Terms of reference for an environmental impact statement

Northern Silica project

September 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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Source number D24/118620

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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 Northern Silica project (the project), proposed by Northern 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 Northern Silica project.

1.3 The proposed project is a greenfield silica sand mining, processing and export project, located approximately 30 kilometres (km) north of Hope Vale and is within the Hope Vale Aboriginal Shire local government area. The project proposes to extract up to 6.25 million tonnes per annum (Mtpa) of run-of-mine silica sand, processed on-site to produce up to 5 Mtpa of product silica sand. The product is proposed to be exported via the Port of Cape Flattery.

1.4 The project is proposed to be developed in 2 stages, subject to market demand for silica. Stage 1 involves the extraction of up to 3.75 Mtpa of run-of-mine silica sand which would report to a processing plant to produce up to 3 Mtpa of product silica sand. Stage 2 is proposed to increase extraction up to 6.25 Mtpa of run-of-mine, construct an additional processing plant, to produce up to 5 Mtpa of product silica sand.

1.5 The proposed project comprises the following:

(a) a mine site including:

(i) open cut sand mine

(ii) onsite processing plants, product stockpile, and conveyor, laydown areas, access road and sediment basins

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

(b) marine infrastructure to support product export within the Port of Cape Flattery 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 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.

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[1] Queensland Government, Department of State Development and Infrastructure, ***Preparing an environmental impact statement – Guideline for proponents*** (February 2024).

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. It is recognised that every aspect of the environment (land, water, air, flora and fauna) has a cultural dimension.

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

4.1 On 14 June 2023, the project was declared to be a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC reference 2023/09485). The following controlling provisions were applied to the proposed action:

(a) the world heritage values of a declared World Heritage property (section 12 and section 15A)

(b) the national heritage values of a National Heritage place (section 15B and section 15C)

(c) the Great Barrier Reef Marine Park (GBRMP) (section 24B and section 24C)

(d) listed threatened species and communities (section 18 and section 18A)

(e) listed migratory species (section 20 and section 20A).

4.2 At the time of the EPBC referral, the project had also been referred to the Department of Environment, Science and Innovation (DESI) triggering the Bilateral Agreement between the Australian Government and the State of Queensland.

4.3 On 14 June 2023, the project was determined to be assessed as a Bilateral Assessment. On 12 January 2024, the project was declared a coordinated project being assessed under the SDPWO Act. The Bilateral Agreement between the Australian Government and the State of Queensland under the EPBC Act continues to apply for the assessment of the project. As such, no decision on assessment approach was made by the delegate for the Australian Minister for the Environment and Water. The assessment of the controlling provisions, mitigation measures and any offsets for residual impacts are to be described and illustrated in a stand-alone report in the EIS that fully addresses the matters relevant to the controlling provisions. The Coordinator-General will evaluate this report in their Coordinator-General's Evaluation Report, which will be provided to the Australian Minister for the Environment and Water. Section 10 of this TOR, developed in consultation with the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW), sets out the information which must be included in the EIS relating to MNES.

5. More information

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

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 (including reference to state and commonwealth marine park boundaries/port limits/lease areas), 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, product stockpile, conveyors, reject stockpiles and fines stockpiles.

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

[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*.

(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)

(j) infrastructure for recreational and tourist purposes

Marine infrastructure requirements

(k) rock barge facility, conveyor, access track, generators and fuel, offices

(l) any vessel launching/loading facilities, including augmentation to the existing wharf

(m) transfer / transhipping activities, including navigation channels, moorings and anchorage point

Ancillary infrastructure requirements

(n) electricity transmission

(o) telecommunication

(p) 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 (including transition from 3.75 to 6.25 Mtpa), 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 and data (where relevant), 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, hydrographic, tidal, topographic, noise, air, flora and fauna, water quality, cultural heritage, contaminated land, visual amenity and how this information will be used in the final design and construction of the project

(c) proposed vegetation clearing and mulching (including footprints, proposed removal techniques, staging use or disposal of cleared vegetation and clear justification for these methods as having the least environmental impact), top- and sub-soil removal and stockpiling and associated management measures

(d) proposed temporary and permanent infrastructure

(e) interference with watercourses (as described under the *Water Act 2000* (Water Act))[3], waterways (as described under the *Fisheries Act 1994*), tidal land and floodplain areas including wetlands

(f) proposed water requirements including source and location of take, volumes, intended purpose and demand management strategies through all project stages.

(g) proposed dewatering, management of site drainage and watercourse and other drainage feature flow

(h) proposed placing of materials (concrete and fill material)

(i) project site access arrangements where access to the site is on tenure not held by the proponent, including consents and approvals required to access land or purchase land or obtain easements

(j) proposed development, upgrades, 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 or waterway, 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

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

(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, marine-side infrastructure such as rock barge facility or augmentations to existing marine infrastructure, anchorage, haul road establishment, bed-levelling, crushing, screening, concrete batching, fuel and chemical storage, workshop facilities, office facilities, on-site mess and ablutions facilities

(j) location and access including coordinates of the boundary points in decimal degrees (latitude and longitude to 5 decimal places, Geocentric Datum of Australia (GDA) 2020 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 or 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 provide

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

(r) stormwater drainage systems and the proposed treatment, disposal and/or re-use arrangements, including any off-site services, stormwater release and monitoring locations with coordinates in decimal degrees (latitude and longitude to 5 decimal places, GDA 2020), and storm water release criteria. The storm water release criteria must provide sufficient justification as to the limits proposed and reference any relevant criteria, such as the Environmental Protection (Water and Wetlands Biodiversity) Policy 2019, or Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand water quality guidelines,[6] to demonstrate that any release can be conducted in a sustainable manner that does not result in environmental harm

(s) solid and liquid waste management

(t) management of contaminated land and acid sulphate soils

(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

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[4] Watercourse identification maps (WIP) can be found on the Business Queensland website at: **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,* **www.waterquality.gov.au/anz-guidelines**, 2018.

(b) mining sequence and cross sections showing profiles and geological strata and faults

(c) proposed methods, equipment and techniques for extraction and 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 use

(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, waterway, lake or spring, overland flow water, and underground water (both direct and in-direct)

(m) water balance for the water supply requirements:

  (i) for each component of the works, identify and quantify all activities requiring water for all stages of the project, including, but not limited to mining and processing potable water, recycled water, dust suppression, washdowns, road construction, and camp operation

  (ii) for each water requirement, the source, volume, means of access and transport, treatment processes, storage method and groundwater reinjection proposals are to be provided. If the development is to be staged, discuss the water requirements for each relevant stage.

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

(o) OGV type and movement frequency through the GBRMP.

Rehabilitation and closure

6.12 Describe the rehabilitation and mine closure activities, showing the dimensions, location (on or off mining lease) with appropriately scaled maps and information formats (tables or lists), 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 and waters to achieve the rehabilitation goals for each proposed final land use proposed in the progressive rehabilitation and closure plan (PRCP)

(c) Describe the method for rehabilitating and decommissioning any marine-side infrastructure, including the safe and effective removal of piled structures, barge facilities and any offshore infrastructure such as OGV anchorage facilities.

(d) all water needs and the proposed authority under which the water would be taken to do this work by defining the location, source of water take and the volumes required.

(e) 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

(f) closure and decommissioning stage, works, water sources and use requirements to be undertaken for removal of land and marine 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/projects, in accordance with Queensland Government 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] Queensland Government, Queensland Treasury, *Common user infrastructure principles,* **www.treasury.qld.gov.au/programs-and-policies/common-user-infrastructure-assessment-principles/**

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 Land Act leases over tidal waters), 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 the *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 of Cape Flattery 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 GBRMP and securing of the OGVs within Port Limits

(f) describe any approvals, authorisations or entitlements required under the Water Act, Water Regulation 2016 (Water Regulation) 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*.

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 water features and associated aquatic and terrestrial 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, Traditional Custodians 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) GBRMP and Great Barrier Reef World Heritage Area (GBRWHA) 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:

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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 regional plan to be considered in EIS preparation until final plan released.

(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.

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 material transfer and/or 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 DESI policies and guidelines.

9.13 In collaboration with relevant Native Title parties, 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 (ILUAs) or other measures. 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 ILUA.

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.

[13] Queensland Government, Department of Infrastructure, Local Government and Planning, *State Planning Policy – state interest guideline: Strategic ports,* 2016.

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/anchorage point. Describe how the results of the consultation informed project design and location of infrastructure.

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

(a) agricultural land of State Planning Policy significance to the agriculture state interest. This assessment is to include how the project is consistent (or otherwise) with 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 landform, landscape, land uses and the visual impact of the project on communities, particularly those living in townships and from key vantage points (including sea). 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 proposed project and in accordance with relevant guidelines. Identify soils that would require specific management due to wetness, erosivity, sodicity, depth, acidity, salinity or other features. Identify acid sulfate soils in the project area, and the potential for acid forming rock in spoil material.

9.22 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

9.23 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 Section 5.3.1 of *Preparing an environmental impact statement – Guideline for proponents* and Appendix 3, Land.

9.24 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*.[14]

9.25 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 3, Land.

9.26 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.

9.27 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 3, Land, that appropriately manages the disturbance of acid sulfate soils to avoid or minimise the mobilisation and release of acid, iron, or other contaminants.

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

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

Rehabilitation and mine closure

Impact assessment and mitigation measures

9.30 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.

9.31 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.

9.32 Provide a proposed PRCP for the project in accordance with *Submission of a progressive rehabilitation and closure plan*[15] 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[16] 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 2 components:

(a) rehabilitation planning part

(b) PRCP schedule.

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[14] Refer Section 5.3.1 of *Preparing an environmental impact statement – Guideline for proponents,* pg 97–105 of *A risk framework for preventing salinity*.
[15] Queensland Government, Department of Environment and Science, *Submission of a progressive rehabilitation and closure plan,* ESR/2019/4957, version 3.00, February 2021.
[16] Stable condition is defined in section 111A of the *Environmental Protection Act 1994.*

Rehabilitation planning part

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

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

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

(c) describe all water needs and the proposed authority under which the water would be taken to do this work by defining the location, source of water take and volumes required

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

(e) include details of the consultation undertaken in developing the proposed PRCP, including infrastructure proposed to be retained onsite

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

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

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

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

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

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

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

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

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

(m) include other information requirements outlined in Guideline – Progressive rehabilitation and closure plans.[17]

9.34 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.

[17] Refer to Section 5.3.3 of *Preparing an environmental impact statement – Guideline for proponents*.

PRCP schedule

9.35 Provide a proposed PRCP schedule[18] which describes time-based milestones for achieving each post-mining land uses 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*.

9.36 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.[19]

9.37 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.

9.38 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.*

9.39 Describe how costs of rehabilitation have been considered in the proposed rehabilitation outcomes for the project. Demonstrate compliance with *Estimated rehabilitation cost under the Environmental Protection Act 1994*, *Estimated rehabilitation cost calculator – mining,* and *User guide for estimated rehabilitation cost calculator user guide – mining*.[20]

[18] 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.
[19] 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.
[20] Refer to Appendix 1, Land.

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 waterways, lakes and wetlands) which are matters of state environmental significance (MSES) or MNES, and where they cannot be avoided, offset any residual impacts

(d) identify and appropriately safeguard MSES to support healthy and resilient ecosystems

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

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

(g) identify critical habitat for all MSES species and ensure it receives special management considerations and protection through a management plan for the proposed project

(h) protect all environmental values relevant to adjacent and receiving environmentally sensitive areas, including aquatic ecosystems and wetlands

(i) 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. Where a MSES is also a MNES, specific cross referencing to where it has been assessed in the MNES chapter is required.

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 and diurnal fluctuations in conditions (i.e. early wet/post-wet and early dry seasons, daytime and nighttime). 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 watercourse, 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.

Existing environment

9.45 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 proposal (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 (GDEs), 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. Where a MSES is also a MNES, specific cross referencing to where it has been assessed in the MNES chapter is required. It is recommended that this section is structured to include separate assessment for each MSES.

9.46 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.

9.47 The known and anticipated locations 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

[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.

(i) waterways providing for fish passage

(j) marine plants

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

9.48 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).

9.49 Describe, using relevant literature, habitat mapping, and the results of surveys, the natural and existing upstream and downstream movement and habitat requirements of the key aquatic and terrestrial flora and fauna groups 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.

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

9.51 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

9.52 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

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

[22] Consider Department of Regional Development, Manufacturing and Water science and monitoring products available at **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.

(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

(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 marine infrastructure, and marine vessels, including an assessment against SDAP state codes 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

[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.

contaminants to water, hydrological changes, vegetation clearing, and vehicle movements).

9.53 In a tabular format, identify all impacted MSES onsite and in proximity to the site, quantify any overlaps between MSES and MNES, and identify relevant legislation and assessment requirements.

9.54 Identify and discuss where proposed vegetation clearing is assessable, accepted, or exempt development for the project under the Planning Regulation 2017. Assess proposed assessable vegetation clearing for off-lease activities (including operational work) against SDAP state code 16,[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.

9.55 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.

9.56 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. For a range of flow events (e.g. Exceedances per year (1-4) and annual exceedance probability (AEP) (63-1%)) show hydraulic conditions (depth, velocities and turbulence) from the downstream to the upstream limit of a waterway barrier are unlikely to delay or have an adverse impact on fish passage up to and including drown out.

9.57 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.

9.58 Describe the potential impacts on ecological function and connectivity between all aquatic environments (inclusive of tidal reach, waterways, lakes and wetlands, including any impacts upstream or downstream off-site, resulting from altered flow paths, changes in flow velocity and changes in inundation periods.

Mitigation measures

9.59 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.

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[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, **www.daf.qld.gov.au/business-priorities/fisheries/habitats/policies-guidelines/factsheets/guidelines-for-fish-salvage**

9.60 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.

9.61 Propose effective and proven measures to avoid, minimise and/or mitigate direct or indirect impacts on ecological environmental values. In particular, address measures to protect or preserve any listed threatened, near threatened or special least concern species. Describe the practicality, effectiveness and risks for each avoidance and mitigation measure. Include the timeframes in which results would be achieved.

9.62 Justify how applying all proposed avoidance and management measures would result in acceptable outcomes for terrestrial, aquatic and/ or marine ecology. Describe how achieving the measures successfully will be monitored, measured and audited. Include provisions to regularly evaluate all the mitigation measures so that improvements may be made as new technologies and best practices evolve.

9.63 Assess the need for fire breaks, buffer zones, and the retention, rehabilitation, or planting movement corridors, including the role of buffer zones in maintaining and enhancing riparian vegetation and wetlands to promote bank stability, promote habitat connectivity, and provide habitat. [28]

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

9.65 Demonstrate that the proposed project will avoid the need for waterway barriers. Describe alternative measures that would achieve this or propose measures to minimise and mitigate impacts on affected waterways, drainage features and wetlands. Include mitigation strategies for construction and operation phases of the proposed project.

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

9.67 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

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

[28] Queensland Government, Department of Primary Industries, *Fisheries Guidelines for Fish habitat buffer zones*, FHG 003, Maria Bavins, Dawn Couchman and John Beumer, August 2000
[29] Refer to Section 5.4.2 of *Preparing an environmental impact statement – Guideline for proponents*.
[30] Queensland Government, Department of Environment and Heritage Protection, *Queensland Environmental Offsets Policy: Significant Residual Impact Guideline,* December 2014.

prescribed under the Sustainable Planning Act 2009 – Queensland Environmental Offsets Policy[31] and the Queensland Environmental Offsets framework.[32]

9.69 Address both state and Australian offset obligations, in accordance with relevant state and Commonwealth legislation and policies, and clearly identify where there are overlaps across jurisdictions. Identify, describe, and illustrate the extent (such as in a map and table) of any SRI overlap between MNES and MSES.

9.70 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*.[33] Where the Australian Government offset policy requires an offset for a significant impact on a MNES, the offset proposal(s) must be consistent with the requirements of the EPBC Act environmental offsets policy.

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

(a) identified SRI offset obligations for MSES and MNES across the state and Commonwealth jurisdictions.

(b) the extent of any SRI overlap between MSES and MNES should be identified, described and illustrated. This could be provided in the form of a table and maps

(c) for staged offsets, consider the full extent of potential impacts on prescribed environmental matters for the entire project as part of the SRI assessment

(d) the results of a habitat quality assessment[34] on both the impact area and the proposed offset area/s to compensate for impacts

(e) identification of whether a SRI to MSES will be addressed through a financial or proponent driven offset, including an offset delivery plan for any proponent driven offsets

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

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

(h) for land based offsets, an assessment of the potential vulnerability and resilience of any proposed offset site/s under climate change scenarios (e.g. reduced water availability, increased bushfire risk, sea level rise).

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

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[31] 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.
[32] Refer to Section 5.4.2 of *Preparing an environmental impact statement – Guideline for proponents.*
[33] Refer to Section 5.4.2 of *Preparing an environmental impact statement – Guideline for proponents.*
[34] The site habitat quality score must be derived in accordance with the Queensland Guide to determining terrestrial habitat quality under the Queensland Environmental Offsets Policy. Before undertaking habitat quality assessments consult with OCG regarding which version of the guide should be used.

9.73 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*, Australian animal and pest strategies, 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 immediate surrounds.[35] Field surveys should appropriately cover seasonal fluctuations in conditions (i.e. wet and dry seasons). Provide maps showing pest animal and weeds distribution in relation to the project area and ecologically significant areas identified as containing, or likely to contain, listed flora, fauna, and ecological communities of MSES or MNES. This survey is to include prohibited and restricted matters listed in the *Biosecurity Act 2014* and Biosecurity Regulation 2016, Weeds of National Significance, pests and weeds declared under 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

[35] Refer to Section 5 of *Preparing an environmental impact statement – Guideline for proponents* for relevant guidelines.

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.

Coastal environment

Objective and outcomes

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

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

Existing environment

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

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

Impact assessment and mitigation measures

9.82 Conduct the assessment in accordance with *Coastal – EIS information guideline,*[36] including the requirements of SDAP State Code 8.

9.83 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 but not limited to water quality, benthos, aquatic flora and fauna, mangrove areas, salt marsh, other subtidal and intertidal fish habitat areas, fringing reef areas, seagrass, 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*

[36] Queensland Government, Department of Environment and Science, *Coastal – EIS information guideline,* ESR/2020/5299, version 1.01, April 2022.

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

(f) capital and/or maintenance dredging or bed levelling for marine assets and infrastructure including 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

(k) construction and operation of 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

(m) demonstrate compliance with the objectives of the *Coastal Protection and Management Act 1995*.

9.84 Assess the potential impacts of the project's activities in the coastal zone. Undertake predictive modelling, over the short (10 years), medium (50 years) and long (100 years) term, to determine if the proposed project would result in significant impacts or effects on any of the following matters:

(a) hydrodynamic processes, including tide or wave action

(b) land reclamation or excavation of the shore

(c) water quality

(d) sediment transport processes

(e) sediment suspension, sorting and settlement including plumes from dredging, excavation, construction and/or transhipping activities

(f) erosion potential

(g) stream and river flows into the estuarine or marine environment.

9.85 Assess the potential loss of marine habitat or diversity that could result from the project. Detail how natural processes will be conserved and monitored for ongoing impacts to tidal fish habitats.

9.86 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).

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

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

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 not 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

9.89 Provide maps of 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 (includes 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

(g) extent of tidal inundation and connectivity to and between inland waterways, lakes, and wetlands.

9.90 Describe existing surface drainage patterns and flows in streams in the project area, including stream geomorphology and characteristics, seasonal variations using suitable representative locations between identified stream nodes.

9.91 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)).

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

Impact assessment and mitigation measures

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

9.94 Detail any removal or placement of fill, or destruction of riparian vegetation within a watercourse, waterway lake or spring, and if any exemptions apply to the proposed activity. If no exemptions apply, describe if the activity could be authorised under the Water Act riverine provisions and if development approval for removal of quarry material under the *Planning Act 2016* is required.

9.95 Provide information on the project's water usage, including details about the source, the source's security of supply and availability, location, quality and quantity of all water required for all stages of the project, including pre-construction, construction, operations and rehabilitation and mine closure.

9.96 Describe how the proposed project will conform to the economic, social, cultural and environmental outcomes of the Water Plan (Cape York) 2019. Where risks to conformance to outcomes are identified, describe potential strategies for how these risks will be mitigated. In assessment of risks, hydrological modelling is to be used to inform the assessment.

9.97 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.

9.98 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.

9.99 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.

9.100 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. Detail any consideration of the *Point Source Water Quality Offsets Policy 2019*.

Reference should be made to the *Technical Guideline: Wastewater release to Queensland waters* (ESR/2015/1654) when discussing releases of wastewater to waters.

9.101 Provide information on the discharge water quality to address the requirements outlined in the guideline Reef discharge standards for industrial activities (ESR/2021/5627) and in accordance with section 41AA of the Environmental Protection Regulation 2019.

9.102 Detail consideration of the *Point Source Water Quality Offsets Policy*.[37]

9.103 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 (e.g. *Technical Guideline: Wastewater release to Queensland waters*).[38]

9.104 Describe and map any proposed taking, including diverting, of overland flow water and water in drainage features. Describe and map any proposed diversions and interferences with water in watercourses, waterway 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, GDEs and watercourses. Ensure that any overland flow storage capacity meets the requirements listed under the relevant Water Plan.

9.105 Describe potential impacts to identified existing and potential users and uses of water and how any impacts will be mitigated.

Groundwater

Existing environment

9.106 Describe the existing groundwater environment, focusing on aspects which may be affected by the proposed mining operations. Describe key potential impacts to the groundwater resource including potential for saltwater intrusion. The assessment of groundwater resources must be undertaken by an appropriately qualified and experienced hydrogeologist. 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 saturated thickness of the aquifer, depth to water level, particularly in relation to sea level and relative to proposed excavation depths

(e) provide monitoring bore stratigraphy and construction logs

[37] Queensland Government, *Point source water quality offsets policy 2019,* Department of Environment and Science, November 2019.
[38] Refer to Section 5.2.1 of *Preparing an environmental impact statement – Guideline for proponents* for relevant guidelines.

(f) provide site specific values for the hydraulic parameters for each hydrogeological unit (vertical and horizonal hydraulic conductivity, transmissivity specific yield or storability)

(g) 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

(h) 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

(i) describe the degree of hydraulic connection between key aquifers and the nature and degree of connectivity with surface water bodies

(j) describe the mechanism and estimated volume of rainfall-recharge (as a % of rainfall) and what methods were used to estimate this. Discuss predicted long-term climate changes (e.g. rainfall and evaporation trends) and predicted sea-level changes (pertinent to predicted saltwater intrusion)

(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 GDEs in or around the project area. Refer to the IESC *Groundwater Dependency Assessment Guidelines*.[39] 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 in particular water to be reinjected into the aquifer, and location of proposed extraction.

9.107 Describe the relationship between groundwater and seawater. Provide a section on the conceptual hydrogeological model including at least 2 cross-sections to show:

(a) inter-aquifer groundwater flow (vertical connectivity)

(b) surface water – groundwater connectivity

(c) saltwater intrusion

(d) aquifer dimensions

(e) mining extent

(f) production bores and monitoring bores

(g) groundwater flow direction.

9.108 A numerical groundwater model must be developed that:

(a) is consistent with the conceptual hydrogeological model for the project

[39] https://www.iesc.gov.au/publications/information-guidelines-explanatory-note-assessing-groundwater-dependent-ecosystems.pdf

(b) is consistent with the Australian Groundwater Modelling Guidelines, Barnett, et al 2012

(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 peer reviewed

(e) the numerical model report and peer review reports must be provided as part of assessment documentation submitted for this project.

9.109 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

9.110 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 predict potential impacts on the groundwater system, other water users, GDEs, 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 individual mining project as well as cumulative impacts of existing and proposed mining 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 local and regional on the following groundwater characteristics at all phases of the project including direct or indirect impacts of groundwater extraction, reinjection and general interference on:

(i) changes in groundwater and surface water flow regimes

(ii) groundwater levels draw-down, recharge, discharge and mounding impacts

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

(iv) GDEs, including impacts on stygofauna and proposed mitigation measures

(v) 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

(vi) the potential for contamination of the aquifer and transport of contaminants via groundwater flow effects on relationship between groundwater and the environmental values of lakes and wetlands

(d) discuss potential impacts of vegetation clearing, possible sedimentation, and potential salinisation on local groundwater levels and quality. identify and describe whether saltwater intrusion may occur from the proposed take of groundwater and include proposed mitigation measures

(e) describe the monitoring bore network including: location, construction details, and the bore siting rationale in terms of detecting and measuring potential impacts. Describe the

existing and proposed groundwater monitoring regime including frequency of water level measurements and frequency of water quality sampling. Detail how the proposed monitoring regime is designed to detect impacts to the groundwater environment and existing hydrogeological dynamics. Discuss whether there are bores which are likely to be decommissioned prior to the project's completion

(f) provide a life of project groundwater management plan, including detailed management strategies for predicted and unpredicted impacts on groundwater and GDEs

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

9.111 Describe how the project meets the considerations 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

(h) impact the proposed taking and use of water may have on cultural and spiritual values under the cultural outcomes of the plan.

9.112 Describe any proposals, including during construction, the life of the project and decommissioning, to take water from 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

9.113 Discuss 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

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

9.115 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.

9.116 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

9.117 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.

9.118 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.

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

9.120 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 the *Australian Drinking Water Guidelines*[40]

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

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

9.121 Minimum water quality sampling of groundwater should include 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. 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.

9.122 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

9.123 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, ship-sourced pollution from transhipment vessel, supply vessels, and ocean-going ships, including when at anchor, or run-off from disturbed acid sulfate, sodic or dispersive soils.

9.124 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*[41]) will be met and how relevant environmental values are to be protected during construction, operation, decommissioning and rehabilitation.

9.125 Identify the potential impacts of dredging, bed levelling, and/or the potential impacts of shipping and offshore transhipping operations on the marine environment. The impact assessment must also address changes in water quality, including increased water turbidity or other contaminants, due to the disturbance of benthic sediments or the disposal and/or relocation of material. It must consider potential ecological impacts due to changes in water quality or the disturbance of the benthos. Provide strategies to avoid, mitigate and manage potential impacts.

9.126 Clarify water quality parameters for water to be re-injected back into the groundwater aquifer and demonstrate how it will not affect the existing properties of the natural groundwater.

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

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[41] Queensland Government, *Reef 2050 Water Quality Improvement Plan – 2017-2022,* 2018.

(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*[42]

(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.

9.128 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 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

9.129 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.[43]

9.130 Preparation of the SIA must be accordance with the *Social Impact Assessment Guideline*.[44] In developing the SIA, consider the Coordinator-General's supplementary material.[45]

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[42] Refer Section 5.3.1 of *Preparing an environmental impact statement – Guideline for proponents.*
[43] Section 9(3) of the SSRC Act.
[44] Queensland Government, Coordinator-General, *Social Impact Assessment Guideline,* March 2018.
[45] *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.*

Existing environment

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

9.132 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

(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

9.133 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.*[46] 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.

9.134 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*.

9.135 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.

9.136 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),[47] and describe the recruitment strategies and training programs to achieve that target.

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[46] Refer to Sections 4.6 and 5.6 of *Preparing an environmental impact statement – Guideline for proponents*.

[47] *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*.

9.137 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.

9.138 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.

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

9.140 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.[48]

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

9.142 Describe the housing strategy to accommodate construction and operational workers, including transiting 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*.

9.143 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.

[48] Refer to Appendix 3.

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* (Queensland Heritage Act)

(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

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

9.145 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.

9.146 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).

9.147 Describe the relevance of the project to the inclusion of the Cape York Peninsula on Australia's World Heritage Tentative List[49] and any matters relevant to the *Cape York Peninsula Heritage Act 2007*.

9.148 For aspects of non-Indigenous historical heritage protected by the 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*.[50] Identify values at local and state thresholds and assess the significance of identified values using recognised criteria.

Impact assessment and mitigation measures

9.149 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*.[51] Consider impacts to visual amenity and interference with landforms and waters in determining impact on cultural heritage.

[49] Refer to **https://environment.desi.qld.gov.au/management/world-heritage-areas/potential/cape-york**
[50] Refer to Section 5.6 of *Preparing an environmental impact statement – Guideline for proponents.*
[51] Refer to Section 5.6 of *Preparing an environmental impact statement – Guideline for proponents.*

9.150 Where required as per Part 7 of the relevant Cultural Heritage 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.

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

9.152 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

9.153 Describe the existing economic environment consistent with the *Economic Impact Assessment Guideline*.[52] 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:

(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.

9.154 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.

9.155 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.

[52] Refer to Section 5.6 of *Preparing an environmental impact statement – Guideline for proponents.*

Impact assessment and mitigation measures

9.156 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*.

9.157 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.

9.158 Provide a demand analysis as justification for the scale and scope of the project, relative to the demand scenarios examined in section 9.153, with sensitivity analysis for potential changes in silica sand product prices.

9.159 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.

9.160 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.

9.161 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.

9.162 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.

9.163 Where the project proposes infrastructure to be permanently owned by a public sector entity or a government-owned corporation,[53] 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.

9.164 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.[54]

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) prepare for climate change through climate resilient project development and operation

(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

9.165 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.

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

Impact assessment and mitigation measures

9.166 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,[55] landslide, heatwave[56]). Identify the cumulative impact of several natural hazards occurring at the one time

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

9.167 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) aquatic and terrestrial flora and fauna at the site and in the vicinity of the site

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

9.168 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.

9.169 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.

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

9.171 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.[57]

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[55] 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.
[56] Use State Heatwave Risk Assessment – Queensland Government, Queensland Fire and Emergency Services, *State Heatwave Risk Assessment,* 2019.
[57] Queensland Government, Maritime Safety Queensland, *Tidal works and major development proposals,* **www.msq.qld.gov.au/Waterways/Tidal-works-and-major-development-proposals**

9.172 Describe the potential risks and proposed mitigation measures in accordance with *Guideline for vetting bulk carriers intended for travel through the Great Barrier Reef*[58] 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.

9.173 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.

9.174 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

(ii) mitigation strategies to achieve the relevant development outcomes in Section E of the *State Planning Policy– Natural Hazards, Risk and Resilience*[59]

(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) onsite medical treatment

(ii) evacuation plans including aerial transportation requirements, communications plan, disaster equipment, training of employees

(iii) consideration of emergency events in the context of community disaster management process

(iv) 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).

9.175 Provide details on consultation undertaken and the proposed communication plan arrangements with native title holders and claimants, the Hope Vale Aboriginal Shire Council and Cook Shire Council and nearby mines and other relevant projects in the event of an emergency (e.g. emergencies, incident management etc).

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

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

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[58] Queensland Government, Maritime Safety Queensland, *Guideline for vetting Bulk Carriers intended for travel through the Great Barrier Reef,* www.msq.qld.gov.au/about-us/news-and-stories/ship-vetting-guideline-for-bulk-carriers-moving-through-the-great-barrier-reef

[59] Refer to Section 5.5 of *Preparing an environmental impact statement*.

Climate

Existing environment

9.178 Describe the extremes of climate (e.g. drought, flood, bushfire, stormwater and tidal surge) relevant to the project area with particular reference to *Changes to fire weather in Queensland*.[60]

9.179 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

9.180 Conduct the assessment in accordance with Climate – EIS information guideline.[61]

9.181 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.

9.182 Assess the project's vulnerabilities to projected climate change (e.g. changing patterns of temperature, rainfall, hydrology, and extreme weather events). The assessment of climate hazards and risks should reference relevant climate projection data (e.g. Queensland Future Climate high-resolution climate projection data)[62] and employ an appropriate climate risk assessment methodology.

9.183 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.

Flooding

Existing environment

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

9.185 Describe the current flood risk for a range of annual exceedance probabilities (AEP) up to the 0.1% AEP and probable maximum flood levels for the project site.

Impact assessment and mitigation measures

9.186 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% AEP, 1% AEP, Probable Maximum Flood (PMF) and 1% AEP with consideration of future climate change.

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[60] Australian Government, Bureau of Meteorology, *Changes to fire weather in Queensland,* 2019.
[61] Refer to Section 5.9 of *Preparing an environmental impact statement.*
[62] Queensland Government, *Queensland Future Climate Dashboard,* https://longpaddock.qld.gov.au/qld-future-climate/dashboard

9.187 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.

9.188 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.

9.189 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 levees, roads and linear infrastructure.

9.190 Describe changes to waterways[63] (as defined under the *Fisheries Act 1994)* and watercourses[64] (as defined under the Water Act), the change in hydrology upstream and downstream of any construction site for any component of the project, including flooding and overland flow on or off the site, including crossings, spillway, fishways, downstream barriers, flood levees, water off-takes and, locations of any proposed water discharge points. Where any changes are proposed, note what licencing provisions may be required under the Water Act.

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.

(c) contribute toward Queensland's emission reduction and renewable energy targets by developing and implementing greenhouse gas abatement measures for the project.

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

Air

Existing environment

9.191 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

[63] 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.
[64] 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.

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).

9.192 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.

9.193 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

9.194 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*.[65] Demonstrate the project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.

9.195 Provide an emissions inventory and description of the characteristics of any contaminants or materials that may be released, and the release rate, as a result of all phases of the project, including point source and fugitive emissions. An emissions inventory (point source and fugitive) during construction, commissioning, operations, maintenance and a range of possible/likely upset conditions is to be included for the project site.

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

9.197 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).

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

9.198 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.

9.199 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.

9.200 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

Existing environment

9.201 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

9.202 Provide an emissions inventory identifying the GHGs to be emitted from all components of the project (i.e. on and off mining lease) and the phase of the project at which the emissions will occur. Include a breakdown of GHG emissions by source.

9.203 Provide information regarding GHG emissions and energy production and consumption consistent with requirements of *National Greenhouse and Energy Reporting Act 2007* (Cth) and its subordinate legislation including methodology, emissions factors, and calculations used to estimate the project's GHG emissions.

9.204 Undertake an assessment of GHG emissions in accordance with *Guideline – Greenhouse gas emissions*[66] including:

(a) an estimate the projected annual scope 1 and scope 2 CO_2 equivalent emissions[67] over the life of the project. Include both unabated emissions and emissions after all avoidance and abatement measures have been accounted

(b) for medium to high emitting projects,[68] provide an estimate of annual scope 3 emissions[69] and total scope 3 emissions over the life of the project.

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

9.206 For medium to high emitting projects,[70] provide a GHG abatement plan that meets the requirements of Appendix A in *Guideline – Greenhouse gas emissions*. The GHG abatement plan must also address the following:

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[66] Queensland Government, Department of Environment, Science and Innovation, *Guideline – Greenhouse gas emissions,* ESR/2024/6819, Version 1.00, May 2024.
[67] 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.
[68] Section 3.2, *Guideline – Greenhouse gas emissions.*
[69] 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.
[70] Section 3.2, *Guideline – Greenhouse gas emissions.*

(a) as part of assessment of project alternatives, detail, compare and quantify conceptual, technological, locality, configuration, scale and individual elements or components of feasible alternatives that were considered to avoid or reduce the project's emissions

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

(c) provide a comparison of expected cumulative project GHG emissions with the remaining global, national and state emission budgets. Consider all Scope 3 emissions identified in the project estimate when comparing with the remaining global emission budget, and respective scope 3 emissions generated nationally or in Queensland for comparison with the remaining national and state emission budgets

(d) where offsets have been identified as the only remaining option for abatement, develop a comprehensive carbon offsets management plan. Detail expected market availability limitations of offset credits and show how the project will secure the required supply of offsets. Identify how opportunities and commitments for offsetting GHG emissions represent genuine emissions reductions within Australia that meet the principles of the *Carbon Credits (Carbon Farming Initiative) Act 2011*

(e) for projects proposing to offset more than 30% of their emissions or offset outside of Queensland, provide as part of the EIS an independent review by an appropriately qualified person. This review will assess and confirm findings of the EIS that GHG emission avoidance, reduction and substitution measures have been expended and why suitable offsets are not available within Queensland

(f) when multi-year emissions reduction targets are proposed to take into account emerging technologies over that period, ensure the same emissions result will be delivered at the end of the multi-year period such that the trajectory of the Queensland emissions targets are met.

9.207 For low emitting projects:[71]

(a) detail proposed GHG management practices to demonstrate that all reasonable and practical measures have been applied to manage GHG emissions through best practice design, process, technology and management following the GHG abatement hierarchy: avoid, reduce, substitute and offset[72]

(b) identify long-term overall scope 1 and scope 2 GHG emission reduction targets

(c) provide a program for periodic public reporting on progress towards the GHG emission reduction targets

(d) explain feasible alternatives that were considered to avoid or reduce the project's scope 1 and 2 emissions as well as the alternative of not proceeding with the project

(e) outline actions that will be taken to reduce scope 3 emissions (e.g. entering into arrangements with third party suppliers or users)

(f) identify the location of scope 3 emissions (domestic or international) and outline whether they are expected to be generated in countries that are signatories to the Paris Agreement or otherwise have policies that are consistent with the objectives of the Paris Agreement

[71] Sections 3.2 and 3.3, *Guideline – Greenhouse gas emissions.*
[72] Figure 1, *Guideline – Greenhouse gas emissions.*

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

(h) provide a description of any opportunities for further offsetting of GHG emissions, noting offsets must be consistent with Australian requirements using Australian Carbon Credit Units

(i) detail any proposed ongoing training and capacity building around decarbonisation options and technology.

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

9.209 Identify risks and likely magnitude of impacts to environmental values from scope 1, 2 and 3 emissions.[73]

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

9.210 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.

9.211 Describe the existing noise and vibration sources and baseline levels within the project area. The data must be collected in accordance with quality-assured, best practice methodologies and as per the Noise Measurement Manual 2013, DESI (QLD).

Impact assessment and mitigation measures

9.212 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.

[73] Section 3.4, *Guideline - Greenhouse gas emissions.*

9.213 Conduct a noise and vibration impact assessment in accordance with *Noise and vibration—EIS information guideline*[74], Schedule 1 of the EPP (Noise) and *Applications for activities with noise impacts*.[75] 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.

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

9.215 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.

9.216 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.

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

9.217 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[76] and Section 5.10 of Preparing an environmental impact statement – Guideline for proponents.

9.218 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.

[74] Refer to Section 5.7 of *Preparing an environmental impact statement – Guideline for proponents.*
[75] Refer to Section 5.7 of *Preparing an environmental impact statement – Guideline for proponents.*
[76] Refer to Section 5.10 of *Preparing an environmental impact statement – Guideline for proponents.*

Existing environment

9.219 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.

9.220 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

9.221 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 identified local government roads

(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), 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 mooring 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 proposed 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.

9.222 Identify the main access to the project site (latitude and longitude coordinates). Where the main access is proposed to/from public roads, 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.

9.223 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)[77] 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.

9.224 Demonstrate how the project complies with *State Development Assessment Provisions supporting guideline – State code 7: Maritime safety*.[78]

9.225 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[79] and the Development Assessment Mapping System.

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

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

9.227 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.

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

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

9.229 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

9.230 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.

9.231 Describe the quantity and physical and chemical characteristics, including hazardous characterisation and toxicity of each waste stream, any attributes that may affect its dispersal in the environment and its associated risk of causing environmental harm. Characterisation of waste and sampling methodologies of the waste must be sufficient to provide statistically valid representations of each geological unit / waste and appropriate management of the waste.

9.232 Conduct the impact assessment in accordance with the latest version of the *Waste—EIS information guidelines* and *Applications for activities with waste impacts*.[80] Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.

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

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

9.235 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.

9.236 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.

9.237 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.

9.238 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.

9.239 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.

9.240 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. Reference should be made to the *Technical Guideline: Wastewater release to Queensland waters* (ESR/2015/1654) when discussing releases of wastewater to waters.

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

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

9.241 Potential cumulative environmental, social, economic, and cultural 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 cumulative impacts.

9.242 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).

9.243 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) housing supply

(c) 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

(d) soil quality

(e) the Cape Bedford/Cape Flattery dunefield complex, associated lakes, wetlands

(f) 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)

(g) quality and quantity of surface water and groundwater resources for all phases of the project (including post decommissioning phase), including management of impacts on underground water rights under the Water Act and any relevant linkages to section 126A of the EP Act

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

(i) air quality

(j) noise and vibration

(k) marine traffic

(l) natural hazards

(m) public health and safety

(n) MSES

(o) MNES listed as controlling provisions on the project:

(i) World Heritage properties

(ii) National Heritage places

(iii) GBRMP

(iv) listed threatened species and communities

(v) listed migratory species.

9.244 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.

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

10. Matters of national environmental significance

Note

A valid referral was received by DCCEEW on 17 May 2023 (EPBC 2023/09485).

On 14 June 2023, a delegate for the Australian Minister the Environment and Water determined the project to be a 'controlled action' under section 75 of the EPBC Act under a bilateral assessment.

On 12 January 2024, a delegate for the Coordinator-General gazetted the project to be a coordinated project pursuant to section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act). The project will continue to be assessed under a bilateral assessment by DCCEEW.

The controlling provisions for the action are as follows:

- the World Heritage values of a declared World Heritage property (section 12 & section 15A)
- the National Heritage values of a National Heritage place (section 15B & section 15C)
- the GBRMP (section 24B & section 24C)
- listed threatened species and communities (section 18 & section 18A)
- listed migratory species (section 20 & section 20A).

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

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

- states each controlling provision for the project
- assesses the potential impacts, mitigation measures and any offsets for residual significant impacts on each protected matter and controlling provision relevant to the proposed action
- contains sufficient information to be read as a stand-alone document, providing references to further detailed information in appendices to the EIS where needed.

The appendices of the EIS are to include a stand-alone report providing an assessment of impacts of the proposed action on the relevant controlling provisions. The MNES report is to contain sufficient information to be read alone with reference to technical data or supplementary reports where appropriate. Any detailed technical information to support the text in the MNES report is to be included as appendices to the EIS.

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

General content

10.1 The MNES section is to take into consideration the *EPBC Act significant impact guidelines*,[81] other relevant statutory documentation (such as relevant recovery plans and conservation advices accessible via the species profile and threat (SPRAT) database) and Commonwealth policy guidelines.

10.2 The MNES chapter should contain sufficient information to allow the Australian Minister for the Environment and Water (or delegate) to make an informed decision on whether or not to approve the taking of the action, and if approved, what conditions to attach, under Part 9 of the EPBC Act for each controlling provision.

10.3 The MNES chapter should contain sufficient information to enable interested stakeholders to understand the environmental consequences of the proposed developments on MNES.

10.4 The level of analysis and detail in the MNES section should reflect the level of significance of the expected impacts on the environment. Any and all unknown variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which the limitations, if any, of available information may influence the conclusions of the environmental assessment should be discussed.

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

Format and style

10.6 The MNES chapter should comprise 3 elements:

(a) the executive summary

(b) the main text of the document

(c) appendices containing detailed technical information and other information, including management plans, that can be made publicly available.

10.7 The MNES section should be written so that any conclusions reached can be independently assessed. To this end, all sources must be appropriately referenced using Harvard standard. The reference list should include the address of any Internet websites that were used as data sources.

10.8 The main text of the MNES chapter should include a list of abbreviations, a glossary of terms and appendices containing:

(a) a list of persons and agencies consulted during the EIS

(b) contact details for the proponent

(c) the names of the persons involved in preparing the EIS and work done by each of these persons.

10.9 Maps, diagrams, and other illustrative material should be included in the EIS. The EIS should be produced on A4 size paper capable of being photocopied, with maps and diagrams on A4 or A3

[81] Australian Government, Department of the Environment, *Matters of National Environmental Significance: Significant impact guidelines 1.1*, 2013.

size and in colour where possible in line with the *Guide to providing maps and boundary data for EPBC Act projects*.[82]

10.10 The proponent should consider the format and style of the document appropriate for publication on the Internet. The capacity of the website to store data and display the material may have some bearing on how the document is constructed.

10.11 The EIS must include an appendix of occurrence records (both sightings and evidence of presence) for all listed threatened and migratory species identified during field surveys for the proposed action. This data may be used by the department to update the relevant species distribution models that underpin the publicly available Protected Matters Search Tool (PMST).

10.12 The species occurrence records must be provided in accordance with the DCCEEW's *Guidelines for biological survey and mapped data* (2018) [83] using the DCCEEW's Species observation data template. [84] Sensitive ecological data must be identified and treated in accordance with the department's *Sensitive Ecological Data – Access and Management Policy V1.0* (2016) [85] or subsequent revision.

Specific content

Note

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

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

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

General information

10.13 Provide the background and context of the action including:

(a) the title of the action

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

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

(d) the location of the action

(e) the background to the development of the action

(f) how the action relates to any other actions (of which the proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action

(g) the current status of the action

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[82] Australian Government, Department of Agriculture, Water and the Environment, *Guide to providing maps and boundary data for EPBC Act projects*, 2021.
[83] Australian Government, Department of the Environment and Energy, *Guidelines for biological survey and mapped data*, 2018.
[84] The species observation data template can be found at https://www.dcceew.gov.au/sites/default/files/documents/species-observation-data-template.xlsx.
[85] Australian Government, Department of the Environment, *Sensitive Ecological Data – Access and Management Policy V1.0,* Environmental Resources Information Network (ERIN), 2016.

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

Description of the action

10.14 All components of the action are to be described in detail, including construction, operation, maintenance, decommissioning and rehabilitation. This is to include the transport of staff and supplies, transhipment of product, precise location of all works to be undertaken, structures to be built or elements of the action that may have impacts on MNES.

10.15 The description of the action must include details on how the works are to be undertaken (including stages of development and their timing) and design parameters for those aspects of the structures or elements of the action that may have relevant impacts. This section must also include a description of:

(a) the frequency of passenger barge (if any) and supply ship movements and the speed (or speed limits) of the various vessels transiting through the GBRMP, GBRWHA and GBRNHP and within Port of Cape Flattery limits

(b) the proposed source of water and the appropriate mechanism to secure the water licence

(c) the potential impacts of the export shipping component, which may include:

(i) OGV and barging frequency

(ii) shipping channels used and vessel speeds through the GBRMP, GBRWHA and GBRNHP

(iii) anchorage of large vessels.

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

10.17 The various elements of the action must be described in the text and illustrated with maps, diagrams, plans (at a suitable scale) and other information as required to provide sufficient context and basis for the identification and assessment of impacts.

10.18 The MNES section must include a map (or maps) which clearly identify all components of the action and boundaries of the proposed project's footprint including all infrastructure elements and development necessary for the project site. The information must present all the key aspects including (but not limited to) stockpiles, plant location, services infrastructure, bunding of storage facilities, water storages and dam/s, access tracks and off-lease infrastructure components associated with the proposed project.

10.19 The MNES section must further include discussion of any environmental design features of the key facilities including bunding of storage facilities.

Feasible alternatives

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

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

(b) alternatives to the planned method of access, delivery of supplies and export, including potential usage, expansion, or duplication of the existing Port of Cape Flattery Wharf or colocation of permanent infrastructure on the southern side of the Cape Flattery headland to reduce impacts such as visual amenity impacts on the GBRWHA

(c) alternatives to the final mine disturbance area pending further detailed information on threatened species and ecological communities (e.g. presence of MNES with consideration of appropriate buffer zones)

(d) a comparative description of the impacts of each alternative on MNES protected by controlling provisions of Part 3 of the EPBC Act for the action

(e) sufficient detail with evidence to make clear why any alternative is preferred to another or why alternatives to the above project activities are not possible

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

Description of the environment

General description of the environment

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

(a) the current land uses of the proposed mining area, the proposed jetty construction area, existing Port of Cape Flattery wharf usage, shipment, and transhipment lanes

(b) transhipment anchorages

(c) ancillary transport roads and the surrounding areas that may be affected by the action.

Environmental information required within project area and surrounds

10.22 Provide details of the scope, timing (survey season/s) and methodology for studies or surveys used to provide information on the listed species/community/habitat at the site (and in areas that may be impacted by the project). Surveys may take into account access restrictions to the site due to wildlife hazards but should include supplementary methods or assumptions in the event of reduced survey effort. Surveys should include consideration of areas below, downstream, within and adjacent to the proposed action area within an appropriate distance (based on the nature and extent of the impact) to allow for detailed design and impact minimisation, to provide context, or to increase the likelihood of detection.

10.23 Provide information on topography and elevation across the project area and adjacent area to enable assessment of MNES and relevant impacts on MNES such as sediment run-off and erosion. Include a map with contour intervals.

10.24 Describe the vegetation communities within, and adjacent to, the project area including the area (in hectares) they each cover and the percentage cover for each vegetation type to an appropriate resolution that is ground-truthed.

10.25 Describe and map the coastal environments of the proposed action area and adjacent area, such as:

(a) inshore coastal areas

(b) vegetation

(c) the Cape Flattery Dune Field and associated lakes and wetlands

(d) underwater ecological features

(e) groundwater dependent features (such as beach springs or submarine groundwater seeps) within the potential project impact area

(f) key habitats (including the seagrass, coral, and benthic communities)

(g) inshore reefs

(h) fringing reefs.

10.26 Describe the habitat mapping and the results of surveys, the natural and existing upstream and downstream movement and habitat requirements for relevant terrestrial and marine flora and fauna, both native and introduced species (e.g. including weeds and feral animals). Similar species can be grouped and discussed together where practicable.

Matters of national environmental significance

Note

It is the proponent's responsibility to be aware of any changes to the distribution of listed threatened and migratory species and ecological communities, listed at the time of the controlled action decision and information available in the SPRAT database. The proponent must ensure that a recent Protected Matters Search Tool (PMST) report has been generated and considered before finalising the draft EIS. This PMST must be provided as an attachment to the EIS. Any listing events (e.g. the up-listing of a species) that occur after the controlled action decision do not affect the assessment and approval process.

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

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

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

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

- approved Conservation Advices
- Recovery Plans
- draft referral guidelines and listing advices
- SPRAT database
- published research.

10.27 The MNES section must include a detailed assessment of the presence of individuals and suitable habitat for the listed threatened and migratory species which are known to occur, may occur, or are likely to occur below, within and adjacent to the project area, including in the GBRWHA, GBRNHP and GBRMP.

10.28 The MNES section must also include a detailed presence and habitat assessment for any other listed threatened and migratory species and and/or ecological community which will, or is likely to, be directly or indirectly impacted by the proposed action.

10.29 The MNES section must provide information about the habitat for and presence of any MNES identified as potentially being significantly impacted by the proposed action, including (but not limited to):

(a) listed threatened species and ecological communities in Appendix 1

(b) listed migratory species in Appendix 2

(c) Great Barrier Reef World Heritage Area

(d) Great Barrier Reef National Heritage Place

(e) the environment of the GBRMP.

General MNES information required

10.30 Provide a habitat assessment for relevant listed threatened species and ecological communities and listed migratory species in Appendixes 1 and 2 respectively. The assessment should consider the presence of these species outside, within and adjacent to the proposed action area (such as those considered as part of the values of the World and National Heritage Great Barrier Reef and the environment of the GBRMP) where they have the potential to be impacted.

10.31 Habitat assessments for species listed in Appendixes 1 and 2 must provide estimates for habitat quality for each protected matter. Habitat quality should be assessed using the same approach/scoring mechanism as is used for any offset site (if relevant). The method applied must be suitable and targeted for each protected matter.

10.32 Identify and describe known historical records of the listed threatened species and ecological communities and listed migratory species within the proposed action area and adjacent area. Where relevant, also identify and describe known and historical records of listed threatened species in the broader region (e.g. highly mobile, transient, or cryptic species). All known records must be supported by an appropriate source (e.g. Commonwealth and State databases, Queensland Government's WildNet, Atlas of Living Australia, published research, publicly available survey reports), and where possible and relevant, state the year of the record and a description of the habitat in which the record was identified.

10.33 Provide detailed mapping of suitable habitat for all listed threatened species and ecological communities, migratory species and (where relevant) values of the GBRWHA/GBRNHP and GBRMP which may be impacted by the action, which:

(a) is specific to the habitat requirements for each listed threatened species and ecological community (i.e. does not only illustrate relevant Queensland Regional Ecosystems)

(b) includes below, downstream, within and adjacent to the proposed action area

(c) includes the total patch size of habitat, which may include sections of the patch that fall outside of the project area (in hectares)

(d) identifies any specific habitat requirements (e.g. breeding, foraging, dispersal, known important habitat, suitable habitats, roosting)

(e) considers the regional context and describes the connectivity of habitat in the broader landscape

(f) includes known records of individuals derived from desktop analysis and field surveys

(g) is provided separately as high-resolution attachments.

10.34 Provide details of the surface water and groundwater hydrology and quality associated with the project site and how they relate to MNES, including (but not limited to) the Cape Flattery Dune Field and associated lakes and wetlands, freshwater beach springs (if present), the coastal marine environment, and GDEs.

10.35 Conceptualisation and understanding of surface water, groundwater dependant ecosystems, groundwater, surface-to-ground water interactions and coastal marine systems and their inter connection should:

(a) be informed by systematic water level and water quality monitoring with appropriate temporal coverage to best capture seasonality, inter-annual variability and trends, including:

(i) continuous or at least monthly monitoring of groundwater levels

(ii) regular water quality sampling of groundwater, as informed by variability in groundwater levels e.g. to capture processes like rainfall infiltration

(iii) regular water quality sampling of surface and marine waters, and event-based sampling as needed

(b) follow relevant Commonwealth, State and/or best practice guidelines to conduct a baseline study and derive site-specific water quality guidelines where appropriate and/or adopt default guidelines as provided by ANZG 2018 (and other relevant sources).[86]

(c) include measurement of physico-chemical parameters, nutrients, metals and metalloids, and any other relevant parameters, such as hydrocarbons, needed to understand potential impacts

(d) describe, if relevant, how baseline hydrological conditions may be influenced by activities associated with nearby mining operations.

10.36 Provide details of the scope, methodology, timing, and effort of field surveys. Provide details of:

(a) how surveys were, or will be, undertaken in accordance with relevant Commonwealth, State and/or best practice survey guidelines, including the DCCEEW survey guidelines[87]

(b) if relevant, the justification for divergence from relevant Commonwealth, State and/or best practice survey guidelines

(c) any limitations associated with the survey which may have impacted on the results, including (but not limited to) rain events, resource limitations (e.g. time, equipment failure), inadequate sampling and/or effort.

10.37 Attach all relevant ecological surveys referenced in the referral and MNES section as supporting documents to the EIS.

10.38 Where potential habitat for listed threatened species and ecological communities and migratory species is identified in the project area, an assessment must be undertaken regardless of whether the species was recorded (i.e. the potential for occurrence of these species and communities must also be considered and assessed).

[86] Such as the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018) found at **www.waterquality.gov.au/anz-guidelines/framework/baseline-study**

[87] Refer to the Australian Government, Department of Climate Change, Energy, the Environment and Water, *Survey guidelines* at **www.dcceew.gov.au/environment/epbc/advice/surveys-and-data**

10.39 Wherever practicable, surveys should be undertaken over an ecologically relevant scale and period to adequately determine the likely presence or absence of the target species or environmental value. A precautionary approach should be taken where this is not possible.

10.40 Identify potential climate change refugia within the proposed action area and adjacent area for listed threatened and migratory species which may be impacted by the proposed action. See Reside et al. 2014[88] for information on climate change refugia as well as other more recent and species-specific research where relevant.

Specific threatened species habitat assessment and threatened ecological community information required

10.41 For the listed threatened ecological community Littoral Rainforest and Coastal Vine Thickets of Eastern Australia, the MNES section is to also:

(a) identify the structural elements that may constitute patches of the ecological community and identify all patches greater than the minimum patch size of 0.1 ha. Provide justification as to why the survey methodology used was adequate to identify and map the TEC

(b) conduct an investigation to determine whether any linkage between the TEC and groundwater exists. This investigation must be done using validated, ground-truthed methods such as Doody et al. (2019).[89] Discuss the findings of these investigations within the EIS and provide supporting evidence to inform whether these linkages exist and, if so, to what extent.

Specific Listed migratory species information required

10.42 For the listed migratory species, the MNES section is to also consider:

(a) site characteristics relevant to listed migratory species including focal habitat features, topography, wetlands (including adjacent to the project area), and distance to potential breeding, nesting, roosting and foraging areas

(b) listed migratory species characteristics including behaviour, flight, or demographic factors (e.g. species presence (ongoing, transitory/migratory)), site use (e.g. transit, roosting, breeding and/or foraging) and likely population numbers.

Specific GBRMP, World Heritage Area and National Heritage Place information required

10.43 Outline the outstanding universal values (OUV) of the GBRWHA that are relevant to the proposed action.[90] Information used to describe and outline these values may include baseline data derived from field surveys, scientific evidence derived from research papers and expert advice, public consultation, other approval processes, and information collected from desktop research (e.g. Commonwealth and State government databases/websites, outcomes of previous field surveys, modelling, scientific investigations).

10.44 Consider the potential impacts of the action on the OUV of the GBRWHA, in particular:

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[88] Reside, AE, Welbergen, JA, Phillips, BL, Wardell-Johnson, GW, Keppel, G, Ferrier, S, Williams, SE, Vanderwal, J, Characteristics of climate change refugia for Australian biodiversity, *Austral Ecology,* 39: 887-897, DOI:10.1111/aec.12146, 2014.
[89] Doody TM, Hancock PJ, Pritchard JL, *Information Guidelines Explanatory Note: Assessing groundwater-dependent ecosystems*. Report prepared for the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development through the Department of the Environment and Energy, Commonwealth of Australia, 2019.
[90] Refer to information on Outstanding Universal Values of the Great Barrier Reef from the Australian Government Department of Climate Change, Energy, the Environment and Water at **www.dcceew.gov.au/parks-heritage/heritage/places/world/gbr**

(a) criterion (vii) 'Contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance'

(b) criterion (viii) 'Be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features'.

10.45 Provide a description of the Cape Flattery Dune Field and associated lakes and wetlands within and adjacent to the proposed action area and how they contribute to the world heritage values. Specifically, provide a description of the geological/geomorphological link and hydrological/hydrogeological link between the significant silica deposits and their importance to on-going landscape processes such as supplying the downstream adjacent GBR lagoon and reef areas with sand or providing shelter for vegetation behind the dunes. The description must:

(a) illustrate the topography of the proposed project area and surroundings on maps at suitable scales and highlight any significant features

(b) include and name watercourses, lakes, springs, and unmapped features in accordance with the Water Act

(c) include duration of flows and the location of persistent waterholes

(d) provide a hydrological and hydrogeological description of the Cape Flattery Dune Field and associated lakes and wetlands where they may be affected by hydrological changes associated with the proposed action, including an Ecohydrological Conceptual Model (ECM) that considers any potential hydrological linkages to the groundwater system

(e) provide a discussion with supporting evidence of the potential for the dune lakes to be GDEs. Groundwater dependency should be ground-truthed using a validated method, such as Doody et al. (2019).[91]

10.46 Provide a description of the importance of dune formation and sediment connectivity systems at the project area in key landscape processes that are relevant to the values of the GBRWHA and its OUV, with consideration of any relevant or similar studies such as Ellerton (2022)[92] and describe the possibility of impacts or disruptions to these systems as a result of the proposed action.

10.47 Outline the national heritage values of the GBR within and adjacent to the proposed action, noting that they largely overlap with the world heritage values (with the exception of Indigenous cultural heritage values).

10.48 Describe any significant cultural values of the GBR of relevance to the potential impacts of the proposed project (e.g. traditional use including fishing, collection, and hunting of marine resources).

10.49 Provide a description of the GBRMP adjacent to the project area that may be impacted by the proposed action, including information about location, physical features, condition, historical context, and current uses adjacent to the proposed action. Identify and describe the aspects of

[91] Doody TM, Hancock PJ, Pritchard JL, *Information Guidelines Explanatory Note: Assessing groundwater-dependent ecosystems*. Report prepared for the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development through the Department of the Environment and Energy, Commonwealth of Australia, 2019.

[92] Ellerton, D, Rittenour, TM, Shulmeister, J, Roberts, AP, Moit da Silva, G, Gontz, A, Hesp, PA, Moss, P, Patton, N, Santini, T, Welsh, K & Zhao, X, *Fraser Island (K'gari) and initiation of the Great Barrier Reef linked by Middle Pleistocene sea-level change*, Nature Geoscience, 15: 1017–1026, **https://doi.org/10.1038/s41561-022-01062-6** , 2022.

the environment, social, cultural and heritage values in the GBRMP which are relevant to the potential or likely impacts of the proposed action.

10.50 Provide detailed mapping of any relevant values of the GBRWHA, GBRNHP and GBRMP within and adjacent to the proposed project area.

Impact assessment

Note

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

10.51 Impacts during both the construction, operation, maintenance, decommissioning and rehabilitation phases of the project should be addressed, and the following information provided:

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

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

(c) analysis of the significance of the relevant impacts

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

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

10.53 Impacts as a result of the proposed action must be assessed in accordance with relevant departmental policies and guidelines, including the SPRAT database and the DCCEEW's *Significant Impact Guidelines 1.1*.[93]

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

(a) loss, fragmentation, and/or drying of potential climate refugia and/or refuges for threatened species or communities as a result of the proposed action – consider the potential impacts of removing or otherwise impacting these habitats

(b) increased risk of fire as a result of mining operations under drier conditions and periods of extreme heat

(c) overtopping of the sediment basin dam during extreme rain events and the downstream impacts on MNES

[93] Australian Government, Department of the Environment, *Matters of National Environmental Significance: Significant impact guidelines 1.1*, 2013.

(d) inclusion of different climate scenarios in water modelling.

10.55 The EIS should also provide a detailed assessment of any potential or likely impacts that the proposed action may facilitate on the following MNES (at a relevant scale depending on the nature of the impact):

(a) the World Heritage values of the Great Barrier Reef World Heritage Area

(b) the National Heritage values of the Great Barrier Reef National Heritage place

(c) the environment of the GBRMP

(d) listed threatened species and ecological communities

(e) listed migratory species.

Impacts on listed threatened species and ecological communities

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

10.57 For threatened ecological communities, the total direct and indirect impact (in hectares) to each identified patch within and adjacent to the project site must be provided. Further, the impact assessment for ecological communities must include a discussion on the post-impact viability of each individual patch within and adjacent to the project site to be directly or indirectly impacted from fragmentation as a result of vegetation clearance.

10.58 Assess how changes to hydrology associated with the proposed action may impact on listed threatened species and threatened ecological communities, taking into consideration both surface and groundwater dependence.

10.59 Include the potential direct, indirect, facilitated, and cumulative (where possible) loss and/or disturbance on listed threatened species, their habitat and threatened ecological communities as a result of the proposed action. This must include:

(a) the quality of the habitat impacted

(b) quantification of the individuals where relevant

(c) duration of impact

(d) habitat area (in hectares) to be impacted.

10.60 After consideration of proposed avoidance, mitigation, and management measures, provide an assessment of the likelihood of significant impacts on relevant listed threatened species and ecological communities. Provide the total amount of significant residual impact, if any, for each type of habitat (in hectares) in the disturbance footprint for each listed threatened species and ecological community. The significant impact assessment must consider the DCCEEW's Significant impact guidelines 1.1.[94]

10.61 Assess the potential direct, indirect, facilitated, and cumulative effects of the proposed action on listed threatened migratory species (e.g. sea turtles) that may change animal behaviour

[94] Australian Government, Department of the Environment, *Matters of National Environmental Significance: Significant impact guidelines 1.1*, 2013.

underwater or cause injury or mortality (e.g. due to vessel movements and vessel strike) and above water (e.g. due to 24 hour lighting and noise).

10.62 Describe, with supporting evidence, how the proposed action will not be inconsistent with:

(a) Australia's obligations under the Biodiversity Convention, the Convention on Conservation of Nature in the South Pacific (Apia Convention), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

(b) a recovery plan or threat abatement plan.

10.63 Describe, with supporting evidence, how the proposed action has taken into account any relevant approved conservation advice for the relevant listed threatened species and threatened ecological communities.

10.64 A risk assessment for all identified risks to threatened species and ecological communities should be conducted and documented.

Specific listed threatened ecological communities impact assessment required

10.65 Describe all potential impacts on the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia threatened ecological community from clearing and fragmentation due to project activities, and changes to surface hydrology, groundwater drawdown and/or contamination of groundwater from chemicals/fuel or mine affected water as a result of the proposed action.

10.66 Assess the threat of feral species and weeds, such as pigs, on the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia threatened ecological community and whether/how this threat could be increased as an indirect impact of the proposed action.

10.67 Assess the potential changes to risk of bushfire from an increase in activity in the region on the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia threatened ecological community and how this risk could be increased as a result of the proposed action.

Impacts on listed migratory species

10.68 The MNES section must assess the likely and potential impacts resulting from the construction, operation, maintenance, decommissioning and rehabilitation components of the project, including both on-lease and off-lease activities, on listed migratory species and their habitat in the terrestrial, marine and palustrine wetland areas within and adjacent to the project area (relevant to the extent of those impacts on listed migratory species). These impacts must include but are not limited to:

(a) noise

(b) underwater noise, vibration, and activity

(c) catchment runoff

(d) vegetation clearing

(e) decreases in quality of a foraging or nesting area for migratory species

(f) anchoring and mooring

(g) changes to hydrology

(h) increased lighting

(i) dust, and

(j) vessel strike.

10.69 The assessment of potential impacts of the action on migratory shorebirds must be done in accordance with the EPBC Act Policy Statement 3.21 Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species (2017).[95]

10.70 Assess the likely impacts of modification to seagrass habitats resulting from land-based runoff, pollution, noise pollution, physical disturbance, and sediment suspension on the relevant migratory species, considering direct, indirect, facilitated, and cumulative impacts.

10.71 Assess the direct, indirect, facilitated, and cumulative effects of the proposed action on migratory marine species (e.g. inshore dolphins, dugongs, and sea turtles) that may change animal behaviour underwater (e.g. construction impacts related to impulsive or tonal noise and vibration from pile driving activities, and due to vessel movements and vessel strike) and above water (e.g. due to 24 hour lighting and noise).

10.72 Describe, with supporting evidence, how the proposed action will not be inconsistent with Australia's obligations under:

(a) the Bonn Convention

(b) China-Australia Migratory Bird Agreement

(c) Japan-Australia Migratory Bird Agreement

(d) Republic of Korea-Australia Migratory Bird Agreement

(e) any international agreement approved under subsection 209(4) of the EPBC Act.

Impacts on the GBRMP, Great Barrier Reef World Heritage Area and Great Barrier Reef National Heritage Place

10.73 Describe and assess all impacts (direct, indirect, facilitated, and cumulative) to the values of the GBRMP, GBRWHA and GBRNHP that are associated with the action.

10.74 After consideration of proposed avoidance, mitigation, and management measures, provide an assessment of the likelihood of significant impacts on the those controlling provisions. The significant impact assessment must consider the DCCEEW's Significant impact guidelines 1.1 (2013).[96]

10.75 Describe how the action is not inconsistent with the relevant reports and documents including, but not limited to:

(a) The Reef 2050 Long-Term Sustainability Plan (2021-2025)[97] and any subsequent reviews

(b) The Reef 2050 Water Quality Improvement Plan 2017-2022 (WQIP)[98]

(c) Cumulative Impact Management Policy (2018)[99]

(d) Net Benefit Policy (2018)[100]

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[95] Australian Government, Department of the Environment and Energy, *EPBC Act Policy Statement 3.21 – Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species*, 2017.
[96] Australian Government, Department of the Environment, *Matters of National Environmental Significance: Significant impact guidelines 1.1*, 2013.
[97] Australian Government, *Reef 2050 long-term sustainability plan 2021-2025*, 2023.
[98] Queensland Government, *Reef 2050 water quality improvement plan 2017-2022*, 2018.
[99] GBRMP Authority, *Cumulative impact management policy*, 2018.
[100] GBRMP Authority, *Net benefit policy*, 2018.

(e) Great Barrier Reef Coast Strategic Assessment Reports (2014)[101]

(f) Great Barrier Reef Outlook Report (2019)[102]

(g) Reef Blueprint (2017)[103]

(h) North-East Shipping Management Plan (2014)[104] and any subsequent reviews

(i) Aboriginal and Torres Strait Islander Heritage Strategy for the GBRMP (2019)[105]

(j) Section 41AA, EP Regulation

(k) requirements for ERA 50, Schedule 2, EP Regulation.

10.76 Assess the impacts of the construction, operation, maintenance, decommissioning and rehabilitation stages of the action on the values and/or integrity of the GBRMP, GBRWHA and GBRNHP below, within and adjacent to the project area (as relevant to the extent of those impacts on the GBR controlling provisions) including (but not limited to):

(a) visual amenity impacts

(b) increased light and noise and vibration impacts

(c) increased shipping

(d) increased risk of vessel strike on listed threatened and migratory species, and marine species

(e) degradation of water and habitat quality in the marine environment, as a direct or indirect impact of the action

(f) potential damage to the sea floor and benthic habitat.

10.77 Describe the potential impacts on the values of the GBRNHP, including those that may permanently diminish or destroy Indigenous cultural values, and assess these impacts against the *Significant Impact Guidelines 1.1* (2013).[106]

10.78 Describe and assess the impacts of the action on the:

(a) visual amenity and the Outstanding Universal Values of the GBRWHA from the development of mine related infrastructure such as the jetty, rock barge facility, shipping and barging operations, mining camp, increased noise, and lighting

(b) geomorphic or physiographic features, and the ongoing landscape and geological processes of the GBRWHA and surrounds

(c) how Part B10.78(a) and Part B10.78(b) may impact users of the GBRWHA and surrounding beaches (including traditional owner hunting, fishing, and other recreational users).

10.79 Describe any effects of the project on the Cape Flattery Dune Field and associated lakes and wetlands through impacts such as changes to hydrology, groundwater, and surface water flows.

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[101] Queensland Government, Department of State Development, Infrastructure and Planning, *Great Barrier Reef coastal zone strategic assessment: Program report*, 2014 and GBRMP Authority, *Great Barrier Reef region strategic assessment: Strategic assessment report*, 2014.
[102] GBRMP Authority, *Great Barrier Reef outlook report 2019*, 2019.
[103] GBRMP Authority, *Great Barrier Reef blueprint for resilience*, 2017.
[104] North-East Shipping Management Group, *North-east shipping management plan*, 2014.
[105] GBRMP Authority, *Aboriginal and Torres Strait Islander heritage survey for the Great Barrier Reef Marine Park*, 2019.
[106] Australian Government, Department of the Environment, *Matters of National Environmental Significance: Significant impact guidelines 1.1*, 2013.

Also include a description of the potential impacts of mining and removal of sand from these systems over the life of mining activities, within and adjacent to the proposed action area.

10.80 Include an assessment of downstream impacts on wetlands, swamps, and the nearshore marine environment, associated with clearing vegetation and mining activities, including reduced surface water catchment, increased sediment load, and potential contaminants from chemical and fuel spills. Assess how climate change may increase the risks of these impacts occurring on the GBRWHA, GBRNHP and GBRMP.

10.81 If present, assess the potential impacts on nearby freshwater beach springs as a result of the action, which may include decreased freshwater spring flow with capture and use of stormwater and run off by the mine or groundwater drawdown; potential contamination of groundwater from releases of mine affected water or chemical/fuel spills; and associated impacts on coastal and shallow marine communities (such as mangroves or seagrasses) that may be vulnerable to changes in salinity.

10.82 Describe the potential impacts on coastal and marine habitats subject to impacts from construction marine or coastal project infrastructure. Calculate the impact area in square meters for the loss of mangrove vegetation, rocky intertidal habitat, fringing reef, and seagrass meadows. Estimate the area of direct and indirect impacts on migratory shorebirds and to migratory marine species.

10.83 Describe the potential impacts (such as suspended sediment from vessel manoeuvring and anchoring, increased dust and aeolian transport of exposed sand dunes, bulk loading operations, sediment overflow, and coastal run-off) on water quality, seagrasses, corals, reef systems, and other values of the GBRMP, GBRWHA and GBRNHP that may smother benthic habitat or seagrass or reduce underwater light levels.

10.84 Demonstrate how the action contributes to an overall or 'net' improvement to ecosystem health, water quality and the condition of the affected values, consistent with *The Reef 2050 Long-Term Sustainability Plan* (2018).[107]

10.85 Demonstrate that the action will not be inconsistent with:

(a) Australia's obligations under the World Heritage Convention

(b) the Australian World Heritage management principles

(c) a plan that has been prepared for the management of a declared World Heritage property under section 316 or as described in section 321 of the EPBC Act.

10.86 Demonstrate that the action will not be inconsistent with:

(a) the National Heritage management principles

(b) an agreement to which the Commonwealth is party in relation to a National Heritage place

(c) a plan that has been prepared for the management of a National Heritage place under section 324S or as described in section 324X of the EPBC Act.

10.87 Describe how increased vehicle traffic on the site has the potential to cause increased dust and run-off into the GBRMP, GBRWHA, and GBRNHP given high wind conditions on site.

[107] Australian Government, *Reef 2050 long-term sustainability plan*, 2018.

Avoidance and mitigation measures

Note

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

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

The SPRAT database, conservation advice, recovery plans, and associated statutory and policy documents, may provide a starting point for relevant mitigation measures for listed threatened and migratory species, ecological communities and World Heritage Properties, National Heritage Places, and the GBRMP.

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

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

10.88 Provide a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise, or compensate for all of the relevant impacts of the action, including:

(a) a description of the environmental outcomes the measures are expected to achieve, including details of any baseline data or proposed monitoring to demonstrate progress towards achieving these outcomes

(b) a description of proposed safeguards and mitigation measures to deal with relevant impacts of the action, including mitigation measures proposed to be taken by the proponent

(c) assessment of the expected or predicted effectiveness of the mitigation measures, with consideration of climate change predictions where relevant

(d) details of ongoing management, including scientifically robust monitoring programs to support an adaptive management approach and determine the effectiveness of the proposed measures or assess against proposed outcomes

(e) any statutory or policy basis for the mitigation measures

(f) the cost of the mitigation measures

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

10.89 Provide a detailed outline of an Environmental Management Plan (EMP) that sets out the framework for management, mitigation, and monitoring of relevant impacts of the action, including any provisions for independent environmental auditing. The EMP must not just state proposed management plans and/or broad objectives to describe avoidance, mitigation, and management measures. Rather, the EMP must include detailed measures that will be implemented to avoid, mitigate, and manage impacts on listed threatened species and ecological communities. The *Environmental Management Plan Guidelines*[108] provides general guidance to stakeholders preparing environmental management plans for environmental impact assessments and approvals under Chapter 4 of the EPBC Act.

10.90 All proposed measures for MNES must consider the 'S.M.A.R.T' principle:

(a) S – Specific (what and how)

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

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

(d) R – Relevant (conservation advices, recovery plans, threat abatement plans)

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

10.91 The EMP needs to address the project phases (construction, operation, maintenance, decommissioning and rehabilitation) separately. It must state the environmental objectives, performance criteria, relevant hold points, monitoring, reporting, corrective action, responsibility, and timing for each environmental issue.

10.92 Provide a description of how the proponent will approach, inform and work with third parties undertaking shipping to adhere to Australian port and transhipping regulations such as appropriate waste management from ships (sewage and plastics) when operating within the GBRMP and within Port limits.

10.93 Include management plans or measures to mitigate the impacts of vessel strike on marine megafauna, reptiles and cetaceans in line with the:

(a) Australian National Guidelines for Whale and Dolphin Watching (2017) [109]

(b) National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (2017) [110]

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[108] Australian Government, Department of the Environment, *Environmental management plan guidelines*, 2014.
[109] Australian Government, Department of the Environment and Energy, *Australian national guidelines for whale and dolphin watching 2017*, 2017.
[110] Australian Government, Department of the Environment and Energy, *National strategy for reducing vessel strike on cetaceans and other marine megafauna*, 2017.

(c) National Environmental Science Programme (NESP): Quantification of risk from shipping to large marine fauna across Australia (2019) [111]

10.94 Include mitigation strategies for reducing impacts of underwater noise in line with the *EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales* (2008). [112] This policy statement is not limited to noise impacts from seismic exploration and is able to be applied to species other than whales.

10.95 Include mitigation strategies for reducing impacts of light pollution in line with the *National Light Pollution Guidelines for Wildlife* (2020). [113]

10.96 Describe how the proposed measures are consistent with the *Reef 2050 Water Quality Improvement Plan 2017–2022* [114] and the *Reef 2050 Long-Term Sustainability Plan.* [115]

10.97 Describe how the risk of the introduction of sediments or particles that may increase turbidity from coastal run-off, spills from conveyor belts or bulk loading operations will be monitored and managed to adhere to GBR water quality guidelines and targets set within the *Reef 2050 Water Quality Improvement Plan 2017-2022*. [116]

10.98 Discuss how impacts on areas and/or objects of Indigenous cultural significance (tangible and intangible) associated with the National Heritage listing of the Great Barrier Reef as a result of the project will be avoided, mitigated, or minimised.

10.99 The EMP should also describe contingencies for events such as failure of sewerage systems, extreme weather events, heavy or prolonged rainfall, flooding events (including stormwater/tidal surges), or saltwater intrusion into ground water.

10.100 The EMP must include measures for the handling, disposal, and storage of organic chemicals, heavy metals or other potentially harmful chemicals that might be used during operation. The EMP must also include a discussion on risk management and mechanisms for monitoring potential leakages to groundwater.

10.101 Provide relevant information on existing and proposed sewage infrastructure relevant to ERA 63, by referring to relevant administering authority policies and guidelines (e.g. *Assessment guideline – Assessing applications for sewage treatment works* (ESR/2015/1652),[117] depending on the proposed sewage collection and treatment infrastructure proposed, the reuse and/or disposal of treated wastewater and sewage wastes generated.

10.102 Include future climate change scenarios in the surface and groundwater models when designing the capacity of the sediment dam and other relevant infrastructure.

10.103 Include information about other groundwater users and potential cumulative impacts of groundwater drawdown to these users as a result of the action.

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[111] Peel, D., Smith, J.N., Erbe, C., Patterson, T., and Childerhouse, S., *Quantification of risk from shipping to large marine fauna across Australia*, Report to the National Environmental Science Program, Marine Biodiversity Hub, CSIRO, 2019.
[112] Australian Government, Department of the Environment, Water, Heritage and the Arts, *EPBC Act policy statement 2.1 – Interaction between offshore seismic exploration and whales*, 2008.
[113] Australian Government, Department of the Environment and Energy, *National light pollution guidelines for wildlife including marine turtles, seabirds and migratory shorebirds*, 2020.
[114] Queensland Government, *Reef 2050 Water Quality Improvement Plan – 2017-2022,* 2018.
[115] Australian Government, *Reef 2050 long-term sustainability plan*, 2018.
[116] Queensland Government, *Reef 2050 Water Quality Improvement Plan – 2017-2022,* 2018.
[117] Queensland Government, Department of Environment and Science, *Assessment guideline: Licensing – Assessing applications for sewage treatment works*, ESR/2015/1652, version 3.04, April 2022.

10.104 Include results of the flood impact assessment to compare pre-development and current flooding risk with the predicted flooding risk as a result of the proposed project at a range of AEP, including consideration of stormwater/tidal surge and future climate change.

10.105 The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program must be stated.

Rehabilitation requirements

Note

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

10.106 Utilise best practice rehabilitation acceptance criteria, including for the restoration of habitat for relevant listed threatened species and communities.

10.107 Provide a summary of the vegetation community that is being rehabilitated and the dominant species that will be including in the rehabilitation site.

10.108 Provide the details of any rehabilitation activities proposed to be undertaken as required by Commonwealth, State or Territory, and local government legislation. Attach relevant Commonwealth, State or Territory, and local government approvals and permits as supporting documents to the MNES section. This must include a draft mine Progressive Rehabilitation and Closure Plan (PRC Plan).

10.109 Provide maps showing the areas that will be progressively rehabilitated within the project area and the size in hectares of these areas.

10.110 Provide a description of the controls to prevent erosion and stabilise cleared sand dunes as sand dunes are considered to be highly susceptible to ‘blow outs’ due to the prevalent strong south-easterly winds that may hinder rehabilitation success.

10.111 Provide a description of the vegetation chosen for rehabilitation that is appropriate for the natural succession trajectory of vegetation communities and/or threatened ecological communities.

10.112 Provide information on management of the rehabilitation sites including, but not limited to, weed and pest management.

10.113 Describe the procedures, including contingency measures, that will be undertaken to achieve the rehabilitation acceptance criteria.

10.114 Provide details of a monitoring program to determine the success of rehabilitation activities implemented by the proponent, including any contingency measures and when they would be triggered, and a framework for adaptive management including review of the monitoring program.

Offsets

Note

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

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

It is important to consider environmental offsets early in the assessment process. Correspondence with the department regarding offsetting is highly encouraged. Any proposed offsets must meet the key principles of the *EPBC Act Environmental Offsets Policy* (2012) (Offsets Policy): https://www.dcceew.gov.au/environment/epbc/publications/epbc-act-environmental-offsets-policy

If it is considered that a residual significant impact is likely, the EIS must include a draft Offset Area Management Plan (OAMP) consistent with the DCCEEW's EPBC Act Environmental Offsets Policy (2012).

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

10.115 Provide an assessment of the likelihood of residual significant impacts occurring on relevant MNES, after avoidance, mitigation and management measures have been applied.

10.116 If a significant impact is likely, provide a summary of the proposed environmental offset and key commitments to achieve a conservation gain for each protected matter in accordance with the *EPBC Act Environmental Offsets Policy.* The DCCEEW considers that it is not possible to offset heritage matters, as per the Guidance on Impact Assessment for World Heritage matters that states "OUV is irreplaceable and cannot be 'offset'".[118]

10.117 An EPBC Act protected matter must be present in the proposed offset site/s if it is present in the project site to align with the EPBC Act Offsets Policy.

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

[118] United Nations Educational, Scientific and Cultural Organization (UNESCO), International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), International Council on Monuments and Sites (ICOMOS) & International Union for Conservation of Nature (IUCN), *Guidance and Toolkit for Impact Assessments in a World Heritage Context,* Paris, UNESCO, 2022.

10.119 Where an offset is proposed, with a completed Offsets Assessment Guide[119] calculation, all inputs must be supported by robust scientific evidence and/or supporting evidence (e.g. historical grazing regimes, satellite imagery, statements from landholders).

10.120 The draft OAMP must be prepared by a suitably qualified ecologist and in accordance with the DCCEEW's *Environmental Management Plan Guidelines* (2014).[120]

Minimum Requirements for a draft Offset Area Management Plan

10.121 Supporting evidence must be included in the draft OAMP to justify how proposed management action/s are additional to the existing requirements of the landholder in managing their land (e.g. weed and pest management requirements under the *Queensland Biosecurity Act 1994*, existing grazing regimes, etc.) as required by the EPBC Act Offsets Policy.

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

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

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

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

(b) time until ecological benefit

(c) risk of loss (%) without offset

(d) risk of loss (%) with offset

(e) confidence in result (%).

10.125 A description of the offset area/s, including location, size, condition, environmental values present and surrounding land uses.

10.126 Baseline data and other supporting evidence that documents the presence of the relevant MNES, and the quality of their habitat within the offset area/s.

10.127 An assessment of the site habitat quality for the offset area/s. The DCCEEW does not mandate the use of any specific method for deriving Habitat Quality scores for the Offset Assessment Guide (calculator). The important factor is that both impact and offset sites are assessed using the same approach/scoring mechanism, that the method is suitable and targeted for each species/community, and that the resulting offset proposed is in line with the core principles of the EPBC Act Environmental Offset Policy (2012).

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[119] Refer to Australian Government, *Offsets assessment guide*, 2012 at www.dcceew.gov.au/environment/epbc/approvals/offsets/guidance/offsets-assessment-guide

[120] Australian Government, Department of the Environment, *Environmental management plan guidelines*, 2014.

10.128 Details of how the offset area/s will provide connectivity with other habitats and biodiversity corridors and/or will contribute to a larger strategic offset for the relevant MNES.

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

10.130 Specific offset completion criteria derived from the site habitat quality to demonstrate the improvement in the quality of habitat in the offset area/s over a 20 year period.

10.131 Details of the management actions, and timeframes for implementation, to be carried out to meet the offset completion criteria.

10.132 Interim milestones that set targets at 5 yearly intervals for progress towards achieving the offset completion criteria.

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

10.134 Proposed timing for the submission of monitoring reports which provide evidence demonstrating whether the interim milestones have been achieved.

10.135 Timing for the implementation of tangible, on-ground corrective actions to be implemented if monitoring activities indicate the interim milestones have not been achieved.

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

10.137 Evidence of how the management actions and corrective actions take into account relevant approved conservation advices and are consistent with relevant recovery plans and threat abatement plans.

10.138 Details and execution timing of the mechanism to legally secure the proposed offset area/s, such that legal security remains in force over the offset area/s for at least 20 years to provide enduring protection for the offset area/s against development incompatible with conservation.

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

Other approvals and conditions

Note

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

10.140 Provide details of any local or State Government planning scheme, or plan or policy under any local or State Government planning system that deals with the proposed action, including:

(a) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan, or policy

(b) how the scheme provides for the prevention, minimisation, and management of any relevant impacts.

10.141 Provide a description of any approval that will or has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action.

10.142 If relevant, provide a statement identifying any additional approval that is required.

10.143 Provide a description of the monitoring, enforcement, and review procedures that apply, or are proposed to apply, to the action.

Consultation

10.144 The MNES section must detail any consultation about the action, including:

(a) any consultation that has already taken place, their outcomes, and details of management measures to address community concerns

(b) proposed future consultation (including plans for future engagement) throughout life of the proposed action

(c) any documented response to, or result of, the consultation

(d) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views

(e) signed documents or statements of consent from land holders or managers (including Registered Native Title Body Corporates).

10.145 Prepare a cultural values assessment, the methodology of which is to be informed by the engagement principles specified by the Interim Engaging with First Nations People and Communities on Assessments and Approvals under the *Environment Protection and Biodiversity Conservation Act 1999*.[121]

Environmental record of person proposing to take the action

10.146 The information provided in the MNES section must include details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

(a) the person proposing to take the action

(b) for an action for which a person has applied for a permit, the person making the application.

10.147 If the person proposing to take the action is a corporation, details of the corporation's environmental policy and planning framework must also be included.

[121] Australian Government, Department of Climate Change, Energy, the Environment and Water, *Interim engaging with First Nations People and communities on assessments and approvals under the Environment Protection and Biodiversity Conservation Act 1999*, 2023.

Economic and social matters

Note

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

Intangible cultural heritage values may include culturally significant species, ecological communities, biogeographic features, storylines, totems, and areas of spiritual significance. The Lesser Sand Plover, the Greater Sand Plover and the marine animals noted in the referral may be of cultural significance.

10.148 Detail projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies.

10.149 Describe any state requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action with regards to Indigenous peoples and communities.

(a) Provide updates on the status of required agreements with relevant land holders (including Registered Native Title Body Corporates). This may include a native title agreement or another agreement with the Aboriginal party, or CHMPs that protect tangible and intangible cultural heritage values

(b) address concerns that might include environmental impacts on Land and Sea Country, noise and vibration, visual impacts of mining and infrastructure, water quality, social impacts (such as the impacts of the mining workforce) and economic opportunities

(c) implements protocols for the identification, protection and management of any cultural heritage values or artefacts discovered in the course of project construction and operations

(d) includes details of targeted cultural heritage pre-clearance surveys prior to site clearance and construction.

10.150 Describe the proponent's commitments and other matters and formalise such agreements in the construction of an appropriate native title agreement or ILUAs, as required under the *Native Title Act 1993*, that:

(a) address any Native Title matter as agreed to by the parties

(b) may include arrangements for consultation, access, dispute management, environmental and cultural heritage management, and economic opportunities.

10.151 Describe employment opportunities (including Indigenous employment targets) expected to be generated by the project (including construction, operational and decommissioning phases).

10.152 Describe opportunities for training facilities or offices in regional towns such as Hope Vale or Cooktown.

10.153 An analysis of the carrying capacity of infrastructure in nearby regional towns (including Hope Vale and Cooktown) to ensure infrastructure in the town such as housing, social services, and road networks to support increased work forces is or will be adequate.

10.154 Details of the relevant costs and benefits of identified alternative options to the proposed action (including not proceeding with the action) should also be included with reference to impacts on and benefits to Indigenous peoples and communities and other social and economic considerations.

10.155 Describe the benefits of undertaking mining in this area to the local and state economy including details of state royalties and creation of jobs.

10.156 Provide a discussion of the global demand for silica sand, which includes information about how the product is likely to be used in manufacturing and other industries.

Information sources provided in the MNES section

10.157 For information given in a draft Environmental Impact Statement, the draft must state:

(a) the source of the information

(b) how recent the information is

(c) how the reliability of the information was tested

(d) what uncertainties (if any) are in the information.

Conclusion

10.158 An overall conclusion as to the environmental acceptability of the proposal should be provided, including discussion on compliance with principles of ecologically sustainable development and the objects and requirements of the EPBC Act. Reasons justifying undertaking the proposal in the manner proposed should also be outlined.

10.159 Key mitigation proposed, as well as any offsets proposed for any unavoidable residual significant impacts on MNES, should be summarised here.

Part C Acronyms and abbreviations

Acronym/abbreviation	Definition
AEP	annual exceedance probability
ANZG 2018	Australian and New Zealand guidelines for fresh and marine water quality
Apia convention	the Convention on Conservation of Nature in the South Pacific
CBA	cost-benefit analysis
CHMP	cultural heritage management plan
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLR	contaminated land register
CO2	cardon dioxide
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DESI	Department of Environment, Science and Innovation
DTMR	Department of Transport and Main Roads
EA	environmental authority
EIS	environmental impact statement
EMP	environmental management plan
EMR	environmental management register
EP Act	*Environmental Protection Act 1994*
EP Regulation	Environmental Protection Regulation 2019
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EPP (Air)	Environmental Protection (Air) Policy 2019
EPP (Noise)	Environmental Protection (Noise) Policy 2019
EPP (Water and Wetland Biodiversity)	Environmental Protection (Water and Wetland Biodiversity) Policy 2019
ERA	environmentally relevant activities
FIFO	fly-in, fly-out
GABORA Water Plan	Water Plan (Great Artesian Basin and Other Regional Aquifers) 2017
GBR	Great Barrier Reef
GBRMP	Great Barrier Reef Marine Park
GBRWHA	Great Barrier Reef World Heritage Area
GBRNHP	Great Barrier Reef National Heritage Place.
GDA2020	Geocentric Datum of Australia 2020
GDE	groundwater dependent ecosystem
GHG	greenhouse gas
GTIA	guide to traffic impact assessment
Ha	hectares

Acronym/abbreviation	Definition
ILUA	Indigenous Land Use Agreements
km	kilometre
MNES	matters of national environmental significance
m^2	metres squared
MSES	matters of state environmental significance
Mtpa	million tonnes per annum
OAMP	Offset Area Management Plan
Offsets Policy	EPBC Act Environmental Offset Policy (2012)
OGV	ocean going vessel
OUV	outstanding universal value
PMF	Probable maximum flood
PMST	Protected Matters Search Tool
PRCP	progressive rehabilitation and closure plan
pH	potential of hydrogen
Queensland Heritage Act	*Queensland Heritage Act 1992*
RIA	regional impact assessment
SDAP	State Development Assessment Provisions
SDPWO Act	*State Development and Public Works Organisation Act 1971*
SIA	social impact assessment
SIMP	social impact management plan
SPRAT	species profile and threats
SRI	significant residual impact
SSRC Act	*Strong and Sustainable Resource Communities Act 2017*
TEC	threatened ecological community
TOR	terms of reference
VM Act	*Vegetation Management Act 1999*
Water Act	*Water Act 2000*
WIP	watercourse identification map

Appendix 1. MNES listed threatened species and communities (sections 18 and 18A)

Table 1 lists the threatened ecological communities and species for the controlled action under the EPBC Act, which at a minimum is to be included in the impact assessment in the MNES section.

Note: The lists at Table 1 may not be a complete list of listed threatened ecological communities and species that will or are likely be impacted by the action. It is the proponent's responsibility to ensure that any listed threatened ecological communities and species at the time of the controlled action decision, which will or are likely to be impacted by the action, are assessed for the Australian Minister for Climate Change, Energy, the Environment and Water's consideration. Any listing events (e.g. the listing or up-listing of a species) that occur after the controlled action decision (14 June 2023) are not required to be considered in the assessment.

Table 1 Listed threatened ecological communities and species

Ecological communities/species name	Status under the EPBC Act
Ecological communities	
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered
Plants	
Ant Plant (*Myrmecodia beccarii*)	Vulnerable
Chocolate Teatree Orchid (*Dendrobium johannis*)	Vulnerable
Cooktown Orchid (*Dendrobium bigibbum*)	Vulnerable
Eremochloa muricata	Endangered
Mammals	
Bare-rumped Sheath-tailed Bat (*Saccolaimus saccolaimus nudicluniatus*)	Vulnerable
Ghost Bat (*Macroderma gigas*)	Vulnerable
Large-eared horseshoe bat (*Rhinolophus robertsi*)	Vulnerable
Birds	
Australian Painted Snipe (*Rostratula australis*)	Endangered
Crimson Finch (white-bellied) (*Neochmia phaeton evangelinae*)	Endangered

Ecological communities/species name	Status under the EPBC Act
Curlew Sandpiper (*Calidris ferruginea*)	Critically Endangered, Migratory
Eastern Curlew (*Numenius madagascariensis*)	Critically Endangered, Migratory
Great Knot (*Calidris tenuirostris*)	Critically Endangered, Migratory
Greater Sand Plover (*Charadrius leschenaultii*)	Vulnerable, Migratory
Lesser Sand Plover (*Charadrius mongolus*)	Endangered, Migratory
Red Knot (*Calidris canutus*)	Endangered, Migratory
Western Alaskan Bar-tailed Godwit (*Limosa lapponica baueri*)	Vulnerable
Reptiles	
Yakka Skink (*Egernia rugosa*)	Vulnerable
Loggerhead Turtle (*Caretta caretta*)	Endangered, Migratory
Green Turtle (*Chelonia mydas*)	Vulnerable, Migratory
Leatherback Turtle (*Dermochelys coriacea*)	Endangered, Migratory
Hawksbill Turtle (*Eretmochelys imbricata*)	Vulnerable, Migratory
Olive Ridley Turtle (*Lepidochelys olivacea*)	Endangered, Migratory
Flatback Turtle (*Natator depressus*)	Vulnerable, Migratory
Sharks	
Freshwater sawfish (*Pristis pristis*)	Vulnerable, Migratory
Green sawfish (*Pristis zijsron*)	Vulnerable, Migratory
Whale shark (*Rhincodon typus*)	Vulnerable, Migratory

Appendix 2. MNES listed migratory species (sections 20 and 20A)

Table 3 lists the migratory species for the controlled action under the EPBC Act, which at a minimum is to be included in the impact assessment in the MNES section.

Note: The list at Table 3 may not be a complete list of listed migratory species that will or are likely be impacted by the action. It is the proponent's responsibility to ensure that any listed migratory species at the time of the controlled action decision, which will or are likely to be impacted by the action, are assessed for the Australian Minister for Climate Change, Energy, the Environment and Water's consideration. Any listing events (e.g. the listing or up-listing of a species) that occur after the controlled action decision (16 January 2023) are not required to be considered in the assessment. Some of the listed migratory species requiring assessment are also listed as threatened under the EPBC Act. These species should be considered in accordance with their status as a threatened species. Assessment of these species does not need to be duplicated in the migratory species section.

Table 2 Migratory species

Species name
Salt-water Crocodile (*Crocodylus porosus*)
Narrow Sawfish (*Anoxypristis cuspidata*)
Reef Manta Ray (*Mobula alfredi*)
Giant Manta Ray (*Mobula birostris*)
Australian Snubfin Dolphin (*Orcaella heinsohni*)
Australian Humpback Dolphin (*Sousa sahulensis*)
Dugong (*Dugong dugon*)

Appendix 3. 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.

General

Queensland Government, Department of State Development and Infrastructure, *Preparing an environmental impact statement – Guideline for proponents*, 2024.

Land

Cook Shire Planning Scheme, 2017.

Hope Vale Aboriginal Shire Planning Scheme, 2014.

McKenzie NJ, Grundy, MJ, Webster R, Ringrose-Voase, AJ, *Guidelines for Surveying Soil and Land Resources*, CSIRO, 2008.

National Committee on Soil and Terrain, *Australian Soil and Land Survey Field Handbook*, CSIRO, 2009.

Queensland Government, AgTrends Spatial web mapping, **https://qldspatial.information.qld.gov.au/AGTrendsSpatial/**.

Queensland Government, Department of Environment and Science and Department of Resources, *Queensland Land Resource Assessment Guidelines – Volume 1: Soil and land resource assessment,* Version 1.0, June 2021.

Queensland Government, Department of Environment and Science and Department of Natural Resources, Mines and Energy, *Queensland Land Resource Assessment Guidelines – Volume 2: Field tests*, Version 1.0, October 2020.

Queensland Government, Department of Environment and Science, *Coastal – EIS information guideline*, ESR/2020/5299, version 1.02, June 2024.

Queensland Government, Department of Environment and Science, *Guideline – Progressive rehabilitation and closure plans*, ESR/2019/4964, Version 3, April 2023.

Queensland Government, Department of Environment and Science, *Submission of a progressive rehabilitation and closure plan*, ESR/2019/4957, version 4.00, March 2023.

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

Queensland Government, Department of Environment, Science and Innovation, *Estimated rehabilitation cost calculator – mining*, ESR/2015/1824, version 5.04, February 2024

Queensland Government, Department of Environment, Science and Innovation, *Land – EIS Guideline,* ESR/2020/5303, Version 1.04, June 2024.

Queensland Government, Department of Infrastructure, Local Government and Planning, *State Planning Policy – state interest guideline: Strategic ports,* 2016.

Queensland Government, Department of Natural Resources and Mines, *Native title work procedures*, 2017.

Queensland Government, Department of Resources, *Guide to State Development Assessment Provisions State code 16: Native vegetation clearing,* Version 3.00, March 2023"

Queensland Government, Department of Resources, *Queensland Soil and Land Resource Survey Information Guideline*, VEG/2018/4460, version 2.0, 2021.

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

Queensland Government, Department of State Development, Infrastructure, Local Government and Planning, *State Development Assessment Provisions*, Version 3.0, December 2021.

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

Queensland Government, guidance material on Acid Sulfate Soils, available at: **https://www.qld.gov.au/environment/land/management/soil/acid-sulfate/national-guidance**

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

Queensland Government, *Soils of Cape York Peninsula by Biggs AJW & Philip SR*, 1995, Queensland Department of Primary Industries Land Resources Bulletin QV95001.

- A Hardcopy report and maps can be downloaded from the Queensland Government Publications Portal (**https://www.publications.qld.gov.au/dataset/soils-cape-york-cyp**), and digital information available for use in a GIS can be downloaded from the Queensland Government Online Spatial Catalogue (Queensland Spatial Catalogue: Queensland Government (**www.information.qld.gov.au**). Otherwise, please feel free to contact **Soil.Enquiry@resources.qld.gov.au** for assistance.

Soil Science Australia, *Guidelines for Soil Survey along Linear Features*, 2015, viewed 1 December 2023, **https://www.soilscienceaustralia.org.au/wpcontent/uploads/2021/02/SSA2015.Guidelines-for-Soil-Survey-along-Linear-Features.pdf**

Flora and fauna

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**.

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**.

Queensland Government, Department of Environment and Science, *Guide to determining terrestrial habitat quality – Methods of assessing habitat quality under the Queensland Environmental Offsets Policy.*

Queensland Government, Department of Environment and Heritage Protection, *Queensland Environmental Offsets Policy: Significant Residual Impact Guideline*, December 2014.

Queensland Government, Department of Primary Industries and Fisheries, *Management and protection of marine plants and other tidal fish habitats*, FHMOP 001, Dawn Couchman and John Beumer, November 2007.

Queensland Government, Department of Primary Industries, *Fisheries Guidelines for Fish habitat buffer zones*, FHG 003, Maria Bavins, Dawn Couchman and John Beumer, August 2000.

Queensland Government, Department of Resources, *Guide to State Development Assessment Provisions – State Code 16: Native vegetation clearing,* Version 3.00, 2023, **https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/development-approvals/sdap**

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.

Queensland Government, Department of State Development, Infrastructure, Local Government and Planning, *State code 16: Native vegetation clearing,* State Development Assessment Provisions, Version 3.0.

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

Queensland Government, 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.

Water

Australian 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.

Australian Government, Geoscience Australia, *Australian Rainfall and Runoff: A Guide to Flood Estimation*, **https://arr.ga.gov.au/**, 2019.

Australian Government, National Water Commission, *Australian groundwater modelling guidelines,* June 2012.
Australian Government, *Reef 2050 Water Quality Improvement Plan – 2017-2022*, 2018.

Peeters LJM and Middlemis H, Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development, *Information Guidelines Explanatory Note – Uncertainty analysis for groundwater modelling,* 2023.

Queensland Government, Department of Environment and Science, *Point source water quality offsets policy 2019,* November 2019, **https://environment.desi.qld.gov.au/management/water/water-quality-offsets**

Queensland Government, Department of Environment, Science and Innovation, *Guideline – Reef discharge standards for industrial activities,* ESR/2021/5627, version 1.04, February 2024.

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

Queensland Government, *Watercourse identification map,* **https://www.business.qld.gov.au/industries/mining-energy-water/water/maps-data/watercourse-map**.

Social

Queensland Government, Coordinator-General, *Social Impact Assessment Guideline*, March 2018.

Queensland Government, Coordinator-General, *Supplementary material for assessing and managing the social impacts of projects under the Coordinator-General's Social Impact Assessment Guideline*, November 2023.

Queensland Government, Maritime Safety Queensland, *Backing Queensland Maritime Jobs Initiative,* April 2023.

Queensland Government, Department of Resources, *Queensland Resources Industry Development Plan*, June 2022.

Cultural heritage

Queensland Government, Department of Environment, Science and Innovation, *Cape York Peninsula – Progressing a World Heritage Tentative Listing*, **https://parks.des.qld.gov.au/__data/assets/pdf_file/0033/329838/cywha-nomination-project-factsheet.pdf**

Australian Government, Department of Sustainability, Environment, Water, Population and Communities, *A World Heritage Nomination for Cape York Peninsula*, **https://www.dcceew.gov.au/sites/default/files/documents/cape-york-nomination.pdf**, 2012.

Economic

International Energy Agency, *Global Energy and Climate Model Documentation – 2023*, **https://www.iea.org/reports/global-energy-and-climate-model**, October 2023.

Queensland Government, Coordinator-General, *Economic Impact Assessment Guideline,* April 2017.

Hazards, health and safety

Australian Government, Bureau of Meteorology, Changes to fire weather in Queensland, 2019.

Australian Standard, *Explosives – Storage, transport and use,* AS 2187.1.

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**.

Queensland Government, Maritime Safety Queensland, *Tidal works and major development proposals,* **https://www.msq.qld.gov.au/Waterways/Tidal-works-and-major-development-proposals**.

Queensland Government, Queensland Fire and Emergency Services, *State Earthquake Risk Assessment*, 2019.

Queensland Government, Queensland Fire and Emergency Services, *State Heatwave Risk Assessment*, 2019.

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

Air

Australian Government, Clean Energy Regulator, National Greenhouse and Energy Reporting Scheme Guidelines, **https://www.cleanenergyregulator.gov.au/NGER/Forms-and-resources/Guidelines**

Transport

Queensland Government, Department of Transport and Main Roads, *Maritime Safety Queensland, State Development Assessment Provisions Supporting Guideline, State Code 7 Maritime Safety, 2022*

Queensland Government, Department of Transport and Main Roads, *Maritime Safety Queensland guidelines for vetting bulk carriers intended for travel through the Great Barrier Reef.*

Queensland Government, Department of Transport and Main Roads, *Maritime Safety Queensland, Anchorage Area Design and Management Guideline, 2019*

Queensland Government, Department of Transport and Main Roads, *Maritime Safety Queensland, Anchorages – jurisdictional responsibility for anchorages in Queensland*

Matters of national environmental significance

Australian Government, *Offsets assessment guide*, 2012 at **https://www.dcceew.gov.au/environment/epbc/approvals/offsets/guidance/offsets-assessment-guide**

Australian Government, *Reef 2050 long-term sustainability plan*, 2018.

Australian Government, *Reef 2050 long-term sustainability plan 2021-2025*, 2023.

Australian Government, Department of Agriculture, Water and the Environment, *Guide to providing maps and boundary data for EPBC Act projects*, 2021.

Australian Government, Department of Climate Change, Energy, the Environment and Water, *Interim engaging with First Nations People and communities on assessments and approvals under the Environment Protection and Biodiversity Conservation Act 1999*, 2023.

Australian Government, Department of Climate Change, Energy, the Environment and Water, *Offsets assessment guide*, 2012 at **https://www.dcceew.gov.au/environment/epbc/approvals/offsets/guidance/offsets-assessment-guide**

Australian Government, Department of the Environment, *Draft survey guidelines for Australia's threatened orchids: Guidelines for detecting orchids listed as 'threatened' under the Environment Protection and Biodiversity Conservation Act*, 2013.

Australian Government, Department of the Environment, *Environmental management plan guidelines*, 2014.

Australian Government, Department of the Environment, *How to use the Offsets Assessment Guide,* at **https://www.dcceew.gov.au/sites/default/files/documents/offsets-how-use.pdf**

Australian Government, Department of the Environment, *Matters of National Environmental Significance: Significant impact guidelines 1.1*, 2013.

Australian Government, Department of the Environment, *Sensitive Ecological Data – Access and Management Policy V1.0,* Environmental Resources Information Network (ERIN), 2016.

Australian Government, Department of the Environment and Energy*, Australian national guidelines for whale and dolphin watching 2017*, 2017.

Australian Government, Department of the Environment and Energy, *EPBC Act Policy Statement 3.21 – Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species*, 2017.

Australian Government, Department of the Environment and Energy, *Guidelines for biological survey and mapped data*, 2018.

Australian Government, Department of the Environment and Energy, *National light pollution guidelines for wildlife including marine turtles, seabirds and migratory shorebirds*, 2020.

Australian Government, Department of the Environment and Energy, *National strategy for reducing vessel strike on cetaceans and other marine megafauna*, 2017.

Australian Government, Department of the Environment, Water, Heritage and the Arts, *EPBC Act policy statement 2.1 – Interaction between offshore seismic exploration and whales*, 2008.

Australian Government, Department of the Environment, Water, Heritage and the Arts, *Survey guidelines for Australia's threatened bats: Guidelines for detecting bats listed as threatened under the Environment Protection and Biodiversity Conservation Act*, 2010.

Australian Government, Department of the Environment, Water, Heritage and the Arts, *Survey guidelines for Australia's threatened birds: Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act*, 2010.

Australian Government, Department of the Environment, Water, Heritage and the Arts, *Survey guidelines for Australia's threatened frogs: Guidelines for detecting frogs listed as threatened under the Environment Protection and Biodiversity Conservation Act*, 2010.

Australian Government, Department of Sustainability, Environment, Water, Population and Communities, *Environment Protection and Biodiversity Conservation Act 1999: Environmental offsets policy*, 2012.

Australian Government, Department of Sustainability, Environment, Water, Population and Communities, *Survey guidelines for Australia's threatened fish: Guidelines for detecting fish listed as threatened under the Environment Protection and Biodiversity Conservation Act*, 2011.

Australian Government, Department of Sustainability, Environment, Water, Population and Communities, *Survey guidelines for Australia's threatened mammals: Guidelines for detecting mammals listed as threatened under the Environment Protection and Biodiversity Conservation Act*, 2011.

Australian Government, Department of Sustainability, Environment, Water, Population and Communities, *Survey guidelines for Australia's threatened reptiles: Guidelines for detecting reptiles listed as threatened under the Environment Protection and Biodiversity Conservation Act*, 2011.

Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018) found at **https://www.waterquality.gov.au/anz-guidelines/framework/baseline-study**

Doody TM, Hancock PJ, Pritchard JL, *Information Guidelines Explanatory Note: Assessing groundwater-dependent ecosystems*. Report prepared for the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development through the Department of the Environment and Energy, Commonwealth of Australia, 2019.

GBRMP Authority, *Aboriginal and Torres Strait Islander heritage survey for the Great Barrier Reef Marine Park*, 2019.

GBRMP Authority, *Cumulative impact management policy*, 2018.

GBRMP Authority, *Great Barrier Reef blueprint for resilience*, 2017.

GBRMP Authority, *Great Barrier Reef outlook report 2019*, 2019.

GBRMP Authority, *Great Barrier Reef region strategic assessment: Strategic assessment report*, 2014.

GBRMP Authority, *Net benefit policy*, 2018.

North-East Shipping Management Group, *North-east shipping management plan*, 2014.

Peel, D., Smith, J.N., Erbe, C., Patterson, T., and Childerhouse, S., *Quantification of risk from shipping to large marine fauna across Australia*, Report to the National Environmental Science Program, Marine Biodiversity Hub, CSIRO, 2019.

Queensland Government, *Reef 2050 water quality improvement plan 2017-2022*, 2018.

Queensland Government, Department of Environment and Science, *Assessment guideline: Licensing – Assessing applications for sewage treatment works*, ESR/2015/1652, version 3.04, April 2022.

Queensland Government, Department of State Development, Infrastructure and Planning, *Great Barrier Reef coastal zone strategic assessment: Program report*, 2014.

United Nations Educational, Scientific and Cultural Organization (UNESCO), International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), International Council on Monuments and Sites (ICOMOS) & International Union for Conservation of Nature (IUCN), *Guidance and Toolkit for Impact Assessments in a World Heritage Context,* Paris, UNESCO, 2022.

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