

Final terms of reference for an environmental impact statement under the *Environmental Protection Act 1994*

*Galalar Silica Sand Project
proposed by Diatrene Resources Limited
November 2020*

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This terms of reference is based on the departments approved form for submission of a draft terms of reference (ESR/2017/4038, version 3.01, March 2020) for resource projects undergoing assessment by environmental impact assessment under the *Environmental Protection Act 1994*.

November 2020

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1. Purpose of the terms of reference

1.1 Introduction

This document is the final terms of reference (TOR) for the proposed Galalar Silica Sand Project (GSSP) (herein referred to as 'the proposed project') proposed by Diatreme Resources Limited (Diatreme) being assessed under the environmental impact statement (EIS) process in chapter 3, part 1, of the *Environmental Protection Act 1994* (EP Act). It sets out the scope and required content that the EIS must include to allow the purposes of the EIS under section 40 of the EP Act to be achieved for the proposed project.

The EIS must address key requirements outlined in the EP Act and subordinate legislation for the proposed project, including:

- the requirements of section 40 of the EP Act, which specifies the purpose of an EIS and of the EIS process
- the requirements of sections 125, 126 and 126A which set out the general information requirements for applications for an environmental authority (EA)
- the requirements of sections 126B, 126C and 126D which set out the information requirements for a proposed progressive rehabilitation and closure (PRC) plan for mining projects
- the requirements of chapter 2 and schedule 1 of the *Environmental Protection Regulation 2019* (EP Regulation), including matters to be addressed by assessment under the bilateral agreement between the Australian Government and the State of Queensland
- the environmental objectives and performance outcomes specified in schedule 8 and schedule 8A of the EP Regulation.

Section 139 of the EP Act states that the information stage of the EA application and PRC plan does not apply if the EIS process is complete, unless there has been a subsequent change to the proposed project including changes to a proposed PRC plan (where relevant). It is therefore important that the EIS provides all the information needed to enable the issuing of an EA (and PRC plan schedule for mining projects) for the proposed project as set out in these TOR in conjunction with latest version of the Department of Environment and Science's (herein referred to as 'the department') [EIS information guidelines](#) (DES 2020).

Proponents that submit a site-specific application for an EA for a new mining activity that relates to a mining lease are required to develop and submit a proposed PRC plan as part of their application. Further guidance is available in the department's guidelines [Progressive rehabilitation and closure plans](#) (ESR/2019/4904¹) and *Public interest evaluation* (when released).

While every attempt is made by the department to ensure the final TOR requires an assessment of all relevant matters, the final TOR may not be exhaustive. Therefore the EIS must address other matters not covered in the final TOR in the following circumstances:

- Studies reveal a matter that had not been foreseen when the TOR was finalised.
- An issue not identified previously is considered contentious by the public, such as a public perception of potential environmental harm or nuisance even though the perception might be mistaken.
- The department directs the proponent in writing to address a matter as an information request under section 62 of the EP Act.
- New or amended legislation or policies come into effect after the TOR has been finalised, regardless of whether or not the legislation or policies have been listed in the TOR. Transitional arrangements or exemptions may apply for individual projects.
- The proponent makes amendments to the proposed project that would result in a change in the nature, timing or location of any impacts.

¹ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

The department must consider if an EIS addresses the final TOR in an acceptable form and may refuse to allow the EIS to proceed under section 49(3) of the EP Act if it believes the information provided in the EIS is not adequate.

1.2 Information about the proposed project and assessment

1.2.1 Project proponent

Diatreme Resources Limited (Diatreme) is the proponent for the proposed GSSP. Diatreme is a publicly listed company (ASX code DRX) with interests in prospective mineral and silica sand projects in Queensland and Western Australia.

Diatreme has entered into a number of commercial arrangements with the Hopevale Congress Aboriginal Corporation, the representative body of all native title holders of the land on which the mine will be built and the owner of the Aboriginal freehold land.

1.2.2 Proposed project

The proposed mine would be located near Cape Bedford approximately 200 kilometres (km) north of Cairns, 20km north of Cooktown and 20km east of Hope Vale, Queensland. The company holds an Exploration Permit [for] Minerals (EPM), EPM 17795 that covers an area of 486km² and EPM (A) 27430 that covers an area of 62.7km². A Mining Lease Application (MLA 100235) for the mine and associated infrastructure was lodged on 20 December 2019 and covers an area of 525km².

The GSSP would be an open cut mining operation designed to extract and process silica sand into a product suitable for manufacturing high quality glass products, including solar panels. It would involve dry-mining silica sand above the water table, on-site processing involving washing and gravity separation, and stockpiling processed product as shown on Figure 1-1. Product would be transported by truck to a barge loading area and then barged to a transshipment location and exported via ship to overseas markets. Export options consist of two alternative barge loading locations as shown on Figure 1-2, one near the mine site at Nob Point and one at Marton on the Endeavour River at Cooktown. It is proposed that these loading and associated transshipping options will be assessed as part of the EIS process and a preferred feasible option will be selected by the proponent. The EIS process will describe the technical merit, environmental impacts, and the constraints of the legislative framework for each option.

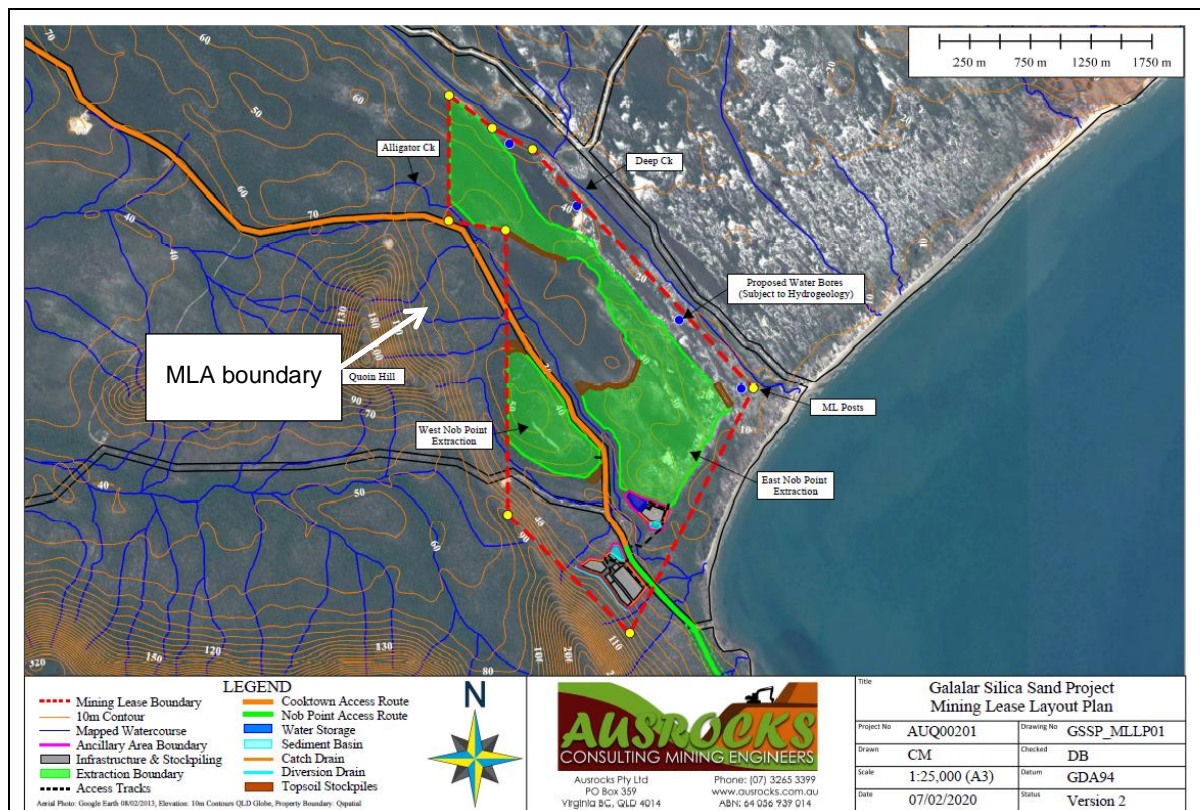


Figure 1-1 Mine and MLA details (adapted from Diatreme Resources Initial Advice Statement).

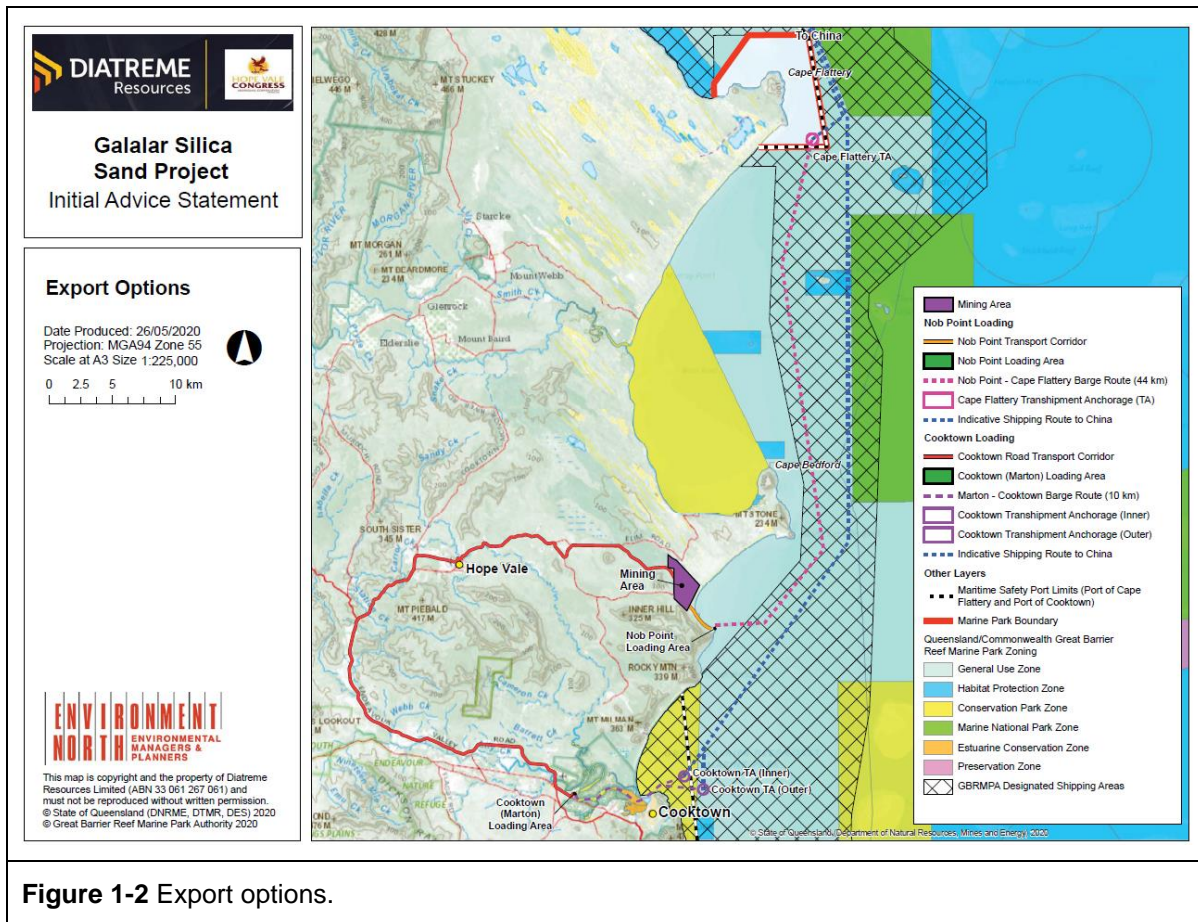


Figure 1-2 Export options.

The current resource is approximately 47 million tonnes (Mt) and at the proposed average rate of extraction of 0.95 Mt per annum (Mtpa) would last in excess of 20 years. However, a conservative initial mine life of 15 years has been assumed. A mining area of approximately 216 hectares (ha) will be developed in stages averaging approximately six ha of mined area per year that will be progressively rehabilitated in accordance with the progressive rehabilitation and closure plan (PRC plan), developed in accordance with the Guideline – progressive rehabilitation and closure plan guideline (ESR/2019/4964²). Of the mined silica, approximately 0.75Mtpa would be recovered for export. A heavy mineral by-product would be produced by the processing plant and stockpiled until there is a sufficient quantity for a heavy mineral shipment. Most of the mine products are expected to eventually be exported, although available domestic markets will be investigated.

Associated mine infrastructure would include a workshop and office, a product materials stockpile site, a mobile processing plant, slurry holding and treatment ponds and roads.

The mining operation and processing plant would operate as a continuous process for 24 hours per day and 360 days per year. The workforce would consist of approximately 40 people over less than one year for the construction stage, and either 45 people for the Nob Point loading option or 61 people for the Cooktown loading option in the operational stage. There will be no camp at the mine and workers would commute from Hope Vale, Cooktown, or elsewhere in the local area.

The mining operation would commence with the removal of large vegetation on the proposed mine areas ahead of the planned mining operation using a bulldozer.

The exposed silica ore would be excavated using a front end loader and loaded directly into a hopper-feeder unit at a rate of approximately 138 tonnes (t) per hour for approximately 19 hours per day and 360 days per year. The hopper-feeder unit would screen out oversize material and pump the sand to a mobile wet spiral plant in slurry form.

² This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

The slurry from the hopper-feeder unit would be pumped into a controlled density tank at the wet processing plant. Processing equipment would include spirals, attritioners, classifiers and magnetic separators to remove heavy minerals, release surface impurities from the silica, remove fine particles and remove magnetic particles.

Heavy mineral concentrate would be stockpiled for further concentration and sale when sufficient stocks have accumulated. Fine particles removed during processing would be pumped to a dam for settling to allow reuse of the process water. The low iron silica product would be dewatered and stockpiled ready for transport.

The site's operational power supply would use a hybrid diesel-solar system where diesel generators would supply the base load and solar panels would provide a variable supply during the day to reduce the diesel fuel consumption.

The solar panels, together with battery storage, would also be used as a back-up supply for offices and workshops during generator maintenance. The diesel generators would be sized to suit the full site power demand which is expected to be up to 750 kilowatt.

The water requirement for the mine and site facilities (e.g. workshop, ablution block and staff kitchen) is approximately 500 megalitres per annum. This supply is expected to be obtained from groundwater bores close to the mine site.

Water recycling dams would be used to minimise the requirement from water bores. Most of the water losses on the site would result from seepage into the ground from dams, product stockpiles, and by-product stockpiles.

Processed product would be transported by truck to either nearby Nob Point (Nob Point loading) or to Cooktown (Cooktown loading).

Local roads between the mining area and Hope Vale for general access (under the control of Hope Vale Aboriginal Shire Council) would be upgraded and maintained as required. Other infrastructure required would be dependent on the preferred loading option:

- Nob Point loading—the 4km local road between the mining area and Nob Point would be upgraded/constructed and maintained as required for the transport of product using semi-trailers. The barge loading area at Nob Point would consist of a product stockpile area and either a barge ramp or land-based crane for loading, and associated mooring piles for stabilising the barges.
- Cooktown loading—in total, 63km of existing shire roads and the State-controlled Endeavour Valley Road would be used for the transport of product using double road trains. The barge loading area at Marton, Cooktown would consist of a 25,000t product stockpile area and a barge ramp at the existing Ida St facility on the Endeavour River.

Coastal barging operations would consist of barges (2,000t or 5,000t, depending on the loading and transshipping option) that would transport product from the selected loading area to a transshipment anchorage where the anchored export ship would be loaded and then sailed to the customer's facility in export markets. While a 35,000t *Handysize* export ship would be used for all options, the available loaded capacity would depend on the depth of water available at the transshipment anchorage selected. Depth is limited in the Port of Cooktown.

The location of the transshipping anchorage and the size of the barges depends on the loading option and local conditions:

- Nob Point loading—the preferred option is an anchorage located approximately 2.2km offshore of Nob Point, although options exist to utilise the Port of Cape Flattery (43km north) or the Port of Cooktown (10km or 13km south, depending on available water depths—to be determined in the EIS).
- Cooktown loading—after loading at a new ramp adjoining the Marton ramp, barges would be towed 10km down the Endeavour River to a transshipment anchorage either just inside or just outside port limits, depending on available water depths—to be determined in the EIS.

Three possible transfer mode options are proposed: bulk (uncontained), 8m³ covered steel skips or 1m³ bags. Each has advantages and disadvantages and legislative constraints, and these will be examined in the EIS.

Key items of major infrastructure depend on the loading option:

- Nob Point loading—in addition to the access road from the mine and the loading infrastructure (barge ramp or crane as described above), it is likely that navigational aids would be required at the selected transshipment anchorage. This infrastructure would be installed and operated by Diatreme.
- Cooktown loading—in addition to the upgrade and maintenance of the State Controlled Road (Endeavour Valley Road) and local roads between the mining area and Cooktown via Hope Vale as noted above, works would be required to construct a ramp adjoining the existing Ida Street Boat Ramp (Marton) facility to accept barges. In addition, navigational aids would be required for the Cooktown Transshipment Anchorage. This infrastructure would be installed and operated by Diatreme.

Mining and ancillary works such as road upgrades, works in a marine park and prescribed tidal works will be assessed as part of the EIS process and approvals required under other Queensland legislation will be obtained by Diatreme following completion of the EIS process from the relevant regulatory agencies.

1.2.3 EIS assessment process

On 4 March 2020 the department approved an application for Diatreme to voluntarily prepare an EIS under the EP Act for the GSSP. Under section 139 of the EP Act, the EIS will form the project application documents for the requirements of chapter 5 of the EP Act. This is provided that the environmental risks of the activity or way the activity will be carried out, including any proposed PRC plan, do not change between the time the voluntary EIS was completed under the EP Act and when the EA and PRC plan applications are made.

On 28 February 2020 a referral was made by Diatreme under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). On 5 June 2020 the proposed project was determined to be a controlled action (2020/8626) under the EPBC Act. The controlling provisions are:

- sections 12 and 15A (World Heritage properties)
- sections 15B and 15C (National Heritage places)
- sections 18 and 18A (listed threatened species and communities)
- sections 20 and 20A (listed migratory species)
- sections 23 and 24A (Commonwealth marine areas)
- sections 24B and 24C (Great Barrier Reef Marine Park).

The EIS process under the EP Act will assess the potential impacts of the proposed project on the controlling provisions as an accredited process under part 8 of the EPBC Act.

Further information on the EIS process under the EP Act is described in the department's guideline [the environmental impact statement process for resource projects under the EP Act](#) (ESR/2016/2167³).

2 Content requirements of the EIS

The remaining sections outline the information requirements of an EIS under the EP Act for the proposed Galalar Silica Sand Project. It is not necessary for the EIS to follow the specific structure outlined below, but the relevant requirements for each section must be included in the EIS.

3 Glossary

Provide a glossary of terms and a list of acronyms and abbreviations at the start of the EIS.

4 Executive summary

The EIS must include an executive summary which describes the proposed project and conveys the most important aspects and environmental management commitments relating to the proposed project in a concise and readable form.

5 Introduction

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

³ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

5.1 Project proponent

Provide information about the proponent(s) and their business, including:

- the proponent's full name, street and postal address, and Australian Business Number, including details of any joint venture partners
- the nature and extent of the proponent's business activities and experience in resource projects
- proponent's environmental record, including a list of any breach of, or proceedings against the proponent(s) under, a law of the Commonwealth or a State for the protection of the environment or the conservation and sustainable use of natural resources (an environmental law)
- the proponent's environmental, health, safety and community policies.

5.2 The environmental impact statement process

Outline the steps of the EIS process, noting which milestones have been completed, and an estimated completion date for each remaining EIS stage. Highlight the steps in which the public will have the opportunity to provide input or comment. This information is required to ensure readers are informed of the EIS process and are aware of their opportunities for input and commenting.

Inform the reader how and when properly made public submissions on the EIS can be made, and outline how the submissions are taken into account in the decision-making process.

5.3 Project approvals process

Describe and illustrate the tenure arrangement for all aspects of the proposed project, including any coastal loading facility and associated works and activities. Detail all approvals and requirements under international, federal, state or local legislation, policies, agreements and standards to enable the proposed project to be constructed, operated, rehabilitated and decommissioned. Note the legislation under which the approvals are assessed and issued and demonstrate that the proposed project could comply with the relevant standards and meet any obligations. This information must explain how the EIS fits into the assessment and approval processes for the EA and other approvals required of the proposed project before construction and operations can start.

As this proposed project is to be assessed under the bilateral agreement between the Australian Government and the State of Queensland, describe the approvals process under the EPBC Act.

6 Consultation process

Describe the consultation that has taken place and how responses from stakeholders, including government agencies, Indigenous stakeholders and members of the community, have been incorporated into the design and outcomes of the proposed project.

Describe any proposed future consultation activities, and outline how the results of that consultation will be used in the ongoing management of the proposed project. Provide information on the development and outcomes of the implementation of consultation for the people, organisations and communities identified as affected or interested persons and stakeholders for the proposed project. Describe issues of potential concern to all stakeholders at various stages of the proposed project from project planning to commencement, project construction, operations and decommissioning. The description of the consultation should at least include the following matters:

- the objectives of the consultation process
- timing of consultation
- the number and interests of the people, organisations and communities involved in the consultation (particularly the affected and interested persons defined in sections 38 and 41 of the EP Act)
- methods of consultation and communication
- reporting and feedback methods of the consultation process
- an assessment explaining how the consultation objectives have been met
- an analysis of the issues and views raised and their completed or planned resolution, including any alterations to the proposed project as a result of the received feedback.

7 Proposed project description and alternatives

Describe all aspects of the proposed project that are covered by the EIS's assessment. If there are any aspects of the proposed project that would be assessed separately, describe what they are, and how they would be assessed and approved.

The project description should include all on and off lease activities relevant to the proposed project, including construction, operation and decommissioning activities. If the delivery of the proposed project is to be staged, the nature and timing of the stages should be fully described.

7.1 Proposed project

Describe and illustrate the following specific information about the proposed project, including:

- proposed project title
- proposed project objectives
- expected capital expenditure
- rationale for the proposed project
- background to the project's development and justification for its need
- proposed project description, including the nature and scale of all project components and activities
- whether it is a greenfield or brownfield site
- power and water supply
- wastewater and waste management
- transport requirements, including transshipping and navigation
- emergency response requirements
- communication requirements
- management of offshore anchorage
- decommissioning activities
- regional and local context of the proposed project's footprint, including maps at suitable scales
- proposed timing of the development, including construction staging, likely schedule of works and anticipated mine life
- flow charts showing material balances for the processing plant, and the anticipated rates of inputs, along with similar data on products, wastes and recycle streams
- extent and nature of proposed exploration and/or geological/geotechnical evaluations over the life of the project
- relationship to other major projects, developments or actions of which the proponent should reasonably be aware
- the workforce numbers for all project phases
- where personnel would be accommodated and the likely recruitment and rostering arrangements to be adopted
- proposed travel arrangements of the workforce to and from work, including use of a fly-in-fly-out (FIFO) workforce.

7.2 Site description

Describe the tenure and real property descriptions of the proposed project land and adjacent properties, including any easements, state owned land and roads (existing and/or proposed) that is subject to application. Identify any land that is external to the mining lease area that is required to facilitate the development, and detail any activities requiring authorisation under the *Land Act 1994*.

Describe and illustrate with appropriately scaled maps the key infrastructure in and around the site, including state-controlled and local roads, rail lines and loading yards, airfields, ports or jetties, electricity transmission infrastructure, pipelines, and any other infrastructure in the region relevant to the proposed project. Provide details

of the current barge ramp at Marton, including current, relevant and necessary approvals, design standards and current condition and use. Include existing camping areas, traditional and non-traditional burial sites, and access points to the beach and camping sites.

Describe and illustrate the topography of the proposed project site and surrounding area, and highlight and identify any significant features shown on the maps. Map the location and boundaries of the proposed project's footprint including all infrastructure elements and development necessary for the proposed project. Show all key aspects including excavations, stockpiles, areas of fill, subsidence areas, services infrastructure, plant locations, water or tailings storages, wastewater treatment infrastructure and disposal area, waste management infrastructure, buildings, bridges and culvert, haul and access roads, causeways, stockpile areas, barge loading facilities and any areas of dredging or bed levelling. Discuss any environmental design features of these facilities including bunding of storage facilities.

Describe and map the spatial distribution and cross-sections of the geology and terrestrial and/or coastal landforms of the proposed project area in a suitable electronic format. Provide the boundaries of water catchments that are significant for the drainage of the site. Show geological structures, such as aquifers, faults and economic resources that could have an influence on, or be influenced by, the proposed project's activities.

Describe and illustrate the precise location of the proposed project in relation to any designated and protected areas and waterbodies. This is to include the location of any proposed buffers surrounding the working areas; and lands identified for conservation, either through retention in their current natural state or to be rehabilitated.

Describe, map and illustrate land and soil resources (types and profiles) of the proposed project area at a scale relevant to the site and in accordance with relevant guidelines. Identify soils that would require particular management due to wetness, erosivity, depth, acidity, salinity or other feature, including acid sulfate soils.

Describe with concept and layout plans, in both plan- and cross-section views, requirements for constructing, upgrading or relocating all infrastructure associated with the proposed project. Show the locations of any necessary infrastructure easements on the plans, including infrastructure such as roads, rail (and the rail corridor), level crossings, conveyors, bridges, jetties, ferries, tracks and pathways, dams and weirs, bore fields, power lines and other cables, wireless technology (such as microwave telecommunications), and pipelines for any services, whether underground or above.

Describe in maps and charts relevant maritime features including, but not limited to:

- maritime boundaries, including coastal loading facility/port limits, Queensland's coastal water, Territorial Sea Baseline, Territorial Sea, Contiguous Zone and Exclusive Economic Zone
- Marine Park Boundaries
- communication equipment locations
- anchorage locations and details (e.g. substrate suitability)
- aids to navigation locations
- shipping routes
- pollution equipment stores
- reception facilities for ship waste
- cyclone mooring
- if relevant, areas of tidal restriction
- Great Barrier Reef Marine Park Authority zoning.

Describe and illustrate the precise location of any point source or other proposed release points in relation to any waterbodies or sensitive receptors. Include the nature of the discharge (e.g. to air, noise, water).

7.3 Proposed construction and operations

Describe the following information about the proposed project, provide maps and concept, design and layout plans for the following, if applicable to the proposed project:

- existing land uses and any previous land use that might have affected or contaminated the land
- existing buildings, infrastructure and easements on the potentially affected land
- the precise location of works to be undertaken, structures to be built or components of the project

- all pre-construction activities (including vegetation clearing, site access, interference with watercourses, wetlands and floodplain areas)
- the proposed construction methods, associated equipment and techniques
- road and rail infrastructure, and stock routes, including new constructions, closures and/or realignments
- transport of supplies (e.g. via barge or road), including contingency planning for adverse weather or other interruptions
- the location, design and capacity of all other required supporting infrastructure, including water supply and storage (water management system, dams, pipes and release points), sewerage, electricity from the grid, generators and fuels (whether gas, liquid and/or solid), power stations, and telecommunications
- location, design and focus of monitoring infrastructure, including for dust, noise and light impacts
- changes to watercourses, flooding and overland flow on or off the site, including water diversions, crossings, flood levees, water off-takes and, locations of any proposed water discharge points
- any take of or interference with water in a watercourse, lake or spring, overland flow water, and underground water (both direct and in-direct) including proposed volumes and sources of any take
- proposed tailings management and storage
- any infrastructure alternatives, justified in terms of ecologically sustainable development (including energy and water conservation)
- days and hours of construction and operation
- proposed mine life, amount of resources to be mined and the resource base including total seam thickness and seam depths
- mining sequence and cross sections showing profiles and geological strata and faults
- the planned recovery of resources including the location of any resources not intended to be mined that may be sterilised during mining activity or from related infrastructure
- the proposed methods, equipment and techniques for resource separation, beneficiation and processing
- the sequencing and staging of activities including progressive rehabilitation
- the scheduled and total area of mining disturbance, disturbance areas of all infrastructure and the proposed rehabilitation schedule, including a mine plan, for the life of the proposed project
- the proposed methods and facilities to be used for the storage, processing, transfer, and loading of product, including details of the proposed 'contained' methods of material transfer
- the capacity of high-impact plant and equipment, their chemical and physical processes, and chemicals or hazardous materials to be used
- any activity that would otherwise be a prescribed environmentally relevant activity if it were not undertaken on a mining or petroleum lease
- any new borrow pits, stream bed excavations, or expanded dredging, bed levelling, quarry and screening operations that may be required to service construction or operation of the proposed project
- marine infrastructure, including onshore and offshore loading facilities and any related infrastructure and activities
- the frequency, days and hours of barge operation.

7.4 Feasible alternatives

Present feasible alternatives for the proposed project. Address a range of alternatives, including conceptual, technological, locality, configuration, scale, tenure, operating arrangements and responsibilities, marine infrastructure, operations, transshipment and individual elements or components that may improve environmental outcomes as well as the alternative of not proceeding with the proposed project.

Describe and evaluate the comparative environmental social and economic impacts of each alternative (including the option of not proceeding), with particular regard to the principles of ecologically sustainable development.

Discuss each alternative and its potential impacts in sufficient detail to enable an understanding of the reasons for preferring certain options and courses of action while rejecting others. Justify why the proposed project and preferred options should proceed.

8 The environmental impact assessment process

For each project specific matter outlined in section 9, the EIS must identify and describe the relevant environmental values, assess potential adverse and beneficial environmental, economic and social impacts of the proposed project; and outline the management, monitoring, planning and other measures proposed to avoid, minimise and/or mitigate any adverse environmental impacts of the proposed project. This must be addressed within the scope of the following requirements.

8.1 Environmental values

For the purposes of the EIS process, 'environment' is defined in section 8 of the EP Act and this includes ecosystems and their constituent parts, including people and communities.

Identify, describe and map the values that must be protected for all the relevant matters including:

- environmental values specified in the EP Act, the EP Regulation (e.g. environmental objectives and performance outcomes as defined in schedule 8 and schedule 8A), environmental protection policies and associated guidelines
- values under other State legislation, policies and guidelines, including the *Vegetation Management Act 1999*, the *Nature Conservation Act 1992*, the *Regional Planning Interests Act 2014* and the *Marine Parks Act 2004*
- values identified in the project specific matters in section 9.

Collate all available baseline information and collect new baseline information relevant to the environmental risks of the proposed project, including seasonal and long term variations. This must include baseline data on cultural heritage, terrestrial ecology, aquatic ecology, surface water (freshwater, estuarine and marine), groundwater, noise, air and marine sediments. Describe the quality of all information, in particular the source of the information, how recent the information is, how the reliability of the information was tested, and any assumptions and uncertainties in the information.

8.2 Impact assessment

Assess the impacts of the proposed project on environmental values. This includes demonstrating that the proposed project meets the environmental objectives and outcomes for each matter in section 9 and the environmental objectives and performance outcomes for any matters listed in schedule 8 and schedule 8A of the EP Regulation.

Impact assessment must address:

- short-, medium- and long-term scenarios
- the scale of an impact, including:
 - the impact's intensity and duration
 - cumulative effects of the proposed project in combination with other major projects or developments of which the proponent should reasonably be aware
 - the risk of environmental harm
 - avoidance, mitigation and management strategies and if necessary, offsets provisions
 - the potential for unforeseen impacts
 - the risks associated with unlikely but potentially major impacts
 - direct, indirect, secondary, permanent, temporary, unknown, unpredictable and/or irreversible impacts
 - both positive and negative impacts
 - impact interactions.

8.3 Cumulative impacts

Assess the cumulative impacts of the proposed project on environmental values. Every effort should be made to find information from all sources relevant to the assessment of cumulative impacts including other major projects or developments of which the proponent should reasonably be aware. The EIS must outline ways in which the cumulative impact assessment and management could subsequently be progressed further on a collective basis.

Impact assessment must address cumulative impacts, including:

- environmental values of land, air and water (surface and groundwater), public health and the health of terrestrial and aquatic ecosystems
- environmental values over time or in combination with other impacts in the dimensions of scale, intensity, duration or frequency of the impacts
- impacts created by the activities on other adjacent, upstream, downstream, and offshore developments and infrastructure, marine parks users and landholders, including but not limited to impacts to surface and groundwater availability, and dust, light and noise impacts.

8.4 Avoidance and mitigation

Propose and describe avoidance, mitigation and management strategies for the protection or enhancement of identified environmental values. Proposed strategies must:

- adhere to the department's management hierarchy: (a) to avoid; (b) to minimise and mitigate including best practice environmental management; once (a) and (b) have been applied, (c) if necessary and possible, to offset
- include an assessment of the expected or predicted effectiveness, of the mitigation measures for dealing with the proposed project's relevant impacts
- the name of the entity responsible for endorsing or approving each mitigation measure or monitoring program
- any statutory or policy basis for the mitigation measures
- the cost of the mitigation measures
- include an environmental management plan setting out the framework for continuing management, mitigation and monitoring programs for the project's relevant impacts, including any provision for independent environmental auditing
- include an adaptive management approach to provide confidence that, based on current technologies, the impacts can be effectively managed over the long-term
- be described in context of the department's model conditions and/or site-specific, outcome-focussed conditions that can be measured and audited.

For unproven elements of a resource extraction or processing process, technology or activity, identify and describe any global leading practice environmental management that would apply.

Demonstrate that the design of the proposed project and its predicted outcomes:

- meet the environmental objectives and outcomes listed in section 9 for each matter and the performance outcomes stated in schedule 8 and schedule 8A of the EP Regulation
- address the matters outlined in schedule 1 of the EP Regulation (including items 2 and 4)
- are consistent with best practice environmental management during construction, operation, and decommissioning of the proposed project
- meet all statutory and regulatory requirements of the federal, state and local government, including any relevant plans, strategies, policies and guidelines.

8.5 Conditions and commitments

Provide sufficient evidence and detail through studies, proposed management measures and supporting information:

- to demonstrate that the predicted outcomes for the proposed project can be achieved
- to meet the requirements of sections 125 and 126A of the EP Act and 126B–126D

- to meet the requirements of schedule 1 of the EP Regulation
- for the administering authority to make recommendations about the suitability of the proposed project, assess whether an approval should be granted and recommend draft conditions for inclusion on relevant approvals.

8.6 Information sources

For information included in the EIS, provide the following: the source of the information, how recent the information is, how the reliability of the information was tested any gaps and uncertainties in the information, and how these gaps and uncertainties have been addressed.

8.7 Critical matters

8.7.1 Definition of critical matters

The detail in which the EIS deals with all matters relevant to the proposed project should be proportional to the scale of the impacts on environmental values. When determining the scale of an impact, consider the impact's intensity, duration, cumulative effect, irreversibility, the risk of environmental harm, management strategies and offset provisions.

A critical matter is a project specific matter listed in section 9 that has one or more of the following characteristics:

- It has a high or medium probability of causing serious or material environmental harm, or a high probability of causing an environmental nuisance.
- It is considered important by the administering authority, and/or there is a public perception that an activity has the potential to cause serious or material environmental harm or an environmental nuisance, or the activity has been the subject of extensive media coverage.
- It is relevant to a controlling provision under the EPBC Act.
- It raises obligations under any other legislation applicable for the proposed project (e.g. *Water Act 2000*).

The final scope of critical matters will be determined by the administering authority when finalising the TOR. However, if a new additional critical matter becomes apparent after the final TOR are issued, the EIS must address that new matter.

8.7.2 Critical environmental matters for this project

Critical environmental matters identified for this proposed project which the EIS must give priority to are:

- Rehabilitation and closure
- Water quality and water resources (groundwater and surface water)
- Flora and fauna (biodiversity)
- Coastal environment
- Cultural heritage
- Social
- Economic
- Transport
- Matters of National Environmental Significance.

9 Project specific matters

9.1 Climate

Conduct the assessment in accordance with the latest version of the department's [Climate—EIS information guideline](#) (DES 2020). Describe the proposed project area's climate patterns that are relevant to the environmental impact assessment, with particular regard to the proposed project's discharges to water and air, and the propagation of noise. Provide climate data in a statistical form including long-term averages and extreme values.

Assess the vulnerability of the area to natural and induced hazards, including floods, bushfires and cyclones. Consider the relative frequency and magnitude of these events together with the risk they pose to the construction, operation and decommissioning of the proposed project, as well as the rehabilitation of the site. Describe measures that would be taken to minimise the risks of these events.

Assess the proposed project's vulnerability to climate change (e.g. changing patterns of rainfall, hydrology, temperature and, extreme weather events) and describe possible preferred and alternative resilience and adaptation strategies based on climate change projections for the region to minimise the risk of impacts from climate change to the proposed project.

9.2 Land

Environmental objective and outcomes
The activity is operated in a way that protects the environmental values of land including soils, subsoils, landforms and associated flora and fauna.
The choice of the site, at which the activity is to be carried out, avoids or minimises serious environmental harm on areas of high conservation value and special significance and sensitive land uses at adjacent places.
The location for the activity on a site protects all environmental values relevant to adjacent sensitive use.
The design of the facility permits the operation of the site, at which the activity is to be carried out, in accordance with best practice environmental management.

Impact assessment

Conduct the impact assessment in accordance with the latest version of the department's [Land—EIS information guideline](#) (DES 2020), [Applications for activities with impacts to land](#) (ESR/2015/1839⁴), [DAFF Environmental impact assessment companion guide](#) (DAFF 2014), [RPI Act statutory guideline 11/16 companion guide](#) (DILGP 2017) and, if any quarry material is needed for construction, the department's [Quarry material—EIS information guideline](#) (DES 2020). Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.⁵

Describe potential impacts of the proposed land uses, taking into consideration the proposed measures that would be used to avoid, minimise and mitigate impacts. The impact prediction must address the following matters:

- Any changes to the landscape and its associated visual amenity in and around the proposed project area.
- Any existing or proposed mining tenement under the *Mineral Resources Act 1989*, petroleum authority under the *Petroleum and Gas (Production and Safety) Act 2004*, petroleum tenure under the *Petroleum Act 1923*, geothermal tenure under the *Geothermal Energy Act 2010* and greenhouse gas tenure under the *Greenhouse Gas Storage Act 2009* overlying or adjacent to the proposed project site.
- Temporary and permanent changes to land uses of the proposed project site and adjacent areas, considering:
 - actual and potential agricultural uses
 - regional plans and local government planning schemes
 - any Key Resources Areas that were identified as containing important extractive resources of state or regional significance which the state considers worthy of protection
 - strategic cropping land, priority agricultural areas, priority living area and strategic environmental areas under the *Regional Planning Interests Act 2014* and the trigger map for strategic cropping land
 - findings of the Agricultural land audit and AgTrends Spatial web mapping app <https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/agribusiness/agtrends-spatial>

⁴ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

⁵ 'For a proposed PRCP schedule or draft PRCP schedule, Part 3, Division 1, entry for 'Land' performance outcome 2(b) of Schedule 8 in the Environmental Protection Regulation 2019, does not apply for the assessment

- impacts on Property and Project Plans approved under the *Soil Conservation Act 1986*
- constraints to the expansion of existing and potential agricultural land uses.
- Identify any existing or proposed incompatible land uses within and adjacent to the site, including the impacts on economic resources and the future availability and viability of the resource including extraction, processing and transport location to markets.
- Identify any infrastructure or works proposed to be located within, or which may have impacts on, the stock route network managed under the *Stock Route Management Act 2002*. Demonstrate how the project will maintain the ongoing functionality and connectivity of the stock route network, including any associated stock route reserves.
- Provide details on proposed tenure arrangements for the properties impacted by the mining project, including any leasehold land, unallocated state land, reserves and dedicated road corridors.
- Provide details on proposed tenure arrangements for any infrastructure or works that are not situated within the proponent's mining lease/s.

Assess the proposed project against the requirements of the *Regional Planning Interests Act 2014*.

Propose suitable measures to avoid or minimise impacts related to land use.

Show how land forms, during and after disturbance, will meet any requirements of project or property plans approved under the *Soil Conservation Act 1986*.

Detail any known or potential sources of contaminated land that could be impacted by the proposed project. Describe how any proposed land use may result in land becoming contaminated.

Identify proposed changes to land use that may lead to land degradation or increased salinity.

Identify potential and actual acid sulphate soils disturbed by mining operations and outline suitable management strategies where necessary.

9.2.1 Native title rights and interests

Identify existing or potential native title rights and interests possibly impacted by the proposed project and the potential for managing those impacts by an Indigenous Land Use Agreement or other measure in accordance with the *Native Title (Queensland) Act 1993* and consistent with the Queensland Government's [Native title work procedures](#) (DNRM 2017).

Detail (including with the use of maps) the following native title considerations:

- current tenure of all land or waters within the project area (which may include creeks)
- land or waters where native title has been determined to exist by the Federal Court
- land or waters that are covered by a native title determination application
- land or waters that are covered by a registered Indigenous Land Use Agreement.

Describe pathways for resolving any native title considerations that comply with the Queensland Government's [Native title work procedures](#) (such as the negotiation and registration of an Indigenous Land Use Agreement).

9.3 Rehabilitation and closure – a critical matter

Environmental objective and outcomes

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

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

The activity is operated in a way that disturbed land will be rehabilitated or restored 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 progress and outcomes of progressive rehabilitation activities will be monitored and reported on to demonstrate how successful they have been in achieving progress towards the agreed final land use, and to inform corrective action where required.

Impact assessment

Address the rehabilitation requirements of the EP Act including the provisions requiring a proposed progressive rehabilitation and closure plan (PRC plan). Demonstrate that the proposed rehabilitation is consistent with the department's guideline [Progressive rehabilitation and closure plans](#) (ESR/2019/4964⁶) and best practice approaches about the strategies and methods for progressive and final rehabilitation. Describe how the rehabilitation costs have been considered in the proposed rehabilitation outcomes including consideration of:

- the department's [Estimated rehabilitation cost under the Environmental Protection Act 1994](#) (ESR/2018/4425)
- the [Estimated rehabilitation cost calculator - mining](#) (ESR/2015/1824) and supporting guideline [User guide for estimated rehabilitation cost calculator user guide - mining](#) (ESR/2019/4626)

Describe how the rehabilitation costs have been considered in the proposed rehabilitation outcomes in line with the department's Estimated rehabilitation cost calculator-mining and supporting guideline User guide for estimated rehabilitation cost calculator for mining (ESR/2019/4626).

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

Describe how land disturbed as a result of the proposed project that is outside of the mining lease will be rehabilitated where there is no ongoing use.

9.3.1 Proposed PRC plan

Provide a proposed PRC plan for the project. The plan must show how and where activities will be carried out on land in a way that maximises the progressive rehabilitation of the land to a stable condition and provide for the condition to which the holder must rehabilitate the land before the EA may be surrendered.

The proposed PRC plan must consist of two components:

- rehabilitation planning part
- progressive rehabilitation and closure plan schedule (PRCP schedule).

The proposed PRC plan must be consistent with the information requirements in the department's [Submission of a progressive rehabilitation and closure plan](#) (ESR/2019/4957⁸).

9.3.2 Rehabilitation planning part

Provide the rehabilitation planning part of the proposed PRC plan, by addressing the following:

- Describe each resource tenure, including the area of each tenure.
- Describe the relevant activities and the likely duration of the relevant activities.
- Include a detailed description, including maps, of how and where the relevant activities are to be carried out.
- Include details of the consultation undertaken by the applicant in developing the proposed PRC plan.
- Include details of how the applicant will undertake ongoing consultation in relation to the rehabilitation to be carried out under the plan.
- 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 or the Commonwealth.
- For each proposed post-mining land use, state the applicant's 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.
- Identify the risks of a stable condition for land identified as a proposed post-mining land use not being achieved, and how the applicant intends to manage or minimise the risks.
- For each proposed non-use management area, state the reasons the applicant considers the area cannot

⁶ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

⁷ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

⁸ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

be rehabilitated to a stable condition because of either of the below:

- carrying out rehabilitation of the land would cause a greater risk of environmental harm than not carrying out the rehabilitation or
- 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 applicant considers, having regard to each public interest consideration⁹, that it is in the public interest for the land not to be rehabilitated to a stable condition.
- Include copies of reports or other evidence relied on by the applicant for each proposed non-use management area.
- For each proposed non-use management area, state the applicant's proposed methodology for achieving best practice management of the area to support the management milestones under the proposed PRCP schedule for the area.
- Include other information requirements outlined in the department's statutory guideline [Progressive rehabilitation and closure plans](#) (ESR/2019/4964¹⁰).

9.3.3 PRCP schedule

Provide a proposed PRCP schedule¹¹ 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 accordance with the Excel spreadsheet template Progressive Rehabilitation and Closure Plan Schedule Template (ESR/2019/5103)¹².

The proposed PRCP schedule, must identify:

- all land within the resource tenure as either a post-mining land use or non-use management area
- when land becomes available for rehabilitation or improvement
- rehabilitation milestones to achieve a post-mining land use
- management milestones to achieve a non-use management area
- milestone criteria that demonstrate when each milestone has been completed
- completion dates for each milestone to be achieved
- a final site design supported by suitably scaled maps which show the area of each relevant resource tenure, proposed area of disturbance and locations of the proposed post-mining land uses and (if proposed) non-use management areas.

All milestone criteria must be consistent with the SMART principles¹³.

9.4 Water

9.4.1 Water quality – a critical matter

Environmental objective and outcomes
<p>The activity will be operated in a way that protects environmental values of waters.</p> <p>The activity will be operated in a way that protects the environmental values of groundwater and any associated surface ecological systems.</p>

⁹ Public interest considerations are defined by section 316PA (2) of the EP Act

¹⁰ This is the publication number which can be used as a search term to find the latest version of a publication at <https://www.business.qld.gov.au/running-business/environment/licences-permits/forms-fees>

¹¹ The guideline [Progressive rehabilitation and closure plans](#) (ESR/2019/4964) contains further information about how to develop a PRCP schedule.

¹² This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

¹³ 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.

Environmental objective and outcomes
The activity will be managed in a way that prevents or minimises adverse effects on wetlands.

Impact assessment

Conduct the impact assessment in accordance with the department's [Water—EIS information guideline](#) (DES 2020), [Applications for activities with impacts to water](#) (ESR/2015/1837¹⁴), [Water quality guidelines](#) (Queensland Government, 2020), [Monitoring and sampling manual](#) (DES 2018), and the [Groundwater quality assessment guideline](#) (DSITI 2017). Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in schedule 8 of the EP Regulation.

With reference to the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 and section 9 the EP Act, identify the environmental values of surface waters and groundwater within the proposed project area and immediately downstream that may be affected by the proposed project, including any human uses and cultural values of water.

Define the relevant water quality objectives applicable to the environmental values, and demonstrate how these will be met by the proposed project during construction, operation, decommissioning and following proposed project completion. Where water quality objectives are not available local water quality objectives should be derived according to department's latest [Water quality guidelines](#) (DSITI 2017, Queensland Government, 2020) and include any semi-permanent or permanent pools, including stock water and all groundwater aquifers that may be affected by the proposed project.

Detail the chemical, physical and biological characteristics of surface waters and groundwater within the area that may be affected by the proposed project and at suitable reference locations using sufficient data to define natural variation, including seasonal variation.

Describe the aquifers present onsite, any seasonal variation of water table levels within the proposed project site. Provide a conceptual model of the hydrogeology and groundwater flow directions and interactions with surface water, extending to all potentially impacted water basins.

Characterise surface water flows and seasonal variations, including onsite surface waters as well as potentially impacted waterbodies located off-site.

Describe the quantity, quality, location, duration and timing¹⁵ of all potential and/or proposed releases of contaminants. Releases may include controlled water discharges to surface water streams, seepage to groundwater from slimes dams, processing ponds, or other storages, uncontrolled discharges when the design capacity of storages is exceeded, spills of products during loading or transportation, contaminated run-off from operational areas of the site (including seepage from waste rock dumps), or run-off from disturbed acid sulfate soils.

Define suitable construction and operational monitoring locations (surface and groundwater) to detect any impact from the activities (including but not limited to, mining activities, fines storage, fuel storage, beneficial plant, waste and wastewater management) to surface water and groundwater, as well as appropriate reference sites.

Assess the potential impact of any releases from point or diffuse sources on all relevant environmental values and water quality objectives of the receiving environment. The impact assessment should consider the resultant quality and hydrology of receiving waters and the assimilative capacity of the receiving environment.

Describe how water quality objectives would be achieved and environmental impacts would be avoided or minimised through the implementation of management strategies that comply with the management hierarchy and management intent of the Environmental Protection (Water and Wetland Biodiversity) Policy 2019. Appropriate management strategies must include the use of erosion and sediment control practices, and the separation of clean storm water run-off from the run-off from disturbed and operational areas of the site. Provide details of the erosion and sedimentation control plan for the site.

Describe how monitoring would be used to demonstrate that objectives were being assessed, audited and met. For example, provide measurable criteria, standards and/or indicators that will be used to assess the condition of the

¹⁴ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

¹⁵ Duration and timing are important aspects of the risk characteristics that affect the impacts of mine and CSG water releases; e.g. for how long will water be released in total and when will it occur with respect to existing 'natural' flows

ecological values and health of surface water environments and groundwaters. Propose corrective actions to be used if objectives are not likely to be met.

Identify the potential impacts of dredging, bed levelling, and/or the potential impacts of shipping and offshore transshipping operations on the marine environment. The impact assessment should 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 should consider potential ecological impacts due to changes in water quality or the disturbance of the benthos. Provide strategies to avoid or mitigate and manage potential impacts. Refer to section 9.7 (Coastal environment) for further information requirements applicable to the coastal environment.

9.4.2 Water resources – a critical matter

Environmental objective and outcomes

With regard to water resources, the proposed project should meet the following objectives:

- equitable, sustainable and efficient use of water resources
- maintenance of environmental flows and water quality to support the long term condition and viability of terrestrial, riverine, wetland, lacustrine, estuarine, coastal and marine ecosystems
- maintenance of the stability of beds and banks of watercourses, and the shores of waterbodies, estuaries and the coast
- maintenance of supply to existing users of surface and groundwater resources.

Impact assessment

Conduct the impact assessment in accordance with the department's [Water—EIS information guideline](#) (DES 2020) and [DAFF Environmental impact assessment companion guide](#) (DAFF 2014). Address the requirements of section 126A of the EP Act.

Describe present and potential users and uses of water in areas potentially affected by the proposed project, including municipal, agricultural, industrial, recreational, environmental and cultural heritage uses of water.

Describe the quality, quantity and significance of groundwater in the proposed project area and any surrounding area potentially affected by the proposed project's activities. Include the following:

- characterise: the nature, type, geology/stratigraphy and depth to and thickness of the aquifers; their hydraulic properties; and value as both water supply sources and to the environment
- analyse the movement of underground water to and from the aquifer(s), including how the aquifer(s) interacts with other aquifers and surface water, and the effect of geological structures on this movement
- characterise the quality and volume of the groundwater including seasonal variations of groundwater levels
- provide surveys of existing groundwater supply facilities (e.g. bores, wells, or excavations).

Establish a groundwater monitoring network and complete a groundwater monitoring plan in accordance with the requirements outlined in the department's *Water—EIS information guideline* (DES 2020). Establish background groundwater quality and levels and determine groundwater quality and levels trigger values in accordance with the department's guideline *Using monitoring data to assess groundwater quality and potential environmental impacts* (DSITI 2017).

Model and describe the inputs, movements, exchanges and outputs of surface water and groundwater that would or may be affected by the proposed project. The models used to estimate associated water take should take into account the climatic conditions at the site, assess the potential impacts on water resources and include a site water balance. The model should be peer-reviewed by an independent appropriately qualified person(s) consistent with the *Australian groundwater modelling guidelines* (Barnett et al 2012).

Provide a description of the proposed project's impacts at the local scale and in a regional context including:

- changes in flow regimes from diversions, water take and discharges
- groundwater draw-down and recharge
- management of mine affected water
- alterations to riparian vegetation and bank and channel morphology
- direct and indirect impacts arising from the development.

Assess any potential permanent or temporary changes to groundwater flows, quality and connectivity (to both groundwater aquifers and surface water bodies) both during and following mining activities, including potential impacts on any GDEs.

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

Identify any required approvals or entitlements under the *Water Act 2000 Water Plan (Cape York) 2019* and the *Water Plan (Great Artesian Basin and Other Regional Aquifers) (GABORA) 2017* and address relevant legislative requirements and water volume limitations. Specifically address whether or not the proposed project would take water from, or affect recharge to, water managed (including underground water and water in springs) by the *Water Plan (GABORA) 2017* and the *Water Plan (Cape York) 2019*. Specifically address required outcomes of both water plans and how the project meets these outcomes.

Specifically address protection of flows to groundwater-dependent ecosystems under Chapter 3 and protection of existing users in Chapter 4 of the GABORA Water Management Protocol 2017 in accordance with the specified requirements.

Specifically address potential impacts or changes to surface water or groundwater associated with the *Water Plan (Cape York) 2019*, including overland flow water, water in a watercourse, lake, or spring, and underground water.

Analyse the potential changes to groundwater levels, pressures and flows resulting from the proposed mining operations and demonstrate how adverse impacts will be mitigated.

Describe the practices and procedures that would be used to avoid or minimise impacts on water resources.

Describe how 'make good' provisions would apply to any water users that may be adversely affected by the proposed project. Propose a network of groundwater monitoring bores before and after the commencement of the proposed project that would be suitable for the purposes of monitoring groundwater quality and hydrology impacts that may occur as a result of the resource activity. Include details on investigation timeframes and actions if exceedances are detected.

Include maps of suitable scale showing the location of diversions and other water-related infrastructure in relation to resource infrastructure. Detail any significant diversion or interception of overland flow, including the effects of subsidence. Describe the options for supplying water to the proposed project and assess any potential consequential impacts in relation to the objectives and strategies of any water plan and associated planning documents that may apply.

Describe the proposed supply of operational and potable water for the proposed project, including temporary demands during the construction period. Where groundwater is proposed as a water supply assess the ability of the groundwater aquifer to support groundwater extraction and potential impacts to the groundwater aquifer quality, groundwater level and changes to current interactions with other aquifers and surface water bodies. Also describe on-site storage and treatment requirements for waste water from accommodation and/or offices and workshops.

Describe the water supply requirements and volumes for the project at each stage of the project, and from each source (water in a watercourse, lake or spring, overland flow water, underground water). For underground water, describe whether the source is water managed under the Water plan (GABORA) 2017, or the Water Plan (Cape York) 2019.

Detail any proposed groundwater recharge system for the proposed project, including potential environmental risks, and mitigation and management of those risks.

9.4.3 Flooding

Environmental objective and outcomes
The construction and operation of the proposed project should aim to ensure that the risk and potential adverse impacts from flooding are avoided, minimised or mitigated to protect people, property and the environment.

Impact assessment

Describe the history of flooding onsite and in proximity to the site. Describe current flood risk for a range of annual exceedance probabilities up to the probable maximum flood for the proposed project site. Use flood modelling or an alternative assessment method that is appropriate to the local environment to assess how the proposed project may potentially change flooding and run-off characteristics on-site and both upstream and downstream of the site. The assessment should consider all infrastructure associated with the proposed project including levees, roads, and linear infrastructure, and all proposed measures to avoid or minimise impacts.

Evidence should be provided to demonstrate that the securing of storage containers of hazardous contaminants during flood events meets the requirements of schedule 8 of the EP Regulation.

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

Assess the proposed project’s vulnerabilities to climate change (e.g. changing patterns of rainfall, hydrology, temperature and extreme weather events). Describe possible adaptation strategies (preferred and alternative) based on climate change projections for the proposed project site.

9.5 Regulated structures

Environmental objective and outcomes
<p>The design of the facility permits the operation of the site, at which the activity is to be carried out, in accordance with best practice environmental management.</p> <p>The potential consequences of the failure of a regulated structure on human life and the environment require that the highest standards are used for their design, construction, operation, modification and decommissioning. The industry, government and the Australian National Committee on Large Dams Inc. have published several guidelines, which should be used to further develop objectives and outcomes for individual projects and the regulated structures they involve.</p>

Impact assessment

Conduct the impact assessments on regulated structures in accordance with the latest version of the department’s guidelines on [Regulated structures— EIS information guideline](#) (DES 2020), [Structures which are dams of levees constructed as part of environmentally relevant activities](#) (ESR/2016/1934¹⁶), and [Manual for assessing hazard consequence categories and hydraulic performance of structures](#) (ESR/2016/1933¹⁷).

Describe the purpose of all dams or levees proposed on the project site. Show their locations on appropriately scaled maps, and provide plans and cross-sections, illustrating such features as embankment heights, spillways, discharge points, design storage allowances, and maximum volumes. Describe how storage structures and other infrastructure would be sited to avoid or minimise risks from flooding and hazards potentially associated with soil characteristics, geological features and landforms (e.g. fault zones) and hydrological regimes (watercourses, catchments and groundwater flow).

Undertake a consequence category assessment for each dam or levee, according to the criteria outlined in department’s [Manual for assessing hazard consequence categories and hydraulic performance of structures](#) (ESR/2016/1933¹⁸). The assessment must be undertaken for the three different failure event scenarios described in department’s manual, i.e. for seepage, overtopping and dam break. Regulated structures must comply with the [Manual for assessing hazard consequence categories and hydraulic performance of structures](#) (ESR/2016/1933¹⁹) in accordance with schedule 8, division 2 of the EP Regulation.

Following the consequence category assessment, determine the consequence category (‘low, significant, or high’) according to table 1 of department’s [Manual for assessing hazard consequence categories and hydraulic performance of structures](#) (ESR/2016/1933²⁰) and provide certified copies of the consequence category determination for each of the proposed dams or levees assessed.

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

¹⁶ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

¹⁷ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

¹⁸ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

¹⁹ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

²⁰ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

9.6 Flora and fauna

Environmental objective and outcomes

The activity will be operated in a way that protects the environmental values of land including soils, subsoils, landforms and associated flora and fauna.

There will be no potential or actual adverse effect on waterways or wetlands as part of carrying out the activity.

The proposed project minimises serious environmental harm on areas of high conservation value and special significance and sensitive land uses at adjacent places.

The location for the activity on a site protects all environmental values relevant to adjacent sensitive use.

The proposed project manages the impacts on the environment by seeking to achieve ecological sustainability, including protected wildlife and habitat.

Critical habitat receives special management considerations and protection through a management plan for the proposed project.

The proposed project avoids significant residual impacts to matters of national environmental significance (MNES) and matters of state environmental significance (MSES), mitigates impacts where they cannot be avoided, and offsets any residual impacts.

The proposed project provides for the conservation of the marine environment, particularly the Great Barrier Reef Marine Park and the Great Barrier Reef Coast Marine Park.

The construction, operation and decommissioning of the proposed project must be consistent with all statutory and regulatory requirements of the federal, state and local government and be consistent with their relevant plans, strategies, policies and guidelines that relate to the terrestrial and aquatic ecological environment.

9.6.1 Biodiversity – a critical matter

Impact assessment

Describe the potential direct and indirect impacts on the biodiversity and natural environmental values of affected areas impacted by the construction, operation and decommissioning of the proposed project. Take into account any proposed avoidance and/or mitigation measures. The EIS should provide information based on relevant guidelines, including the latest version of the department's [EIS information guidelines](#) (DES 2020) that cover *terrestrial ecology, aquatic ecology, coastal, groundwater dependent ecosystems, water, matters of national environmental significance, and biosecurity*.

Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in schedule 8 of the EP Regulation.

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

The assessment should include the following key elements:

- identification and relevant mapping of all significant species and ecological communities, including MSES and MNES, listed flora and fauna species (i.e. terrestrial, aquatic and marine), and regional ecosystems, on the proposed project's site and in its vicinity
- terrestrial and aquatic ecosystems including groundwater dependent ecosystems and subterranean fauna such as stygofauna and their interactions
- biological diversity
- the integrity of ecological processes, including habitats of listed threatened, near threatened or special least-concern species
- connectivity of habitats and ecosystems
- the integrity of landscapes and places, including wilderness and similar natural places
- chronic, low-level exposure to contaminants or the bio-accumulation of contaminants
- direct and indirect impacts on terrestrial and aquatic species and ecosystems whether due to: vegetation clearing; hydrological changes; discharges of contaminants to water, air or land; noise; and other relevant matters
- impacts of waterway barriers on fish passage in all waterways mapped on the Queensland Waterways for Waterway Barrier Works spatial data layer

- impacts of shipping, transshipping and barge movements on estuarine and marine plants and fauna
- impacts of spills of products, oil, sewage, garbage and other pollutants during loading, transportation or maritime casualty (for example, grounding, capsizing or vessel damage)
- impacts of underwater noise pollution on estuarine and marine fauna due to shipping/barge movements and/or piling programs for jetties, wharfs, navigational aids or other structures (e.g. dolphins).

Potential impacts on turtle nesting habitat must be assessed for their risk with regards to the proximity of proposed project components to turtle feeding and nesting habitat. Impacts include: vessel strike, noise and vibration, lighting, coastal morphology changes (e.g. erosion and foredune movement, beach slope), changes to coastal vegetation/foredune vegetation and changes to groundwater hydrology.

Assess other priority species (e.g. as identified in the Australian Government's National Environmental Science Program (NESP) project: Prioritising Threatened Species in Northern Australia) to ensure the proposed project avoids any significant residual impacts to these species and mitigates impacts where they cannot be avoided.

Describe any actions of the proposed project that require an authority under the *Nature Conservation Act 1992*, and/or would be assessable development for the purposes of the *Vegetation Management Act 1999*, the *Regional Planning Interests Act 2014*, the *Fisheries Act 1994* and the *Planning Act 2016*. Features to consider include regional ecosystems, environmentally sensitive areas (including fish habitat areas), wetlands, nature refuges, protected areas and strategic environmental areas. Potential impacts from lighting (either from vessels, vehicles or infrastructure) on coastal environments and significant ecological processes (such as turtle nesting) must be assessed for their risk with regards to impacting native flora and fauna.

Propose practical measures to avoid, minimise, mitigate and/or offset direct or indirect impacts on ecological environmental values.

Assess how the nominated quantitative indicators and standards may be achieved for nature conservation management. In particular, address measures to protect or preserve any listed threatened, near-threatened or special least concern species.

Propose measures that would avoid the need for waterway barriers, or propose measures to mitigate the impacts of their construction and operation.

Assess the need for buffer zones and the retention, rehabilitation or planting of movement corridors. The assessment should take account of the role of buffer zones in maintaining and enhancing riparian vegetation and wetlands to enhance water quality and habitat connectivity.

Propose rehabilitation success criteria, in relation to natural values, that would be used to measure the progressive rehabilitation of disturbed areas. Describe how the achievement of the objectives would be monitored and audited, and how corrective actions would be managed. Proposals for the rehabilitation of disturbed areas should incorporate, in suitable habitat, provision of low shrubs, ground level hollow logs, stick piles, nest hollows, ground litter and fish passage and habitat.

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.

9.6.2 Offsets

For any significant residual impact, propose offsets that are consistent with the following requirements as set out in applicable State and Commonwealth legislation or policies:

- Where a significant residual impact will occur on a prescribed environmental matter as outlined in the Environmental Offsets Regulation 2014, the offset proposal(s) must be consistent with the requirements of Queensland's *Environmental Offsets Act 2014* and the latest version of the [Queensland environmental offsets policy](#) (DES 2020).
- Where the Commonwealth offset policy requires an offset for significant residual impacts on a MNES, the offset proposal(s) must be consistent with the requirements of the latest version of the [EPBC Act environmental offsets policy](#) (DSEWPC 2012) and relevant guidelines.

9.6.3 Biosecurity

Environmental objective and outcomes

The construction, operation and decommissioning of the proposed project should ensure:

- the introduction and spread of weeds, pests (including marine pests) and disease, pathogens and contaminants are avoided (as the highest priority) or minimised
- existing weeds and pests, including marine pests, are controlled, including biosecurity threats and their management
- the performance outcomes correspond to the relevant policies, legislation and guidelines, and that sufficient evidence is supplied (through studies and proposed management measures) to show these outcomes can be achieved.

Impact assessment

Conduct the impact assessment in accordance with the latest version of the department's [Biosecurity—EIS information guideline](#) (DES 2020).

Describe the current distribution and abundance of pest animals and weeds on the proposed project site.

Describe the impact the project's construction and operation will have on the spread of pest animals, weed species and disease.

Propose detailed measures to remove, control and limit the spread of pests, weeds, diseases, pathogens and contaminants on the proposed project site and any areas under the proponent's control. This includes declared plants and animals and restricted areas under Queensland's *Biosecurity Act 2014*, the Commonwealth *Biosecurity Act 2015* and weeds of national significance and designated pests under the Queensland *Public Health Act 2005*. All proposed measures are to be in accordance with biosecurity surveillance or prevention measures authorised under the *Biosecurity Act 2014* and aligned with local government pest management priorities.

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.

9.7 Coastal environment – a critical matter

Environmental objective and outcomes

The proposed project's objective for the coastal environment is that its activities are operated in a way that avoids or minimises adverse impacts on coastal environmental values, processes and resources.

The construction, operation and decommissioning of the proposed project must be consistent with all statutory and regulatory requirements of the federal, state and local government and be consistent with their relevant plans, strategies, policies and guidelines that relate to the coastal environment. The coastal environment is taken to include estuarine, littoral and marine environmental values, and the amenity of important natural coastal landscapes, views and vistas.

Impact assessment

Conduct the impact assessment in accordance with the latest version of the department's [Coastal—EIS information guideline](#) (DES 2020).

Provide illustrated details of the existing coastal zone that is potentially affected by the proposed project, and describe and illustrate any proposed works in the coastal zone, including a schedule of ongoing maintenance requirements. The description should at least address the following matters:

- 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)
- existing estuarine, littoral and marine environmental values, including water quality, benthos, aquatic flora and fauna, mangrove areas, salt marsh, and amenity, that could be impacted by construction or operation of the proposed project
- state or Commonwealth marine parks and their zoning in the region of the proposed project's site
- separately describe and map at a suitable scale marine plants and any fish habitat areas protected under the *Fisheries Act 1994*
- existing residential, commercial or recreational uses of the coastal zone that could be impacted by construction or operation of the proposed project, such as camping sites, cultural heritage areas, including burial sites, historical heritage sites, and fishing and hunting areas.

- capital dredging for navigation channels, berths, swing basins or harbours
- maintenance dredging or bed levelling for navigation channels, berths, swing basins or harbours
- excavations on or near the shore
- potential impacts of product loading and unloading, shipping and offshore transshipping operations on the marine environment
- the volume, chemical and physical characteristics of the dredged or excavated material, with particular regard to acid sulfate soils
- proposed disposal or placement options for dredged or excavated material, including an assessment of whether disposal in waters or for land reclamation would be likely to receive approval
- justification for whether dredging is required for barge movements
- any jetties, bunds, harbour walls, groynes, moorings, channel markers, navigation aids, or other infrastructure, to be built in waters
- buildings and infrastructure, including barge loading facilities to be built on the shore or on land close to the shore
- any proposals to undertake transshipping of material in state waters or the Commonwealth marine area
- fishery resources (including commercial, recreational and indigenous fisheries).

Assess the potential impacts of the proposed project's activities in the coastal zone and consistency with relevant marine park zoning plans.

Assess the risk to coastal processes and nearshore landforms from the proposed project. This should include expected and modelled changes to sediment transport, erosion, accretion, beach slope, foredune height/slope and morphology, coastal vegetation lines, king tide heights and wave conditions that could be impacted by the project, including from any navigation channels, dredge pockets or coastal infrastructure.

Model the spread and assess the impacts of any sediment plume to be created by dredging or excavations. Assess the potential loss of habitat or diversity that could result from the proposed project. Also assess any potential impacts on commercial or recreational fisheries, 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). Assess the potential short-term or long-term impacts of noise on marine fauna.

Propose measures to avoid or minimise the potential impacts of the proposed project's activities in the coastal zone, including an appropriate first-strike oil response capacity. If acid sulfate soils would be disturbed, describe measures to avoid oxidation of the sulfides or to treat and neutralise the acid if it forms.

Detail any residual impacts that cannot be avoided, and propose measures to offset the residual loss.

Detail any approvals under State and Commonwealth legislation that would be required to construct or operate the proposed project in the coastal zone. Identify any development for the proposed project outside a mining or petroleum lease that would be assessable development within the coastal zone requiring approval under the *Planning Act 2016*. Provide sufficient information and assessment for the relevant authorities to decide whether granting the approval(s) would be appropriate. Detail any owner's consent requirements from the State pertaining to any necessary development application/s, where applicable, including for any work on land below high-water.

Include an analysis on options for anchoring of ocean going vessels (e.g. anchor mooring versus fixed moorings) over the timeframe of impacts (approximately 15 year project life).

Develop and describe suitable indicators for measuring coastal resources and values, and set objectives to protect them in accordance with relevant State Planning Policy, guidelines and legislation. Refer to the [State Planning Policy—state interest guideline coastal environment](#) (DSDIP 2016) and the department's guidelines on coastal development.

Detail a monitoring program that would audit the success of mitigation measures, measure whether objectives have been met, and describe corrective actions to be used if monitoring shows that objectives are not being met.

9.8 Air

Environmental objective and outcomes

The activity will be operated in a way that protects the environmental values of air.

Impact assessment

Describe the existing air environment at the proposed project site and the surrounding region. Provide sufficient data on local meteorology and ambient levels of contaminants to establish a baseline and to model air quality environmental impacts within the airshed in accordance with the department's *Air—EIS information guideline* (ESR/DES/5294).

Describe and illustrate the locations of sensitive receptors, agricultural or ecologically significant species and habitats that could be impacted by emissions from the project including the extent to which they may be impacted.

Provide an emissions inventory and description of the characteristics of contaminants or materials that would be released from point and diffuse sources and fugitive emissions (including, but not limited to, silica dust) when carrying out the activity (point source and fugitive emissions). The description should address the construction, commissioning, operation, upset conditions, and closure of the proposed project and include emissions from ships in air quality assessments, including requirements under the International Convention for the Prevention of Pollution from Ships (MARPOL) and *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*.

Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in schedule 8 of the EP Regulation.

Predict the impacts of the releases from the activity on environmental values of the receiving environment using established and accepted methods and in accordance with the EP Regulation, Environmental Protection (Air) Policy 2019 (EPP (Air)) and the latest version of the department's [Air—EIS information guideline](#) (DES 2020) and [Applications for activities with impacts to air](#) (ESR/2015/1840²¹). The description of impacts should take into consideration the sensitivity and assimilative capacity of the receiving environment and the practices and procedures that would be used to avoid or minimise impacts. The impact prediction must address the cumulative impact of any 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 proposed project for all contaminants whether or not they are covered by the *National Environmental Protection (Ambient Air Quality) Measure* or the EPP (Air), including the potential for dust and silicosis as a result of extraction, stockpiling and transport of silica sand.

Describe the proposed mitigation measures to limit impacts from air emissions and how the proposed activity will be consistent with best practice environmental management. The EIS must address the compatibility of the proposed project's air emissions with existing or potential land uses in surrounding areas. Potential land uses might be gauged from the zonings of local planning schemes, State Development Areas or other relevant planning frameworks.

Describe how the proposed project's air emission objectives would be achieved, monitored, audited and reported, and how corrective actions would be managed for the life of the proposed project.

Proponents are responsible for determining if they have obligations under the Commonwealth *National Greenhouse and Energy Reporting Act 2007* (NGER Act) and ensuring that information regarding greenhouse gas emissions and energy production and consumption provided in the EIS is consistent with requirements of the NGER Act and its subordinate legislation.

Provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO₂ equivalent' terms. Estimate emissions from upstream activities associated with the proposed project, including the fossil fuel based electricity to be used during construction, operation and decommissioning and briefly describe the methods used to make the estimates. The *National Greenhouse and Energy Reporting (Measurement) Determination 2008* provides methods and criteria for calculating greenhouse gas emissions and energy data under the NGER Act which can be used in combination with [National greenhouse energy report](#)

²¹ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

[technical guidelines](#) (DAWE, 2020) as a reference source for emission estimate methods and supplemented with information from other sources where practicable and appropriate.

Assess the potential impacts of operations within the proposed project area on the state and national greenhouse gas inventories and propose greenhouse gas abatement measures, including:

- a description of the proposed preferred and alternative measures to avoid and/or minimise greenhouse gas emissions directly resulting from activities of the proposed project, including such activities as transportation of products and consumables, and energy use by the proposed project
- an assessment of how the preferred measures minimise emissions and achieve energy efficiency
- a comparison of the preferred measures for emission controls and energy consumption with best practice environmental management in the relevant sector of industry
- a description of any opportunities for further offsetting of greenhouse gas emissions through indirect means.

9.9 Noise and vibration

Environmental objective and outcomes
The activity will be operated in a way that protects the environmental values of the acoustic environment.

Impact assessment

Describe and illustrate the locations of any sensitive receptors that are listed in schedule 1 of the Environmental Protection (Noise) Policy 2019. Also describe any other environmental values that could be impacted by emissions from the proposed project.

Fully describe the sources and characteristics of noise and vibration that would be emitted during the construction, commissioning, operation, upset conditions, and closure of the proposed project. This will include an assessment of any impacts from the increase in sea, land and air transportation associated with the proposal.

Conduct a noise and vibration impact assessment in accordance with the latest version of the department's [Noise and vibration—EIS information guideline](#) (DES 2020) and [Applications for activities with noise impacts](#) ESR/2015/1838²²). The assessment must address low-frequency (<200 Hz) noise emissions and potential cumulative impact of the proposed project with other emissions of noise from any existing developments and known possible future development in the area.

Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in schedule 8 of the EP Regulation.

Describe how the proposed activity would be managed to be consistent with best practice environmental management, including the control of background creep in noise as outlined in the Environmental Protection (Noise) Policy 2019. The EIS must address the compatibility of the proposed project's noise emissions with existing or potential land uses in surrounding areas. Potential land uses might be gauged from the zonings of local planning schemes, State Development Areas or other relevant planning frameworks.

Describe how the environmental management objectives for noise and vibrations would be achieved, monitored, audited and reported, and how corrective actions would be managed.

Describe how the proposed activity (including piling and shipping) could impact aquatic and marine fauna based on underwater noise modelling. Underwater noise modelling must include modelling of bed substrates (acoustically reflective or acoustically absorptive) to understand the propagation beyond the proximity of the noise source (e.g. piling). The assessment must identify the distance to which there would be a biological impact to those species.

Propose environmental management strategies that will avoid long-term impacts of underwater noise on aquatic and marine fauna and describe how objectives would be monitored and audited, and how corrective actions would be managed.

²² This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

9.10 Waste management

Environmental objective and outcomes

Any waste generated, transported, or received as part of carrying out the activity is managed in a way that protects all environmental values.

Impact assessment

Conduct the impact assessment in accordance with the latest version of the department's [Waste—EIS information guidelines](#) (DES 2020) and [Applications for activities with waste impacts](#) (ESR/2015/1836²³). Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.

Describe all the expected waste streams from the proposed project activities during the construction, operational, rehabilitation and decommissioning phases of the proposed project. Waste streams for resource projects would typically include: waste rock, tailings, organic materials, minerals and coarse rejects from mining and mineral processing; and brackish, saline or mine affected water from all types of resource projects.

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

Define and describe objectives and practical measures for protecting or enhancing environmental values from impacts from wastes.

Detail the locations, areas and specifications of all waste management and wastewater management infrastructure.

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

- the final fate of the wastes must be clearly identified
- if the project is relying on the local municipal waste system, an assessment must be undertaken of the capacity of the local municipal system to dispose of the project's solid waste
- provide justification as to why waste disposal, which is the least preferred option on the waste management hierarchy, is being utilised.

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.

Detail waste management planning for the proposed project, in particular how measures have been applied to prevent or minimise environmental impacts due to waste at each stage of the proposed project.

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

Detail the geochemistry of all waste rock, including spoil, tailings and rejects. Assess the potential risks associated with this waste stream and describe the management of progressive placement and any disposal strategy to minimise any potential impacts on environmental values of the proposed project area. Detail how high risk waste material will be managed in the rehabilitation plan.

Identify the quantity, quality and location of all potential discharges of water and contaminants by the proposed project, including treated wastewater and sewage and by-products generated during process water cleaning. 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 a risk assessment of the potential impacts on waters, in the near-field or far-field, resulting from controlled or uncontrolled discharges from the site. Address the following matters with regard to every potential discharge of contaminated water:

- Describe the circumstances in which controlled and uncontrolled discharges might occur.

²³ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

- Provide stream flow data and information on discharge water quality, including any potential variation in discharge water quality that will be used in combination with proposed discharge rates to estimate in-stream dilution and water quality. Chemical and physical properties of any waste water, including concentrations of constituents, at the point of entering natural surface waters should be discussed along with toxicity of effluent constituents to human health, flora and fauna.
- Provide an assessment of the available assimilative capacity of the receiving waters given existing water quality and other potential point source discharges in the catchment. Options for controlled discharge at times of natural stream flow should be investigated to ensure that adequate flushing of waste water is achieved.
- Provide water quality limits that are appropriate to maintain background water quality and protect other water uses.
- Describe the necessary streamflow conditions in receiving waters under which controlled discharges will be allowed.

Provide relevant information on existing and proposed sewage and treatment infrastructure relevant to environmentally relevant activity (ERA) 63, by referring to relevant department policies and guidelines, depending on the proposed sewage collection and treatment infrastructure proposed and the reuse and/or disposal of treated wastewater and sewage wastes generated by referring to relevant department policies and guidelines including:

- *Disposal of effluent using irrigation Technical guideline* (Tennakoon and Ramsay 2020)
- *Wastewater release to Queensland waters, version 2.02, October 2019. Technical guideline* (DES 2019)
- *Eligibility criteria and standard conditions for sewage treatment works (ERA 63) – Version 2* (DES 2015)).

Specifically address the information requirements in Appendix 1 of the *Disposal of effluent using irrigation Technical guideline*. Assess reception facilities for ship sourced waste from both transshipment vessels and oceangoing vessels, management of biosecurity and treatment/ disposal.

Identify [end of waste codes](#) (Queensland Government, 2020) under the *Waste Reduction and Recycling Act 2011* which may be relevant for the proposed project.

9.11 Hazards and safety

Environmental objective and outcomes
<p>The construction and operation of the proposed project should ensure:</p> <ul style="list-style-type: none"> • the risk of, and the adverse impacts from, natural and man-made hazards are avoided, minimised or mitigated to protect people and property • the community's resilience to natural hazards is maintained or enhanced • the storage and handling of hazardous materials are appropriately located, designed and constructed to minimise health and safety risks to communities and individuals and adverse effects on the environment. • that any risk associated with explosives use, transportation, storage or manufacture is within an acceptable level, in accordance with the <i>Explosives Act 1999</i> and codes and standards including the <i>Australian Standard AS2187.1 Explosives - Storage, transport and use - storage</i> • the proposed project prevents or minimises the production of hazardous contaminants and waste • if the production of hazardous contaminants and waste is unavoidable, the proposed project treats and/or contains hazardous contaminants until their disposal at an approved facility.

Impact assessment

Describe the potential risks to people and property that may be associated with the proposed project in the form of a risk assessment for all components of the proposed project and in accordance with relevant standards. The assessment should address the following matters:

- The safety of employees during design, planning, construction, and operation of the proposed project.
- Identify historical workings within the proximity of operational and/or inhabited areas, and measures in place to ensure the safety of all personnel.
- Potential hazards (including those associated with petroleum and gas pipelines, abandoned mines, explosive magazines and the storage and use of explosives as part of construction), accidents, spillages, fire and abnormal events that may occur during all stages of the proposed project, including estimated probabilities of occurrence.

- The respirable crystalline silica dust hazards that may arise during construction and operation of the project (i.e. possibly associated with the risk of silicosis), available at <https://www.worksafe.qld.gov.au/construction/workplace-hazards/silica-exposure-a-serious-risk-for-construction-workers>
- Address the requirements of the *Water Supply (Safety and Reliability) Act 2008* with regard to failure impact assessment, population at risk and referable dam status.
- Hazard analysis and risk assessment in accordance with:
 - *AS/NZS ISO 31000:2018 Risk management guidelines* and with *HB203:2006 Environmental risk management principles and processes* and
 - Consider the suite of risk assessments included in the relevant Local Disaster Management Group Plans (Hope Vale Aboriginal Shire LDMG and Cook Shire LDMG Plan) and the Queensland State Risk Assessments available at <https://www.disaster.qld.gov.au/qermf/Pages/Assessment-and-plans.aspx> (State heatwave assessment, State Earthquake Risk Assessment, Severe Wind Hazard Assessment)
 - Consider the Queensland Government Climate Change science resources available at <https://www.qld.gov.au/environment/climate/climate-change/resources/science> including the Queensland Future Climate Dashboard available at <https://longpaddock.qld.gov.au/qld-future-climate/dashboard>
- Consider geophysical risk management such as earthquakes. The State Earthquake Risk Assessment includes probabilities of major seismic events for all local government areas and should be used to inform risk consideration and management.
- Address the potential cyclone and severe wind hazard and risk to the project and the heat and heatwave risk management refer to the State Heatwave Risk.
- Demonstrate that any major hazard facility involving dangerous and hazardous materials is appropriately located in accordance with [State Development Assessment Provisions](#), Code 21, Hazardous chemical facilities (Queensland Government, 2020).
- Identify all hazardous substances and any explosives to be used, transported, stored, processed or produced and the rate of usage.
- Evaluate the risks associated with the secure storage, use and transportation of explosives to ensure the risks are within an acceptable standard in accordance with *Australian Standard AS2187.1 Explosives - Storage, transport and use – storage*.
- Identify the need for appropriate explosive licences and notice of proposed blasting prior to explosives use.
- Potential wildlife hazards, including a development of a mosquito management plan in accordance with Queensland Health guidelines, natural events (e.g. cyclone, storm tide inundation, flooding, bushfire) and implications related to climate change and adaptation.
- Describe natural hazards that may affect the site with at least a 1% annual exceedance probability or 100 year average recurrence interval level, including mapping of the potential hazard areas at the site.
- Describe how siting, layout and operation of the development will avoid or mitigate the risks, particularly with regard to the release of hazardous materials during natural hazard events.
- Describe how natural processes and the protective function of landforms and vegetation will be maintained in sea erosion and storm tide inundation areas.
- Assess impacts of and response to maritime casualties (shipping incidents – groundings, capsizing), bulk silica spills (for example, smothering impacts), oil spills.
- Assess impacts from anchorage and appropriate location and design (including substrate, depth, current) of anchorages.
- Provide details on the safeguards that would reduce the likelihood and severity of hazards, consequences and risks to persons, within and adjacent to the proposed project area(s). Identify the residual risk following application of proposed mitigation measures. Present an assessment of the overall acceptability of the impacts of the proposed project in light of the residual uncertainties and risk profile.
- As part of the emergency response plan include:

- 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 Part E of the State Planning Policy– Natural Hazards, Risk and Resilience (DILGP 2017)
 - 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
- a safety and emergency management plan addressing construction and operations, and including the following information at a minimum:
 - i. evacuation plans for the construction and operation phases of the development
 - ii. safety management plans and emergency response procedures in consultation with the state and regional emergency service providers (including Queensland Fire and Emergency Services and the Queensland Ambulance Service) and provide an adequate level of training to staff who will be tasked with emergency management activities.
- Provide an outline of the proposed integrated emergency management planning procedures, including evacuation plans and available and proposed physical communication systems and infrastructure, if required, for the range of situations identified in the risk assessment developed in this section. Facilitate discussions and engagement involving Queensland Health (Hope Vale Clinic), Queensland Ambulance, Queensland Fire and Rescue and Queensland Police Service to develop coordinated emergency response procedures for work sites/work camps. Issues to be considered are:
 - The emergency response notification process is to ensure, where required, advice in advance is provided in a timely manner on high risk activities (e.g. working at heights, blasting, working with chemicals.)
 - Nominate the number of emergency response/medical staff and emergency infrastructure/ equipment available (medical services, firefighting equipment available on site). This will enable the QAS to plan for the appropriate service delivery to the region and the workplace
 - The QAS to be provided with a copy of the principal hazard management plan
 - Notification of planned exercises, either practical or tabletop, for attendance and participation by the QAS.
- Outline any consultation undertaken with the relevant emergency management authorities, including the local disaster management group.
- The emergency response plan is to include reference to first-strike spill response, maritime casualty and emergency towing, and maritime fire-fighting capacity requirements.
- Discuss shipping requirements under The International Convention for the Safety of Life at Sea, International Maritime Solid Bulk Cargoes Code and related Australian Maritime Safety Authority.

9.12 Cultural heritage – a critical matter

Environmental objective and outcomes

The construction and operation of the proposed project should achieve the purposes of the *Aboriginal Cultural Heritage Act 2003* and the *Torres Strait Islander Cultural Heritage Act 2003* with respect to the proposed project site, and ensure that the nature and scale of the proposed project does not compromise the cultural heritage significance of a heritage place or heritage area.

Impact assessment

Conduct the impact assessment in accordance with the latest version of the department's [Aboriginal and Torres Strait Islander cultural heritages—EIS information guideline](#) (DES 2020) and [Non-Indigenous cultural heritage—EIS information guideline](#) (DES 2020).

Unless section 86 of the *Aboriginal Cultural Heritage Act 2003* or *Torres Strait Islander Cultural Heritage Act 2003* applies, the proponent must develop a Cultural Heritage Management Plan in accordance with the requirements of Part 7 of these Acts.

Undertake site-specific Indigenous Culture assessment in consultation with Traditional Owners and clan groups across all sites relevant to the proposed project, including both land and water areas. Detail any known or potential sites of Cultural significance that could be impacted by the proposed project.

For non-Indigenous historical heritage, undertake a study of, and describe, the known and potential historical cultural and landscape heritage values of the area potentially affected by the proposed project. Any such study should be conducted by an appropriately qualified cultural heritage practitioner. Provide strategies to mitigate and manage any negative impacts of the proposed project on non-Indigenous cultural heritage values and enhance any positive impacts.

Establish baseline information on underwater and terrestrial cultural heritage values. Assess the impact of the proposed project on underwater cultural heritage items as required by the *Underwater Cultural Heritage Act 2018* (Cwlth).

9.13 Social – a critical matter

Environmental objective and outcomes
<p>The construction, operation and closure of the proposed project should ensure that:</p> <ul style="list-style-type: none"> • adverse social impacts arising from the proposed project are avoided or mitigated • benefits for local and regional communities are enhanced.

Impact assessment

9.13.1 SIA Contents

Prepare a social impact assessment (SIA) for the proposed project that is consistent with the requirements of the *Strong and Sustainable Resource Communities Act 2017* (SSRC Act) and the Coordinator-General's [SIA guideline](#) (DSDTI 2018).

Develop the SIA in consultation with the Office of the Coordinator-General, Department of State Development, Tourism and Innovation.

Include in the SIA detailed assessment of the following five key matters in accordance with the SIA guideline (DSDTI 2018):

- i. community and stakeholder engagement
- ii. workforce management
- iii. housing and accommodation
- iv. local business and industry procurement
- v. health and community well-being.

9.13.2 Key SIA outcomes

Describe in the SIA:

- the existing social environment of communities that are potentially impacted by the project
- the potential social impacts (both positive and negative) of the project, as well as how they will be managed and monitored
- how the project will contribute to enhancing the sustainability of these communities.

9.13.3 Consultation for the SIA

The SIA is to be informed by an inclusive and collaborative community and stakeholder engagement process, consistent with the SIA guideline. Community and stakeholder engagement is to be iterative throughout preparation of the SIA. Engagement with local government must commence at an early stage.

Demonstrate evidence in the SIA of consultation outcomes from key stakeholder groups (refer to Appendix 1 in the [SIA guideline](#)). The SIA must be informed by the results of community and stakeholder engagement.

9.13.4 Workforce arrangements

Include in the SIA a workforce profile summary for the construction and operational phases of the project, including the estimated proportion of local and fly-in, fly-out (FIFO) workers (including specialist workers. This is to be informed by an analysis of the capacity of towns within 125 km radius of the project (or other area determined by the assessment of the appropriate SIA study area) to:

- provide workers for the construction and operational phases of the project,
- receive workers and their families who move to the towns, and
- address barriers that may impact choice for workers to live locally.

The SIA will need to include a target for obtaining a local workforce and set the maximum proportion of FIFO workers for the project. This is to be supported by a rationale to ensure local benefit.

Identify in the SIA measures for prioritising the recruitment of workers from local and regional communities. This includes describing how the recruitment hierarchy for workers in section 9(3A) of the SSRC Act will be implemented.

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

Where a FIFO workforce is proposed, identify measures for managing this workforce in accordance with the [SIA guideline](#), as well as sections 6 and 8 of the SSRC Act and the relevant provisions in the *Anti-Discrimination Act 1991*.

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

9.13.5 Social impact management plan

Include in the SIA a social impact management plan (SIMP) with management measures to mitigate the impacts and enhance the potential benefits identified in the assessment of the five key matters. The SIMP must describe a practical basis for the implementation of management measures.

The SIMP is to include timeframes for implementation of management measures, key performance indicators, roles and responsibilities, stakeholders and potential partnerships. Potential partnerships include opportunities for linkages with other projects planned or operating in the area and possible alignment with existing strategies or proposed new initiatives that would benefit the management of any cumulative social impacts.

The SIMP must include a process of review throughout the project lifecycle to ensure management measures continue to be effective and, where the stated outcomes are not achieved, are amended to appropriately mitigate impacts.

9.14 Economic – a critical matter

Environmental objective and outcomes
<p>The construction and operation of the proposed project should ensure that:</p> <ul style="list-style-type: none"> • avoid or mitigate adverse economic impacts arising from the proposed project • capitalise on opportunities potentially available for capable local industries and communities • create a net economic benefit to the region and state.

Impact assessment

Identify the potential adverse and beneficial economic impacts of the proposed project on the local and regional area and the state, referring specifically to the determined SIA study area. Estimate the costs and benefits and economic impacts of the proposal using both regional impact analysis and cost–benefit analysis. Undertake the analysis in accordance with the Coordinator-General’s [Economic impact assessment guideline](#) (DSDMIP 2017). Separately address each stage of the proposed project (e.g. construction, operation and decommissioning).

Identify recreational, commercial or indigenous fisheries and commercial tour operators potentially impacted by the proposed project and undertake consultation with these stakeholders. Assess the likely impact of the proposed project on these users and any proposed avoidance, mitigation and management measures.

Provide an analysis of the economic costs to agricultural activities on land including any impacts to supply chains.

9.15 Transport – a critical matter

Environmental objective and outcomes
<p>The construction and operation of the proposed project should aim to:</p> <ul style="list-style-type: none"> • maintain the safety and efficiency of all affected transport modes for the proposed project workforce and other transport system users • avoid and mitigate impacts including those on the condition of transport infrastructure • ensure any required works are compatible with existing infrastructure and future transport corridors.

Impact assessment

The EIS should include a clear summary of the total transport task for the proposed project, including workforce, inputs and outputs, during the construction, operational and decommissioning phases of the proposed project. Proponents should make appropriate choices for modes of transport to ensure efficiency and minimise impacts on the community.

Undertake the impact assessment in accordance with the department's [Transport—EIS information guideline](#) (DES 2020). The methods used should include the following matters:

- for impacts on roads: a traffic impact assessment report in accordance with the [Guide to traffic impact assessment](#) (DTMR 2018), with traffic data in Department of Transport and Main Roads-suitable formats.
- for impacts on rail level crossings: the [Australian Level Crossing Assessment Model](#) (ALCAM, 2020).
- for impacts on maritime operations: the [Maritime Safety Queensland guidelines for major development proposals](#) (TMR 2019).

Present the transport assessment for each proposed project-affected mode (road, rail, air, port and sea) as appropriate for each phase of the proposed project. Provide sufficient information to allow an independent assessment of how existing transport infrastructure will be affected by proposed project transport at the local and regional level (e.g. local roads and state-controlled roads). Assess the impacts of the proposed project on existing users of transport infrastructure and waterways, including recreational and commercial tour operators in the marine park.

Discuss how identified impacts will be mitigated for each transport mode. Mitigation strategies may include works, contributions or other strategies that can be documented in a road-use management plan²⁴. The strategies should be prepared in close consultation with relevant transport authorities, including local government and the Queensland Police Service. Strategies should consider the transport authorities' works programs and forward planning, and be in accordance with the relevant methodologies, guidelines and design manuals.

9.16 Matters of National Environmental Significance under the EPBC Act – a critical matter

The EIS must state and address the controlling provisions and describe the particular aspects of the environment leading to the controlled action declaration under the EPBC Act. Enough information about the proposed project and its relevant impacts must be provided to allow the Australian Government's Environment Minister to make an informed decision whether to approve the proposed project under the EPBC Act.

The assessment of the potential impacts, mitigation measures and any offsets for residual impacts must be dealt with in a stand-alone section of the EIS that fully addresses the matters relevant to the controlling provisions. This must be consistent with the department's [MNES—EIS information guideline](#) (DES 2020) for additional guidance.

Refer to Appendix 3 for the complete TOR for MNES under the EPBC Act requirements.

²⁴ Contact the Department of Transport and Main Road on MDP@tmr.qld.gov.au

10 Commitments

Provide a consolidated description of all the proponent's commitments to implement avoidance, mitigation, management and design measures (including monitoring programs and management plans) that would need to be applied to meet the predicted project outcomes. This includes commitments for rehabilitation costs in accordance with relevant department guidelines. Should the proposed project proceed, these commitments would be carried over into conditions as relevant.

11 Conditions

Propose conditions that may be placed on the EA and any other required approvals or licenses. For the EA, conditions may be taken from the department's [environmental authority conditions](#) (DES, 2020) including model operating conditions for mining and petroleum activities and/or modified or developed to suit site and project specific issues.

As part of the PRC plan (refer to Section 9.3) provide a PRCP schedule which sets out the milestones and conditions that relate to the completion of progressive rehabilitation and mine closure. The PRC plan must be consistent with the department's guideline [Progressive rehabilitation and closure plans](#) (ESR/2019/4964²⁵).

12 Appendices to the EIS

Appendices to the EIS must include the technical data collected, and evidence used to develop assertions and findings in the main text of the EIS.

No significant issue or matter, including statements of uncertainty associated with assertions and findings, should be mentioned for the first time in an appendix—it must be addressed in the main text of the EIS.

Include a table listing the section and sub-sections of the EIS where each requirement of the TOR is addressed.

13 Spatial and electronic data presentation

Maps included in the EIS should have contours at suitable increments relevant to the scale, location, potential impacts and type of proposed project, shown with respect to Australian Height Datum (AHD) and drafted to Geocentric Datum of Australia 2020 (GDA2020). In relatively flat locations, contours should be at one metre intervals. Present geographical coordinates as latitude and longitude against the GDA2020. Alternatively, use of GDA94 is acceptable. The highest astronomical tide (HAT) contour should be clearly displayed.

Provide spatial data presented in the EIS to the department in appropriate electronic form, such as shape files. This includes all water quality and waste water quality data. Refer to the department's guideline [Spatial information submission](#) (ESR/2018/4337²⁶) for information on the format for spatial information.

For rehabilitation matters, provide spatial information in accordance with the department's guideline *Progressive rehabilitation and closure plans* (ESR/2019/4964²⁷) and the department's application form *Submission of a progressive rehabilitation and closure plan* (ESR/2019/4957²⁸)

Maps, charts and electronic GIS data in relation to loading facilities, anchorages, transshipping operations and maritime navigation must include at a minimum:

- Maritime boundaries including Queensland's coastal water, Territorial Sea Baseline, Territorial Sea, Contiguous Zone and Exclusive Economic Zone and nautical mile scales.
- A nautical mile scale in addition to or instead of a metric scale.

²⁵ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

²⁶ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au.

²⁷ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au

²⁸ This is the publication number which can be used as a search term to find the latest version of a publication at www.qld.gov.au

Appendix 1 Glossary

The following acronyms, initialisms and abbreviations have been used in this document.

Acronym/abbreviation	Definition
AHD	Australian Height Datum
Bilateral agreement	an agreement between the Australian Government and the State of Queensland under section 45 of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> relating to environmental assessment
Congress	Hopevale Congress Aboriginal Corporation ('Hope Vale Congress' or 'Congress') Registered Native Title Body Corporate (RNTBC)
CCA	Compensation and Conduct Agreement between Diatreme and Congress
CHA	Cultural Heritage Agreement between Diatreme and Congress
CMU	cumulative management area
Department	the Queensland Department of Environment and Science
EA	environmental authority
EIS	environmental impact statement
EP Act	<i>Environmental Protection Act 1994</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
EP Regulation	Environmental Protection Regulation 2019
ERA	environmentally relevant activity
FIFO	fly-in-fly-out
GBRMP	Great Barrier Reef Marine Park
GDA2020	Geocentric Datum of Australia 2020
MNES	matters of national environmental significance
MPA	Mining Project Agreement (between Diatreme and Congress)
MSES	matters of state environmental significance
NGER Act	<i>National Greenhouse Energy Reporting Scheme Act</i>
Proposed PRC plan	proposed progressive rehabilitation and closure plan
Proposed PRCP schedule	proposed progressive rehabilitation and closure plan schedule
SIA	social impact assessment
SIMP	Social Impact Management Plan
SSRC Act	<i>Strong and Sustainable Resource Communities Act 2017</i>
TOR	terms of reference

Appendix 2 Policies, guidelines and references

The most recent version of the following documents must be considered in the development of the EIS for the Galalar Silica Sand Project.

- Australian Level Crossing Assessment Model, viewed March 2020, <http://alcam.com.au/documentation.aspx>
- ANZECC and ARMCANZ, *Australian and New Zealand guidelines for fresh and marine water quality*, Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand, viewed March 2020, <https://www.waterquality.gov.au/guidelines/anz-fresh-marine>
- Barnett B, Townley LR, Post V, Evans RE, Hunt RJ, Peeters L, Richardson S, Werner AD, Knapton A and Boronkay A 2012, *Australian groundwater modelling guidelines*, Australian Government National Water Commission, Canberra.
- Department of Agriculture, Fisheries and Forestry 2014, *DAFF Environmental impact assessment companion guide*, Queensland Government, Brisbane, viewed March 2020, <https://www.daf.qld.gov.au/business-priorities/agriculture/sustainable/environmental-impact-assessment>
- Department of Agriculture, Water and the Environment, *National greenhouse energy report technical guidelines*, Australian Government, Canberra, viewed March 2020, <http://www.environment.gov.au/climate-change/climate-science-data/greenhouse-gas-measurement/nger/technical-guidelines>
- Department of Environment and Heritage Protection 2012, *Coal seam gas water management policy*, Queensland Government, Brisbane, viewed March 2020, <https://environment.des.qld.gov.au/management/activities/non-mining/water/csg-water>
- Department of Environment and Science, *End of waste codes*, Queensland Government, viewed March 2020, <https://environment.des.qld.gov.au/management/waste/business/end-of-waste-classification>
- Department of Environment and Science 2015, Eligibility criteria and standard conditions for sewage treatment works (ERA 63) – Version 2 Queensland Government, Brisbane, https://environment.des.qld.gov.au/__data/assets/pdf_file/0035/88919/pr-es-irrigate-treated-sewage.pdf
- Department of Environment and Science 2018, *Monitoring and sampling manual: Environmental Protection (Water) Policy 2009*, Queensland Government, Brisbane, viewed March 2020, https://environment.des.qld.gov.au/__data/assets/pdf_file/0031/89914/monitoring-sampling-manual-2018.pdf
- Department of Environment and Science 2019, Wastewater release to Queensland waters, version 2.02, October 2019. Technical guideline. Queensland Government, Brisbane, <https://environment.des.qld.gov.au/assets/documents/regulation/pr-gl-wastewater-to-waters.pdf>
- Department of Environment and Science 2020, *Environmental impact statement information guidelines*, Queensland Government, Brisbane, viewed March 2020, <https://www.qld.gov.au/environment/pollution/management/eis-process/about-the-eis-process/developing-an-eis>
- Department of Environment and Science 2020, Disposal of effluent using irrigation Technical guideline. Tennakoon. S, and Ramsay. I, 2020. Queensland Government, Brisbane, <https://www.publications.qld.gov.au/dataset/disposal-of-effluent-using-irrigation-technical-guideline>
- Department of Natural Resources and Mines 2017, Guidance Note for Fatigue Risk Management https://www.dnrme.qld.gov.au/__data/assets/pdf_file/0004/240358/qld-guidance-note-16.pdf
- Department of Natural Resources and Mines 2017, *Native title work procedures*, Queensland Government, Brisbane, viewed March 2020, <https://www.dnrme.qld.gov.au/qld/atsi/native-title-work-procedures/work-procedures>
- Department of Natural Resource, Mines and Energy 2019, *Guideline: Works that interfere with water in a watercourse for a resource activity—watercourse diversions authorised under the Water Act 2000*, OSW/2019/4599, Queensland Government, Brisbane, viewed March 2020, https://www.dnrme.qld.gov.au/?a=109113:policy_registry/watercourse-diversions-water-act.pdf&ver=2.00
- Department of Infrastructure, Local Government and Planning 2016, State Planning Policy—State interest guideline coastal environment, Queensland Government, Brisbane, viewed March 2020, <http://www.dlgrma.qld.gov.au/resources/guideline/spp/spp-guideline-coastal-environment.pdf>
- Department of Infrastructure, Local Government and Planning 2017, State Planning Policy, Queensland Government, Brisbane, viewed March 2020, <https://www.cabinet.qld.gov.au/documents/2017/May/SPP/Attachments/Policy.pdf>

- Department of Infrastructure, Local Government and Planning 2017, *RPI Act Statutory Guideline 11/16 Companion Guide. A guide for state agencies and proponents on the requirements of the Regional Planning Interests Act 2014 in the planning and development process*, Queensland Government, Brisbane, viewed March 2020, <https://dsdmipprd.blob.core.windows.net/general/rpi-guideline-11-16-dilgp-companion-guide.pdf>
- Department of Science, Information Technology, Innovation and the Arts 2017, *Groundwater quality assessment guideline: Using monitoring data to assess groundwater quality and potential environmental impacts*, Queensland Government, Brisbane, <https://publications.qld.gov.au/en/dataset/groundwater-quality-assessment-guideline/resource/472cc88a-000a-4bb8-a60d-204cfe7e0238>
- Department of State Development Manufacturing Infrastructure and Planning 2017, *Economic impact assessment guideline*, Queensland Government, Brisbane, viewed March 2020, <http://www.coordinatorgeneral.qld.gov.au/resources/guideline/cg/economic-impact-assessment-guideline.pdf>
- Department of State Development Manufacturing Infrastructure and Planning 2018, *Social impact assessment guideline*, Queensland Government, Brisbane, viewed March 2020, <https://www.statedevelopment.qld.gov.au/coordinator-general/strong-and-sustainable-resource-communities/social-impact-assessment.html>
- Department of State Development Manufacturing Infrastructure and Planning 2020, *State Development Assessment Provisions*, Queensland Government, Brisbane, viewed March 2020, <https://www.dlgrma.qld.gov.au/resources/policy/sdap/v2/sdap.pdf>
- Department of Sustainability, Environment, Water, Populations and Communities 2012, Environment Protection and Biodiversity Conservation Act 1999 *Environmental offsets policy*, Australian Government, Canberra, viewed March 2020, <http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy>
- Department of Transport and Main Roads 2018, *Guide to traffic impact assessment*, Queensland Government, Brisbane, viewed March 2020, <https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Guide-to-Traffic-Impact-Assessment>
- Department of Transport and Main Roads 2019, *Maritime Safety Queensland guidelines for major development proposals*, Queensland Government, Brisbane, viewed March 2020, <https://www.msq.qld.gov.au/Waterways/Major-development-proposals.aspx>
- Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development, IESC Publications and resources, viewed March 2020, <http://www.iesc.environment.gov.au/publications>
- Joint Standards Australia/Standards New Zealand Committee 1998, *Explosives—Storage, transport and use—Storage, AS2187.1*
- Joint Standards Australia/Standards New Zealand Committee 2012, *Managing environment-related risk, SA/SNZ HB 203:2012*
- Joint Standards Australia/Standards New Zealand Committee 2018, *Risk management—Guidelines AS/NZS ISO 31000:2018*
- Queensland Government, *Environmental authority conditions*, Business Queensland, Queensland Government, viewed March 2020, <https://www.business.qld.gov.au/running-business/environment/licences-permits/applying/conditions>
- Queensland Government, *Environmental offsets*, Queensland Government, Brisbane, viewed March 2020, <http://www.qld.gov.au/environment/pollution/management/offsets>
- Queensland Government, *Queensland emergency risk management framework*, viewed March 2020, <https://www.disaster.qld.gov.au/qermf/Pages/Resources.aspx>
- Queensland Government, *Surat Cumulative Management Area*, Queensland Government, Brisbane, viewed March 2020, <https://environment.des.qld.gov.au/management/activities/non-mining/coal-seam-gas/cumulative-management>
- Queensland Government, *Water quality guidelines*, Queensland Government, Brisbane, viewed March 2020, <https://environment.des.qld.gov.au/management/water/quality-guidelines>

Appendix 3 Terms of reference for matters of national environmental significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requirements²⁹

The proposed action was referred on the 7th May 2020 to the then Australian Government Department of Agriculture, Water and the Environment (DAWE) (2020/8626). On the 5th June 2020, a delegate of the Minister determined the proposed action to be a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The controlling provisions are sections:

- 12 and 15A (world heritage values of a declared World Heritage property)
- 15B and 15C (heritage values of a National Heritage place)
- 18 and 18A (listed threatened species and communities)
- 20 and 20A (listed migratory species)
- 24B and 24C (the Great Barrier Reef Marine Park)
- 23 & 24A (a Commonwealth marine area)

The proposed action will be assessed under the bilateral agreement between the Commonwealth and the State of Queensland (section 45 of the EPBC Act) using the EIS prepared under the EP Act. The TOR must be addressed by the proponent in a stand-alone section that primarily focuses on the MNES listed above. This section (henceforth called the 'MNES section') must contain sufficient information to be read alone with reference to technical data or supplementary reports where appropriate. Any detailed technical information to support the text in the MNES section must be included as appendices to the draft EIS.

General Content

The MNES section must take into consideration the EPBC Act *Significant Impact Guidelines* 1.1 (2013) that can be downloaded from the following website: <http://www.environment.gov.au/epbc/guidelines-policies.html>.

If it is necessary to make use of material that is considered to be of a confidential nature, the proponent must consult with the DAWE on the preferred presentation of that material, before submitting it to the Commonwealth Minister for approval for publication.

The proponent must ensure that the MNES section assesses compliance of the action with the principles of Ecological Sustainable Development as set out in the EPBC Act, and the objects of the EPBC Act at [Attachment 1](#). A copy of Schedule 4 of the EPBC Regulations, '*Matters to be addressed by draft public environment report and environmental impact statement*', is at [Attachment 2](#).

Format

The MNES section must be written so that any conclusions reached are supported by clear evidence and can be independently assessed. To this end all sources must be appropriately referenced using the Harvard standard. The reference list should include the address of any Internet "web" pages used as data sources.

Maps, diagrams and other illustrative material must be included in the MNES section in a format so that they are legible and easily understood. The MNES section must be produced on A4 size paper capable of being photocopied, with maps and diagrams on A4 or A3 size and in colour where possible.

The proponent must 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.

²⁹ provided by the Commonwealth Department of Agriculture, Water and the Environment (DAWE)

Specific Content for the MNES Section

1 General Information

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; and
- h) the consequences of not proceeding with the action.

2 Description of the Action

All construction, operational (including transport, transshipment and vessel routes), rehabilitation and decommissioning components of the action must be described in detail. This must include the precise location of all works to be undertaken, structures to be built or elements of the action that may have impacts on MNES.

The description of the action must also include details on how the works are to be undertaken (including stages of development and their timing) and design parameters for those aspects of the structures or elements of the action that may have relevant impacts. This must include details regarding the potential for the action to be considered dumping if it the mined product enters the Marine Park, intentionally or unintentionally.

Provide the total size (in hectares) of the project site and the total size (in hectares) of the disturbance footprint. If the disturbance footprint is the same as the project site, the MNES section must include a statement to this effect.

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

3 Feasible Alternatives

Any feasible alternatives to the action to the extent reasonably practicable, including:

- a) if relevant, the alternative of taking no action;
- b) a comparative description of the impacts of each alternative on the MNES above; and
- c) sufficient detail to make clear why any alternative is preferred to another.

Short, medium and long-term advantages and disadvantages of the options must be discussed.

4 Description of the Environment

A description of the environment of the project site including the proposed mining area, loading facilities, shipment and transshipment lanes, transshipment anchorages, ancillary transport roads and the surrounding areas that may be affected by the action (this may also include downstream of the project site) (henceforth referred to as 'the project sites'). This section must include information relevant to all controlling provisions for the action.

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

The MNES section must address, at a minimum, impacts on the listed threatened species and ecological communities at [Attachment 3](#).

Note: The list at [Attachment 3](#) may not be a complete list of listed threatened species and ecological communities that will or are likely be impacted by the action. It is the proponent's responsibility to ensure that any listed threatened species and ecological communities at the time of the controlled action decision, which will or are likely to be impacted by the project, are assessed for the Minister's consideration. Any listing events (e.g. the listing or up-listing of a species) that occur after the controlled action decision (05 June 2020) do not affect the assessment and approval process.

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

- a) **Description:** describe each listed threatened species and ecological communities (including EPBC Act listing status, distribution, life history, etc.).
- b) **Desktop analysis:** describe the desktop assessment methodology used to inform the field surveys within, adjacent to and/or downstream of the project sites.

The MNES section must identify and describe known historical records of listed threatened species and ecological communities in the broader region (this may also include downstream of the project sites). All known records must be supported by an appropriate source (i.e. Commonwealth and State databases, published research, publicly available survey reports, etc.), the year of the record and a brief description of the habitat in which the record was identified.

- c) **Survey effort:** provide details of the scope, methodology, timing and effort of field surveys (which must be undertaken by qualified species experts with demonstrated experience in detecting the listed threatened species and ecological communities) within, adjacent to and/or downstream of the project sites. Provide details of:
 - i. how surveys were undertaken in accordance with relevant Commonwealth, State guidelines or best practice survey guidelines at the time of the surveys; and
 - ii. if relevant, the justification for divergence from relevant Commonwealth, State guidelines or best practice survey guidelines at the time of the surveys.
- d) **Survey outcomes:** state the total number of records (individuals and evidence of presence) of listed threatened species and ecological communities within, adjacent to and/or downstream of the project sites. All records must be supported by the year of the record and a brief description of the habitat in which the record was identified.
- e) **Habitat assessment:** provide a robust assessment of the potential habitat available within, adjacent to and/or downstream of the project sites for listed threatened species and ecological communities. This must include the assessment of specific habitat requirement/s relevant to each listed threatened species and ecological community (e.g. breeding, foraging, dispersal, known important habitat, suitable habitats, roosting, etc.).

Habitat assessments must be derived from information obtained from:

- i. field surveys and vegetation assessments;
- ii. the Species Profile and Threats (SPRAT) Database;
- iii. relevant DAWE documents (e.g. approved conservation advices, recovery plans, listing advices, draft referral guidelines, etc.); and
- iv. published research and other relevant sources (where relevant).

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

Provide the total amount of each type of habitat (in hectares) in the project sites for each listed threatened species and ecological community.

The MNES section must also include a detailed habitat assessment for any other listed threatened species and/or ecological communities identified during field surveys.

DAWE considers it is not unreasonable that a species may still use a project site at some point in time because the vegetation and habitat feature/s to support its requirements are present. As such, the potential for occurrence of listed threatened species and communities must also be considered and assessed in the MNES section.

- f) **Impact assessment:** describe and assess all impacts (direct, indirect and cumulative) to listed threatened species and ecological communities and any others that are found to be or may potentially be present in areas that may be impacted by the action. The impact assessment must include consideration of the requirements in the 'Relevant Impacts' section below.

Identify which component/s and stage/s of the action is of relevance to each listed threatened species and/or ecological community and/or if the threat of impact relates to consequential actions.

For threatened ecological communities, the total direct impact (in hectares) to each identified patch within and

adjacent to the project sites must be provided in the MNES section compared to its current extent. 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 sites to be directly impacted from fragmentation as a result of vegetation clearance.

Provide the total amount of each type of habitat (in hectares) in the disturbance footprint for each listed threatened species and ecological community.

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

- i. be specific to the habitat assessment undertaken for each listed threatened species and ecological community (i.e. not illustrate relevant Queensland REs only);
 - ii. include an overlay of the disturbance footprint; and
 - iii. include known records of individuals (or evidence of individuals) derived from desktop analysis and/or field surveys.
- g) **Avoidance, mitigation and management:** describe all relevant species-specific measures proposed to avoid, mitigate and manage potential impacts on listed threatened species and ecological communities as required in the 'Avoidance, Mitigation and Management' section below.

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

Note: Appropriate measures may be detailed on the SPRAT Database for relevant listed threatened species and ecological communities. All proposed measures must consider the 'S.M.A.R.T.' principle (see below).

- h) **Statutory requirements:** where relevant, briefly discuss how the proponent has had regard to relevant approved conservation advice/s.

The MNES section must demonstrate, with supporting evidence, that the action will not be inconsistent with Australia's obligations under:

- i. the Biodiversity Convention;
 - ii. the Convention on Conservation of Nature in the South Pacific (Apia Convention);
 - iii. the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); and
 - iv. a recovery plan or threat abatement plan.
- i) **Significant impact assessment:** 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. The significant impact assessment must consider the Department's *Significant impact guidelines 1.1* (2013).

The MNES section must provide a clear and definitive conclusion of significant impacts on relevant listed threatened species and ecological communities to align with the *EPBC Act Environmental Offsets Policy* (2012).

6 Listed migratory species (sections 20 and 20A)

The MNES section must address, at a minimum, impacts on the listed migratory species at [Attachment 3](#).

Note: The list at [Attachment 3](#) may not be a complete list of listed migratory species that will or are likely to 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 Minister's consideration. Any listing events that occur after the controlled action decision (21 May 2018) do not affect the assessment and approval process.

Similarly to the 'Listed threatened species and communities' section above, the structure of the assessment of listed migratory species in the MNES section must be the following:

- a) Description
- b) Desktop analysis
- c) Survey effort

- d) Survey outcomes
- e) Habitat assessment
- f) Impact assessment
- g) Avoidance, mitigation and management
- h) Statutory requirements

The MNES section must demonstrate, with supporting evidence, that the action will not be inconsistent with Australia's obligations under:

- i. the Bonn Convention;
 - ii. CAMBA;
 - iii. JAMBA;
 - iv. ROKAMBA; and
 - v. an international agreement approved under subsection 209(4) of the EPBC Act.
- i) Significant impact assessment

7 World heritage values of a declared World Heritage property (sections 12 and 15A)

The MNES section must, at a minimum:

- a) Identify and describe the world heritage values of the Great Barrier Reef World Heritage Area (GBRWHA) that are likely to be impacted by the action. The relevant world heritage values are those described in *Statement of outstanding universal value for the Great Barrier Reef World Heritage Area*.
- b) Discuss the relevant impacts of the action on the values and/or integrity of the GBRWHA including, but not limited to:
 - i. visual amenity impacts;
 - ii. light and noise impacts;
 - iii. increased shipping;
 - iv. increased risk of vessel strike on listed threatened and migratory species, and marine species;
 - v. degradation of water and habitat quality in the marine environment, as a direct or indirect impact of the action.

The impact assessment must include consideration of the requirements in the 'Relevant Impacts' section below.

- c) Assess the impacts of the action against and provide justification for how the action is not inconsistent with the relevant reports and documents including, but not limited to:
 - i. The Reef 2050 Long-Term Sustainability Plan (2018) and any subsequent reviews, particularly with regard to its position on restricting new port development
 - ii. Cumulative Impact Management Policy (2018)
 - iii. Net Benefit Policy (2018)
 - iv. Great Barrier Reef Coast Strategic Assessment Reports (2014)
 - v. Great Barrier Reef Outlook Report 2019
 - vi. North-East Shipping Management Plan (2014) and any subsequent reviews
 - vii. Queensland Transshipping Policy (2018)
- d) 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).
- e) Describe all relevant measures proposed to avoid, mitigate and manage potential impacts on the GBRWHA as required in the 'Avoidance, Mitigation and Management' section below.
- f) Demonstrate that the action will not be inconsistent with:

- i. Australia's obligations under the World Heritage Convention; or
 - ii. the Australian World Heritage management principles; or
 - iii. 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.
- g) After consideration of proposed avoidance, mitigation and management measures, provide an assessment of the likelihood of significant impacts on the GBRWHA. The significant impact assessment must consider the Department's *Significant impact guidelines 1.1* (2013).

8 Heritage values of a National Heritage place (sections 15B and 15C)

The MNES section must, at a minimum:

- a) Identify and describe the national heritage values of the Great Barrier Reef National Heritage Place (GBRNHP) that are likely to be impacted by the action. The National Heritage values of the GBRNHP Heritage place are same as its world heritage values.
- b) Discuss the relevant impacts of the action on the values and/or integrity of the GBRNHP including, but not limited to:
 - i. visual amenity impacts;
 - ii. light and noise impacts;
 - iii. increased shipping;
 - iv. increased risk of vessel strike on listed threatened and migratory species, and marine species;
 - v. degradation of water and habitat quality in the marine environment, as a direct or indirect impact of the action.

The impact assessment must include consideration of the requirements in the 'Relevant Impacts' section below.

- c) Assess the impacts of the action against and provide justification for how the action is not inconsistent with the relevant reports and documents including, but not limited to:
 - i. The Reef 2050 Long-Term Sustainability Plan (2018) and any subsequent reviews, particularly with regard to its position on restricting new port development
 - ii. Cumulative Impact Management Policy (2018)
 - iii. Net Benefit Policy (2018)
 - iv. Great Barrier Reef Coast Strategic Assessment Reports (2014)
 - v. Great Barrier Reef Outlook Report 2019
 - vi. North-East Shipping Management Plan (2014) and any subsequent reviews
 - vii. Queensland Transshipping Policy (2018)
- d) 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).
- e) Describe all relevant measures proposed to avoid, mitigate and manage potential impacts on the GBRNHP as required in the 'Avoidance, Mitigation and Management' section below.
- f) Demonstrate that the action will not be inconsistent with:
 - i. the National Heritage management principles; or
 - ii. an agreement to which the Commonwealth is party in relation to a National Heritage place; or
 - iii. 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.
- g) After consideration of proposed avoidance, mitigation and management measures, provide an assessment of the likelihood of significant impacts on the GBRNHP. The significant impact assessment must consider the Department's *Significant impact guidelines 1.1* (2013).

9 Great Barrier Reef Marine Park (sections 24B and 24C)

The MNES section must, at a minimum:

- a) Identify and describe the aspects of the environment, social, cultural and heritage values in the Great Barrier Reef Marine Park (GBRMP) that are likely to be impacted by the action.
- b) Provide an assessment of the relevant impacts of the action on the environment, social, cultural and heritage values in the GBRMP with regard to:
 - i. the objects of the EPBC Act;
 - ii. the object of the GBRMP Act; and
 - iii. the GBRMP Regulations.
- c) Discuss the relevant impacts of the action on the values and/or integrity of the GBRMP including, but not limited to:
 - i. visual amenity impacts
 - ii. light and noise impacts;
 - iii. increased shipping;
 - iv. increased risk of vessel strike on listed threatened and migratory species, and marine species;
 - v. degradation of water and habitat quality in the marine environment, as a direct or indirect impact of the action.

The impact assessment must include consideration of the requirements in the 'Relevant Impacts' section below.

- d) Assess the impacts of the action against and provide justification for how the action is not inconsistent with the relevant reports and documents including, but not limited to:
 - i. The Reef 2050 Long-Term Sustainability Plan (2018) and any subsequent reviews , particularly with regard to its position on restricting new port development.
 - ii. Cumulative Impact Management Policy (2018)
 - iii. Net Benefit Policy (2018)
 - iv. Great Barrier Reef Coast Strategic Assessment Reports (2014)
 - v. Great Barrier Reef Outlook Report 2019
 - vi. North-East Shipping Management Plan (2014) and any subsequent reviews
 - vii. Queensland Transshipping Policy (2018)
- e) 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)*.
- f) Describe all relevant measures proposed to avoid, mitigate and manage potential impacts on the GBRMP as required in the 'Avoidance, Mitigation and Management' section below.
- g) After consideration of proposed avoidance, mitigation and management measures, provide an assessment of the likelihood of significant impacts on the GBRMP. The significant impact assessment must consider the Department's *Significant impact guidelines 1.1 (2013)*.

10 Commonwealth Marine Environment (s23 & 24A)

The MNES section must, at a minimum:

- a) Identify and describe the aspects of the environment, social, cultural and heritage values in the relevant Commonwealth marine environment that are likely to be impacted by the action.
- b) Provide an assessment of the relevant impacts of the action on the environment, social, cultural and heritage values in the relevant Commonwealth marine environment with regard to:
 - i. the objects of the EPBC Act;
- c) Discuss the relevant impacts of the action on the relevant Commonwealth marine environment including, but not limited to:
 - i. visual amenity impacts
 - ii. light and noise impacts;
 - iii. increased shipping;

- iv. increased risk of vessel strike on listed threatened and migratory species, and marine species.
- v. degradation of water and habitat quality in the marine environment, as a direct or indirect impact of the action.

The impact assessment must include consideration of the requirements in the 'Relevant Impacts' section below.

- d) Assess the impacts of the action against relevant reports and documents including, but not limited to:
 - i. The Reef 2050 Long-Term Sustainability Plan (2018) and any subsequent reviews
 - ii. Cumulative Impact Management Policy (2018)
 - iii. Net Benefit Policy (2018)
 - iv. Great Barrier Reef Coast Strategic Assessment Reports (2014)
 - v. Great Barrier Reef Outlook Report 2019
 - vi. North-East Shipping Management Plan (2014) and any subsequent reviews
 - vii. Queensland Transshipping Policy (2018)
- e) 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).
- f) Describe all relevant measures proposed to avoid, mitigate and manage potential impacts on the relevant Commonwealth marine environment as required in the 'Avoidance, Mitigation and Management' section below.
- g) After consideration of proposed avoidance, mitigation and management measures, provide an assessment of the likelihood of significant impacts on the relevant Commonwealth marine environment. The significant impact assessment must consider the Department's Significant impact guidelines 1.1 (2013).

11 Relevant Impacts

All relevant impacts of the action must be assessed in accordance with relevant DAWE policies and guidelines, and information provided in the SPRAT Database.

The MNES section must include a description of all of the relevant impacts of the action (direct, indirect, cumulative and facilitated). Relevant impacts are the impacts that the action will have, or is likely to have, on MNES. Impacts during the construction, operational and the decommissioning stages of the action must be addressed, and the following information provided:

- a detailed assessment of the nature and extent of the likely short-term and long-term relevant impacts;
- a statement, with supporting evidence, whether any relevant impacts are likely to be unknown, unpredictable or irreversible; and
- any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

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

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

The MNES section must also provide a detailed assessment of any likely impact that the action may facilitate on (at the local, regional, state, national and international scale):

- a World Heritage property;
- a National Heritage place;
- listed threatened species and ecological communities;
- listed migratory species;
- the Great Barrier Reef Marine Park; and/or
- a Commonwealth marine environment.

12 Avoidance, Mitigation and Management Measures

The MNES section must include detailed descriptions of measures proposed to be undertaken by the proponent to avoid, mitigate and manage relevant impacts of all stages of the action on MNES. The proposed measures must be based on best available practices, appropriate standards and supported by scientific evidence. The MNES section must include:

- proposed measures to be undertaken to avoid and mitigate the relevant impacts of the proposed action on MNES, including those required by other Commonwealth, State and local government approvals;
- a discussion of how the proposed mitigation and management measures are consistent with the objectives of The Reef 2050 Long-Term Sustainability Plan (2018)
- an assessment of the predicted effectiveness of the proposed measures;
- any statutory or policy basis for the proposed measures, including reference to the SPRAT Database and relevant approved conservation advices, and a discussion on whether the proposed measures are not inconsistent with relevant recovery plans and threat abatement plans;
- details of ongoing management, including monitoring programs to support an adaptive management approach and determine the effectiveness of the proposed measures;
- details on measures, if any, proposed to be undertaken by State and local government, including the name of the agency responsible for approving each measure;
- information on the timing, frequency and duration of the measures to be implemented; and
- the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

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

The SPRAT Database may provide some relevant mitigation measures for listed threatened species and ecological communities. All proposed measures for MNES must consider the 'S.M.A.R.T' principle:

- S – Specific (what and how)
- M – Measurable (baseline information, number/value, auditable)
- A – Achievable (timeframe, money, personnel)
- R – Relevant (conservation advices, recovery plans, threat abatement plans)
- T – Time-bound (specific timeframe to complete)

13 Environmental Offsets

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, the GBRMP and a Commonwealth marine environment after avoidance, mitigation and management measures have been applied. If it is determined that a residual significant impact is likely, include a draft Offset Management Strategy that provides, at a minimum:

- details of the environmental offset/s (in hectares) for residual significant impacts of the action on relevant MNES, and/or their habitat;
- details of how the environmental offset/s meets the requirements of the *EPBC Act Environmental Offsets Policy* (2012) (EPBC Act Offset Policy), including the Offsets Assessments Guide, available at: www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy;
- details of a strategy for the staging of environmental offset/s for each project stage (if proposed);
- details of appropriate offset area/s (including a map) to compensate for the residual significant impact on relevant MNES, and/or their habitat;
- the methodology, with justification and supporting evidence, used to inform the inputs of the Offsets Assessment Guide in relation to the project site for each relevant MNES, including:
 - quantum of impact – area (in hectares)

- quantum of impact – quality (e.g. using the *Queensland Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy* [Version 1.2, April 2017], or subsequent revision)
- the methodology, with justification and supporting evidence, used to inform the inputs of the Offsets Assessment Guide in relation to each potential offset area/s for each relevant MNES, including:
 - time over which loss is averted (max. 20 years)
 - time until ecological benefit
 - risk of loss (%) without offset
 - risk of loss (%) with offset
 - confidence in result (%)
- evidence that the relevant MNES, and/or their habitat, can be present in the potential offset area/s;
- information about how the proposed offset/s area provides connectivity with other relevant habitats and biodiversity corridors; and
- details of the mechanism to legally secure the environmental offset/s (under Queensland legislation or equivalent) to provide protection for the offset area/s against development incompatible with conservation.

Note: DAWE is likely to require an environmental offset be approved prior to the commencement of the action to align with the *EPBC Act Environmental Offsets Policy (2012)* (EPBC Act Offsets Policy). An approved Offset Area Management Plan may also be required before the action can commence.

Note: DAWE is likely to require the offset area/s be legally secured under Queensland legislation within 12 months of the approval of the environmental offset.

Where offset area/s have been nominated, include a draft Offset Area Management Plan (OAMP) which includes information to demonstrate how the environmental offset/s compensate for residual significant impacts of the project on relevant MNES, and/or their habitat, in accordance with the principles of the Offsets Policy and all requirements of the Offsets Assessment Guide. The draft OAMP must include:

- a description of the offset area/s, including location, size, condition, environmental values present and surrounding land uses;
- baseline data and other supporting evidence, including the ecological field data, that documents the presence of the relevant MNES, and the quality of related habitat within the offset area/s;
- an assessment of the site habitat quality for the offset area/s using an appropriate methodology, with justification and supporting evidence, (e.g. using the *Queensland Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy* [Version 1.2, April 2017], or subsequent revision);
- 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 listed threatened species and communities;
- 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 listed threatened species and communities that the environmental offset/s compensates for, and the size of the environmental offset/s in hectares);
- 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;
- details of the management actions, and timeframes for implementation, to be carried out to meet the offset completion criteria;
- interim milestones that set targets at 5-yearly intervals for progress towards achieving the offset completion criteria;
- 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);
- proposed timing for the submission of internal monitoring reports which provide evidence demonstrating whether the interim milestones have been achieved;

- timing for the implementation of corrective actions if monitoring activities indicate the interim milestones have not been achieved;
- 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;
- if proposed for listed threatened species and communities, 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; and
- details of the legal mechanism for legally securing 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.

The draft OAMP must be prepared by a suitably qualified person and in accordance with DAWE's *Environmental Management Plan Guidelines* (2014), available at: www.environment.gov.au/epbc/publications/environmental-management-plan-guidelines.

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

Note: The Department expects that an EPBC Act protected matter is present in the proposed offset site/s if it is present in the project site to align with the EPBC Act Offsets Policy.

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.

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

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.

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

Note: It is DAWE's expectation that the agreed inputs into the Offsets Assessment Guide are specified in the conditions of approval (if the action is approved, subject to conditions, under the EPBC Act).

14 Other Approvals and Conditions

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. This must include:

- a) details of any local or State Government planning scheme, or plan or policy under any local or State Government planning system that deals with the proposed action, including:
 - what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy; and
 - how the scheme provides for the prevention, minimisation and management of any relevant impacts;
- b) a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;
- c) a statement identifying any additional approval that is required; and
- d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

15 Environmental Record of Person(s) Proposing to take the Action

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

- a) the person proposing to take the action; and
- b) for an action for which a person has applied for a permit, the person making the application.

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.

16 Economic and Social Matters

The economic and social impacts of the action, both positive and negative, must be analysed in the MNES section. Matters of interest may include:

- details of any public consultation activities undertaken, including any consultation with Indigenous stakeholders, and their outcomes;
- projected economic costs and benefits of the action, including the basis for their estimation through cost/benefit analysis or similar studies; and
- employment opportunities expected to be generated by the action (including construction and operational phases).

Economic and social impacts must be considered at the local, regional and national levels. Details of the relevant cost and benefits of alternative options to the action, as identified above, must also be included.

17 Information Sources Provided in the MNES Section

For information given in the MNES section, the MNES section must state:

- a) the source of the information;
- b) how recent the information is;
- c) how the reliability of the information was tested; and
- d) what uncertainties (if any) are in the information.

Attachment 1 - The objects and principles of the EPBC Act sections 3 and 3a

3 Objects of the Act

- a) to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance;
- b) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources;
- c) to promote the conservation of biodiversity;
- d) to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples;
- e) to assist in the co-operative implementation of Australia's international environmental responsibilities;
- f) to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and
- g) to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge.

3A Principles of Ecologically Sustainable Development

The following principles are principles of ecologically sustainable development.

- a) Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.
- b) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- c) The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
- d) The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.
- e) Improved valuation, pricing and incentive mechanisms should be promoted.

Attachment 2 – Matters that must be addressed in a public environment report (PER) or EIS (Schedule 4 of the EPBC Regulations 2000)

1 General information

1.01 The background 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; and
- h) the consequences of not proceeding with the action.

2 Description

2.01 A description of the action, including:

- a) all the components of the action;
- b) the precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts;
- c) how the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts;
- d) relevant impacts of the action;
- e) proposed safeguards and mitigation measures to deal with relevant impacts of the action;
- f) any other requirements for approval or conditions that apply, or that the Proponent reasonably believes are likely to apply, to the proposed action;
- g) to the extent reasonably practicable, any feasible alternatives to the action, including:
 - i. if relevant, the alternative of taking no action;
 - ii. a comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action; and
 - iii. sufficient detail to make clear why any alternative is preferred to another;
- h) any consultation about the action, including:
 - i. any consultation that has already taken place;
 - ii. proposed consultation about relevant impacts of the action; and
 - iii. if there has been consultation about the proposed action — any documented response to, or result of, the consultation; and
- i) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

3 Relevant impacts

3.01 Information given under paragraph 2.01(d) must include

- a) a description of the relevant impacts of the action;
- b) a detailed assessment of the nature and extent of the likely short term and long term relevant impacts;
- c) a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;
- d) analysis of the significance of the relevant impacts; and
- e) any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

4 Proposed safeguards and mitigation measures

4.01 Information given under paragraph 2.01(e) must include:

- a) a description, and an assessment of the expected or predicted effectiveness of, the mitigation measures;
- b) any statutory or policy basis for the mitigation measures;
- c) the cost of the mitigation measures;
- d) an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;
- e) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program; and
- f) a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the Proponent.

5 Other Approvals and Conditions

5.01 Information given under paragraph 2.01(f) must include:

- a) details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including:
 - i. what environmental assessment of the proposed action has been, or is being carried out under the scheme, plan or policy; and
 - ii. how the scheme provides for the prevention, minimisation and management of any relevant impacts;
- b) a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;
- c) a statement identifying any additional approval that is required; and
- d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

6 Environmental record of person proposing to take the action

6.01 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; and
- b) for an action for which a person has applied for a permit, the person making the application.

6.02 If the person proposing to take the action is a corporation — details of the corporation's environmental policy and planning framework.

7 Information sources

7.01 For information given the PER/EIS must state:

- a) the source of the information; and
- b) how recent the information is; and
- c) how the reliability of the information was tested; and
- d) what uncertainties (if any) are in the information.

Attachment 3 – Listed threatened species and communities and listed migratory species requiring assessment in the EIS

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

- Bare-rumped Sheath-tailed Bat (*Saccolaimus saccolaimus nudicluniatus*) – Vulnerable
- Spectacled Flying-fox (*Pteropus conspicillatus*) – Endangered
- Black-footed Tree-rat (NQ subspecies) (*Mesembriomys gouldii rattoides*) – Vulnerable
- Chocolate Tea-tree Orchid (*Dendrobium johannis*) – Vulnerable
- Cooktown Orchid (*Dendrobium bigibbum*) – Vulnerable
- Ant Plant (*Myrmecodia beccarii*) – Vulnerable
- Haines's Orange Mangrove (*Bruguiera hainesii*) – Critically Endangered
- Bar-tailed Godwit (*Limosa lapponica baueri*) – Vulnerable
- Common Mistfrog (*Litoria rheocola*) – Endangered
- Loggerhead Turtle (*Caretta caretta*) – Endangered
- Green Turtle (*Chelonia mydas*) – Vulnerable
- Leatherback Turtle (*Dermochelys coriacea*) – Endangered
- Hawksbill Turtle (*Eretmochelys imbricata*) – Vulnerable
- Olive Ridley Turtle (*Lepidochelys olivacea*) – Endangered
- Flatback Turtle (*Natator depressus*) – Vulnerable
- Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (LRF) – Critically Endangered
- Green Sawfish (*Pristis zijsron*) – Vulnerable
- Freshwater Sawfish (*Pristis pristis*) – Vulnerable
- Whale shark (*Rhincodon typus*) – Vulnerable

Listed migratory species (sections 20 and 20A)

- Salt-water Crocodile (*Crocodylus porosus*)
- Green Sawfish (*Pristis zijsron*)
- Freshwater Sawfish (*Pristis pristis*)
- Narrow Sawfish (*Anoxypristis cuspidata*)
- Whale shark (*Rhincodon typus*)
- Dugong (*Dugong dugon*)
- Reef Manta Ray (*Manta alfredi*)
- Giant Manta Ray (*Manta birostris*)
- Australian Snubfin Dolphin (*Orcaella heinsohni*)
- Indo-Pacific Humpback Dolphin (*Sousa chinensis*)
- Australian Humpback Dolphin (*Sousa sahalensis*)
- Indian Ocean Bottlenose Dolphin (*Tursiops aduncus*)
- Loggerhead Turtle (*Caretta caretta*) – Endangered
- Green Turtle (*Chelonia mydas*) – Vulnerable
- Leatherback Turtle (*Dermochelys coriacea*) – Endangered
- Hawksbill Turtle (*Eretmochelys imbricata*) – Vulnerable
- Olive Ridley Turtle (*Lepidochelys olivacea*) – Endangered
- Flatback Turtle (*Natator depressus*) – Vulnerable

14 Approved by

Christopher Loveday

Signature

Christopher Loveday

Director, Technical and Assessment Services

Department of Environment and Science

Delegate of the chief executive

Environmental Protection Act 1994

23 November 2020

Date

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