Draft terms of reference for an environmental impact statement

Cape Flattery Silica Sand project

May 2024

COORDINATOR-GENERAL

Queensland Government

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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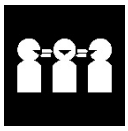

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Part A About these terms of reference

1. Introduction

1.1 This document outlines the draft terms of reference (TOR) for the environmental impact statement (EIS) for the Cape Flattery Silica Sand project (the project), proposed by Cape Flattery Silica 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*,[1] which must be read in conjunction with, and forms part of, this draft TOR for the Cape Flattery Silica Sand project.

1.3 The proposed project is a greenfield silica sand mining, processing and export project, located approximately 42 kilometres (km) northeast of Hope Vale and is within the Hope Vale Aboriginal Shire local government area. The project proposes to extract up to 4 million tonnes per annum (Mtpa) of run-of-mine silica sand, processed on-site to produce approximately 3 Mtpa of product silica sand. The product is proposed to be exported via barge transhipping using a greenfield jetty to ocean-going vessels (OGVs) secured offshore within the Port of Cape Flattery.

1.4 The project is likely to be staged, subject to market demand for silica. Stage 1 involves the extraction of up to 2 Mtpa of run-of-mine silica sand which would report to a processing plant to produce up to approximately 1.8 Mtpa of product silica sand. Stage 2 is proposed to increase extraction up to 4 Mtpa of run-of-mine, construct an additional processing plant, to produce up to approximately 3 Mtpa of product silica sand.

1.5 The proposed project comprises the following:

(a) an approximately 617 hectare (ha) mine site including:

(b) open cut sand mine

(c) two processing plants, product stockpile, conveyors, laydown areas, access roads and sediment basins

(d) a mine infrastructure area consisting of a worker accommodation facility, offices, power generation, water and sewage treatment and fuel storage

(e) a 400 metre (m) long jetty with product conveyor and barge loader, and a 200m long pile-mounted marine offloading facility

(f) transhipment of product silica sand via barge to OGVs secured offshore within the Port of Cape Flattery limits (port limits).

2. Indigenous recognition and native title

2.1 It is acknowledged that the project is located on lands that the Federal Court of Australia has confirmed native title to preserved lands for the benefit or use of First Nations peoples.

2.2 The Warra Peoples of the Hopevale Community of Eastern Cape York Peninsula in Queensland received acknowledgment of their native title rights in December 1997 (Native Title Determination: Warra Peoples/Hope Vale (Federal Court number: QUD174/1997). The

[1] 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**.

determination recognised rights of exclusive possession, occupation use and enjoyment over 110,000 hectares.

2.3 The project site is also subject to an additional native title claim, QUD673/2014 Cape York United Number 1, which is awaiting a determination.

2.4 Accepting statutory processes and regulated decision-making requirements, as far as practicable, the proponent is to demonstrate engagement and consideration of the views of the Warra Peoples.

3. Statutory basis

3.1 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.

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

4. EIS process under the *Environment Protection and Biodiversity Conservation Act 1999*

4.1 This TOR does not relate to matters of national environmental significance.

4.2 On 16 January 2023, the project was declared to be a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC reference 2022/09376) and on 17 February 2023, the assessment method was determined to be by EIS under the EPBC Act. A separate EIS process for potential impacts on matters of national environmental significance will be undertaken under the EPBC Act.

5. More information

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

Part B 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 run-of-mine silica sand material to be mined and processed onsite

(b) estimated proportion of fly-in, fly-out (FIFO) workforce[2] expressed as annual average full-time equivalent positions created during each phase

(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 workforce accommodation, offices, telecommunications, 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) processing plants, conveyors, product stockpiles, reject stockpiles and fines stockpiles

(d) transport and utility infrastructure and corridors, including necessary access roads and tracks

(e) renewable energy infrastructure

(f) dams, levees and diversion channels

(g) water pipelines

(h) waterway and watercourse crossing infrastructure

(i) any onsite infrastructure affected by the project (such as buildings, bores, fences).

Marine infrastructure requirements

(j) jetty infrastructure area including jetty, conveyor, access track, generators and fuel, offices

(k) marine offloading facility including any vessel launching/loading facilities

(l) transhipping activities.

Ancillary infrastructure requirements

(m) electricity transmission

(n) telecommunication

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[2] ***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*.

(o) access roads and tracks.

6.4 Describe the purpose of all dams, levees and diversion channels proposed on the proposed project area. 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.

Project staging

6.7 Provide a detailed description of the staging of project activities (pre-construction, construction, operation, decommissioning and rehabilitation), including 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 any stages and the sequencing of these stages.

6.8 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

6.9 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, hydrographic, 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)),[3] 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)

[3] As shown on the Queensland Government Watercourse identification map.

(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, 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 (EMR) and Contaminated Land Register (CLR)

(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)

(p) any required preparatory activities including demolition, temporary augmentation or other preparatory activities on existing structures including recreational infrastructure

(q) the type, quantity, origin, routes, delivery modes, storage and laydown requirements for materials required

(r) any land contamination survey, sampling and decontamination methods and programs

(s) existing infrastructure and easements on affected land within and adjoining the project area

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

Construction

6.10 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 works and structures and infrastructure necessary (such as construction laydown areas) to enable the construction and operation of the development, whether on or off the project area, and 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 and laydown areas

(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 five (5) decimal places, GDA2020) of any new or established quarry or extraction operations (i.e. extraction voids, borrow pits, dredging 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, proposed 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. cyclone, flood, bushfire, drought etc.) would be managed during construction

(m) any potential disruption to flows in watercourses[4]/waterways[5] and tributaries during construction and any diversion works required including temporary diversions

(n) management of fauna and vegetation material generated by clearing for construction

(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, potable, recycled water, dust suppression, concrete batching, washdowns, road construction, camp operation are to be identified and quantified. For each water requirement, 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, 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 five 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 Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand water quality guidelines,[6] to

[4] 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.
[5] 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.
[6] Australia and New Zealand Governments, Australia and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality,* **https://www.waterquality.gov.au/anz-guidelines**, 2018.

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

6.11 Describe the operational 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 silica mineral mined at each major stage of the proposed project

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

(g) the type, quantity, origin, routes, delivery modes, storage and laydown requirements for materials and employees

(h) 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

(i) waste material management (for example waste rock)

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

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

(l) any take or interference with water in a watercourse, lake or spring, overland flow water, and underground water (both direct and in-direct)

(m) 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, potable water, recycled water, dust suppression, washdowns, camp operation are to be identified and quantified. For each water requirement, 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.

(n) transhipping activities, including barge loading and unloading frequency, vessel type, OGV anchorage arrangements within the port limits

(o) OGV type and movement frequency through the Great Barrier Reef Marine Park.

Rehabilitation and closure

6.12 Describe the rehabilitation and 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) proposed methods for rehabilitation and decommissioning any marine infrastructure, including the safe and effective removal of piled structures, barge facilities and offshore infrastructure such as OGV anchorage facilities

(d) 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

(e) 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

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

Site description

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

Project rationale and alternatives

6.14 The project rationale and alternatives requirements are set out in Section 4.3 of *Preparing an environmental impact statement – Guideline for proponents*.

6.15 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 silica sand 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. 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 [7]

(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, sea conditions, and time taken to travel. The multi-criteria analysis is to assess shared use of common user infrastructure with nearby mines or projects.

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) describe any proposals for locating infrastructure over state land (including unallocated state land), and detail the process for obtaining relevant grants, permits, tenure, licenses, or approvals for the proposals under the *Land Act 1994* and other relevant legislation. Include discussion of the requirements or effects of any other legislation where relevant, such as the *Forestry Act 1959* and *Native Title Act 1993*

(b) identify any licences, approvals or agreements required to be obtained with or from the Port Authority to facilitate the proposed development and/or use of marine infrastructure within the port limits

(c) identify development approvals required for marine infrastructure and the relevant assessment managers

(d) describe how the project is compatible with *the Sustainable Ports Development Act 2015*

(e) identify any permits, licenses, and approvals associated with operation and transit of OGVs in the Port of Cape Flattery and the Great Barrier Reef Marine Park and securing of the OGVs within port limits

(f) describe any approvals, authorisations or entitlements required under the Water Act, Water Regulation 2016 and the Water Plan (Cape York) 2019. 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 Cape York 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*.

[7] Queensland Government, Queensland Treasury, *Common user infrastructure principles,* **https://www.treasury.qld.gov.au/programs-and-policies/common-user-infrastructure-assessment-principles/**,

9. Assessment of project specific matters

Land

Objective and outcomes

The design, construction, operation and rehabilitation of the project is 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

9.1 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, Aboriginal and Torres Strait Islander peoples' land and cultural practice areas, protected areas, State leasehold land, reserves, unallocated state land, legally secured offset areas, state forest, watercourses/waterways (including stream order information), easements and road reserves. This should be supported by maps with lot/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 (resource tenures, national park, state forest etc) overlying and adjacent to the project area

(e) Great Barrier Reef marine park and Great Barrier Reef World Heritage Area zoning adjacent to the project area

(f) identify all regional and land use plans, local planning instruments, and overlays relevant to the project

(g) provisions of the local planning instruments and assessment benchmarks for necessary development approvals for the project

(h) State Development Assessment Provisions (SDAP) codes[8] relevant to the project (including those exempt due to coordinated project status)

(i) 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

(j) design and locational factors influencing the selection of the project components and the project area.

9.2 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[9]

(d) stock route network

(e) agricultural land considered as a priority agricultural area and/or strategic cropping land, and any other matters identified in the *Regional Planning Interests Act 2014* and Regional Planning Interests Regulation 2014.

Impact assessment and mitigation measures

9.3 The assessment of impacts on land is to be in accordance with *Application requirements for activities with impacts to land* and relevant aspects of the *Land – EIS information guideline* for the proposed mining land use.[10] If any quarry material is required for construction, *Quarry material – EIS information guideline*.[11] Demonstrate that the project can meet the environmental objectives and performance outcomes relevant to land in Schedule 8 of the EP Regulation.

9.4 Assess the project in the context of the applicable regional plan[12] and the relevant local planning instrument, including assessment benchmarks, and justify any inconsistency between the project and these plans.

9.5 Identify all state and regional planning interests (e.g. priority agricultural areas, Key Resource Areas, strategic cropping areas and strategic environmental areas) potentially impacted by the project, and the source of mapping to identify those interests. Where mapping is not available, identify the methodology followed to prepare the mapping and its scale.

9.6 Identify any existing or proposed incompatible land uses within and adjacent to the project site.

9.7 Describe how the project aligns with state transport planning policies, including:

(a) how the project supports and protects the achievement of state interest policies for the strategic Port of Cape Flattery[13]

(b) how the project aligns with the land use plan for the Port of Cape Flattery, if relevant.

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[8] Queensland Government, Department of State Development, Infrastructure, Local Government and Planning, *State Development Assessment Provisions,* Version 3.0, December 2021.
[9] **https://qldspatial.information.qld.gov.au/AGTrendsSpatial/**.
[10] Refer to Section 5.3 of *Preparing an environmental impact statement – Guideline for proponents.*
[11] Refer to Section 5.3 of *Preparing an environmental impact statement – Guideline for proponents*.
[12] The Cape York Regional Plan is under review. The draft regional plan to be considered in EIS preparation until final plan released.
[13] Queensland Government, Department of Infrastructure, Local Government and Planning, *State Planning Policy – state interest guideline: Strategic ports,* 2016.

9.8 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.

9.9 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.

9.10 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.

9.11 Detail the proposed measures to be undertaken during the construction and operational 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.

9.12 Describe, map and illustrate the location, area and depth of transhipping activities and associated infrastructure in accordance with requirements for ERA 50 (Mineral and bulk material handling) under the EP Act and *Planning Act 2016* by referring to relevant Department of Environment, Science and Innovation (DESI) policies and guidelines.

9.13 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.[14] 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)

(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.

9.14 Describe any proposed tenure to be applied for as part of this project, including anticipated timeframes, approvals and/or owner's consent.

9.15 Describe any agreements required to be entered into with the Port Authority to enable third-party use of the project's marine infrastructure; decommissioning and removal of marine infrastructure; and ability to construct new supporting infrastructure to increase capacity of the project's marine infrastructure e.g. conveyor or jetty extension.

9.16 Detail outcomes of consultation with relevant stakeholders, including Maritime Safety Queensland, the Regional Harbour Master, and Aboriginal and Torres Strait Islander peoples, regarding the proposed location of the project's marine infrastructure, transhipping activities and OGV transhipment zone. Describe how the results of consultation informed project design and location of infrastructure.

9.17 Assess the likely potential impacts to agricultural interests, including:

[14] Refer to Queensland Government, Department of Natural Resources and Mines, *Native title work procedures,* 2017.

(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 protecting Agricultural Land Classification Class A and Class B land for sustainable agricultural use, in accordance with state interest – agriculture 2 (a)-(c)

(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.

9.18 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.

Topography, geology and soils

Existing environment

9.19 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.

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

9.21 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 the potential for acid forming rock in spoil material.

9.22 Describe and map delineated areas of potential for acid sulphate soils and proposed infrastructure including mining, product stockpile, reject stockpile and fines stockpile areas.

9.23 Provide details, including maps, showing the location of existing soil conservation plans approved under the *Soil Conservation Act 1986* and all existing runoff control works (e.g. contour banks, waterways, discharge points etc.).

Impact assessment and mitigation measures

9.24 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.

9.25 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*.[15] 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.

[15] Refer Section 5.3.1 of *Preparing an environmental impact statement – Guideline for proponents,* pg 97–105 of *A risk framework for preventing salinity*.

9.26 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.

9.27 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.

9.28 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.

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

9.30 Demonstrate how landforms, during and after disturbance, will be stable and non-eroding over time.

Rehabilitation and mine closure

Impact assessment and mitigation measures

9.31 Describe the rehabilitation strategy which demonstrates how the marine infrastructure will be decommissioned, removed and area rehabilitated, including timing and agreed final landforms and land use. Where marine infrastructure is proposed to remain, identify the owner of this infrastructure.

9.32 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.

9.33 Provide a proposed progressive rehabilitation and closure plan (PRCP) for the project in accordance with Submission of a progressive rehabilitation and closure plan16 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[17] 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

9.34 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

[16] Queensland Government, Department of Environment and Science, *Submission of a progressive rehabilitation and closure plan,* ESR/2019/4957, version 3.00, February 2021.
[17] Stable condition is defined in section 111A of the *Environmental Protection Act 1994.*

(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

(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:

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

(l) 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

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

(n) 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

(o) include other information requirements outlined in *Guideline – Progressive rehabilitation and closure plans*.[18]

9.35 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.

PRCP schedule

9.36 Provide a proposed PRCP schedule[19] which describes time-based milestones for achieving each post-mining land use or non-use management areas for the proposed project. Present the proposed PRCP schedule in the table template included in Submission of a progressive rehabilitation and closure plan.

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[18] Refer to Section 5.3.3 of *Preparing an environmental impact statement – Guideline for proponents*.
[19] Queensland Government, Department of Environment and Science, *Guideline – Progressive rehabilitation and closure plans,* ESR/2019/4964, version 3.00, 2023 contains further information about how to develop a PRCP schedule.

9.37 The proposed PRCP schedule, must identify:

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

(b) when land becomes available for rehabilitation or improvement

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

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

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

(f) completion dates for each milestone to be achieved

(g) a final site design

(h) all milestone criteria must be consistent with the SMART principles.[20]

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

9.39 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*.

[20] 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.

Flora and fauna

Objective and outcomes

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

(a) protect the environmental values of land including soils, subsoils, landforms, habitats and associated flora and fauna

(b) minimise 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), 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) provide for the conservation of the marine environment , 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

9.40 Address the project's impacts on MSES and other regionally significant biodiversity, and cultural and environmental values.

9.41 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.

9.42 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. early wet/post-wet and early dry seasons). Ecological survey reports (including field proformas and data sheets) should be provided as searchable and hyperlinked appendices.

9.43 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 temporary non-resident workforce accommodation, construction laydown areas, power 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.

9.44 When identifying impacts, ensure impact figures are appropriately scaled and provided for each activity/component and for each stage of the project.

9.45 Detail outcomes of consultation with relevant Aboriginal and Torres Strait Islander peoples, regarding flora and fauna. Describe how matters raised in consultation informed project design and were reconciled with other information and assessments.

9.46

Existing environment

9.47 Identify and describe MSES,[21] state and regionally significant biodiversity, and natural environmental values of the terrestrial and aquatic ecosystems likely to be impacted by the project. This is to include waterways providing for fish passage impacted by the project (including 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, instream refuge waterholes, high ecological significance wetlands, highly protected zones of State marine parks, fish habitat areas declared under the *Fisheries Act 1994*, and marine plants. It is recommended that this section is structured to include separate assessment for each MSES.

9.48 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.

9.49 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 (including wetlands of high ecological significance), watercourses and drainage features

(d) threatened species records

(e) protected wildlife habitat

(f) protected areas and conservation areas

(g) highly protected zones of State marine parks

(h) fish habitat areas

(i) waterways providing for fish passage

(j) marine plants

[21] 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.

(k) biodiversity offset areas approved by the state or Australian governments (if any).

9.50 Provide a detailed description of the key aquatic flora and fauna groups:[22]

(a) known to occur within the project area (as identified through on-ground seasonal studies)

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

9.51 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 as a result of the project) of aquatic and terrestrial flora and fauna groups, regional ecosystems, and significant species.

9.52 Describe flow dependent ecological values within, adjacent and downstream to the site that could be affected by the proposed development and their critical surface or groundwater flows, including, where known, their relevant ecological thresholds.

9.53 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

9.54 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 (including tidal and intertidal), and in sensitive areas, biodiversity values, connectivity and supporting ecological processes[23]

(b) fauna and flora of cultural significance to the relevant Aboriginal Parties for the project. The assessment is to detail outcomes of consultation with relevant Aboriginal and Torres Strait Islander peoples, regarding flora and fauna. Describe how matters raised in consultation were reconciled with other information used in the assessment process.

(c) terrestrial and aquatic ecosystems, including groundwater dependent ecosystems and subterranean fauna such as stygofauna and their interactions, wetlands (including tidal and intertidal), coastal and marine ecosystems

(d) alterations to riparian and coastal vegetation, habitat type and availability, connectivity, and bank and channel morphology, including for any recorded fauna breeding and nesting sites

[22] Consider Department of Regional Development, Manufacturing and Water science and monitoring products available at **https://www.qld.gov.au/environment/library**

[23] Where a MSES is also a MNES, specific cross referencing to where it has been assessed in the MNES chapter is required.

(e) potential impacts associated with physical disturbance and shading of mangroves, seagrass bed, intertidal areas, benthic communities, reefs, microalgal mats, algal forests, and waterways providing for fish and fauna passage (including temporary and permanent impacts) from the jetty infrastructure area, marine offloading facility, and marine vessels, including an assessment against SDAP state code 11[24] and 18[25]

(f) area (in metres squared (m^2)) of permanent and temporary impacts to all aquatic plants (including marine plants)

(g) changes to hydrology and environmental flows resulting in potential impacts to upstream and downstream terrestrial and aquatic habitats

(h) impacts on aquatic and terrestrial fauna and flora species resulting from water quality changes during the construction and operation of the project

(i) the existing integrity and potential impacts on ecological processes, including habitats of listed threatened, near-threatened or special least-concern species

(j) connectivity of habitat and ecosystems and impacts on access to different habitat requirements by species, including waterways providing for fish passage.

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

(l) chronic, low-level exposure to contaminants or the bio-accumulation of contaminants

(m) terrestrial, aquatic, and marine 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 (including underwater noise), and other relevant matters

(n) 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

(o) actions of the project that require an authority under the *Nature Conservation Act 1992* and Water Act (e.g. riverine protection permit), assessable development under the *Planning Act 2016*, *Vegetation Management Act 1999* (VM Act), *Fisheries Act 1994* and an authority and/or permit under the EP Act

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

(q) protected areas, state forest, tenures, biodiversity offset areas approved by the state or commonwealth governments

(r) impacts on native fauna during construction and operation 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).

9.55 In a tabular format, identify all impacted MSES onsite and in proximity to the site and identify relevant legislation and assessment requirements.

9.56 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

[24] Queensland Government, Department of State Development, Infrastructure, Local Government and Planning, *State code 11: Removal, destruction or damage of marine plants,* State Development Assessment Provisions, Version 3.0.
[25] 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.

16,[26] 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.

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

9.58 Describe the potential disruption to flows in waterways and tributaries and demonstrate how the chosen method minimises and mitigates potential impacts on aquatic and riparian habitat (including sediment dams, levees, temporary diversions). Reference is to be made to *Guidelines for Fish Salvage*[27] 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.

9.59 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.

9.60 Describe, illustrate, and assess where any proposed infrastructure, including tailing storage facilities or dams, disturbed and rehabilitated areas, would lie in relation to the extent of any modelled flood level, including the probable maximum flood level. Describe management actions to minimise impacts of flooding to mine infrastructure and manage in mine pit water post-flooding.

Mitigation measures

9.61 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 proposed project.

9.62 Demonstrate how the proposal avoids native vegetation clearing (particularly in High Ecological Significance wetlands), or where avoidance is not reasonably possible, minimises clearing to conserve vegetation, avoid land degradation and maintain ecological processes.

9.63 Propose practical measures (based on demonstrated successful methodologies) to avoid, minimise and/or mitigate direct or indirect impacts on ecological environmental values, including measures for protecting or enhancing natural values. Assess how the nominated quantitative indicators and standards may be achieved for nature conservation management. In particular, address measures to protect or preserve any listed threatened, near threatened or special least

[26] 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.

[27] Queensland Government, Department of Agriculture and Fisheries, *Guidelines for Fish Salvage*, 2018, https://www.daf.qld.gov.au/business-priorities/fisheries/habitats/policies-guidelines/factsheets/guidelines-for-fish-salvage.

concern species. Discuss with reference to relevant studies and literature that supports the effectiveness of these measures.

9.64 Assess the need for fire breaks, buffer zones, and the retention, rehabilitation, or construction of fauna movement corridors, including the role of buffer zones in maintaining and enhancing riparian vegetation and wetlands to promote bank stability, enhance habitat connectivity, and provide habitat.

9.65 Describe how mine infrastructure, including extraction pits, are located to avoid impacting waterways providing for fish passage and if avoidance cannot be achieved, demonstrate any mitigation measures and associated residual impacts.

9.66 Demonstrate that the proposed 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 stages of the proposed project.

9.67 Describe, illustrate, and demonstrate how the project provides safe and adequate upstream and downstream aquatic fauna passage, including all monitoring and maintenance measures.

9.68 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

9.69 After demonstrating that all reasonable on-site avoidance and mitigation measures have been applied, identify whether the project will result in a significant residual impact (SRI) on MSES requiring an offset with reference to the *Queensland Environmental Offsets Policy*,[28] *Queensland Environmental Offsets Policy: Significant Residual Impact Guideline*,[29] or the *Significant Residual Impact Guideline for matters of state environmental significance and prescribed under the Sustainable Planning Act 2009 – Queensland Environmental Offsets Policy*[30] and the Queensland Environmental Offsets framework.[31]

9.70 Address state offset obligations, in accordance with relevant state legislation and policies. Identify, describe, and illustrate the extent (such as in a map and table) of any SRI.

9.71 Where an 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 and the *Queensland Environmental Offsets Policy*.[32]

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

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[28] Refer to Section 5.4.2 of *Preparing an environmental impact statement – Guideline for proponents.*
[29] Queensland Government, Department of Environment and Heritage Protection, *Queensland Environmental Offsets Policy: Significant Residual Impact Guideline,* December 2014.
[30] Queensland Government, Department of State Development, Infrastructure and Planning, *Significant Residual Impact Guideline: For matters of state environmental significance and prescribed activities assessable under the Sustainable Planning Act 2009 – Queensland Environmental Offsets Policy,* December 2014.
[31] Refer to Section 5.4.2 of *Preparing an environmental impact statement – Guideline for proponents.*
[32] Refer to Section 5.4.2 of *Preparing an environmental impact statement – Guideline for proponents.*

(a) identified SRI offset obligations for MSES across the state jurisdiction.

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

(c) the results of a habitat quality assessment[33] on both the impact area and the proposed offset area/s to compensate for impacts

(d) 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

(e) discussion and sound review of the availability of the offset for each MSES proposed to be offset and the ability to enter into long-term conservation agreements

(f) an evaluation of how the proposed offset will achieve a conservation outcome for the impacted matter

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

9.73 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). Describe how the achievement of the offset strategy will be monitored and audited, and how corrective actions will be managed.

9.74 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, construction and operation 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, marine pests, 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

9.75 Survey terrestrial and aquatic pest animals and weeds and describe their current distribution and abundance in the project area and surrounds.[34] 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

[33] The site habitat quality score must be derived in accordance with the latest version of the Queensland Government, Department of Environment and Science, *Queensland Guide to determining terrestrial habitat quality: Methods for assessing habitat quality under the Queensland Environmental Offsets Policy*.

[34] Refer to Section 5.4.4 of *Preparing an environmental impact statement – Guideline for proponents* for relevant guidelines.

as containing, or likely to contain, listed flora, fauna, and ecological communities of MSES. 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 Hope Vale Aboriginal Shire Council and Cook Shire Council local laws, and designated pests under the *Public Health Act 2005*.

Impact assessment and mitigation measures

9.76 Describe the project's construction and operational impacts on the potential spread of terrestrial and aquatic pest animals, terrestrial and aquatic weed species, marine pests and disease within the project area construction and operational access routes and into adjoining properties (where relevant). Conduct the impact assessment in accordance with the guidance materials identified in Section 5.4.4 of *Preparing an environmental impact statement - Guideline for proponents*.

9.77 Propose detailed measures using best practice to remove, control and limit the spread of pests, weeds, and diseases 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 Maritime Safety Queensland, Biosecurity Queensland and the Australian Maritime Safety Authority. Include a discussion on minimising any susceptibility to biosecurity risks with the introduction and/or expansion of temporary and permanent infrastructure.

9.78 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 VM Act/*Planning Act 2016*.

9.79 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, construction and operation 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 does diminish the quality or ability to access the resource for existing water users

(c) maintain and monitor environmental flows, water quality objectives, 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

9.80 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

(f) freshwater springs naturally occurring within the ocean.

9.81 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.

9.82 Identify the relevant environmental values defined in section 9 of the EP Act and water quality objectives provided in the Environmental Protection Policy (Water and Wetland Biodiversity) 2019 (EPP (Water and Wetland Biodiversity)).

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

Impact assessment and mitigation measures

9.84 Identify the location of all proposed infrastructure in relation to potentially impacted waters.

9.85 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.

9.86 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 including pre-construction, construction, operations, rehabilitation and mine closure activities.

9.87 Describe impacts of the project on the outcomes of the Cape York Water Plan 2019, including how the project will conform to the relevant 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 relevant 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).

9.88 Describe how the project meets the consideration for releasing strategic reserve unallocated water under the Cape York Water Plan 2019 and the Cape York 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

(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 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.

9.89 Discuss the changes in the stream flows and eco-hydraulic indicators that may be anticipated as a result of the proposed 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, including delivery to the coastal and near shore environment.

9.90 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.

9.91 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 phase.

9.92 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 DESI policies and guidelines.

9.93 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.

9.94 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.

9.95 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. 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, groundwater dependent ecosystems and watercourses. Ensure that any overland flow storage capacity meets the requirements listed under the relevant Water Plan.

Groundwater

Existing environment

9.96 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, or potential saltwater intrusion 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 horizonal 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 is a tidal influence and/or seasonal changes related to annual barometric pressure trends

(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) described 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. In particular mapping of groundwater salinity to identifying any saltwater-freshwater interface near the coast or tidal creeks. Describe any seasonal variation in the groundwater salinity

(l) identify and describe any known or potential groundwater dependent ecosystems (GDEs) in or around the project area. Refer to the IESC Groundwater Dependency Assessment Guidelines.[35] 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.

9.97 Describe the relationship between groundwater and seawater. 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) sea water intrusion

(d) aquifer dimensions

(e) mining extent

(f) production bores and monitoring bores

[35] Australian Government, IESC, *Information Guidelines Explanatory Note – Assessing groundwater-dependent ecosystems,* https://www.iesc.gov.au/publications/information-guidelines-explanatory-note-assessing-groundwater-dependent-ecosystems.

(g) groundwater flow direction.

9.98 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*[36]

(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.

9.99 Describe the nature of aquifers within the proposed impacted areas regulated by the Water Plan (Great Artesian Basin and Other Regional Aquifers) 2017 (GABORA Water Plan).

Impact assessment and mitigation measures

9.100 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, groundwater dependent ecosystems, saltwater intrusion, 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 Cape Flattery area.

(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) groundwater dependent ecosystems, including impacts on stygofauna and proposed mitigation measures

(vi) the availability, reliability and quality of groundwater resources for other existing users, including existing industrial users in the Cape Flattery local area, and include proposed mitigation measures

(vii) the potential of any contaminants and its movement through the groundwater system

[36] Australian Government, National Water Commission, *Australian groundwater modelling guidelines,* June 2012.

(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) identify and describe whether saltwater intrusion may occur from the proposed take of groundwater and include proposed mitigation measures

(f) describe details of all existing and proposed monitoring bores to be used for identifying potential changes and impact on other water users, groundwater dependent ecosystems, saltwater intrusion, and inter-aquifer flow

(g) detail the construction and operation of the groundwater monitoring program for the project, to monitor any impacts as a result of the project, including on groundwater quality and hydrology, and groundwater dependent ecosystems. The program is to detail any foreseeable decommissioning and replacement of bores

(h) provide a groundwater management plan, for the life of the project, which details management strategies for predicted impacts on groundwater and groundwater dependent ecosystems

(i) detail the regulatory framework for decommissioning of any temporary groundwater bores.

9.101 Describe any proposals, including during construction, the life of the project and decommissioning, to take water form an aquifer managed under the GABORA Water Plan and if an entitlement can be obtained under the water planning framework.

Water-related cultural values

Existing environment

9.102 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

9.103 Describe the project's potential impacts on water-related cultural values, uses and aspirations of water resources for Aboriginal and Torres Strait Islander peoples.

9.104 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.

9.105 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, construction and operation 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 water quality objectives

(c) protect the environmental values of groundwater and any associated surface ecological systems

(d) protect the environmental values of receiving marine waters and wetlands.

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

Existing environment

9.106 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.

9.107 With reference to the EPP (Water and Wetland Biodiversity) (Jeannie and Endeavour River Basins Environmental Values and Water Quality Objectives) and section 9 the EP Act, identify the current water quality environmental values and water quality objectives 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.

9.108 Demonstrate how the relevant water quality objectives will be met during all phases of the project.

9.109 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*[37]

(f) surface water quality samples that include, as a minimum, electrical conductivity, pH, sulphate, dissolved oxygen, turbidity, total suspended solids, nutrients, dissolved and total metals and metalloids, total recoverable hydrocarbons and major anions and cations. Groundwater indicators must include, as a minimum, the same indicators (except turbidity

[37] Refer to Section 5.2.1 of *Preparing an environmental impact statement – Guideline for proponents*.

and total suspended solids) and should allow for all water quality objectives for local groundwater to be assessed

9.110 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, dissolved and total trace metals i.e. suite of analytes suitable for addressing all water quality objectives. Surface water quality testing should include the above analytes as well as turbidity and total recoverable hydrocarbons.

9.111 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.

9.112 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

9.113 With reference to the project construction and operational 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, operational decommissioning areas of the project and surround, or run-off from disturbed acid sulfate, sodic or dispersive soils.

9.114 Demonstrate how the relevant water quality guidelines or final objectives (as outlined in water quality information sources in Section 5.3.1 of *Preparing an environmental impact statement – Guideline for proponents* and the *Reef 2050 Water Quality Improvement Plan*[38]) will be met and how relevant environmental values are to be protected during construction, operation, decommissioning and rehabilitation.

9.115 Describe and include in a Water Management Plan avoidance measures, mitigation strategies and contingency plans for:

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

(b) stormwater run-off, erosion and sedimentation from the construction of the project with reference to *Best Practice Erosion and Sediment Control IECA 2023*[39]

(c) water quality impacts from the proposed development as a result of flooding events of relevant watercourses, the effects of tropical cyclones and other extreme events on other properties and the environment

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

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

9.116 Describe how monitoring would be used to demonstrate that water quality objectives were being assessed, audited and met. For example, provide measurable criteria, standards and/or

[38] Queensland Government, *Reef 2050 Water Quality Improvement Plan – 2017-2022,* 2018.
[39] Refer Section 5.3.1 of *Preparing an environmental impact statement – Guideline for proponents.*

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, construction and operation 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

9.117 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

(e) health and community wellbeing.[40]

9.118 Preparation of the SIA must be accordance with the *Social Impact Assessment Guideline*.[41] In developing the SIA, consider the *Coordinator-General's supplementary material*.[42]

Existing environment

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

9.120 Prepare a social baseline analysis within the project's study area. The baseline must:

(a) describe the state of existing social conditions for people, communities, and key stakeholders directly or indirectly affected by the project

(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) consider the effects of historic interventions in communities, including policies, programs, projects and developments

(d) identify the impacts of any operating mines and other significant development

[40] Section 9(3) of the SSRC Act.
[41] Queensland Government, Coordinator-General, *Social Impact Assessment Guideline,* March 2018.
[42] *Social Impact Assessment – Supplementary material for assessing and managing social impacts of projects under the Coordinator-General's Social Impact Assessment Guideline,* November 2023 - refer to Section 5.6 of *Preparing an environmental impact statement – Guideline for proponents.*

(e) critically examine and discuss the quality of current baseline social conditions across communities within the study area, especially where there are materially different baseline conditions across the study area.

Impact assessment and mitigation measures

9.121 The SIA for the project must be informed by a consultative and inclusive stakeholder engagement program, in accordance with the requirements of the *Preparing an environmental impact statement – Guideline for proponents*.[43] 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

(c) clearly demonstrate how the design of the project and proposed mitigation and management measures have been informed by engagement.

9.122 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*.

9.123 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),[44] and describe the recruitment strategies and training programs to achieve that target.

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 Identify barriers to employment opportunities at the project for residents of nearby regional communities, in particular traditional owners residing in Hope Vale Aboriginal Shire and Cook Shire local government areas. Identify measures to facilitate traditional owners to work at the project and reside in their community and maintain community connections when off-roster.

9.127 Describe how workers will travel to the project site for all project phases. Detail any associated mitigation and management measures.

9.128 Describe the project's procurement strategy for all project phases and components, including for maritime and shipping services, and discuss how the strategy aligns with relevant government policies, plans and initiatives.[45]

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[43] Refer to Sections 4.6 and 5.6 of *Preparing an environmental impact statement – Guideline for proponents.*
[44] ***Nearby regional community*** for a large resource project means a town which is within a 125km 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*.
[45] Refer to Appendix 1.

9.129 Detail the target for procurement from Aboriginal and Torres Strait Islander owned businesses, and the proposed strategies to achieve the target.

9.130 Describe the housing strategy to accommodate construction and operational workers. Describe how this will impact the residential land supply, housing and accommodation market of Hope Vale Aboriginal Shire and Cook Shire 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*.

9.131 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) strategies, plans and initiatives to improve poor baseline conditions (where identified during the social baseline analysis)

(c) measures to ensure continued community and stakeholder participation in monitoring, mitigation and management of social impacts

(d) 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, and relevant stakeholders.

Cultural heritage

Objective and outcomes

The design, construction and operation 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

9.132 Identify the Aboriginal Parties of the land within and adjacent to the project area.

9.133 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.

9.134 Any desktop assessment must be verified and supported by a field survey of the project area. The survey must be sufficient to support the preparation of a Cultural Heritage Management Plan (CHMP), where required for the project in accordance with the relevant Cultural Heritage Act(s).

9.135 Describe, the relevance of the project to the inclusion of the Cape York Peninsula[46] on Austrlaia's World Heritage Tentative List and any matters relevant to the *Cape York Peninsula Heritage Act 2007*.

9.136 For aspects of non-Indigenous historical heritage protected by the *Queensland Heritage Act 1992* (Qld) (Queensland Heritage Act), undertake a study of, and describe, the known and potential historical cultural, archaeological, underwater cultural heritage artefacts and landscape heritage values of the area potentially affected by the project in accordance with the *Non-Indigenous cultural heritage – EIS information guideline*.[47] Identify values at local and state thresholds and assess the significance of identified values using recognised criteria.

Impact assessment and mitigation measures

9.137 Detail potential impacts on Aboriginal and Torres Strait Islander peoples' cultural heritage from the project in accordance with the *Aboriginal and Torres Strait Islander cultural heritage – EIS information guideline*.[48] Consider impacts to visual amenity and interference with landforms and waters in determining impact on cultural heritage.

9.138 Where required as per Part 7 of the relevant Cultural Hertiage Act(s), develop a CHMP informed by the results of the cultural heritage assessment. In the alternative, provide reasonably sufficient information about any relevant native title agreement for the project and its effects on the management of cultural heritage, to the extent allowable.

9.139 Detail potential impacts on Queensland (non-Indigenous) historical heritage identified under the Queensland Heritage Act.

9.140 Provide strategies to mitigate and manage relevant impacts on cultural heritage values of Aboriginal and Torres Strait Islander peoples and non-Indigenous cultural heritage values from the proposed development. 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*.

Economic

Objective and outcomes

The design, construction and operation 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*.[49] The analysis is to describe the local and regional economies likely to be impacted by the proposed project and identify the relevant stakeholders, and include:

[46] Refer to https://parks.des.qld.gov.au/data/assets/pdf_file/0033/329838/cywha-nomination-project-factsheet.pdf.
[47] Refer to Section 5.6 of *Preparing an environmental impact statement – Guideline for proponents.*
[48] Refer to Section 5.6 of *Preparing an environmental impact statement – Guideline for proponents.*
[49] Refer to Section 5.6 of *Preparing an environmental impact statement – Guideline for proponents.*

(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

(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 silica sand product 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 proposed 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 proposed 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 silica sand product prices.

9.147 Undertake a regional impact assessment (RIA) 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 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 6.15(c) and 6.15(d), justify the proposed 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 Where the project proposes infrastructure to be permanently owned by a public sector entity or a government-owned corporation,[50] the CBA should demonstrate how the infrastructure will provide a net economic benefit to the region and the State for its design life, including during project operations and following the cessation of mining.

9.152 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.[51]

[50] As defined section 8 of the *Public Sector Act 2023* (Qld).
[51] Refer also to The Cape York Regional Plan. The draft plan to be considered in EIS preparation until final plan released.

Hazards, health and safety

Objective and outcomes

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

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

(b) avoid, minimise and/or mitigate adverse impacts on coastal environmental values, processes and resources

(c) 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

(d) ensure development is appropriately located, designed and constructed to minimise health and safety risks to communities, individuals and adverse effects on the environment

(e) enhance the community's resilience to natural hazards

(f) 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

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

Impact assessment and mitigation measures

9.154 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 stages 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., cyclone, storm tide, flooding, bushfire, earthquakes,[52] landslide, heatwave[53]). Identify the cumulative impact of several natural hazards occurring at the one time.

[52] 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.
[53] Use State Heatwave Risk Assessment – Queensland Government, Queensland Fire and Emergency Services, *State Heatwave Risk Assessment,* 2019.

(d) how the project may potentially affect hazards away from the project site (e.g., changing flooding characteristics, bushfire, landslide).

9.155 Assess the vulnerability of the area to natural and induced hazards, including drought, heat, floods, bushfires and cyclones. Consider the relative frequency, duration, intensity and magnitude of these events together with the risk they pose to:

(a) the construction, operation and rehabilitation of the project

(b) flora and fauna at the site and in the vicinity of the site including arboreal species

(c) environmental values of the site and surrounding areas.

9.156 Detail how siting, layout and operation of the development as well as other measures will avoid or mitigate risks of these events to the project, environmental values and human safety.

9.157 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.

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

9.159 Detail the potential maritime operational and safety risks associated with project activities, including transhipping activities, barge and fast vessel movements and emergency events including extreme weather events, maritime casualties, ship groundings and ship sourced pollution incidents. Describe mitigation measures to address identified risks and emergency events. [54]

9.160 Describe the potential risks and proposed mitigation measures in accordance with *Guideline for vetting bulk carriers intended for travel through the Great Barrier Reef*[55] to ensure that shipping within the Great Barrier Reef is safe, risks are minimised, and incidents are reduced to as close to zero as possible.

9.161 Develop mitigation measures for identified potential wildlife hazards e.g. estuarine crocodiles, mosquitoes and other biting insects. The mosquito (and other biting insect) management plan must provide strategies for the management of risks onsite including breeding sites and harbourages during construction and operational phases of the project.

9.162 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 and operations, and including the following information at a minimum:

(i) a bushfire hazard analysis

[54] Queensland Government, Maritime Safety Queensland, *Tidal works and major development proposals,* https://www.msq.qld.gov.au/Waterways/Tidal-works-and-major-development-proposals.
[55] Queensland Government, Maritime Safety Queensland, *Guideline for vetting Bulk Carriers intended for travel through the Great Barrier Reef,* https://www.msq.qld.gov.au/about-us/news-and-stories/ship-vetting-guideline-for-bulk-carriers-moving-through-the-great-barrier-reef.

(ii) mitigation strategies to achieve the relevant development outcomes in Section E of the *State Planning Policy– Natural Hazards, Risk and Resilience*[56]

(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 and operational 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 and Emergency Services and Queensland Ambulance Service).

9.163 Provide details on consultation undertaken and the proposed communication plan arrangements with the Hope Vale Aboriginal Shire Council and Cook Shire Council in the event of an emergency (e.g. emergencies, incident management etc.)

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

9.165 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.

Climate

Existing environment

9.166 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*.[57]

9.167 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

9.168 Conduct the assessment in accordance with *Climate – EIS information guideline*.[58]

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

9.170 Assess the project's vulnerabilities to projected climate change (e.g. changing patterns of temperature, rainfall, hydrology, and extreme weather events). The assessment of climate

[56] Refer to Section 5.5 of *Preparing an environmental impact statement*.
[57] Australian Government, Bureau of Meteorology, *Changes to fire weather in Queensland,* 2019.
[58] Refer to Section 5.9 of *Preparing an environmental impact statement.*

hazards and risks should reference relevant climate projection data (e.g. Queensland Future Climate high-resolution climate projection data)[59] and employ an appropriate climate risk assessment methodology.

9.171 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 are to be designed to avoid perverse outcomes, such as increased emissions of greenhouse gases or maladaptive outcomes for surrounding land uses.

Coastal environment

Existing environment

9.172 Describe and provide mapping of the existing coastal zone that is potentially affected by the project.

9.173 Describe and provide mapping of sea floor, water depth, currents and winds relevant to shipping and anchorages.

Impact assessment and mitigation measures

9.174 Conduct the assessment in accordance with *Coastal – EIS information guideline*.[60]

9.175 Describe and illustrate any proposed works in the coastal zone, including a schedule of ongoing maintenance requirements. The description must address the following matters:

(a) current and recently historical estuarine, littoral and marine morphology with a description of the processes shaping the coastal zone (e.g. tides, rivers, floods, coastal currents, major storms, rocky headlands or islands)

(b) existing estuarine, littoral and marine environmental values, including water quality, benthos, aquatic flora and fauna, mangrove areas, salt marsh, and amenity, that could be impacted by construction, operation and decommissioning of the project

(c) Queensland or Australian marine parks in the region of the project site

(d) separately mention marine plants and any fish habitat areas protected under the *Fisheries Act 1994*

(e) existing residential, commercial or recreational uses of the coastal zone that could be impacted by construction or operational activities of the project

(f) maintenance dredging or bed levelling for navigation channels, berths, swing basins or harbours

(g) excavations on or near the shore

(h) any proposals to undertake transhipping of material in Queensland waters or the Australian marine area

(i) the volume, chemical and physical characteristics of the excavated material, with particular regard to acid sulfate soils

(j) proposed disposal or placement options for excavated material, including an assessment of whether disposal in waters or for land reclamation would be likely to receive approval

[59] Queensland Government, *Queensland Future Climate Dashboard,* https://longpaddock.qld.gov.au/qld-future-climate/dashboard.
[60] Queensland Government, Department of Environment and Science, *Coastal – EIS information guideline,* ESR/2020/5299, version 1.01, April 2022.

(k) any jetty, vessel landing, bund, harbour wall, groyne, channel markers, OGV anchorage or other infrastructure to be built in waters

(l) buildings and infrastructure to be built on the shore or on land close to the shore.

9.176 Assess the potential impacts of the project's activities in the coastal zone. Model or assess through a suitable alternative methodology, the spread and impacts of any sediment plume to be created by construction or transhipping activities.

9.177 Assess the potential loss of marine habitat or diversity that could result from the project.

9.178 Assess any potential impacts on commercial or recreational fisheries that operate in the area, including impacts that could arise from the loss of nursery habitat (e.g. seagrass beds, reefs, or mangroves) of target species (such as prawns and fish).

9.179 Detail how natural processes and the protective function of coastal landforms and vegetation will be maintained in sea erosion and storm tide inundation areas.

9.180 Propose measures to avoid, minimise or mitigate the potential impacts of the project's activities in the coastal zone.

Flooding

Existing environment

9.181 Discuss the history of flooding onsite and in proximity to the proposed project site including extent, levels and frequency (upstream and downstream).

9.182 Describe the current flood risk for a range of annual exceedance probabilities up to the probable maximum flood for the proposed project site.

Impact assessment and mitigation measures

9.183 Provide a hydraulic and hydrological analysis (flood impact assessment) demonstrating the design flood peak depths, levels, extents, velocities and hazards for the site and surrounding area which exist in the pre- and post-project scenarios for the 5% Annual Exceedance Probability (AEP), 1% AEP, Probable Maximum Flood (PMF) and 1% AEP with consideration of future climate change.

9.184 Assess the project's vulnerabilities to flooding in the context of 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.

9.185 Describe how overland flow paths/ hydraulic conveyance should be maintained on the site as part of the proposed project. Describe how the existing environment flow scenario will be replicated in the post project condition. Describe how the project design addresses any concentration of flows, potential for back-up/ponding and scour/erosion which may undermine existing and future state-controlled transport corridors.

9.186 Describe changes to waterways[61] (as defined under the *Fisheries Act 1994*) and watercourses[62] (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

[61] 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.
[62] 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.

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.

Air

Air

Objective and outcomes

The design, construction and operation 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.

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

Existing environment

9.187 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).

9.188 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.

9.189 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

9.190 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*.[63] Demonstrate the project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.

9.191 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)

[63] Refer to Section 5.8 of *Preparing an environmental impact statement.*

during construction, commissioning, operations, maintenance and a range of possible/likely upset conditions is to be included for the project site.

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

9.193 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).

9.194 Address the compatibility of the proposed project's air emissions with existing or potential land uses in surrounding areas, using established and accepted methods predict potential impacts on environmental values of the receiving environment.

9.195 Describe how the proposed 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.

9.196 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.

Greenhouse gas emissions

Note: The *Queensland Resources Industry Development Plan* (June 2022) includes an action to require industry to develop plans to decarbonise operations. The QRIDP states that the Queensland Government, led by the former Department of Environment and Science, will work with the resources industry to develop a decarbonisation plan policy that:

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

This section, requiring consideration of GHG emissions attributed to the project has been prepared in collaboration with DESI. DESI is developing a draft Greenhouse Gas Emissions Guideline, which was subject to targeted industry and community consultation in November 2023-February 2024. Accordingly, this section may change prior to finalisation of the TOR for the project. The proponent will be required to be consistent with the Greenhouse Gas Emissions Guideline when finalised.

Existing environment

9.197 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

9.198 Describe the proponent's obligations under the Australian *National Greenhouse and Energy Reporting Act 2007* (NGER Act). Information regarding GHG emissions and energy production and consumption provided in the EIS must be consistent with requirements of the NGER Act and its subordinate legislation.

9.199 Provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO_2 equivalent' terms. Include a breakdown of GHG emissions by source.

9.200 Identify the projected annual scope 1 and scope 2 emissions[64] over the life of the project. Include an estimate of both unabated and predicted emissions after all avoidance and abatement measures have been accounted.

9.201 Provide an estimate of annual scope 3 emissions[65] and total scope 3 emissions over the life of the project.

9.202 Describe how the estimates were determined, including information about the methodology used, assumptions made and justification for any exclusion of emissions. The National Greenhouse and

[64] 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.
[65] 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.

Energy Reporting (Measurement) Determination 2008 provides methods and criteria for calculating GHG emissions and energy data under the NGER Act which can be used in combination with National greenhouse energy report technical guidelines[66] and National Greenhouse Accounts Factors as a reference source for emission estimate methods and supplemented with information from other sources where practicable and appropriate.

9.203 Quantify, describe and illustrate the potential impacts of the project on the State and National GHG inventories, including Queensland's emission targets.

9.204 Describe potential positive and negative contributions to GHG emissions associated with the project.

9.205 Detail proposed GHG abatement measures, including:

(a) project emission reduction targets to assist in meeting Queensland's emission reduction targets

(b) measure and reporting on progress towards project emission reduction targets

(c) a description of the proposed preferred and alternative measures to avoid and/or minimise scope 1 and 2 emissions of the project through best practice design, process, technology, and management following the GHG abatement hierarchy: avoid reduce, substitute and offset

(d) options for avoiding and/or mitigating scope 3 emissions (e.g. working with supply chain and customers)

(e) identify the location of scope 3 emissions (domestic or international) and outline whether they are expected to be subject to similar emission reduction requirements

(f) an assessment of how the preferred measures minimise emissions and achieve energy efficiency describing the practicality, effectiveness, timeframe for implementation and risks for each avoidance and mitigation measure

(g) any voluntary initiatives such research into reducing the lifecycle and embodies energy carbon intensity of the proposed project's processes or products

(h) a comparison of the preferred measures for emission controls and energy consumption with best practice environmental management in the relevant sector of industry

(i) a description of any opportunities for further offsetting of GHG emissions. Offsets must be consistent with Australian requirements using Australian Carbon Credit Units.

(j) ongoing training and capacity building around decarbonisation options and technology.

9.206 Identify risks and likely magnitude of impacts to environmental values from scope 1, 2 and 3 emissions.

9.207 Describe how GHG emissions would be monitored, audited and reported, and how corrective/preventative actions would be managed for the life of the project.

[66] **https://www.cleanenergyregulator.gov.au/NGER/Forms-and-resources/Guidelines** and National Greenhouse Accounts Factors.

Noise and vibration

Objective and outcomes

The design, construction and operation of 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

9.208 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 proposed project.

9.209 Describe the existing noise and vibration sources and baseline levels within the project area.

Impact assessment and mitigation measures

9.210 Describe the characteristics of the noise and vibration sources emitted by the project (point source and general emissions) during all phases of the proposed project.

9.211 Conduct a noise and vibration impact assessment in accordance with *Noise and vibration—EIS information guideline*[67], Schedule 1 of the EPP (Noise) and *Applications for activities with noise impacts*.[68] 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

9.212 Assess the potential short-term or long-term impacts of noise on marine fauna, particularly cetaceans.

9.213 Describe how the proposed project would be managed to be consistent with best practice environmental management, including the control of background creep in noise as outlined in the Environmental Protection (Noise) Policy 2019. The assessment must address the compatibility of the proposed project's noise emissions with existing and potential land uses in surrounding areas.

9.214 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.

[67] Refer to Section 5.7 of *Preparing an environmental impact statement – Guideline for proponents.*
[68] Refer to Section 5.7 of *Preparing an environmental impact statement – Guideline for proponents.*

Transport

Objective and outcomes

The design, construction and operation 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

9.215 Describe the total transport task for the project, including workforce, inputs and outputs during the construction, operational and decommissioning phases 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*[69] and Section 5.10 of *Preparing an environmental impact statement – Guideline for proponents*.

9.216 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

9.217 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.

9.218 Describe and illustrate the topography of the existing marine project area. This investigation should be undertaken by hydrographic survey (including bathymetry).

Impact assessment and mitigation measures

9.219 Describe the total transport activities associated with all project phases (from pre-construction through to decommissioning). 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

[69] Refer to Section 5.10 of *Preparing an environmental impact statement – Guideline for proponents.*

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

(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) details for all marine vessels concerning maritime transportation of supplies, product, and personnel, including:

(i) vessel details (including under keel clearance of OGVs)

(ii) barge loading facilities

(iii) number of trips

(iv) load size

(v) service frequency

(vi) duration

(vii) fuel resupply for all vessels and machinery

(viii) details of securing locations for vessels (including for when vessels are not in use)

(ix) protocols for extreme weather events (e.g. cyclones)

(x) logistics regarding reef pilots and port pilots

(e) potential impacts from shipping/marine activities and marine infrastructure on hydrographic assessments (including bathymetry) during construction and operational phases of the project

(f) potential impacts to time sensitive agricultural freight (e.g. exports, horticulture, livestock)

(g) traffic generated by workforce personnel and service providers during the construction, operational and decommissioning phases of the project

(h) 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.

9.220 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.

9.221 Prepare a transport assessment in accordance with *Transport – EIS information guideline* and present each project-affected mode (road, rail, air services, port and maritime) 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 the project's pre-construction, construction, and operational phases.

(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)[70] 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.

9.222 Demonstrate how the project complies with Maritime Safety Queensland's *State Development Assessment Provisions supporting guideline – State code 7: Maritime safety*.[71]

9.223 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[72] and the Development Assessment Mapping System.

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

9.225 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 governments, DTMR, Maritime Safety Queensland, 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.

[70] Refer to Section 5.10 in *Preparing an environmental impact statement – Guideline for proponents.*
[71] Queensland Government, Department of Transport and Main Roads, *State Development Assessment Provisions Supporting Guideline – State code 7: Maritime safety*, 2022.
[72] Refer to **https://www.tmr.qld.gov.au/QTRIPonline**.

Waste management

Objective and outcomes

The design, construction and operation 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

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

9.227 Describe pre-existing contaminated material identified on property lots listed on the EMR 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

9.228 For wastes other than wastewater, describe all the expected waste streams, including hazardous contaminants, generated by project activities, including marine activities, during the construction, operation, rehabilitation and decommissioning.

9.229 Describe the quantity, and physical and chemical characteristics of each significant waste stream, any attributes that may affect its dispersal in the environment, and its associated risk of causing environmental harm.

9.230 Conduct the impact assessment in accordance with the latest version of the *Waste—EIS information guidelines* and *Applications for activities with waste impacts*.[73] Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.

9.231 Describe objectives and practical mitigation measures to ensure environmental values are protected or enhanced from potential impacts from wastes.

9.232 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) and describe the management of progressive placement and any disposal strategy to minimise any

[73] Refer to Section 5.11 of *Preparing an environmental impact statement – Guideline for proponents.*

potential impacts on environmental values of the proposed project area. Describe how high-risk waste material will be managed in the rehabilitation plan.

9.233 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 stage 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, including waste generated by marine activities.

9.234 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.

9.235 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.

9.236 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.

9.237 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.

9.238 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.

Cumulative impacts

Objective and outcomes

The design, construction and operation 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

9.239 Potential cumulative environmental, social, economic, and cultural impacts (including the likelihood, intensity, duration, magnitude, and extent of impacts) are to be considered for the design, construction, operational, decommissioning and rehabilitation phases of the project, including the likelihood, intensity, duration, magnitude, and extent of impacts resulting from the construction, operational, maintenance and decommissioning components of the project, including flora, fauna, and species habitat in the terrestrial and marine project areas.

9.240 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).

9.241 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

(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) soil quality

(d) the Cape Bedford/Cape Flattery dunefield complex and associated lakes and wetlands

(e) 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, marine ecosystems, and the Great Barrier Reef)

(f) 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

(g) release of contaminants, materials or wastes and the management and disposal of waste

(h) air quality

(i) noise and vibration

(j) marine traffic

(k) natural hazards

(l) public health and safety

(m) MSES

9.242 Describe how cumulative impacts for the above listed matters may be affected by climate change, including changes in the frequency and intensity of extreme weather events.

9.243 Describe measures that would be used to avoid, minimise, or mitigate any identified cumulative impacts.

Appendix 1. Polices 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.

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