assessment and mitigation measures**

- 9.4 The assessment of impacts on land is to be in accordance with *Application requirements for activities with impacts to land* and *Land – EIS information guideline*.<sup>9</sup> If any quarry material is required for construction, *Quarry material – EIS information guideline*.<sup>10</sup> Demonstrate that the project can meet the environmental objectives and performance outcomes relevant to land in Schedule 8 of the EP Regulation.
- 9.5 Assess the project in the context of the applicable regional plan and the relevant local planning instrument, including assessment benchmarks, and justify any inconsistency between the project and these plans.
- 9.6 Identify any existing or proposed incompatible land uses within and adjacent to the project site.
- 9.7 Describe potential temporary and permanent changes to land uses of the proposed project site and adjacent areas, taking into consideration the proposed measures to be used to avoid or minimise potential impacts.
- 9.8 Address impacts on any identified 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 or resource exploration activities, liaise with any authorised tenement holder whose mining interests overlay the project area to advise of the proposal and ascertain any future exploration activities.
- 9.9 Describe how any proposed land use may result in land becoming contaminated. Describe the actions to be undertaken to avoid, identify, remediate, manage land that is contaminated or becomes contaminated.

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<sup>7</sup> Refer to Appendix 1, Land.

<sup>8</sup> <https://qldspatial.information.qld.gov.au/AGTrendsSpatial/>.

<sup>9</sup> Refer to Appendix 1, Land.

<sup>10</sup> Refer to Appendix 1, Land.



- 9.10 Detail the proposed measures to be undertaken during the construction and operations phases of the project 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.
- 9.11 Identify existing and potential Native Title rights and interests impacted by the project and the potential for managing those impacts by Indigenous Land Use Agreements or other measures.<sup>11</sup> 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 watercourses/waterways)
  - (b) a native title assessment that determines presence, or otherwise, of Native Title over all land or waters within the project area
  - (c) land or waters where Native Title has been determined to exist by the Federal Court
  - (d) land or waters that are covered by a Native Title determination application
  - (e) land or waters that are covered by a registered Indigenous Land Use Agreement.
- 9.12 Describe any proposed tenure to be applied for as part of this project, including anticipated timeframes, approvals and/or owner's consent.
- 9.13 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*.
- 9.14 Demonstrate how the project will maintain the ongoing functionality and connectivity of the stock route network.
- 9.15 Assess the likely potential impacts to agricultural interests, including:
- (a) agricultural land of State Planning Policy significance to the agriculture state interest. This assessment is to include how the project is consistent (or otherwise) with promoting and optimising agriculture and agricultural development as the preferred land use in areas identified as Important Agricultural Areas and protecting Agricultural Land Classification Class A and Class B land for sustainable agricultural use, in accordance with state interest – agriculture (1) and (2)
  - (b) 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 subject and adjacent to project activities.
- 9.16 Describe, using graphics and figures, temporary and permanent changes to the landscape, land uses and the visual impact of the project on communities, particularly those living in townships and from key vantage points. Describe the proposed mitigation measures that are to be used to avoid or minimise impacts.

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<sup>11</sup> Refer to Queensland Government, Department of Resources, *Native title work procedures*, available at <https://www.qld.gov.au/firstnations/environment-land-use-native-title/native-title-work-procedures>.



## Topography, geology and soils

### **Existing environment**

- 9.17 Describe and illustrate the topography of the existing project area.
- 9.18 Describe in detail, including maps and itemised sources of information, the geology and geomorphology of the project area, with particular reference to the physical and chemical properties of surface and sub-surface materials and geological structures within the proposed areas of disturbance.
- 9.19 Describe the geological properties that could impact upon ground stability and influence the nature and location of project activities.
- 9.20 Describe, map and illustrate soil types and profiles of the project area at a scale relevant to the project and in accordance with relevant guidelines. Identify soils that would require specific management due to wetness, erosivity, sodicity, depth, acidity, salinity or other features. Identify acid sulfate soils in the project area, and the potential for acid forming rock in spoil material.

### **Impact assessment and mitigation measures**

- 9.21 Where significant earthworks are proposed, assess the impact of these works on affected soils and landscapes. Describe how these works affect land use, land management and associated land degradation risks. This investigation of soils and landscapes should be undertaken in accordance with guidance materials identified in Appendix 1, Land.
- 9.22 Investigate the risks to the soil and landscape associated with land degradation. This is to include a salinity risk assessment to predict, manage and mitigate salinity risk in accordance with *A risk framework for preventing salinity*.<sup>12</sup> Where irrigation water is applied to land, assess the:
  - (a) water balance to assess the impacts of deep drainage
  - (b) salt balance
  - (c) unsaturated zone.
- 9.23 Investigate land degradation in the form of erosive soil loss associated with increased run-off, clearing or other changes to hydrology in accordance with the guidelines identified in Section 5.3.1 of *Preparing an environmental impact statement – Guideline for proponents* and Appendix 1, Land.
- 9.24 Describe proposed mitigation measures to avoid or minimise project impacts related to land use, soil values, existing conservation works and sediment and erosion control works. Include mitigation and management measures where any acid forming rock is to be placed in spoil disposal areas.
- 9.25 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 guidance materials identified in Appendix 1, Land, that appropriately manages the disturbance of acid sulfate soils to avoid or minimise the mobilisation and release of acid, iron, or other contaminants.
- 9.26 Describe how current and/or expected technologies will be applied when surface mining.

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<sup>12</sup> Grundy MJ, Silburn DM, Chamberlain T (2007). *A risk framework for preventing salinity*. Environmental Hazards. 7: 97–105. <https://www.sciencedirect.com/science/article/abs/pii/S1747789107000245>.

## Rehabilitation and mine closure

- 9.27 Describe the rehabilitation strategy which demonstrates how the off mining lease infrastructure will be decommissioned, removed and area rehabilitated, including timing and agreed final landforms and land use. Where infrastructure is proposed to remain, identify the owner of this infrastructure.
- 9.28 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. For example, undertake rehabilitation methods that aim to restore habitat elements important for the long-term persistence of Julia Creek dunnart and Mitchell grass.

### *Progressing rehabilitation and closure plan*

- 9.29 Provide a proposed progressive rehabilitation and closure plan (PRCP) for the project in accordance with *Submission of a progressive rehabilitation and closure plan*<sup>13</sup> and best practice approaches about the strategies and methods for progressive and final rehabilitation. The PRCP 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<sup>14</sup> condition and provide for the condition to which the holder must rehabilitate the land before the Environmental Authority (EA) may be surrendered. The PRCP must consist of two components:
- (a) rehabilitation planning part
  - (b) PRCP schedule.

#### Rehabilitation planning part

- 9.30 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) describe all water needs and the proposed authority under which the water would be taken to do this work by defining the location, source of water take and volumes required
  - (d) include a detailed description, including maps, of how and where the relevant activities are to be carried out
  - (e) include details of the consultation undertaken in developing the proposed PRCP, including infrastructure proposed to be retained onsite
  - (f) include details of how ongoing consultation will be undertaken to discuss rehabilitation to be carried out under the plan
  - (g) 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
  - (h) 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

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<sup>13</sup> Refer to Appendix 1, Land.

<sup>14</sup> Stable condition is defined in section 111A of the *Environmental Protection Act 1994*.

- (i) 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 the risks
  - (j) 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
  - (k) include copies of reports or other evidence relied on for each proposed non-use management area
  - (l) 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
  - (m) include other information requirements outlined in *Guideline – Progressive rehabilitation and closure plans*.<sup>15</sup>
- 9.31 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.
- 9.32 Describe how costs of rehabilitation have been considered in the proposed rehabilitation outcomes for the project. Demonstrate compliance with *Estimated rehabilitation cost under the Environmental Protection Act 1994*, *Estimated rehabilitation cost calculator – mining*, and *User guide for estimated rehabilitation cost calculator user guide – mining*.<sup>16</sup>

#### PRCP schedule

- 9.33 Provide a proposed PRCP schedule<sup>17</sup> which describes time-based milestones for achieving each post-mining land use or non-use management areas for the project. Present the proposed PRCP schedule in the table template included in *Submission of a progressive rehabilitation and closure plan*.<sup>18</sup>
- 9.34 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

<sup>15</sup> Refer to Appendix 1, Land.

<sup>16</sup> Refer to Appendix 1, Land.

<sup>17</sup> Queensland Government, Department of Environment and Science, *Guideline – Progressive rehabilitation and closure plans*, ESR/2019/4964, Version 3.00, April 2023 contains further information about how to develop a PRCP schedule.

<sup>18</sup> Refer to Appendix 1, Land.

- (g) a final site design
- (h) all milestone criteria must be consistent with the SMART principles.<sup>19</sup>

9.35 Demonstrate that effective, long-term planning for rehabilitation over the life of mine has been included in the mine planning in line with the matters raised in *Guideline – Progressive rehabilitation and closure plans*.<sup>20</sup>

## Flora and fauna

### Objective and outcomes

The design and all phases of the project are to:

- (a) protect the environmental values of land including soils, subsoils, landforms, habitats and associated flora and fauna
- (b) avoid, minimise and/or mitigate environmental harm in areas of high conservation value and special significance and sensitive land uses at adjacent places
- (c) avoid, minimise and/or mitigate adverse and significant residual impacts (SRIs) to flora and fauna (including wetlands) which are matters of state environmental significance (MSES) or MNES, and where they cannot be avoided, offset any residual impacts
- (d) identify and appropriately safeguard MSES to support healthy and resilient ecosystems
- (e) manage the impacts on the environment by seeking to achieve ecological sustainability, including protected wildlife and habitat
- (f) ensure the sustainable, long-term conservation of biodiversity
- (g) identify critical habitat for all MSES species and ensure it receives special management considerations and protection through a management plan for the proposed project
- (h) protect all environmental values relevant to adjacent and receiving environmentally sensitive areas, including aquatic ecosystems and wetlands
- (i) avoid constructing or raising waterway barrier works in fish habitats, or where this is not feasible, ensure waterway barrier works in fish habitats are constructed to maintain connectivity, habitat values and fish passage.

### General content

- 9.36 Address the project's impacts on MSES and other regionally significant biodiversity, and cultural and environmental values. Where a MSES is also a MNES, specific cross referencing to where it has been assessed in the MNES chapter is required.
- 9.37 Specifically address any obligations imposed by State or Commonwealth legislation or policy or international treaty obligations, such as the China–Australia Migratory Bird Agreement, Japan–Australia Migratory Bird Agreement, or Republic of Korea–Australia Migratory Bird Agreement.
- 9.38 Include details on the scope, methodology, timing, effort, and results of field surveys undertaken in the EIS. Field surveys should appropriately cover seasonal fluctuations in conditions (i.e. wet

<sup>19</sup> SMART milestones are: Specific – it is clear what must be done; Measurable – it must be possible to know when it has been achieved; Achievable – it is capable of being achieved; Reasonable/relevant – there is a clear connection between the milestone and the desired outcomes. The requirement is reasonable; Time Specific – it is clear when the milestone will be completed.

<sup>20</sup> Refer to Appendix 1, Land.

and dry seasons). Ecological survey reports (including field proformas and data sheets) should be provided as searchable and hyperlinked appendices.

- 9.39 Using maps at a suitable scale, illustrate the context of the project area in relation to surrounding MSES. This includes the location of:
- (a) existing and proposed infrastructure (including workforce accommodation, construction laydown areas, solar farm and transmission lines, and pipelines), and project activities
  - (b) proposed buffers (including waterway, wetland, firebreak, and safety buffers)
  - (c) existing and proposed access tracks required for construction, operation, and maintenance
  - (d) any other areas of disturbance required to undertake the project.
- 9.40 When identifying impacts, ensure impact figures are appropriately scaled and provided for each activity/component and for each phase of the project.

### Existing environment

- 9.41 Identify and describe MSES,<sup>21</sup> state and regionally significant biodiversity, and natural environmental values of the terrestrial and aquatic ecosystems likely to be impacted by the project, including the conservation status of each identified ecological value under the *Nature Conservation Act 1992* (NC Act), *Vegetation Management Act 1999* (VM Act) and EP Act. This is to include waterways providing for fish passage impacted by the project (including impacts from but not limited to groundwater drawdown, diversion, dams, weirs, fill, crossings, or mine pit location), watercourse floodplain ecology (especially as it relates to potential changed hydrology and water quality from project activities e.g. levees and groundwater drawdown impacts), groundwater dependent ecosystems (GDEs), instream refuge waterholes and wetlands. Where a MSES is also a MNES, specific cross referencing to where it has been assessed in the MNES chapter is required. It is recommended that this section is structured to include separate assessment for each MSES.
- 9.42 Describe the existing quality and suitability of habitat for all terrestrial flora and fauna species that are known to occur or have the potential to occur in the project area. Provide the area of existing habitat in hectares for each MSES species in the project area based on field verification. For habitat area calculations, identify the use (if any) of high value regrowth vegetation and non-remnant areas.
- 9.43 The location of fauna and flora of cultural, state, national and environmental significance in the project area, and in surrounding areas, are to be identified through desktop analysis and field surveys, described, and shown on maps in relation to their habitat and connectivity in the landscape (including upstream and downstream of the project). Include the following MSES:
- (a) regulated vegetation (including prescribed regional ecosystems and essential habitat)
  - (b) connectivity areas
  - (c) wetlands, watercourses and drainage features
  - (d) threatened species records
  - (e) protected wildlife habitat
  - (f) protected areas and conservation areas

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<sup>21</sup> MSES are a component of the biodiversity state interest that is defined under the State Planning Policy and defined under the Environmental Offsets Regulation 2014. MSES includes certain environmental values that are protected under Queensland legislation.

- (g) waterways providing for fish passage
  - (h) biodiversity offset areas approved by the State or Australian governments (if any).
- 9.44 Provide a detailed description of all aquatic flora and fauna:<sup>22</sup>
- (a) known to occur within the project area (as identified through on-ground seasonal studies)
  - (b) identified as likely to occur (via desktop assessment).
- 9.45 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 species in the project area and surrounding area. Identify sensitivity to change (including acidity) of aquatic and terrestrial flora and fauna groups, regional ecosystems, and significant species.
- 9.46 Describe all flow dependent ecological values and their critical surface or groundwater flows, including their relevant ecological thresholds.
- 9.47 Describe how features of the seasonal flow underpins:
- (a) structure and function of aquatic ecosystems, including peak wet season flows and their variability
  - (b) draw period of flows and flood residence times during wet and dry season transition
  - (c) base flows (i.e. low and disconnected flows) during the dry season
  - (d) initial flushing flows during the dry to wet season transition.

## Impact assessment

- 9.48 Describe the impacts on biodiversity and natural environmental values (such as breeding, roosting, nesting, and foraging habitat) of affected areas over the lifetime of the project in accordance with guidance materials identified in Section 5.4 of *Preparing an environmental impact statement – Guideline for proponents*. This should include detail on the likely magnitude, duration, and frequency of potential/likely and known direct, indirect, cumulative, and facilitated impacts. The assessment is to include, but not be limited to:
- (a) identification of all significant flora and fauna species and ecological communities in both terrestrial and aquatic environments, wetlands, and in sensitive areas, biodiversity values, connectivity and supporting ecological processes<sup>23</sup>
  - (b) fauna and flora of cultural significance to Aboriginal and Torres Strait Islander Peoples
  - (c) terrestrial and aquatic ecosystems, including GDEs and subterranean fauna such as stygofauna and their interactions, and wetlands
  - (d) alterations to riparian vegetation, habitat type and availability, connectivity, and bank and channel morphology, including for any recorded fauna breeding and nesting sites
  - (e) area (in metres squared (m<sup>2</sup>)) of permanent and temporary impacts to all aquatic plants
  - (f) changes to hydrology and environmental flows resulting in potential impacts to upstream and downstream terrestrial and aquatic habitats

<sup>22</sup> Consider the Department of Regional Development, Manufacturing and Water's science and monitoring products available at <https://www.qld.gov.au/environment/library>.

<sup>23</sup> Where a MSES is also a MNES, specific cross referencing to where it has been assessed in the MNES chapter is required.



- (g) impacts on aquatic and terrestrial fauna and flora species resulting from water quality changes during the construction, operation, decommissioning and rehabilitation of the project
  - (h) the existing integrity and potential impacts on ecological processes, including habitats of listed threatened, near-threatened or special least-concern species
  - (i) connectivity of habitat and ecosystems and impacts on access to different habitat requirements by species, including waterways providing for fish passage
  - (j) integrity of landscapes and places, including wilderness, reserves, and similar natural places
  - (k) chronic, low-level exposure to contaminants or the bio-accumulation of contaminants
  - (l) direct and indirect impacts on terrestrial and aquatic species and ecosystems whether acting individually or in combination. Relevant matters include vegetation clearing, hydrological changes, discharges of contaminants to water, air or land, noise and other relevant matters
  - (m) extent of edge effects created as a result of cleared vegetation and associated impacts on access to food resources for fauna species at new edges
  - (n) biological diversity including listed flora and fauna species and regional ecosystems
  - (o) impacts on native fauna during each phase of the project due to their proximity to the project area (e.g. light, noise, vibration, waste, discharges or overflow of contaminants to water, hydrological changes, vegetation clearing, and vehicle movements).
- 9.49 Describe any actions of the project that require an authority under the NC Act, and/or would be assessable development for the purposes of the VM Act, the *Regional Planning Interests Act 2014*, the *Fisheries Act 1994* and the *Planning Act 2016*. Features to consider include regional ecosystems, environmentally sensitive areas, wetlands, nature refuges, protected areas and strategic environmental areas.
- 9.50 In a tabular format, identify all impacted MSES onsite and in proximity to the site, quantify any overlaps between MSES and MNES, and identify relevant legislation and assessment requirements.
- 9.51 Identify and discuss where proposed vegetation clearing is assessable, accepted, or exempt development for the project under the Planning Regulation 2017. Assess proposed assessable vegetation clearing for off-lease activities (including operational work) against SDAP state code 16,<sup>24</sup> addressing the relevant assessment benchmarks for a coordinated project for all other purposes. Note that all vegetation, including Category X areas (under the VM Act), on state land tenures is assessable unless an exemption or Accepted Development Vegetation Clearing Code applies.
- 9.52 Provide detail regarding proposed works within waterways. For any infrastructure that constitutes assessable waterway barrier works, provide cross-sections of the waterway that show the barrier in relation to the bed and banks, and long-sections of the waterway that show the barrier in relation to the bed upstream and downstream of the structure. Describe how the barrier and

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<sup>24</sup> Coordinated project (all other purposes) can be used to inform a response to SDAP state code 16 – Queensland Government, Department of State Development, Infrastructure, Local Government and Planning, *State code 16: Native vegetation clearing*, State Development Assessment Provisions, Version 3.0 and Queensland Government, Department of resources, *Guide to State Development Assessment Provisions – State code 16: Native vegetation clearing*, Version 3.00, 2023.

hydrological conditions provide for safe, bi-directional fish passage for all members of the fish community and other aquatic fauna.

- 9.53 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 Saxby River crossing, sediment dams, and temporary diversions). Reference is to be made to *Guidelines for Fish Salvage*<sup>25</sup> if any dewatering is required. The description is to include:
- (a) proposed fauna passage through any diversions, noting that any diversions are to retain natural habitat features such as a meandering path, pools, riparian and in-stream vegetation
  - (b) proposals for the reinstatement of the waterways after construction has ceased, if applicable.
- 9.54 Describe the potential impacts on ecological function and connectivity, including any impacts upstream or downstream off-site, resulting from altered flow paths, changes in flow velocity and changes in inundation periods.

#### Mitigation measures

- 9.55 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.
- 9.56 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.
- 9.57 Propose effective and proven measures to avoid, minimise and/or mitigate direct or indirect impacts on ecological environmental values. In particular, address measures to protect or preserve any listed threatened, near threatened or special least concern species. Describe the practicality, effectiveness and risks for each avoidance and mitigation measure. Include the timeframes in which results would be achieved.
- 9.58 Where applicable, provide a salvage and relocation plan for impacted species including MSES.
- 9.59 Justify how applying all proposed avoidance and management measures would result in acceptable outcomes for terrestrial, aquatic and/ or marine ecology. Describe how achieving the measures successfully will be monitored, measured and audited. Include provisions to regularly evaluate all the mitigation measures so that improvements may be made as new technologies and best practices evolve.
- 9.60 Assess the need for fire breaks, buffer zones, and the retention, rehabilitation, or planting of fauna movement corridors, including the role of buffer zones in maintaining and enhancing riparian vegetation and wetlands to promote bank stability, promote habitat connectivity, and provide habitat.
- 9.61 Describe how project infrastructure, including extraction pits, stockpiles and proposed upgrades to existing transport corridors, are located to avoid impacting waterways providing for fish passage and if avoidance cannot be achieved, demonstrate any mitigation measures and associated residual impacts.

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<sup>25</sup> Refer to Appendix 1, Flora and fauna.



- 9.62 Demonstrate that the project will avoid the need for waterway barriers. Describe alternative measures that would achieve this, or propose measures to mitigate impacts on affected waterways, drainage features and wetlands. Include mitigation strategies for construction and operation phases of the project.
- 9.63 Describe, illustrate, and demonstrate how the project provides safe and adequate upstream and downstream aquatic fauna passage, including all monitoring and maintenance measures.
- 9.64 Propose rehabilitation criteria, based on a standardised and repeatable framework such as the BioCondition assessment framework, 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, the provision of low shrubs, ground level hollow logs, stick piles, nest hollows, ground litter, fish passage and terrestrial and aquatic habitat as appropriate.

## Offsets

- 9.65 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 current versions of *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*<sup>26</sup> and the Queensland Environmental Offsets framework.<sup>27</sup>
- 9.66 Where a SRI is predicted to occur on a prescribed environmental matter, describe and quantify the SRI and propose offsets consistent with the requirements of Queensland's *Environmental Offsets Act 2014* and the latest version of the *Queensland Environmental Offsets Policy*.<sup>28</sup> Where the Australian offset policy requires an offset for a significant impact on a MNES, the offset proposal(s) must be consistent with the requirements of the EPBC Act environmental offsets policy.
- 9.67 Provide as an appendix to the EIS an offset proposal 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) identified SRI offset obligations for MSES and MNES across the state and Australian jurisdictions
  - (b) the extent of any SRI overlap between MSES and MNES should be identified, described and illustrated. This could be provided in the form of a table and maps
  - (c) for staged offsets, consider the full extent of potential impacts on prescribed environmental matters for the entire project as part of the SRI assessment
  - (d) the results of a habitat quality assessment<sup>29</sup> on both the impact area and the proposed offset area/s to compensate for impacts

<sup>26</sup> Refer to Appendix 1, Flora and fauna.

<sup>27</sup> Queensland Government, *Legislation – Environmental offset framework*, available at <https://www.qld.gov.au/environment/management/environmental/offsets/legislation>.

<sup>28</sup> Refer to Appendix 1, Flora and fauna.

<sup>29</sup> The site habitat quality score must be derived in accordance with the Queensland Government, Department of Environment, Science and Innovation, *Queensland Guide to determining terrestrial habitat quality: Methods for assessing habitat quality under the Queensland Environmental Offsets Policy*. Before undertaking habitat quality assessments, consult with the Office of the Coordinator-General regarding which version of the guide should be used.

- (e) identification of whether a SRI to MSES will be addressed through a financial or proponent driven offset, including an offset delivery plan for any proponent driven offsets
  - (f) discussion and sound review of the availability of the offset for each MSES and MNES proposed to be offset and the ability to enter into long-term conservation agreements
  - (g) an evaluation of how the proposed offset will achieve a conservation outcome for the impacted matter
  - (h) for land-based offsets, an assessment of the vulnerability and resilience of any proposed offset site/s under climate change scenarios (e.g. reduced water availability, increased bushfire risk, sea level rise).
- 9.68 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 are most relevant to habitat reconstruction).
- 9.69 Describe how the achievement of the offset strategy will be monitored and audited, and how corrective actions will be managed.
- 9.70 Describe any proposed measures that would be used to avoid, minimise, or mitigate any impact on agricultural land of state or regional significance when meeting environmental offset requirements required for the project.

## Biosecurity

### Objective and outcomes

The design and all phases of the project are to:

- (a) avoid, minimise and/or mitigate the spread of terrestrial and aquatic weeds, terrestrial and aquatic pest animals, animal and plant pests and 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*, biosecurity plans, weeds of national significance and designated pests under the *Public Health Act 2005* and relevant policies, legislation and guidelines.

### Existing environment

- 9.71 Survey terrestrial and aquatic pest animals and weeds and describe their current distribution and abundance in the project area and surrounds.<sup>30</sup> Field surveys should appropriately cover seasonal fluctuations in conditions (i.e. wet and dry seasons). Provide maps showing pest animal and weeds distribution in relation to the project area and ecologically significant areas identified as containing, or likely to contain, listed flora, fauna, and ecological communities of MSES or MNES. This survey is to include prohibited and restricted matters listed in the *Biosecurity Act 2014* and Biosecurity Regulation 2016, Weeds of National Significance, pests and weeds declared under McKinlay Shire Council local laws, and designated pests under the *Public Health Act 2005*.

<sup>30</sup> Refer to Section 5.4 of *Preparing an environmental impact statement – Guideline for proponents* for relevant guidelines (or current versions of these guidelines).

## Impact assessment and mitigation measures

- 9.72 Describe for each project phase, the potential spread of terrestrial and aquatic pest animals, terrestrial and aquatic weed species, and disease within the project area construction and operations access routes and into adjoining properties (where relevant). Conduct the impact assessment in accordance with the guidance materials identified in Section 5.4 of *Preparing an environmental impact statement - Guideline for proponents*.
- 9.73 Propose detailed measures using best practice to remove, control and limit the spread of pests, weeds, diseases, and contaminants within and surrounding the project area and adjacent areas. Detail alignment with any relevant local government area Biosecurity Plans and pest management priorities or initiatives undertaken by Biosecurity Queensland. Include a discussion on minimising any susceptibility to biosecurity risks with the introduction and/or expansion of temporary and permanent infrastructure.
- 9.74 All proposed measures are to be in accordance with any relevant biosecurity surveillance or prevention measures authorised under the *Biosecurity Act 2014* and any requirements under the *VM Act* or *Planning Act 2016*.
- 9.75 Detail a monitoring program that would audit the success of biosecurity measures, identify whether objectives have been met, and describe corrective actions to be used if monitoring indicates objectives are not being met. Performance outcomes should correspond to the relevant policies, legislation and guidelines, and sufficient evidence should be supplied (through studies and proposed management measures) to show these outcomes can be achieved.

## Water resources

### Objectives and outcomes

The design and all phases of the project are to:

- (a) avoid, minimise and/or mitigate adverse impacts to water resources and Indigenous water resources uses and values
- (b) use water resources in a lawful and authorised manner that doesn't diminish the quality or ability to access the resource for existing water users
- (c) maintain and monitor environmental flows, water quality objectives (WQOs), in-stream habitat diversity, habitat connectivity 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) maintain the availability of water to existing authorised users and other beneficial uses of water (such as spring flows, wetlands, groundwater recharge and groundwater-dependent ecosystems) are not adversely impacted by the project.

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

## Surface water

### **Existing environment**

- 9.76 Provide maps of existing water features within and adjacent to the project area which identify:
- (a) relevant drainage basin(s) and basin sub-area(s)
  - (b) natural and artificially modified and ephemeral and perennial watercourses, drainage features, lakes (including lagoons, wetlands and swamps) and springs
  - (c) floodplain and floodplain ecosystems
  - (d) semi-permanent and permanent waterholes, including descriptions of any groundwater-surface water interactions
  - (e) existing interferences with the flow of water, including dams, weirs, diversions and excavations.
- 9.77 Describe existing surface drainage patterns and flows in streams in the project area including stream geomorphology and characteristics, seasonal variations using suitable locations between identified stream nodes.
- 9.78 Identify the relevant environmental values defined in section 9 of the EP Act and WQOs provided in the Environmental Protection Policy (Water and Wetland Biodiversity) 2019 (EPP (Water and Wetland Biodiversity)).
- 9.79 Describe existing and potential users and uses of water in the area potentially affected by the project, including municipal, agricultural, industrial, mining, recreational and environmental uses of water.

### **Impact assessment and mitigation measures**

- 9.80 Identify the location of all proposed infrastructure in relation to potentially impacted waters.
- 9.81 Detail any removal or placement of fill, or destruction of riparian vegetation within a watercourse, lake or spring, and if any exemptions apply to the proposed activity. If no exemptions apply, describe if the activity would be authorised under the Water Act riverine provisions and if development approval for removal of quarry material under the *Planning Act 2016* is required.
- 9.82 Provide information on the project's water usage, including details about the source, location, quality and quantity of all water required for all phases of the project.
- 9.83 Describe impacts of the project on the outcomes of the relevant water plan(s),<sup>31</sup> including how the project will conform to the water plan and how any impacts will be mitigated. In the assessment of impacts, hydrological modelling is to be used to inform the assessment, the general, specific and ecological outcomes of the water plan, indicators and objectives, strategies to meet the outcomes, unallocated water rules, processes and volumes, downstream users and environment, overland flow provisions and water plan implementation (i.e. water management protocol).
- 9.84 Describe how the project meets the consideration for releasing strategic reserve unallocated water under the Gulf Water Plan and the Gulf Water Management Protocol 2019, including:
- (a) eligibility requirements for accessing strategic reserve unallocated water
  - (b) the availability of water in the plan area for the proposed purpose

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<sup>31</sup> The Gulf Water Plan is under review. The current Gulf Water Plan is to be considered in EIS preparation until the replacement water plan is released.

- (c) the efficiency of existing and proposed water use practices
  - (d) the impact the proposed taking of water may have on existing authorisations in the plan area, as well as other known potential projects in the immediate and surrounding area
  - (e) the availability of an alternative water supply for the purpose for which the water is required
  - (f) the impact the proposed taking and use of water may have on natural ecosystems and the environmental outcomes of the water plan
  - (g) whether the land is suitable for the intended purpose, including measures to prevent, or if practical reverse the degradation of natural ecosystems; and
  - (h) impact the proposed taking and use of water may have on cultural and spiritual values under the cultural outcomes of the plan.
- 9.85 Discuss the changes in the stream flows and eco-hydraulic indicators that may be anticipated as a result of the project in:
- (a) in-stream and off-stream wetland inundation frequency timing and duration, including instream pools as dry season refugia
  - (b) sediment/nutrient/energy processes in the catchments.
- 9.86 For each source of water supply (surface and groundwater) for the project, address the quality and quantity, security of supply and resource availability, as well as any water licencing requirements under the Water Act and its subordinate legislation.
- 9.87 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 workforce during the construction and operations phases.
- 9.88 Provide detailed designs for all infrastructure utilised in the treatment of onsite water including how any onsite water supplies are to be treated, contaminated water is to be disposed of and any decommissioning requirements and timing of temporary water supply/treatment. Provide sufficient information on proposed water treatment infrastructure relevant to ERA 64 (Water treatment), by referring to relevant Department of Environment, Science and Innovation (DESI) policies and guidelines.
- 9.89 Identify the quantity, quality and location of all potential discharges of water and contaminants by project, including treated wastewater and sewage. Describe whether the discharges would be from point sources (whether uncontrolled and controlled discharges) or diffuse sources (such as irrigation to land of treated wastewater/sewage effluent) and describe the receiving environment (such as land or surface waters). Provide any relevant stream flow data or other 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 instream dilution and water quality. Chemical and physical properties of any discharge water and 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.
- 9.90 Provide details on the proposed sewage collection and treatment infrastructure, and any proposed treatment of dewatered groundwater, and the reuse and/or disposal of treated

wastewater and sewage wastes generated relevant to ERA 63 (Sewage treatment) by referring to relevant DESI policies and guidelines.<sup>32</sup>

- 9.91 Describe and map any proposed taking, including diverting, of overland flow water and water in drainage features, and any proposed diversions and interferences with water in watercourses or lakes.
- 9.92 Describe the relevant impacts of any taking, diversions and/or interferences, and describe watercourse diversion design, operation, monitoring regime, and measures to be implemented to avoid impacts on local wetlands, streams, GDEs and watercourses.<sup>33</sup> Ensure that any overland flow storage capacity meets the requirements listed under the relevant water plan.
- 9.93 Provide an assessment against SDAP state code 18 for any assessable waterway barrier works required for the project, including construction activities.

## Groundwater

### **Existing environment**

- 9.94 Describe the historic and existing environment for groundwater resources that may be affected by the project and the possible significance of the project to groundwater depletion or recharge of existing aquifers. The assessment of groundwater resources must be undertaken by an appropriately qualified and experienced hydrogeologist. The assessment is to include an on-ground survey of existing groundwater supply facilities (i.e. bores, wells or excavations) within the project area and adjacent to the project area. The assessment must:
- (a) include an on-ground survey of existing groundwater infrastructure, mapping the locations of the existing infrastructure (e.g. bores, wells, excavations)
  - (b) identify beneficial users of local groundwater facilities (e.g. rural, domestic or industrial users) and document the estimated volume of groundwater extracted at each location, noting the current type of use for each facility
  - (c) describe and map the geology of the area identifying the structure, stratigraphy, and lithology of the site, including any significant geological features (faults, folds, intrusive)
  - (d) identify and describe the nature and extent of all aquifers and aquitards as well as existing boundaries and barriers. Include the aquifer type, depth to and thickness of the aquifer, depth to water level, particularly in relation to sea level and relative to proposed excavation depths
  - (e) describe the hydraulic parameters of each aquifer
  - (f) provide monitoring bore stratigraphy and construction logs
  - (g) provide site specific values for the hydraulic parameters for each hydrogeological unit (vertical and horizontal hydraulic conductivity, specific yield or specific storage)
  - (h) provide hydrographs and mapped potentiometric/piezometric surfaces for all key aquifers based on groundwater monitoring level data representative of seasonal and climatic cycles. Note whether there are seasonal changes related to annual barometric pressure trends

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<sup>32</sup> Refer to Section 5.2 of *Preparing an environmental impact statement – Guideline for proponents* (or current versions of policies and guidelines).

<sup>33</sup> Refer to Appendix 1, Water.



- (i) describe and map groundwater flow directions, discharge and recharge areas, describing the water balance of the groundwater system and any seasonal variation in groundwater flow, discharge or recharge
  - (j) describe the degree of hydraulic connection between other aquifers and the degree of connectivity with surface water whether by discharge or recharge. Describe the methods used to estimate rainfall-recharge and discuss potential long term changes in relation to climate change and drought
  - (k) provide water quality of the aquifer and its vulnerability to pollution. Describe any seasonal variation in the groundwater salinity
  - (l) identify and describe any known or potential GDEs in or around the project area. Refer to the IESC *Groundwater Dependency Assessment Guidelines*.<sup>34</sup> Provide a map of GDEs in the area. Describe the interconnectivity between groundwater and wetlands, lakes, springs or other water bodies
  - (m) present a conceptual hydrogeological model of the project area based on all available data and interpretation
  - (n) describe the groundwater resources proposed to be used by the project, including the target aquifer, volumes required, expected rates of usage, water quality requirements, and location of proposed extraction.
- 9.95 Describe the relationship between groundwater and surface water. Provide a section on the conceptual hydrogeological model including at least two cross sections to show:
- (a) inter-aquifer groundwater flow (vertical connectivity)
  - (b) surface water – groundwater connectivity
  - (c) aquifer dimensions
  - (d) mining extent
  - (e) production bores and monitoring bores
  - (f) groundwater flow direction.
- 9.96 A numerical groundwater model must be developed that:
- (a) is consistent with the conceptual hydrogeological model for the project
  - (b) is consistent with the *Australian Groundwater Modelling Guidelines*<sup>35</sup>
  - (c) predicts groundwater level response impacts from mining activities at a project scale and cumulative projects scale for the life of the project and post-mining
  - (d) is independently reviewed
  - (e) the numerical model report and peer review reports must be provided as part of the EIS.
- 9.97 Describe the nature of aquifers within the proposed impacted areas regulated by the relevant water plan(s).

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<sup>34</sup> Refer to Appendix 1, Water.

<sup>35</sup> Refer to Appendix 1, Water.

## **Impact assessment and mitigation measures**

9.98 Matters to be addressed are to include descriptions of the following:

- (a) provide a detailed description of all analytical and/or numerical models used to assess potential impacts on the groundwater system, other water users, GDEs, and water quality.
  - (i) the models are to include sensitivity and uncertainty analysis of the boundary conditions, hydraulic and storage parameters, recharge and discharge, and predictions
  - (ii) the model is to assess impacts of the project as well as cumulative impacts of existing and proposed projects in the McKinlay and Richmond Shire areas. A peer review is to be undertaken on the hydrogeological conceptualisation and model.
- (b) describe inputs, movements, exchanges and outputs of surface water and groundwater that would or may be affected by the project, including consideration of changes in hydrostatic pressure
- (c) provide an assessment of the impacts of all phases of the project at the local scale and in a regional context including the effects of operations and direct and indirect groundwater take, interference or discharge on:
  - (i) changes in groundwater and surface water flow regimes
  - (ii) groundwater draw-down, recharge, discharge and mounding impacts
  - (iii) riparian vegetation and alterations to bank and channel morphology
  - (iv) potential impacts from groundwater drawdown depleting water in the root zone of vegetation with conservation value, particularly in localities with threatened species
  - (v) GDEs, including impacts on stygofauna and proposed mitigation measures
  - (vi) the availability, reliability and quality of groundwater resources for other existing users, including existing industrial and agricultural users in the McKinlay Shire area, and include proposed mitigation measures
  - (vii) the potential of any contaminants and its movement through the groundwater system
  - (viii) effects on relationship between groundwater and the environmental values of lakes and wetlands
- (d) impacts of vegetation clearing, sedimentation, salinity and depth below natural surface level of local groundwater resources
- (e) describe details of all existing and proposed monitoring bores to be used for identifying potential changes and impact on other water users, GDEs and inter-aquifer flow
- (f) detail the construction and operation of the groundwater monitoring program for the project, to monitor any project impacts, including on groundwater quality and hydrology (including seepage), and GDEs. The program is to detail any foreseeable decommissioning and replacement of bores
- (g) provide a groundwater management plan, for the life of the project, which details management strategies for predicted impacts on groundwater and GDEs
- (h) detail the regulatory framework for decommissioning of any temporary groundwater bores.



- 9.99 Describe any proposals, including during any phase of the project, to take water from an aquifer managed under the GABORA Water Plan and if an entitlement can be obtained under the water planning framework.
- 9.100 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.

## Water-related cultural values

### *Existing environment*

- 9.101 Discuss Aboriginal and Torres Strait Islander Peoples' cultural and spiritual values and water-related cultural use as relevant to the project and protected under the *Human Rights Act 2019*.

### *Impact assessment and mitigation measures*

- 9.102 Describe the project's potential impacts on water-related cultural values, uses and aspirations of water resources for Aboriginal and Torres Strait Islander peoples, including consideration for cultural outcomes of the Gulf Water Plan and GABORA Water Plan.
- 9.103 Describe how water-related cultural values, uses and aspirations of water resources for Aboriginal and Torres Strait Islander peoples will be protected and/or promoted through water allocation and management strategies, relevant to the project.
- 9.104 Where country may be affected by existing or proposed projects in the area, assess the cumulative impacts of these projects on the water-related cultural values, uses and aspirations linked to water for Aboriginal and Torres Strait Islander peoples.

## Water quality

### **Objectives and outcomes**

The design and all phases of the project are to:

- (a) avoid, minimise and/or mitigate adverse impacts to water quality
- (b) protect environmental values of Queensland waters and maintain or enhance water quality to achieve WQOs
- (c) protect the environmental values of groundwater and any associated surface ecological systems
- (d) protect the environmental values of receiving waters and wetlands.

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

### Existing environment

- 9.105 Describe the existing water quality (surface and groundwater) of the local and regional water catchment that may be affected by any component of the project.
- 9.106 With reference to the EPP (Water and Wetland Biodiversity) and section 9 the EP Act, identify the environmental values (EVs) and WQOs of surface and groundwaters within the project area and surrounds, and those downstream that may be affected by the project activities, including any human uses and cultural values of water. Where there are no scheduled EPP for the project site, EVs and WQOs are required to be locally derived with full monitoring details submitted as part of the EIS.

9.107 The basis for this assessment is to include a literature review supplemented by a suitable sampling program supported by sufficient site-specific baseline data. The following matters are to be discussed:

- (a) relationship of water quality to flow, using local catchment examples
- (b) suitability of existing raw water quality for proposed on-site uses and any treatment required
- (c) current water quality issues related to specific uses of water as related to the project (e.g. potable supply)
- (d) comparative analysis of groundwater and surface water chemistry to determine their connectivity
- (e) characterise baseline groundwater chemistry both spatially and temporally, capturing seasonal variability as well as other long and short term influences. Provide an assessment of suitability for environmental and potable (human) use in accordance with *Australian Drinking Water Guidelines*<sup>36</sup>
- (f) surface water quality samples that include, as a minimum, water flow, electrical conductivity, pH, sulphate, fluoride, dissolved oxygen, turbidity, total suspended solids, nutrients, ammonia, dissolved and total metals and metalloids (including vanadium and uranium, if any), total recoverable hydrocarbons and major anions and cations. Groundwater indicators must include, as a minimum, the same indicators (except turbidity and total suspended solids) and should allow for all WQOs for local groundwater to be assessed
- (g) minimum water quality sampling of groundwater should be field and laboratory measurement of electrical conductivity, total dissolved solids, total suspended solids, pH, dissolved oxygen and major anions and cations, nutrients, fluoride, dissolved and total trace metals i.e. suite of analytes suitable for addressing all WQOs. Surface water quality testing should include the above analytes as well as turbidity and total recoverable hydrocarbons.

9.108 Describe the 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.

9.109 Describe how and where post-processing water will be returned or reinjected into the aquifer and describe the expected quality of post-processing water in comparison to the original groundwater and its potential impacts.

#### Impact assessment and mitigation measures

9.110 With reference to the project construction and operations water balance, describe the quantity, quality, location, duration and timing of all potential and/or proposed releases of contaminants to waters. Releases may include controlled water discharges to surface water streams, uncontrolled discharges when the design capacity of storages is exceeded, spills of products during loading or transportation, contaminated run-off from construction, operations, decommissioning or rehabilitation areas of the project and surrounds, or run-off from disturbed acid sulfate, sodic or dispersive soils.

9.111 Define the relevant water and sediment quality guidelines applicable to the EVs and demonstrate how these will be met and how relevant EVs are to be protected during construction, operations,

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<sup>36</sup> Refer to Appendix 1, Water.

decommissioning and rehabilitation. Where WQOs are not available, locally derived trigger values must be developed according to the latest water quality guidelines.<sup>37</sup> 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 EVs.

- 9.112 Describe and include in the EMP avoidance, mitigation strategies and contingency plans for:
- (a) potential accidental discharges of contaminants, nutrients and sediments during construction, operation, decommissioning and rehabilitation of the project site and transport of products to Townsville
  - (b) stormwater run-off, erosion and sedimentation from the construction of the project with reference to *Best Practice Erosion and Sediment Control*<sup>38</sup>
  - (c) flooding of relevant river systems and the effects of cyclones and other extreme events
  - (d) management of acid sulfate, sodic and dispersive soils
  - (e) impacts to other properties and the environment during flood events
  - (f) treatment and disposal processes for all wastewater produced as a result of the project, including construction activities.
- 9.113 Describe how monitoring would be used to demonstrate that WQOs were being assessed, audited and met during all phases of the project. 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.

## Social

### Objective and outcomes

The design and all phases of the project are to:

- (a) ensure benefit to residents of communities in the vicinity of the project
- (b) avoid, minimise and mitigate adverse social impacts arising from the project
- (c) be managed in a way that is consistent with the *Strong and Sustainable Resources Communities Act 2017* (SSRC Act), including the prioritisation hierarchy for recruitment of workers for the project in accordance with section 9(3A) of the SSRC Act.

### General content

- 9.114 The social impact assessment (SIA) for the project must provide for the following key matters:
- (a) community and stakeholder engagement
  - (b) workforce management
  - (c) housing and accommodation
  - (d) local business and procurement

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<sup>37</sup> Refer to Section 5.2 of Preparing an environmental impact statement – Guideline for proponents (or current versions of documents).

<sup>38</sup> International Erosion Control Association, Best Practice Erosion and Sediment Control Document, 2023, <https://www.austieca.com.au/publications/best-practiceerosion-and-sediment-control-bpesc-document>.

(e) health and community wellbeing.<sup>39</sup>

9.115 Preparation of the SIA must be in accordance with the *Social Impact Assessment Guideline*.<sup>40</sup> In developing the SIA, consider the *Supplementary material for assessing and managing the social impacts of projects under the Coordinator-General's Social Impact Assessment Guideline (March 2018)*.<sup>41</sup>

#### Existing environment

9.116 Identify and describe people, communities, and key stakeholders directly or indirectly affected by the project.

9.117 Determine the scope for the SIA and provide a justification for the study area chosen.

9.118 Prepare a social baseline analysis within the project's study area using the latest qualitative and quantitative data and supplementing it through stakeholder engagement processes.

9.119 The social baseline study is to include:

- (a) an analysis of community characteristics such as community culture and values, community history, community well-being, land ownership and use of natural resources
- (b) validate desktop findings by engaging with the community and stakeholders, and gather additional information regarding community values, attitudes and aspirations, social networks, and community cohesion
- (c) details of the capacity of those potentially affected to participate in the community and stakeholder engagement
- (d) assessment of the capacity and accessibility of infrastructure, facilities and services, including health and emergency services
- (e) an analysis of the existing housing and accommodation market, including availability, capacity and affordability
- (f) a profile of the local and regional labour market, including an assessment of the likely availability, of personnel with skills relevant to the project
- (g) relevant data contained in local and state government publications, reports, plans, and documentation
- (h) details of other resource and infrastructure projects in the area, both planned and currently operating, based on publicly accessible information
- (i) likely consequences of social changes on potentially affected communities and stakeholders and the cumulative impact projects are predicted to have within the study area.

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<sup>39</sup> Section 9(3) of the Strong and Sustainable Resource Communities Act 2017.

<sup>40</sup> Refer to Appendix 1, Social.

<sup>41</sup> Refer to Appendix 1, Social.

## Impact assessment and mitigation measures

- 9.120 The SIA for the project must be informed by a consultative and inclusive stakeholder engagement program, consistent with the *Social Impact Assessment Guideline*.<sup>42</sup> The SIA should:
- (a) explain the stakeholder engagement program relative to assessment of the key matters for SIA, inclusive of any previous engagement and plans for future engagement for the life of the project
  - (b) describe the outcomes of engagement 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 and infrastructure service providers
  - (c) clearly demonstrate how the design of the project and proposed mitigation and management measures have been informed by engagement.
- 9.121 Describe the project's potential social impacts (both beneficial and adverse) on potentially affected people, communities, and key stakeholders across all key matters for SIA, in accordance with the *Social Impact Assessment Guideline*.
- 9.122 Access and describe the type, level and significance of the project's social impacts, based on the outcomes of community engagement processes and the social baseline study.
- 9.123 Detail any potential impacts on areas identified by stakeholders as being valued for recreational, natural, or traditional and cultural purposes, during all project phases. Describe how the project's design has been informed by these values, and any associated mitigation and management measures.
- 9.124 Identify the annual peak full-time equivalent workers for each project phase. Detail the number and percentage of workers likely to be sourced from the study area (including nearby regional communities),<sup>43</sup> and identify the recruitment strategies and training programs to achieve that target. This is to be informed by an analysis of the capacity of towns within the 125 km radius to:
- (a) provide workers for the construction and operation phases of the project
  - (b) receive workers and their families who move to these towns
  - (c) address barriers that may impact worker's choice to live locally.
- 9.125 Detail the target for number and percentage of workers who identify as Aboriginal and Torres Strait Islander people to be employed for the project for each project phase. Identify management measures, including recruitment strategies and training programs, to achieve the target.
- 9.126 Describe how workers will travel to the project site for each project phase. Detail any associated mitigation and management measures.
- 9.127 Describe the project's procurement strategy for all project phases and components and discuss how the strategy aligns with relevant government policies, plans and initiatives.<sup>44</sup>
- 9.128 Detail the target for procurement from Aboriginal and Torres Strait Islander owned businesses, and the proposed strategies to achieve the target.

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<sup>42</sup> Refer to Sections 4.6 and 5.6 of Preparing an environmental impact statement – Guideline for proponents.

<sup>43</sup> **Nearby regional community** for a large resource project means a town which is within a 125 km radius of the main access to the project and has a population of more than 200 people - Schedule 1 of the *Strong and Sustainable Resource Communities Act 2017*.

<sup>44</sup> Refer to Appendix 1, Social and Section 5.6 of *Preparing an environmental impact statement – Guideline for proponents*.

- 9.129 Describe the housing strategy to accommodate workers during each phase of the project. Describe how this will impact the residential land supply, housing and accommodation market of McKinlay and Richmond local government areas. The housing strategy is to be informed by the SIA and impact management plan requirements of the Workforce Management and Housing and Accommodation sections of the *Social Impact Assessment Guideline*.
- 9.130 In accordance with the *Social Impact Assessment Guideline*, develop a social impact management plan (SIMP). The SIMP should include:
- (a) a clear explanation of how specific issues identified through community and stakeholder engagement are addressed through mitigation and management measures
  - (b) measures to ensure continued community and stakeholder participation in monitoring, mitigation and management of social impacts
  - (c) a 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, potential partnerships and relevant stakeholders. Potential partnerships include opportunities for linkages with other projects planned or operating in the area and possible alignment with existing strategies or proposed new initiatives that would benefit the management of any cumulative social impacts.

## Cultural heritage

### Objective and outcomes

The design and all phases of the project are to:

- (a) avoid, minimise and mitigate adverse impacts on Aboriginal and Torres Strait Islander peoples' cultural heritage and non-Indigenous cultural heritage of Queensland
- (b) achieve the purposes of the relevant *Aboriginal Cultural Heritage Act 2003*, *Torres Strait Islander Cultural Heritage Act 2003* (Cultural Heritage Act/s), and the *Queensland Heritage Act 1992*
- (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

- 9.131 Identify the Traditional Owners of the land within and adjacent to the project area.
- 9.132 Identify the existing and potential Aboriginal and Torres Strait Islander peoples' cultural heritage within the project area. 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 landscape of the affected area in terms of the physical and cultural integrity of lands and waters.
- 9.133 Any desktop assessment must be verified and supported by a field survey of the project area, sufficient to support the preparation of a Cultural Heritage Management Plan (CHMP) for the entire project, in accordance with section 87 of the relevant Cultural Heritage Act(s).
- 9.134 For aspects of non-Indigenous historical heritage protected by the *Queensland Heritage Act 1992* (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.*<sup>45</sup> Identify values at local and state thresholds and assess the significance of identified values using recognised criteria.

- 9.135 In consultation with Queensland Museum, review and assess the extent and stratigraphic context of fossil deposits (if any) within the project area to determine their value to the community, such as age, species, rarity and representation.

#### Impact assessment and mitigation measures

- 9.136 Detail potential impacts on Aboriginal and Torres Strait Islander peoples' cultural heritage in accordance with the *Aboriginal and Torres Strait Islander cultural heritage – EIS information guideline.*<sup>46</sup> Consider impacts to visual amenity and interference with landforms and waters in determining impact on cultural heritage.
- 9.137 Develop a CHMP or plans in accordance with the requirements of Part 7 of the relevant Cultural Heritage Act(s) and identify any associated agreements that have been reached. The CHMP must be informed by the results of the cultural heritage assessment.
- 9.138 Detail potential impacts on Queensland (non-Indigenous) historical heritage identified under the Queensland Heritage Act.
- 9.139 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.
- 9.140 In consultation with Queensland Museum, identify strategies to mitigate and/or manage impacts on fossils should they be found within the project area. Include a strategy to address unexpected archaeological discoveries and cultural places in accordance with the relevant part of the *Non-Indigenous cultural heritage – EIS information guideline.*<sup>47</sup>

## Economic

### Objective and outcomes

The design and all phases of the project are to:

- (a) avoid, minimise and/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

- 9.141 Describe the existing economic environment consistent with the *Economic Impact Assessment Guideline.*<sup>48</sup> 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) the regional economy's key industries and their contribution to regional output
  - (b) relevant economic indicators
  - (c) existing and proposed resource projects in the region

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<sup>45</sup> Refer to Appendix 1, Cultural heritage.

<sup>46</sup> Refer to Appendix 1, Cultural heritage.

<sup>47</sup> Refer to Appendix 1, Cultural heritage.

<sup>48</sup> Refer to Appendix 1, Economic.

- (d) any relevant existing or proposed Aboriginal and/or Torres Strait Islander-led projects in the region.
- 9.142 Describe the existing and future demand for the project's products in both domestic and international markets over the life of operations, including alternative demand scenarios (i.e. International Energy Agency's development scenarios) and detail any assumptions underpinning the demand scenarios.
- 9.143 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

- 9.144 Identify the net economic impacts of the project on the local and regional area and the State, ensuring the analysis is consistent with the *Economic Impact Assessment Guideline*.
- 9.145 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) the anticipated value of offsets required for all components of the project.
- 9.146 Provide a demand analysis as justification for the scale and scope of the project, relative to the demand scenarios examined in section 9.142, with sensitivity analysis for potential changes in product prices.
- 9.147 Undertake a regional impact assessment (RIA) using computable general equilibrium modelling that quantifies the employment by industry (including an estimate of supply chain employment) and value-added contribution of the project to the local, regional and state economies. The RIA is to estimate the changes in key indicators including:
- (a) gross regional product
  - (b) gross state product
  - (c) employment by industry
  - (d) gross value added by industry.
- 9.148 Undertake a cost-benefit analysis (CBA) that identifies the structure of the project and the relevant direct costs and benefits from the project. The CBA is to consider:
- (a) key construction inputs and milestones in the form of a project timeline
  - (b) relevant renewal costs related to the project (including projected repair/replacement of infrastructure)
  - (c) operational costs, including all input costs of production
  - (d) costs associated with environmental management, monitoring, mitigation, rehabilitation and offsets associated with the project, including abatement of greenhouse gas (GHG) emissions
  - (e) benefits, including revenue projections (and stipulating unit/price assumptions)



- (f) expected project life and any residual value over the assessment period.
- 9.149 The CBA should also consider all direct private, indirect, and external social costs and benefits. These would include:
- (a) external net benefits to third parties who are providing inputs to the project
  - (b) external net costs (to third parties, community, local and State Government) as a direct result of the project
  - (c) comparisons of all direct, indirect and external costs and benefits and valuing those direct, indirect and external costs and benefits in monetary terms
  - (d) assumptions for benefits and costs, including risk assessments
  - (e) all beneficiaries (e.g. individuals, the community, local and state government) of the project.
- 9.150 Consistent with requirements of 6.17 justify the project configuration using a CBA, considering any alternative sites, alignments and/or designs for project components and infrastructure, including shared use of common user infrastructure with nearby mines/projects, which provide for lower impact.
- 9.151 Discuss any economic aspirations identified through engagement with Aboriginal and Torres Strait Islander peoples that are enabled via the project, especially for areas where native title exists. Where agreements have been entered into with Aboriginal and Torres Strait Islander peoples, describe the net benefit provided by these agreements and how they align with any identified economic aspirations.

## Hazards, health and safety

### Objective and outcomes

The design and all phases 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, property and the environment
- (b) 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 to better ensure climate resiliency of the project
- (c) ensure development is appropriately located, designed and constructed to minimise health and safety risks to communities, individuals and adverse effects on the environment in accordance with best practice environmental management
- (d) enhance the community's resilience to natural hazards
- (e) if the production of hazardous contaminants and waste is unavoidable, the project treats and/or contains hazardous contaminants until their disposal at an approved facility.

## General

### *Existing environment*

9.152 Describe the likelihood and severity of hazards and health and safety risks in and around the project area including, but not limited to storm, flooding, bushfire, earthquakes, landslide and heatwave.

### *Impact assessment and mitigation measures*

- 9.153 Prepare a risk assessment and describe the potential risks to people, property, waterways, flora and fauna that may be associated with the project, for all components of the project, and in accordance with relevant standards. The assessment is to include:
- (a) potential hazards, accidents, fire, structural failure (including failure of any proposed dams) and abnormal events that may occur during all phases of the project, including estimated probabilities of occurrence
  - (b) identification of all hazardous substances (including hazardous waste) to be used, transported, stored, processed or produced and the rate of usage
  - (c) potential hazards posed by wildlife interactions, natural events (e.g. storm, flooding, bushfire, earthquakes,<sup>49</sup> landslide, heatwave<sup>50</sup>). Identify the cumulative impact of several natural hazards occurring at the one time
  - (d) how the project may potentially affect hazards away from the project site (e.g. changing flooding characteristics, bushfire, landslide).
- 9.154 Assess the vulnerability of the area to natural and induced hazards, including drought, heat, floods, storms and bushfires. Consider the relative frequency, duration, intensity and magnitude of these events together with the risk they pose to:
- (a) the construction, operation, decommissioning and rehabilitation of the project
  - (b) flora and fauna at the site and in the vicinity of the site
  - (c) environmental values of the site and surrounding areas.
- 9.155 Detail how siting, layout and operation of the project as well as other measures will avoid or mitigate risks of these events to the project, environmental values and human safety.
- 9.156 Provide details on the safeguards that will reduce the likelihood and severity of 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 in light of the residual uncertainties and risk profile.
- 9.157 Detail measures required to ensure that the project avoids the release of hazardous materials as a result of a natural hazard event/s.

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<sup>49</sup> 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 – Queensland Government, Queensland Fire and Emergency Services, *State Earthquake Risk Assessment*, 2019.

<sup>50</sup> Use State Heatwave Risk Assessment – Queensland Government, Queensland Fire and Emergency Services, *State Heatwave Risk Assessment*, 2019.

- 9.158 Detail the potential operational and safety risks associated with project activities, including transport of materials and products and emergency events including extreme weather events incidents. Describe mitigation measures to address identified risks and emergency events.
- 9.159 Develop mitigation measures for identified potential wildlife hazards e.g. estuarine crocodiles, mosquitoes and other biting insects. The mosquito (and other biting insects) management plan must provide strategies for the management of risks onsite including breeding sites and harbourages during each phase of the project.
- 9.160 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. As part of the emergency response plan include:
- (a) a bushfire management plan, certified by a suitably qualified person, in consultation with the Queensland Fire and Emergency Services addressing construction, operations, decommissioning and rehabilitation phases and proposed offset locations, and including the following information at a minimum:
    - (i) a bushfire hazard analysis
    - (ii) mitigation strategies to achieve the relevant development outcomes in Section E of the *State Planning Policy– Natural Hazards, Risk and Resilience*<sup>51</sup>
    - (iii) provides details of the proposed ongoing management of fuel loads across the subject site through grazing or mechanical means including the asset protection zone proposed.
  - (b) a safety and emergency management plan addressing construction, operations, decommissioning and rehabilitation phases, and including the following information at a minimum:
    - (i) evacuation plans including aerial transportation requirements, communications plan, disaster equipment, training of employees
    - (ii) consideration of emergency events in the context of community disaster management process
    - (iii) safety management plans and emergency response procedures in consultation with the state and regional emergency service providers (including Queensland Fire Department and Queensland Ambulance Service).
- 9.161 Provide details on consultation undertaken and the proposed communication plan arrangements with the McKinlay Shire Council in the event of an emergency (e.g. emergencies, incident management, etc.).
- 9.162 Detail any consultation undertaken with the relevant state, district and local emergency response authorities and organisations, including the Local Disaster Management Group, if relevant.
- 9.163 Describe how the achievement of the hazards, health and safety objectives would be monitored, audited and reported, and how corrective/preventative actions would be effectively managed.

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<sup>51</sup> Refer to Section 5.5 of Preparing an environmental impact statement – Guideline for proponents.

## Climate

### **Existing environment**

- 9.164 Describe the extremes of climate (e.g. drought, flood and bushfire) relevant to the project area with particular reference to *Changes to fire weather in Queensland*.<sup>52</sup>
- 9.165 Describe the rainfall patterns (including magnitude and seasonal variability of rainfall), overland flow paths, air temperatures, humidity, wind (direction and speed) and any other special factors (e.g. temperature inversions) that may affect management of the project.

### **Impact assessment and mitigation measures**

- 9.166 Conduct the assessment in accordance with *Climate – EIS information guideline*.<sup>53</sup>
- 9.167 Describe the project area's climate patterns that are relevant to the environmental impact assessment, particularly the project's discharges to water and air, and propagation of noise. 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.
- 9.168 Assess the project's vulnerabilities to projected climate change (e.g. changing patterns of temperature, rainfall, hydrology, and extreme weather events). In the assessment of climate hazards and risks, reference relevant climate projection data (e.g. Queensland Future Climate high-resolution climate projection data)<sup>54</sup> and employ appropriate risk assessment methodology.
- 9.169 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 surrounding land uses. Adaptation activities must be designed to avoid perverse outcomes, such as increased emissions of GHGs or maladaptive outcomes for surrounding land uses.

## Flooding and regulated structures

### **Existing environment**

- 9.170 Discuss the history of flooding onsite and in proximity to the proposed project site including extent, levels and frequency (upstream and downstream).
- 9.171 Describe the current flood risk for a range of annual exceedance probabilities up to the 0.1% annual exceedance probability (AEP) and probable maximum flood levels for the project site.

### **Impact assessment**

- 9.172 Describe, illustrate, and assess where any proposed infrastructure, including tailing storage facilities, dams, waste rock dumps, levees, roads and other linear infrastructure and disturbed and rehabilitated areas, would lie in relation to the extent of any modelled flood levels, including the 0.1% AEP and probable maximum flood level.
- 9.173 Provide a hydraulic and hydrological analysis (flood impact assessment) demonstrating the design flood peak discharges for the site and surrounding area which exist in the pre- and post-

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<sup>52</sup> Australian Government, Bureau of Meteorology, *Changes to fire weather in Queensland*, 2019.

<sup>53</sup> Refer to Appendix 1, Climate.

<sup>54</sup> Queensland Government, *Queensland Future Climate Dashboard*, <https://longpaddock.qld.gov.au/qld-future-climate/dashboard>.

project scenarios for all flood and stormwater events up to a 0.1% AEP and probable maximum flood levels for the project site.

- 9.174 Environmental objectives and performance outcomes for dams or levees are to be developed with reference to guidelines prepared by industry, the Australian National Committee on Large Dams guidelines and *Guideline – Structures which are dams or levees constructed as part of the environmentally relevant activities*.<sup>55</sup>
- 9.175 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.
- 9.176 Conduct the impact assessments on regulated structures in accordance with *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*.<sup>56</sup>
- 9.177 Undertake a consequence category assessment of each dam or levee according to the criteria outlined in the *Manual for assessing consequence categories and hydraulic performance of structures*. The assessment must be undertaken for the three different failure event scenarios described in manual, e.g. for seepage, overtopping and dam break. Regulated structures must comply with the *Manual for assessing consequence categories and hydraulic performance of structures* in accordance with Schedule 8, Division 2 of the EP Regulation.
- 9.178 Following the consequence category assessment, determine the consequence category ('low, significant, or high') according to Table 1 of *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.
- 9.179 Assess the project's vulnerabilities to climate change (e.g. changing patterns of rainfall, hydrology, temperature and extreme weather events). Demonstrate that flood storage capacity is maintained on the site with the project.
- 9.180 Overland flow paths/hydraulic conveyance should be maintained on the site as part of the project. The existing environment flow scenario will need to be replicated in the post project condition. The project design will need to address any concentration of flows, potential for back-up/ponding and scour/erosion which may undermine existing and future levees, roads and linear infrastructure.
- 9.181 Describe changes to waterways<sup>57</sup> (as defined under the *Fisheries Act 1994*) and watercourses<sup>58</sup> (as defined under the *Water Act*), the change in hydrology upstream and downstream of any construction site for any component of the project, including flooding and overland flow on or off the site, including crossings, spillway, fishways, downstream barriers, flood levees, water off-takes and, locations of any proposed water discharge points. Where any changes are proposed, note what licencing provisions may be required under the *Water Act*.

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<sup>55</sup> Refer to Appendix 1, Hazards, health and safety.

<sup>56</sup> Refer to Appendix 1, Hazards, health and safety.

<sup>57</sup> 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.

<sup>58</sup> 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.

## **Mitigation measures**

- 9.182 Illustrate how any regulated structure on site would be monitored and managed during periods of high incidental rainfall and/or flooding on site so that any potential impacts to land or water are minimised.
- 9.183 Describe monitoring and management measures to minimise impacts of flooding to mine infrastructure and manage mine pit water post-flooding.
- 9.184 Describe how storage structures and other infrastructure would be
- (a) sited to avoid or minimise risks from flooding using flood mapping showing the 0.1% AEP and probable maximum flood
  - (b) located, constructed and operated to avoid, minimise and mitigate impacts on environmental values
  - (c) located and designed to maximise progressive rehabilitation and closure.
- 9.185 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.

## **Air**

### **Objective and outcomes**

The design and all phases 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 health and biodiversity of ecosystems and human health and wellbeing
- (c) contribute toward Queensland's emission reduction and renewable energy targets by developing and implementing greenhouse gas abatement measures for the project.

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

## **Air**

### **Existing environment**

- 9.186 Discuss the existing local and regional air shed environment and quality in the context of environmental values, 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 reporting, and/or ambient air quality monitoring undertaken by the Queensland Government
  - (b) pollutants
  - (c) baseline monitoring results
  - (d) locations of sensitive receptors (including ecologically significant species and habitats).



- 9.187 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.
- 9.188 The assessment of environmental values should 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 DESI monitoring stations cannot be reliably extrapolated.

### **Impact assessment and mitigation measures**

- 9.189 The assessment of impacts on air from all components of the project (i.e. on and off-site) should be in accordance with *Air – EIS information guideline* and *Application requirements for activities with impacts to air*.<sup>59</sup> Demonstrate the project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.
- 9.190 Provide an emissions inventory and description of the characteristics of any contaminants or materials that may be released, and the release rate, as a result of all phases of the project, including point source and fugitive emissions. An emissions inventory (point source and fugitive) during construction, commissioning, operations, maintenance and a range of possible/likely upset conditions is to be included for the project site.
- 9.191 Predict the potential impacts of the releases to air from project activities on environmental values of the receiving environment using established and accepted methods.
- 9.192 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). 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).
- 9.193 Address the compatibility of the project's air emissions with existing or potential land uses in surrounding areas.
- 9.194 Describe how the project will avoid and/or minimise potential impacts to air quality, dust and odour management. Identify measures to be implemented on-site to control and mitigate impacts and describe how the proposed project activities will be consistent with best practice environmental management.
- 9.195 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.

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<sup>59</sup> Refer to Appendix 1, Air.



## Greenhouse gas emissions

### **Existing environment**

9.196 Describe nearby activities or sources which may emit GHG emissions (point source or diffuse) including naturally occurring (potential or actual) sources.

### **Impact assessment and mitigation measures**

- 9.197 Provide an emissions inventory identifying the GHGs to be emitted from all components of the project (i.e. on and off mining lease) and the phase of the project (e.g. pre-construction, construction, operation, decommissioning or rehabilitation) at which the emissions will occur. Include a breakdown of GHG emissions by source.
- 9.198 Provide information regarding GHG emissions and energy production and consumption consistent with requirements of *National Greenhouse and Energy Reporting Act 2007* (Cth) and its subordinate legislation, including methodology, emissions factors, and calculations used to estimate the project's GHG emissions.
- 9.199 Undertake an assessment of GHG emissions in accordance with *Guideline – Greenhouse gas emissions*, including:<sup>60</sup>
- (a) an estimate of the projected annual Scope 1 and Scope 2 CO<sub>2</sub> equivalent emissions<sup>61</sup> over the life of the project. Include both unabated emissions and emissions after all avoidance and abatement measures have been accounted
  - (b) for medium to high emitting projects,<sup>62</sup> provide an estimate of annual Scope 3 emissions<sup>63</sup> and total Scope 3 emissions over the life of the project.
- 9.200 Demonstrate the project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.
- 9.201 For medium to high emitting projects,<sup>64</sup> provide a GHG abatement plan that meets the requirements of Appendix A in *Guideline – Greenhouse gas emissions*. The GHG abatement plan must also address the following:
- (a) as part of assessment of project alternatives, detail, compare and quantify conceptual, technological, locality, configuration, scale and individual elements or components of feasible alternatives that were considered to avoid or reduce the project's emissions
  - (b) identify any voluntary initiatives, or research into reducing the lifecycle and embodied energy carbon intensity of the project's processes or products
  - (c) provide a comparison of expected cumulative project GHG emissions with the remaining global, national and state emission budgets. Consider all scope 3 emissions identified in the project estimate when comparing with the remaining global emission budget, and respective scope 3 emissions generated nationally or in Queensland for comparison with the remaining national and state emission budgets

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<sup>60</sup> Refer to Appendix 1, Air.

<sup>61</sup> Scope 1 emissions – direct emissions of GHGs from sources within the boundary of the facility and from the facility (including emissions from vegetation clearing). 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.

<sup>62</sup> Section 3.2, *Guideline – Greenhouse gas emissions* – full reference at Appendix 1, Air.

<sup>63</sup> Scope 3 emissions – emissions of GHGs which occur as a consequence of the activities of the project, but from sources now owned or controlled by the facility's business.

<sup>64</sup> Section 3.2, *Guideline – Greenhouse gas emissions* – full reference at Appendix 1, Air.

- (d) where offsets have been identified as the only remaining option for abatement, develop a comprehensive carbon offsets management plan. Detail expected market availability limitations of offset credits and show how the project will secure the required supply of offsets. Identify how opportunities and commitments for offsetting GHG emissions represent genuine emissions reductions within Australia that meet the principles of the *Carbon Credits (Carbon Farming Initiative) Act 2011*
- (e) for projects proposing to offset more than 30% of their emissions or offset outside of Queensland, provide as part of the EIS an independent review by an appropriately qualified person. This review will assess and confirm findings of the EIS that GHG emission avoidance, reduction and substitution measures have been expended and why suitable offsets are not available within Queensland
- (f) when multi-year emissions reduction targets are proposed to take into account emerging technologies over that period, ensure the same emissions result will be delivered at the end of the multi-year period such that the trajectory of the Queensland emissions targets are met.

9.202 For low emitting projects:<sup>65</sup>

- (a) detail proposed GHG management practices to demonstrate that all reasonable and practical measures have been applied to manage GHG emissions through best practice design, process, technology, and management following the GHG abatement hierarchy: avoid, reduce, substitute and offset<sup>66</sup>
- (b) identify long-term overall Scope 1 and Scope 2 GHG emission reduction targets
- (c) provide a program for periodic public reporting on progress towards the GHG emission reduction targets
- (d) explain feasible alternatives that were considered to avoid or reduce the project's a Scope 1 and 2 emissions as well as the alternative of not proceeding with the project
- (e) outline actions that will be taken to reduce Scope 3 emissions (e.g. entering into arrangements with third party suppliers or users)
- (f) identify the location of Scope 3 emissions (domestic or international) and outline whether they are expected to be generated in countries that are signatories to the Paris Agreement or otherwise have policies that are consistent with the objectives of the Paris Agreement
- (g) provide a description of any voluntary initiatives such research into reducing the lifecycle and embodies energy carbon intensity of the proposed project's processes or products
- (h) provide a description of any opportunities for further offsetting of GHG emissions, noting offsets must be consistent with Australian requirements using Australian Carbon Credit Units
- (i) detail any proposed ongoing training and capacity building around decarbonisation options and technology.

9.203 Describe the assumptions and data inputs applied to develop the emissions estimates and the emissions reduction targets. The calculation of baseline should follow the methodology outlined in the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015. If International Best Practice benchmarks are not available, detail how the project baseline has

<sup>65</sup> Sections 3.2 and 3.3, *Guideline – Greenhouse gas emissions* – full reference at Appendix 1, Air.

<sup>66</sup> Figure 1, *Guideline – Greenhouse gas emissions* – full reference at Appendix 1, Air.

been estimated and identify how the International Best Practice benchmark will be integrated should values become available.

- 9.204 Identify risks and likely magnitude of impacts to environmental values from Scope 1, 2 and 3 emissions.<sup>67</sup>

## Noise and vibration

### Objective and outcomes

The design and all phases the project are to:

- (a) avoid, minimise and/or mitigate adverse noise and vibration impacts to sensitive receptors and structural damage to buildings or other infrastructure as a result of vibration
- (b) protect 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

- 9.205 Describe and illustrate the locations of any sensitive receptors that are listed in Schedule 1 of the Environmental Protection (Noise) Policy 2019 (EPP (Noise)). Describe any other environmental values and infrastructure that could be impacted by emissions from the project.
- 9.206 Describe the existing noise and vibration sources and baseline levels within the project area. The data must be collected in accordance with quality-assured, best practice methodologies and as per the *Noise Measurement Manual 2013*.<sup>68</sup>

### Impact assessment and mitigation measures

- 9.207 Describe the characteristics of the noise and vibration sources emitted by the project (point source and general emissions) during each phase of the project.
- 9.208 Conduct a noise and vibration impact assessment in accordance with *Noise and vibration—EIS information guideline*<sup>69</sup>, Schedule 1 of the EPP (Noise) and *Applications for activities with noise impacts*.<sup>70</sup> The assessment must include:
- (a) a description of the surrounding existing and planned sensitive receptors and the associated environmental values in order to set noise criteria which protects the environmental values
  - (b) a description of the project's noise and vibration impacts on sensitive receptors and proposed mitigation measures through all phases of the project.
- 9.209 Describe how the project 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). The assessment must address the compatibility of the proposed project's noise emissions with existing and potential land uses in surrounding areas.
- 9.210 Describe how the project's acoustic quality objectives will be monitored and audited, and how corrective actions will be managed in accordance with best practice environmental management.

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<sup>67</sup> Section 3.4, *Guideline - Greenhouse gas emissions* – full reference at Appendix 1, Air.

<sup>68</sup> Refer to Appendix 1, Noise.

<sup>69</sup> Refer to Appendix 1, Noise.

<sup>70</sup> Refer to Appendix 1, Noise.

## Transport

### Objective and outcomes

The design and all phases 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.

### General content

- 9.211 Describe the total transport task for the project, including workforce, inputs and outputs during each phase of the project. Detail appropriate choices for modes of transport to ensure efficiency and minimise impacts on the community. Refer to *Transport – EIS information guideline*<sup>71</sup> and Section 5.10 of *Preparing an environmental impact statement – Guideline for proponents*.
- 9.212 Present the transport assessment in separate sections for each project-affected mode (road, rail, air, and sea) as appropriate for each phase of the project, including the proposed transportation and delivery of pre-assembled modules or components to site.

### Existing environment

- 9.213 Describe 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 and workers accommodation areas
  - (b) locations where project components cross or are located in proximity to or located within existing and planned:
    - (i) road and railway corridors
    - (ii) road and rail infrastructure
    - (iii) airports and airstrips
    - (iv) sea ports
    - (v) nearby mines and other relevant projects.

### Impact assessment and mitigation measures

- 9.214 Describe the total transport activities associated with each project phase. The information should include, but not be limited to:
- (a) background traffic growth and existing traffic data that is expected via the state-controlled road network and via local government roads
  - (b) expected annual volumes, weights and origins/destinations of materials, products, hazardous goods, and wastes

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<sup>71</sup> Refer to Appendix 1, Transport.

- (c) details concerning road transportation for each major transport task (e.g. fuel, plant and equipment, consumables, wastes) including heavy vehicle classification, load size (highlighting over-mass and over-sized loads) (swept paths to be provided), number of trips, service frequency, likely timing and duration, and maps of routes highlighting any vulnerable bridges or other structures along the proposed routes
  - (d) potential impacts to time sensitive agricultural freight (e.g. exports, horticulture, livestock)
  - (e) traffic generated by workforce personnel and service providers during each phase of the project
  - (f) a multi-criteria analysis and/or a cost benefit analysis of the economic, social, and environmental impacts for logistics management alternatives being considered, including shared use of common user infrastructure with nearby mines and other relevant projects.
- 9.215 Identify the main access to the project site (latitude and longitude coordinates). Include an assessment of the suitability for the proposed use and any required upgrades in accordance with relevant local and/or state policies, standards, and manuals.
- 9.216 Prepare a transport assessment in accordance with *Transport – EIS information guideline*<sup>72</sup> and present each project-affected mode (road, rail, air services and port) as appropriate for each phase of the project. The assessment must be completed by a Registered Professional Engineer of Queensland engineering consultant and include:
- (a) how the existing and future safety, condition, and performance of transport infrastructure (local and state) will be impacted by each phase of the project.
  - (b) details of the adopted assessment methodology for impacts on roads within the road impact assessment report in accordance with *Guide to Traffic Impact Assessment (GTIA)*<sup>73</sup> for state-controlled roads and the local government impact assessment methodologies for local government roads.
  - (c) for state-controlled roads, to ensure that all impact types, such as road safety, access and frontage, intersection delay, road link capacity, pavement, and transport infrastructure (including bridges, culverts, and grids), and wayfinding and road signs as detailed in the GTIA are considered and mitigated. Particular emphasis is to also be placed on the following sections of the GTIA:
    - (i) section 8.4.2 Heavy Vehicle Routes
    - (ii) section 9 Road Safety
    - (iii) section 13 Pavement.
- 9.217 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 Department of Transport and Main Roads (DTMR's) Queensland Transport and Roads Investment Program<sup>74</sup> and the Development Assessment Mapping System.
- 9.218 Provide a detailed assessment for the project's impacts on local government roads in accordance with the relevant local government's impact assessment methodology.
- 9.219 Demonstrate how project impacts for each transportation mode will be mitigated. Mitigation measures are to be prepared in consultation with relevant transport authorities (e.g. local

<sup>72</sup> Refer to Appendix 1, Transport.

<sup>73</sup> Refer to Appendix 1, Transport.

<sup>74</sup> Refer to <https://www.tmr.qld.gov.au/QTRIPonline>.

governments, DTMR, Civil Aviation Safety Authority, Townsville Port Authority, Maritime Safety Queensland, Queensland Rail and Queensland Police Service) and must consider the transport authorities' works programs and forward planning, and be in accordance with the relevant methodologies, guidelines, and design manuals.

## Waste management

### Objective and outcomes

The design and all phases of the project are to:

- (a) avoid, minimise and/or mitigate adverse impacts of hazardous contaminants and waste generated by the project to protect people, property and the environment
- (b) manage any waste transported, generated, or received as part of carrying out the activity in a way that protects all environmental values and community enjoyment of the region
- (c) ensure waste infrastructure has the capacity to adequately accommodate waste, and any upgrades to waste infrastructure are funded by the proponent.

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

### Existing environment

- 9.220 Describe any existing waste infrastructure relevant to the project, including location, capacity, and accepted waste streams.
- 9.221 Describe pre-existing contaminated material identified on property lots listed on the Environmental Management Register within the project footprint. If contaminated material was identified, describe:
- (a) details of any site investigations undertaken by a suitable qualified professional, including findings of the investigation
  - (b) using maps at a suitable scale, illustrate the context of the project area in relation to identified contaminated material
  - (c) outline the management or disposal of any identified contaminated material.

### Impact assessment and mitigation measures

- 9.222 Conduct the impact assessment in accordance with the latest version of the *Waste—EIS information guidelines* and *Application requirements for activities with waste impacts*.<sup>75</sup> Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.
- 9.223 For wastes other than wastewater, describe all the expected waste streams, including hazardous contaminants, generated by project activities during each phase of the project.
- 9.224 Describe the quantity and physical and chemical characteristics (including hazardous characterisation and toxicity) of each waste stream, any attributes that may affect its dispersal in the environment, and its associated risk of causing environmental harm. Characterisation of

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<sup>75</sup> Refer to Appendix 1, Waste.



waste and sampling methodologies of the waste must be sufficient to provide statistically valid representations of each geological unit/waste and appropriate management of this waste.

- 9.225 Detail options assessed for disposal of spoil and rejects, including justification for the preferred option.
- 9.226 Describe the geochemistry of all spoil and rejects. Assess the potential risks associated with this waste stream (in particular any material that has the potential to create and leach acids)<sup>76</sup> and describe the management of progressive placement and any disposal strategy to minimise any potential impacts on environmental values of the project area. Describe how high-risk waste material will be managed in the rehabilitation plan.
- 9.227 Describe waste management planning for the project, especially how these plans are to be applied to prevent or minimise environmental impacts from waste for each phase of the project, including pre-construction. Waste management planning is to include detail of all identified waste types, waste volumes and proposed locations for waste disposal.
- 9.228 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; treatment; disposal. This includes the generation and storage of waste.
- 9.229 Describe objectives and practical mitigation measures to ensure environmental values are protected or enhanced from potential impacts from wastes.
- 9.230 Provide details of any proposed reuse and/or disposal of treated wastewater and sewage wastes in accordance with requirements of *Assessment guideline – Assessing applications for sewage treatment works* and *Technical Guideline: Wastewater release to Queensland waters*<sup>77</sup>.
- 9.231 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.
- 9.232 Describe how securing of storage containers of any hazardous contaminants during a natural hazard event (i.e. floods, cyclones) would meet the requirements of schedule 8 of the EP Regulation.
- 9.233 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 managed.
- 9.234 Provide sufficient information on proposed sewage infrastructure relevant to ERA 63, by referring to relevant DESI policies and guidelines, depending on the proposed sewage collection and treatment infrastructure proposed, the reuse and/or disposal of treated wastewater, and sewage wastes generated.

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<sup>76</sup> Refer to Appendix 1, Waste.

<sup>77</sup> Refer to Appendix 1, Waste.



## Cumulative impacts

### Objective and outcomes

The design and all phases of the project are to avoid, minimise and/or mitigate potential adverse impacts arising from the combined effects of past, present and reasonably foreseeable projects on the environmental, social, economic and cultural values.

### General requirements

- 9.235 Potential cumulative environmental, social, economic, and cultural impacts (including the likelihood, intensity, duration, magnitude, and extent of impacts) are to be considered for each phase of the project.
- 9.236 The cumulative impact assessment is to consider the combined effect of potential impacts of different components of the project on the same value (i.e. intra-project cumulative impacts) and the impacts of other relevant projects acting in combination on the same value (i.e. inter-project cumulative impacts).
- 9.237 Describe the cumulative impacts of the project, in conjunction with existing development and known future development (as described by approved plans and proposed projects) to the following matters:
- (a) proposed land uses, including impacts from contaminants, materials or wastes
  - (b) capacity of infrastructure corridors and resources (e.g. land, pipelines, energy, water, renewable energy, roads, airfields, port facilities and waste management) intended to be accessed by the proponent
  - (c) soils
  - (d) percentage of habitat remaining (compared to pre-clearance levels) at relevant catchment and subregional scales, health, and ecosystem resilience of terrestrial and aquatic ecosystems (including upstream and downstream impacts)
  - (e) quality and quantity of surface water and groundwater resources for all phases of the project (including post decommissioning phase), including management of impacts on underground water rights under the Water Act and any linkages to sections 126A and 227AA of the EP Act
  - (f) air quality
  - (g) noise and vibration
  - (h) natural hazards
  - (i) public health and safety
  - (j) MSES.
- 9.238 Describe how cumulative impacts for the above listed matters may be affected by climate change, including the frequency and intensity of extreme weather events.
- 9.239 Describe measures that would be used to avoid, minimise, or mitigate any identified cumulative impacts.

## 10. Matters of national environmental significance

On 30 May 2024, the project was determined to be a controlled action, requiring approval under the EPBC Act (EPBC reference 2024/09819). The controlling provision for the project is listed threatened species and communities (sections 18 and 18A).

The project will be assessed by accredited assessment under Part 4 of the SDPWO Act.

The MNES section of the EIS should be a stand-alone chapter that primarily focuses on the MNES listed above. This section (MNES section) is to contain sufficient information to be read alone with reference to technical data or supplementary reports where appropriate. Any detailed technical information to support the text in the MNES section is to be included as appendices to the EIS.

Ensure habitat definitions for listed threatened species are in accordance with definitions available in the EPBC Act Guidelines or other relevant, most recent, statutory documents (e.g. referral guidelines, approved listing advice(s), approved conservation advice(s), recovery plan(s), threat abatement plan(s) or comparable policy guidelines, and information contained in relevant Australian databases such as the Species Profile and Threats (SPRAT) database). Ensure that the habitat definitions also take into account all relevant Queensland regional ecosystem and other available information. The most up to date documentation and/or scientific expert advice needs to be used.

**Note:** Where 'action' is used below, it is to mean the project (all components) in the MNES section.

### General content

- 10.1 The MNES section is to take into consideration the *EPBC Act significant impact guidelines*,<sup>78</sup> other relevant statutory documentation (such as relevant recovery plans and conservation advices accessible via the SPRAT database) and Commonwealth policy guidelines.
- 10.2 The MNES chapter should contain sufficient information to allow the Australian Minister for the Environment and Water (or delegate) to make an informed decision on whether or not to approve the taking of the action, and if approved, what conditions to attach, under Part 9 of the EPBC Act for the controlling provision.
- 10.3 The MNES chapter should contain sufficient information to enable interested stakeholders to understand the environmental consequences of the proposed developments on MNES and how these impacts are proposed to be avoided, mitigated and/or offset.
- 10.4 The level of analysis and detail in the MNES section should reflect the level of significance of the expected impacts on the environment. Any and all unknown variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which the limitations, if any, of available information may influence the conclusions of the environmental assessment should be discussed.
- 10.5 The proponent is to ensure that the MNES section assesses compliance of the action with the principles of Ecologically Sustainable Development and the objects of the EPBC Act (see Chapter 1, Part 1 of the EPBC Act).

### Format and style

- 10.6 The MNES chapter should comprise three elements:
  - (a) the executive summary

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<sup>78</sup> Refer to Appendix 1, Matters of national environmental significance.

- (b) the main text of the document
  - (c) appendices containing detailed technical information and other information, including management plans, that can be made publicly available.
- 10.7 The MNES section should be written so that any conclusions reached can be independently assessed. To this end, all sources must be appropriately referenced using Harvard standard. The reference list should include the address of any Internet websites that were used as data sources.
- 10.8 The main text of the MNES chapter should include a list of abbreviations, a glossary of terms and appendices containing:
- (a) a list of persons and agencies consulted during the EIS
  - (b) contact details for the proponent
  - (c) the names of the persons involved in preparing the EIS and work done by each of these persons.
- 10.9 Maps, diagrams, and other illustrative material should be included in the EIS. The EIS should be produced on A4 size paper capable of being photocopied, with maps and diagrams on A4 or A3 size and in colour where possible in line with the *Guide to providing maps and boundary data for EPBC Act projects*.<sup>79</sup>
- 10.10 The proponent should consider the format and style of the document appropriate for publication on the Internet. The capacity of the website to store data and display the material may have some bearing on how the document is constructed.
- 10.11 The EIS must include an appendix of occurrence records (both sightings and evidence of presence) for all listed threatened and migratory species identified during field surveys for the proposed action. This data may be used by the department to update the relevant species distribution models that underpin the publicly available Protected Matters Search Tool (PMST).
- 10.12 The species occurrence records must be provided in accordance with DCCEEW's *Guidelines for biological survey and mapped data*<sup>80</sup> using DCCEEW's Species observation data template.<sup>81</sup> Sensitive ecological data must be identified and treated in accordance with the department's *Sensitive Ecological Data – Access and Management Policy V1.0 (2016)*<sup>82</sup> or subsequent revision.

## Specific content

### General information

- 10.13 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, including regional context

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<sup>79</sup> Refer to Appendix 1, Matters of national environmental significance.

<sup>80</sup> Refer to Appendix 1, Matters of national environmental significance.

<sup>81</sup> The species observation data template can be found at <https://www.dcceew.gov.au/sites/default/files/documents/species-observation-data-template.xlsx>.

<sup>82</sup> Refer to Appendix 1, Matters of national environmental significance.

- (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, or are being, taken or that have been approved in the region affected by the action
- (g) the current status of the action
- (h) the consequences of not proceeding with the action.

#### Description of the action

- 10.14 All components (phases) of the action are to be described in detail, including pre-construction, construction, operation, maintenance, decommissioning and rehabilitation. This is to include the transport of staff, supplies and product, precise location of all works to be undertaken, structures to be built or elements of the action that may have impacts on MNES.
- 10.15 The description of the action must 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. This section must also include, with appropriately scaled maps, a description of:
- (a) all infrastructure constructed and construction methods
  - (b) ancillary or supporting infrastructure, associated works or safety works including new construction and upgrades
  - (c) location of mine infrastructure area, waste rock dump, tailings dam, water supply dams, truck load-out facilities and run of mine pad/stockpiles
  - (d) all new and existing roads, as well as details on which roads are sealed and unsealed, and traffic volume
  - (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 Indigenous employees
  - (h) other such actions, including but not limited to, earthworks, use of explosives, changes to hydrological flow and groundwater, accommodation facilities, material storage, construction facilities, fines and dust control management, waste management generally and management of spills/contaminants/pollutants
  - (i) the proposed source of water and the appropriate mechanism to secure the water licence.
- 10.16 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. Include any adjoining areas which may be indirectly impacted by the proposal, including nearby vegetation.
- 10.17 The various elements of the action must be described in the text and illustrated with maps, diagrams, plans (at a suitable scale) and other information as required to provide sufficient context and basis for the identification and assessment of impacts.
- 10.18 The MNES section must include a map/s which clearly identify all components of the action and boundaries of the proposed project's footprint including all infrastructure elements and development necessary for the project site. The information must present all the key aspects

including (but not limited to) stockpiles, plant location, services infrastructure, bunding of storage facilities, water storages and dam/s, access tracks and off-lease infrastructure components associated with the proposed project. All maps must follow the *Guide to providing maps and boundary data for EPBC Act projects*.<sup>83</sup>

## Feasible alternatives

- 10.19 Outline any feasible alternatives to the action to the extent reasonably practicable, including:
- (a) if relevant, the alternative of taking no action
  - (b) alternatives to the planned method of access, delivery of supplies and product transport
  - (c) alternatives to the final mine disturbance area pending further detailed information on threatened species and ecological communities (e.g. presence of MNES with consideration of appropriate buffer zones)
  - (d) a comparative description of the impacts of each alternative on listed threatened species and communities
  - (e) sufficient detail with evidence to make clear why any alternative is preferred to another or why alternatives to the above project activities are not possible
  - (f) short, medium and long-term advantages and disadvantages of the feasible alternatives.

## Description of the environment

### **General description of the environment**

- 10.20 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) the current and historical land uses of the project area
  - (b) terrestrial and aquatic ecosystems, including key vegetation communities and relevant watercourse
  - (c) total size (in hectares) of Regional Ecosystems (REs) to be present on site, as well as a map/s showing RE patches and native vegetation regrowth
  - (d) native flora and fauna, both terrestrial and aquatic
  - (e) distribution and abundance of pest species and weeds
  - (f) important habitat areas, recognised populations and habitat, and aggregations of listed species
  - (g) existing condition of the overall environment within, adjacent to, downstream and upstream of the project site
  - (h) surface water and groundwater hydrology and quality, including but not limited to Saxby River, Flinders River, and relevant wetlands in the region and groundwater depth across the project area
  - (i) GDEs of potentially affected rivers, creeks and wetlands, including but not limited to Saxby River, Flinders River, and relevant wetlands in the region

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<sup>83</sup> Refer to Appendix 1, Matters of national environmental significance.

- (j) soil types and characteristics in the project area and broader region including presence and extent of erosive soils
- (k) occurrence or potential for acid sulfate soils
- (l) topography and elevation across the project area
- (m) cultural heritage values, people and communities and other social relevant considerations
- (n) historical anthropogenic uses of the project area and existing condition of the overall area within and adjacent to, downstream and upstream of the project area
- (o) ancillary transport roads and the surrounding areas that may be affected by the action.

### ***Environmental information required within project area and surrounds***

- 10.21 Provide details of the scope, timing (survey season/s) and methodology for studies or surveys used to provide information on the listed species/community/habitat at the site (and in areas that may be impacted by the project). Surveys should include all areas below, downstream, within and adjacent to the proposed action area to allow for detailed design and impact minimisation, to provide context, or to increase the likelihood of detection.
- 10.22 Provide information on topography and elevation across the project area and adjacent area to enable assessment of MNES and relevant impacts on MNES such as sediment run-off and erosion. Include a map with contour intervals.
- 10.23 Describe the vegetation communities within, and adjacent to, the project area including the area (in hectares) they each cover and the percent (%) cover for each vegetation type to an appropriate resolution (provide information on where vegetation communities have been ground-truthed).
- 10.24 Describe the habitat mapping and the results of surveys, the natural and existing upstream and downstream movement and habitat requirements for relevant terrestrial and aquatic flora and fauna, both native and introduced species (e.g. including weeds and feral animals). Similar species can be grouped and discussed together where practicable.

## Matters of National Environmental Significance

### Note

It is the proponent's responsibility to be aware of any changes to the distribution of listed threatened species and ecological communities, listed at the time of the controlled action decision and information available in the Species Profile and Threats (SPRAT) Database. The proponent must ensure that a recent Protected Matters Search Tool report has been generated and considered before finalising the draft EIS. This Protected Matters Search Tool report must be provided as an attachment to the EIS. If the listing or up-listing of a species occurs after the controlled action decision, the species will continue to be assessed under the level of threatened status it was before this event. However, all relevant conservation advice and recovery plans remain at least partially relevant and are a mandatory consideration for the Minister in deciding whether or not to approve a proposed action (section 139 of the EPBC Act). The proponent should ensure that the most recent documents are consulted and referenced.

Habitat assessments must be informed by desktop searches, including but not limited to examination of:

- Australasian Virtual Herbarium
- Atlas of Living Australia
- Queensland's WildNet resources.

Habitat assessments must also be informed by field surveys (in accordance with departmental guidelines or as supported by evidence-based best practice).

Habitat assessments should refer to relevant departmental and other documents, which may include:

- approved Conservation Advices
- Recovery Plans
- draft referral guidelines and Listing Advices
- SPRAT Database
- published research.

- 10.25 The MNES section must include a detailed assessment of the presence of individuals and suitable habitat for the listed threatened and migratory species which are known to occur, may occur, or are likely to occur below, within and adjacent to the project area.
- 10.26 The MNES section must also include a detailed presence and habitat assessment for any other listed threatened species and/or ecological community which will, or is likely to, be directly or indirectly impacted by the proposed action.
- 10.27 The MNES section must provide information about the habitat for and presence of any MNES identified as potentially being significantly impacted by the proposed action, including (but not limited to) the listed threatened species and ecological communities in Appendix 2.

### **General MNES information required**

- 10.28 Provide a habitat assessment for relevant listed threatened species and ecological communities in Appendix 2. The assessment should consider the presence of species outside, within and adjacent to the proposed action area where they have the potential to be impacted.



- 10.29 Habitat assessments for species listed in Appendix 2 must provide estimates for habitat quality for each protected matter. Habitat quality should be assessed using the same approach/scoring mechanism as is used for any offset site (if relevant). The method applied must be suitable and targeted for each protected matter.
- 10.30 Identify and describe known historical records of the listed threatened species and ecological communities within the proposed action area and adjacent area. Where relevant, also identify and describe known and historical records of listed threatened species in the broader region (e.g. highly mobile, transient, or cryptic species). All known records must be supported by an appropriate source (e.g. Commonwealth and State databases, Queensland Government's WildNet, Atlas of Living Australia, published research, publicly available survey reports), and where possible and relevant, state the year of the record and a description of the habitat in which the record was identified.
- 10.31 Provide detailed mapping of suitable habitat for all listed threatened species and ecological communities which may be impacted by the action, which:
- (a) is specific to the habitat requirements for each listed threatened species and ecological community (i.e. does not only illustrate relevant Queensland REs)
  - (b) includes below, downstream, within and adjacent to the proposed action area
  - (c) includes the total patch size of habitat, which may include sections of the patch that fall outside of the project area (in hectares)
  - (d) identifies any specific habitat requirements (e.g. breeding, foraging, dispersal, known important habitat, suitable habitats, roosting)
  - (e) considers the regional context and describes the connectivity of habitat in the broader landscape
  - (f) includes known records of individuals derived from desktop analysis and field surveys
  - (g) is provided separately as high-resolution attachments.
- 10.32 Provide details of the surface water and groundwater hydrology and quality associated with the project site and how they relate to MNES, including (but not limited to) the wetlands and GDEs.
- 10.33 Conceptualisation and understanding of surface water, GDEs, groundwater, surface-to-ground water interactions and their inter connection should:
- (a) be informed by systematic water level and water quality monitoring with appropriate temporal coverage to best capture seasonality, inter-annual variability and trends, including:
    - (i) continuous or at least monthly monitoring of groundwater levels
    - (ii) regular water quality sampling of groundwater, as informed by variability in groundwater levels e.g. to capture processes like rainfall infiltration
    - (iii) regular water quality sampling of surface waters, and event-based sampling as needed
  - (b) follow relevant Commonwealth, State and/or best practice guidelines to conduct a baseline study and derive site-specific water quality guidelines where appropriate and/or adopt default guidelines as provided by the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (and other relevant sources)<sup>84</sup>

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<sup>84</sup> Refer to Appendix 1, Matters of national environmental significance.

- (c) include measurement of physico-chemical parameters, nutrients, metals and metalloids, and any other relevant parameters, such as hydrocarbons, needed to understand potential impacts
  - (d) describe, if relevant, how baseline hydrological conditions may be influenced by activities associated with nearby mining operations.
- 10.34 Provide details of the scope, methodology, timing, and effort of field surveys. Provide details of:
- (a) how surveys were, or will be, undertaken in accordance with relevant Commonwealth, State and/or best practice survey guidelines, including DCCEEW survey guidelines<sup>85</sup>
  - (b) if relevant, the justification for divergence from relevant Commonwealth, State and/or best practice survey guidelines
  - (c) any limitations associated with the survey which may have impacted on the results, including (but not limited to) rain events, resource limitations (e.g. time, equipment failure), inadequate sampling and/or effort.
- 10.35 Attach all relevant ecological surveys referenced in the referral and MNES section as supporting documents to the EIS.
- 10.36 Where potential habitat for listed threatened species and ecological communities is identified in the project area, an assessment must be undertaken regardless of whether the species was recorded (i.e. the potential for occurrence of these species and communities must also be considered and assessed).
- 10.37 Wherever practicable, surveys should be undertaken over an ecologically relevant scale and period to adequately determine the likely presence or absence of the target species or environmental value. A precautionary approach should be taken where this is not possible.
- 10.38 Identify potential climate change refugia within the proposed action area and adjacent area for listed threatened and migratory species which may be impacted by the proposed action. See *Characteristics of climate change refugia for Australian biodiversity*<sup>86</sup> for information on climate change refugia as well as other more recent and species-specific research where relevant.

## Impact assessment

### Note

The MNES section must include a description of all the relevant impacts of the action. Relevant impacts are impacts that the action will have or is likely to have on a matter protected by a controlling provision.

For each listed threatened species and community, provide the habitat assessment and impact assessment together under a heading of the species' name so potential impacts can be easily understood.

- 10.39 Relevant impacts are the impacts that the action will have, or is likely to have, on MNES. 'Likely' is taken to mean a 'real, or not remote, chance or possibility'. Impacts during the pre-construction,

<sup>85</sup> Refer to the Australian Government, Department of Climate Change, Energy, the Environment and Water, *Survey guidelines* at <https://www.dcceew.gov.au/environment/epbc/advice/surveys-and-data>.

<sup>86</sup>Reside et al (2014). Full reference at Appendix 1, Matters of national environmental significance.

construction, operation, decommissioning and rehabilitation phases of the project should 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, taking into consideration any indirect impacts (e.g. light and dust pollution, noise from operations, construction and explosives, increased risk of predation)
- (b) a statement, with supporting evidence, of whether any relevant impacts are likely to be unknown, unpredictable or irreversible
- (c) an analysis of the significance of the relevant impacts (see 9.54)
- (d) any technical data and other information used or needed to make a detailed assessment of the relevant impacts
- (e) consideration must be given to specific habitat features relevant to the species within and surrounding the development footprint.

10.40 The MNES section should identify and address cumulative impacts, where potential project impacts are in addition to existing impacts of other activities (including known potential future expansions or developments by the proponent and, to the extent possible, other proponents in the region and vicinity).

10.41 Impacts as a result of the proposed action must be assessed in accordance with relevant departmental policies and guidelines, including the SPRAT Database and DCCEE's *Significant Impact Guidelines 1.1*.<sup>87</sup>

10.42 Where relevant, the MNES section should consider the anticipated/predicted future climatic conditions at the site in the assessment of impacts on MNES, and how changes in climate and the frequency and severity of weather events may interact with, exacerbate or reduce the impacts of the proposed action on MNES over time. This should include, but not be limited to the:

- (a) loss, fragmentation, and/or drying of potential climate refugia and/or refuges for threatened species or communities as a result of the proposed action – consider the potential impacts of removing or otherwise impacting these habitats
- (b) increased risk of fire as a result of mining operations under drier conditions and periods of extreme heat
- (c) overtopping of the sediment basin dam during extreme rain events and the downstream impacts on MNES
- (d) inclusion of different climate scenarios in water modelling.

10.43 The EIS should also provide a detailed assessment of any potential or likely impacts that the proposed action may facilitate on threatened species and ecological communities including but not limited to increased road traffic, increased use of area, etc.

### **Impacts on listed threatened species and ecological communities**

10.44 Provide an assessment of the likelihood intensity, duration, magnitude and extent of impacts resulting from the pre-construction, construction, operation, maintenance, decommissioning and rehabilitation components of the project on threatened species and species habitat in the terrestrial project areas.

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<sup>87</sup> Refer to Appendix 1, Matters of national environmental significance.

- 10.45 With consideration of all project phases, identify and describe 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. All relevant impacts of the action must be assessed in accordance with the latest relevant Commonwealth policies and guidelines, and information provided in the SPRAT database, including but not limited to:
- (a) habitat clearance
  - (b) habitat inundation
  - (c) habitat fragmentation and degradation
  - (d) injury or death (such as from vehicle strike)
  - (e) disturbance from dust, light, vibration and noise
  - (f) introduction/spread of, and/or increase in, pests, weeds and disease
  - (g) changes to hydrological regimes (including flow changes and flooding)
  - (h) impacts to groundwater levels in root zones of relevant vegetation
  - (i) impacts to water quality, including from waste/chemical pollution and/or land contamination
  - (j) sedimentation and erosion
  - (k) barriers to fauna dispersal and edge effects.
- 10.46 For threatened ecological communities, the total direct and indirect impact (in hectares) to each identified patch within and adjacent to the project site must be provided. Further, the impact assessment for ecological communities must include a discussion on the post-impact viability of each individual patch within and adjacent to the project site to be directly or indirectly impacted from fragmentation as a result of vegetation clearance. Assessment of the impact to threatened ecological communities must include any relevant buffers directly surrounding the patch. Justification must be provided as to the size and form of any buffer applied, or in cases where a buffer is not applied.
- 10.47 Assess how changes to hydrology associated with the proposed action may impact on listed threatened species and threatened ecological communities, taking into consideration both surface and groundwater dependence.
- 10.48 Include the potential direct, indirect, facilitated, and cumulative (where possible) loss and/or disturbance on listed threatened species, their habitat and threatened ecological communities as a result of the proposed action. This must include:
- (a) the quality of the habitat impacted
  - (b) quantification of the individuals where relevant
  - (c) duration of impact
  - (d) habitat area (in hectares) to be impacted.
- 10.49 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 Richmond – Julia Creek Vanadium Project (2021/9097), Saint Elmo Vanadium project (EPBC2017/8007), Mount James Wind Farm (EPBC2022/09211), Copper String Transmission Line Project (EPBC2019/8416), and Prairie

Wind Farm (EPBC2022/09312). Details of these projects can be found on DCCEEW's EPBC Public Notices website.

- 10.50 The MNES section is to address the potential impact of the action on ecosystem resilience where relevant for MNES. This should include consideration of the likely/predicted changes to climate regimes.
- 10.51 Describe, with supporting evidence, how the proposed action will not be inconsistent with:
- (a) Australia's obligations under the Biodiversity Convention, the Convention on Conservation of Nature in the South Pacific (Apia Convention), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
  - (b) a recovery plan or threat abatement plan.
- 10.52 Describe, with supporting evidence, how the proposed action has taken into account any relevant approved conservation advice for the relevant listed threatened species and threatened ecological communities.
- 10.53 A risk assessment for all identified risks to threatened species and ecological communities should be conducted and documented.
- 10.54 After consideration of proposed avoidance, mitigation, and management measures, provide an assessment of the likelihood of significant impacts on relevant listed threatened species and ecological communities. Provide the total amount of significant residual impact, if any, for each type of habitat (in hectares) in the disturbance footprint for each listed threatened species and ecological community. The significant impact assessment must consider DCCEEW's *Significant impact guidelines 1.1*.<sup>88</sup>

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<sup>88</sup> Refer to Appendix 1, Matters of national environmental significance.

## Avoidance and mitigation measures

### Note

Avoidance, minimisation, and mitigation measures are the primary methods of eliminating and reducing significant impacts on MNES. Where possible and practicable, it is best to avoid impacts. If impacts cannot be avoided, then they should be minimised or mitigated as much as possible. Residual impacts should then be managed. Avoidance, minimisation, and mitigation measures must be investigated thoroughly as a part of the assessment and be supported by evidence to demonstrate likely success.

The MNES section must provide information on proposed avoidance, minimisation, mitigation, and management measures to deal with the impacts of the action. Committal language (i.e. 'will') rather than non-committal language (i.e. 'may', 'where possible', 'if required', etc.) must be used, and any commitments by the proponent must be clearly distinguished from recommendations or statements of best practice made by the document author or other technical expert. The proposed measures and the outcomes to be achieved must be provided and substantiated and based on best available evidence and practices.

The SPRAT Database, conservation advice, recovery plans, and associated statutory and policy documents, may provide a starting point for relevant mitigation measures for listed threatened and migratory species and ecological communities.

Any management plans required for the mitigation and management of impacts on MNES should be provided either as separate documents attached to the EIS or provided as subsections in the MNES section. DCCEEW is likely to recommend to the Australian Minister (or delegate) that any conditions of approval require that final versions of any relevant plans be approved and in place prior to the commencement of the proposed action.

DCCEEW encourages the proponent to establish, test, and monitor novel methods for avoiding, minimising, and mitigating impacts of the proposed project on MNES. DCCEEW also encourages the development of scientifically rigorous monitoring programs to measure impacts and assess the effectiveness of mitigation.

- 10.55 Provide a consolidated list of mitigation measures, including environmental design features, proposed to be undertaken to prevent, minimise, or compensate for all of the relevant impacts of the action, including:
- (a) a description of the environmental outcomes the measures are expected to achieve, including details of any baseline data or proposed monitoring to demonstrate progress towards achieving these outcomes
  - (b) a description of proposed safeguards and mitigation measures to deal with relevant impacts of the action, including mitigation measures proposed to be taken by the proponent
  - (c) assessment of the expected or predicted effectiveness of the mitigation measures, with consideration of climate change predictions where relevant
  - (d) details of ongoing management, including scientifically robust monitoring programs to support an adaptive management approach and determine the effectiveness of the proposed measures or assess against proposed outcomes
  - (e) any statutory or policy basis for the mitigation measures
  - (f) the cost of the mitigation measures

- (g) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.
- 10.56 Proposed measures must be based on best available practices, appropriate standards, evidence of success for other similar actions and supported by published scientific evidence. All commitments must be drafted using committal language (e.g. 'will' and 'must') when describing the proposed measures.
- All proposed measures must also be drafted to meet the 'S.M.A.R.T' 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 advices, recovery plans, threat abatement plans)
  - (e) T – Time-bound (specific timeframe to complete).
- 10.57 Describe how habitat fragmentation and patch isolation will be avoided, with consideration of whether avoidance areas will enable species mobility across the project area and still be connected to habitat in the broader landscape.
- 10.58 Provide a detailed outline of an EMP that sets out the framework for management, mitigation, and monitoring of relevant impacts of the action, including any provisions for independent environmental auditing. The EMP must include details of specific and measurable environmental outcomes, performance criteria, monitoring, reporting, corrective action, responsibility, and timing for each measure, including an assessment of the expected or predicted effectiveness of the proposed measures for relevant protected matters. Including, but not limited to:
- (a) Information on the timing, frequency and duration of the proposed avoidance, mitigation and management measures to be implemented and address the project phases (construction, operation, decommission and rehabilitation) separately
  - (b) details of ongoing management and monitoring programs, including timing, to validate the effectiveness of proposed measures and demonstrate that environmental outcomes will be, or have been, achieved
  - (c) details of tangible, on-ground corrective actions that will be implemented, including timing, in the event that monitoring programs indicate that the environmental outcomes have not been, or will not be, achieved. Describe contingencies for events such as failure of sewerage systems, extreme weather events, heavy or prolonged rainfall or flooding events
  - (d) measures for the handling, disposal, and storage of organic chemicals, heavy metals or other potentially harmful chemicals that might be used during operation. The EMP must also include a discussion on risk management and mechanisms for monitoring potential leakages to groundwater
  - (e) any statutory or policy basis for the proposed measures, including reference to the SPRAT Database and relevant approved conservation advice, recovery plan or threat abatement plan, and a discussion on how the proposed measures are consistent with relevant plans, such as the *National Light Pollution Guidelines for Wildlife*<sup>89</sup>

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<sup>89</sup> Refer to Appendix 1, Matters of national environmental significance.



- (f) future climate change scenarios in the surface and groundwater models when designing the capacity of the sediment dam and other relevant infrastructure
  - (g) information about other groundwater users and potential cumulative impacts of groundwater drawdown to these users as a result of the action
  - (h) results of the flood impact assessment to compare pre-development and current flooding risk with the predicted flooding risk as a result of the proposed project at a range of Annual Exceedance Probabilities and including consideration of future climate change.
- 10.59 The *Environmental Management Plan Guidelines*<sup>90</sup> provides general guidance to stakeholders preparing EMPs for environmental impact assessments and approvals under Chapter 4 of the EPBC Act.
- 10.60 The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program must be stated.

## Rehabilitation requirements

### Note

Where rehabilitation is proposed and relevant to MNES, the information in below must be included in a rehabilitation management plan or a subsection of the MNES section.

- 10.61 Detail any rehabilitation activities proposed to be undertaken and how they meet best practice standards, including for the restoration of habitat for relevant listed threatened species and communities.
- 10.62 Provide a summary of the vegetation community that is being rehabilitated and the dominant species that will be including in the rehabilitation site.
- 10.63 Provide 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 MNES section. This must include a draft mine PRCP.
- 10.64 Provide information on the timing, frequency and duration of proposed rehabilitation activities to be implemented, including anticipated time to completion (refer to 'S.M.A.R.T' principle above). All commitments must be drafted using committal language (e.g. 'will' and 'must') when describing the proposed activities.
- 10.65 Provide details of ongoing management and monitoring programs, including timing, to validate the effectiveness of proposed rehabilitation activities and demonstrate that completion criteria will be, or have been, achieved.
- 10.66 Provide maps showing the areas that will be progressively rehabilitated within the project area and the size in hectares of these areas.
- 10.67 Provide a description of the vegetation chosen for rehabilitation that is appropriate for the natural succession trajectory of vegetation communities and/or threatened ecological communities.
- 10.68 Provide information on management of the rehabilitation sites including, but not limited to, weed and pest management.

<sup>90</sup> Refer to Appendix 1, Matters of national environmental significance.

- 10.69 Describe the procedures, including contingency measures, that will be undertaken to achieve the rehabilitation acceptance criteria.
- 10.70 Provide details of a monitoring program to determine the success of rehabilitation activities implemented by the proponent, including any contingency measures and when they would be triggered, and a framework for adaptive management including review of the monitoring program.
- 10.71 Provide details of tangible, on-ground corrective actions that will be implemented, including timing, in the event that monitoring programs indicate that the completion criteria have not been, or will not be, achieved.
- 10.72 Provide the proposed final landform, including rehabilitation completion criteria, and its relation to the pre-disturbance vegetation community. Include an assessment of the expected or predicted effectiveness of the proposed rehabilitation activities.

## Offsets

### Note

The MNES section must include an assessment of the likelihood of residual significant impacts occurring on listed threatened species and communities after avoidance, mitigation and management measures relating to the proposed action have been applied. If it is considered that residual significant impacts are likely, then environmental offsets are required to be provided.

Environmental offsets are measures that compensate for the residual significant impacts of an action on the environment. Offsets provide environmental benefits to counterbalance the impacts that remain after consideration of avoidance and mitigation measures. Offsets do not reduce the impacts of an action, and are not intended to make proposals with unacceptable impacts acceptable.

It is important to consider environmental offsets early in the assessment process. Correspondence with the department regarding offsetting is highly encouraged. Any proposed offsets must meet the key principles of the *EPBC Act Environmental Offsets Policy (2012)* (Offsets Policy):

<https://www.dcceew.gov.au/environment/epbc/publications/epbc-act-environmental-offsets-policy>

If it is considered that a residual significant impact is likely, the EIS must include a draft Offset Area Management Plan (OAMP) consistent with the Offsets Policy. If an offset area has been nominated, provide an OAMP. Note that if there is a residual significant impact, DCCEEW is likely to recommend to the Australian Minister (or delegate) that any conditions of approval require the environmental offset and associated OAMP be approved and implemented prior to the commencement of the proposed action.

Please note, the department is likely to recommend to the Minister (or delegate) that the conditions of approval require the environmental offset/s or the OAMP be approved and implemented prior to the commencement of the proposed action (if the action is approved, subject to conditions, under the EPBC Act).

- 10.73 Provide an assessment of the likelihood of residual significant impacts occurring on relevant MNES, after avoidance, mitigation and management measures have been applied.
- 10.74 If a residual significant impact is likely, provide a summary of the proposed environmental offset and key commitments to achieve a conservation gain for each protected matter must be provided in accordance with the Offsets Policy.

- 10.75 An EPBC Act protected matter must be present in the proposed offset site/s if it is present in the project site to align with the Offsets Policy.
- 10.76 Where the proposed offset area/s supports an environmental offset for multiple MNES, proposed management action/s for one protected matter must not be detrimental (i.e. have an impact) to other protected matters.
- 10.77 Where an offset is proposed, with a completed Offsets Assessment Guide<sup>91</sup> calculation, all inputs must be supported by robust scientific evidence and/or supporting evidence (e.g. historical grazing regimes, satellite imagery, statements from landholders).
- 10.78 The draft OAMP must be prepared by a suitably qualified ecologist and in accordance with DCCEE's *Environmental Management Plan Guidelines*.<sup>92</sup>

### **Minimum Requirements for a draft Offset Area Management Plan**

- 10.79 Supporting evidence must 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 1994*, existing grazing regimes, etc.) as required by the Offsets Policy.
- 10.80 The draft OAMP must include robust scientific evidence (e.g. published research, pilot studies, previously successful projects/programs) to demonstrate the success of proposed measures to create, revegetate, regenerate and/or improve habitat (e.g. tree planting, nest boxes, artificial hollows) in the proposed offset area/s for a listed threatened species or ecological community.
- 10.81 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.
- 10.82 Details, with supporting evidence, to demonstrate how the environmental offset/s their habitat, in accordance with the principles of the Offsets Policy and all requirements of the Offsets Assessment Guide including:
- (a) time over which loss is averted (max. 20 years)
  - (b) time until ecological benefit
  - (c) risk of loss (%) without offset
  - (d) risk of loss (%) with offset
  - (e) confidence in result (%).
- 10.83 A description of the offset area/s, including location, size, condition, environmental values present and surrounding land uses.
- 10.84 Baseline data and other supporting evidence that documents the presence of the relevant MNES, and the quality of their habitat within the offset area/s.
- 10.85 An assessment of the site habitat quality for the offset area/s. Before undertaking habitat quality assessments, consult with the Office of the Coordinator-General and DCCEE regarding proposed methodology for deriving Habitat Quality scores for the Offset Assessment Guide (calculator). The important factor is that both impact and offset sites are assessed using the same approach/scoring mechanism, that the method is suitable and targeted for each

<sup>91</sup> Refer to Appendix 1, Matters of national environmental significance.

<sup>92</sup> Refer to Appendix 1, Matters of national environmental significance.

species/community, and that the resulting offset proposed is in line with the core principles of the Offsets Policy.

- 10.86 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.
- 10.87 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).
- 10.88 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.
- 10.89 Details of the management actions, and timeframes for implementation, to be carried out to meet the offset completion criteria.
- 10.90 Interim milestones that set targets at 5-yearly intervals for progress towards achieving the offset completion criteria.
- 10.91 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).
- 10.92 Proposed timing for the submission of monitoring reports which provide evidence demonstrating whether the interim milestones have been achieved.
- 10.93 Timing for the implementation of tangible, on-ground corrective actions to be implemented if monitoring activities indicate the interim milestones have not been achieved.
- 10.94 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.
- 10.95 Evidence of how the management actions and corrective actions take into account relevant approved conservation advices and are consistent with relevant recovery plans and threat abatement plans.
- 10.96 Details and execution timing of a 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.
- 10.97 All proposed management actions, monitoring approach and corrective actions must be written using committed language (e.g. 'will' and 'must').

#### Other approvals and conditions

##### **Note**

The MNES section must include information on any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action.

- 10.98 Provide 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:

- (a) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan, or policy
  - (b) how the scheme provides for the prevention, minimisation, and management of any relevant impacts.
- 10.99 Provide a description of any approval that will or has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the EPBC Act), including any conditions that apply to the action.
- 10.100 If relevant, provide a statement identifying any additional approval that is required.
- 10.101 Provide a description of the monitoring, enforcement, and review procedures that apply, or are proposed to apply, to the action.

## Consultation

- 10.102 The MNES section must detail any consultation about the action, including:
- (a) any consultation that has already taken place, their outcomes, and details of management measures to address community concerns
  - (b) proposed future consultation (including plans for future engagement) throughout life of the proposed action
  - (c) any documented response to, or result of, the consultation
  - (d) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views
  - (e) signed documents or statements of consent from land holders or managers.
- 10.103 Prepare a cultural values assessment, the methodology of which is to be informed by the engagement principles specified in the *Interim Engaging with First Nations People and Communities on Assessments and Approvals under the Environment Protection and Biodiversity Conservation Act 1999*.<sup>93</sup>

## Environmental record of person proposing to take the action

- 10.104 The information provided in the MNES section 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.
- 10.105 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.

## Principles of Ecologically Sustainable Development

- 10.106 Describe how the proposed action meets the principles of Ecologically Sustainable Development, as defined in section 3A of the EPBC Act. The following principles are principles of ecologically sustainable development:

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<sup>93</sup> Refer to Appendix 1, Matters of national environmental significance.

- (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.

## Economic and social matters

### Note

The economic and social impacts of the action, both positive and negative at the local, regional, and national levels, must be analysed.

Intangible cultural heritage values may include culturally significant species, ecological communities, biogeographic features, storylines, totems, and areas of spiritual significance.

- 10.107 Provide an analysis of the economic and social impacts of the action, both positive and negative.
- 10.108 Details of any public consultation activities undertaken and their outcomes.
- 10.109 Detail projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies.
- 10.110 Describe any state requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action with regards to Indigenous peoples and communities.
- 10.111 Describe opportunities for training facilities or offices in regional towns such as Julia Creek or Richmond.
- 10.112 An analysis of the carrying capacity of infrastructure in nearby regional towns (including Julia Creek, Richmond and Mount Isa (if relevant)) to ensure infrastructure in the town such as housing, social services, airports and road networks to support increased work forces is or will be adequate.
- 10.113 Details of the relevant costs and benefits of identified alternative options to the proposed action (including not proceeding with the action) should also be included with reference to impacts on and benefits to nearby communities and other social and economic considerations.
- 10.114 Describe the benefits of undertaking mining in this area to the local and state economy including details of state royalties and creation of jobs.
- 10.115 Provide a discussion of the global demand for vanadium, HPA and molybdenum, which includes information about how the product is likely to be used in manufacturing and other industries.

## Indigenous engagement

- 10.116 Identify existing or potential native title rights and interests, including any areas and objects that are of particular significance to Indigenous peoples and communities, possibly impacted by the proposed action and the potential for managing those impacts.
- 10.117 Describe any Indigenous consultation that has been undertaken, or will be undertaken, in relation to the proposed action and their outcomes.
- 10.118 Best practice consultation, in accordance with the *Interim engaging with First Nations People and Communities on assessments and approvals under the EPBC Act* includes:<sup>94</sup>
- (a) identifying and acknowledging all relevant affected Indigenous peoples and communities
  - (b) committing to early engagement
  - (c) building trust through early and ongoing communication for the duration of the project, including approvals, implementation and future management
  - (d) setting appropriate timeframes for consultation
  - (e) demonstrating cultural awareness.
- 10.119 Describe any state requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action with regards to Indigenous peoples and communities.
- 10.120 Describe employment opportunities (including Indigenous employment targets) expected to be generated by the project (including construction, operation, decommissioning and rehabilitation phases).

## Information sources provided in the MNES section

- 10.121 For information given in a draft EIS, the draft must 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.

## Conclusion

- 10.122 An overall conclusion as to the environmental acceptability of the proposal should be provided, including discussion on compliance with principles of ecologically sustainable development and the objects and requirements of the EPBC Act. Reasons justifying undertaking the proposal in the manner proposed should also be outlined.
- 10.123 Key mitigation proposed, as well as any offsets proposed for any unavoidable residual significant impacts on MNES, should be summarised here.

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<sup>94</sup> Refer to Appendix 1, Matters of national environmental significance.



## Part C Acronyms and abbreviations

Acronym/ abbreviation	Definition
AEP	Annual Exceedance Probability
CBA	cost-benefit analysis
CHMP	Cultural Heritage Management Plan
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DESI	Department of Environment, Science and Innovation
DTMR	Department of Transport and Main Roads
EA	environmental authority
EIS	environmental impact statement
EMP	environmental management plan
EP Act	<i>Environmental Protection Act 1994</i>
EP Regulation	Environmental Protection Regulation 2019
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
EPP (Air)	Environmental Protection (Air) Policy 2019
EPP (Noise)	Environmental Protection (Noise) Policy 2019
EPP (Water and Wetland Biodiversity)	Environmental Protection (Water and Wetland Biodiversity) Policy 2019
ERA	environmentally relevant activities
EVs	Environmental values
FIFO	fly-in, fly-out
GABORA Water Plan	Water Plan (Great Artesian Basin and Other Regional Aquifers) 2017
GDE	groundwater dependent ecosystem
GHG	greenhouse gas
GTIA	Guide to traffic impact assessment
Gulf Water Plan	Water Plan (Gulf) 2007
HPA	high purity alumina
km	kilometre
MNES	matters of national environmental significance
MSES	matters of state environmental significance
NC Act	<i>Nature Conservation Act 1992</i>
Offsets Policy	<i>EPBC Act Environmental Offset Policy</i>
PRCP	progressive rehabilitation and closure plan
Queensland Heritage Act	<i>Queensland Heritage Act 1992</i>
RE	Regional ecosystem
RIA	regional impact assessment

Acronym/ abbreviation	Definition
SDAP	State Development Assessment Provisions
SDPWO Act	<i>State Development and Public Works Organisation Act 1971</i>
SIA	social impact assessment
SIMP	social impact management plan
SPRAT	Species Profile and Threats
SSRC Act	<i>Strong and Sustainable Resource Communities Act 2017</i>
TOR	terms of reference
tpa	tonnes per annum
VM Act	<i>Vegetation Management Act 1999</i>
Water Act	<i>Water Act 2000</i>
WIP	watercourse identification map
WQOs	water quality objectives

# Appendix 1. Policies and guidelines

In addition to the policies and guidelines identified in *Preparing an environmental impact statement – Guideline for proponents*, the EIS is to consider relevant planning schemes, policies and guidelines identified in this appendix.

## General

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Queensland Government, Department of Environment, Science and Innovation, *Model mining conditions*, ESR/2016/1936, Version 6.03, February 2024.

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McKinlay Shire Planning Scheme, 2019.

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Queensland Government, Department of Environment and Science, *User Guide for Estimated Rehabilitation Cost Calculator for Mining*, ESR/2019/4626, Version 3.00, October 2022.

Queensland Government, Department of Resources, *Native title work procedures*, available at <https://www.qld.gov.au/firstnations/environment-land-use-native-title/native-title-work-procedures>.

Queensland Government, Department of Environment, Science and Innovation, *Quarry material – EIS information Guideline*, ESR/2020/5306, Version 1.02, June 2024.

Queensland Government, Department of Resources, *Queensland Soil and Land Resource Survey Information Guideline*, VEG/2018/4460, version 2.0, 2021, [https://www.daf.qld.gov.au/?a=109113:policy\\_registry/guideline-soil-land-resource-survey.pdf](https://www.daf.qld.gov.au/?a=109113:policy_registry/guideline-soil-land-resource-survey.pdf)

Queensland Government, Department of State Development, Infrastructure, Local Government and Planning, *State Development Assessment Provisions*, Version 3.0, February 2022.

Queensland Government, Department of State Development, Infrastructure, Local Government and Planning, *State code 18: Constructing or raising waterway barrier works in fish habitats*, State Development Assessment Provisions, Version 3.0.

Queensland Government, *Information sheet - Voids in flood plains*, ESR/2019/4966, version 1.00, 2020.

Soil Science Australia, *Guidelines for Soil Survey along Linear Features*, 2015, <https://www.soilscienceaustralia.org.au/wpcontent/uploads/2021/02/SSA2015.Guidelines-for-Soil-Survey-along-Linear-Features.pdf>

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## Appendix 2. MNES listed threatened species and communities (sections 18 and 18A)

Table 1 lists the threatened 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:** This list at Table 1 may not be a complete list of threatened species that will or are likely to 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 that occur after the controlled action decision (31 May 2024) are not required to be considered in the assessment.

**Table 1 Listed threatened species (sections 18 and 18A)**

Ecological communities/species name	Status under the EPBC Act
<b>Birds</b>	
Gouldian Finch ( <i>Erythrura gouldiae</i> )	Endangered
Grey Falcon ( <i>Falco hypoleucos</i> )	Vulnerable
Sharp-tailed Sandpiper ( <i>Calidris acuminata</i> )	Vulnerable
Star Finch (eastern), Star Finch (southern) ( <i>Neochmia ruficauda ruficauda</i> )	Endangered
<b>Mammals</b>	
Julia Creek dunnart ( <i>Sminthopsis douglasi</i> )	Vulnerable
<b>Threatened Ecological Communities</b>	
The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin	Endangered

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