

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

*Lake Vermont Meadowbrook Project
proposed by Bowen Basin Coal Pty Ltd
December 2019*

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Completed in the approved form prepared by the Department of Environment and Science for resource projects undergoing assessment by environmental impact statement under chapter 3, part 1 of the *Environmental Protection Act 1994*.

13 December 2019

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1 Purpose of this document

1.1 Introduction

This document outlines the draft terms of reference (TOR) for the Lake Vermont Meadowbrook Project (herein referred to as 'the Project') proposed by Bowen Basin Coal Pty Ltd; 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, including but not limited to:

- 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 chapter 2 and schedule 1 of the Environmental Protection Regulation 2019 (EP Regulation 2019), 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, Part 3 of the EP Regulation 2019.

Section 139 of the EP Act states that the information stage of the EA application process does not apply if the EIS process is complete, unless there has been a subsequent change to the proposed project. It is therefore important that the EIS provides all the information needed to enable the issuing of an EA for the proposed project as set out in these TOR in conjunction with the latest version of guidance material published on the department's website¹:

While every attempt is made by the Department of Environment and Science (DES) herein referred to as 'the department' - to ensure the final TOR requires an assessment of all relevant matters, the final TOR may not be exhaustive. Therefore, the EIS for the proposed Lake Vermont Meadowbrook Project 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 that 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.

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

¹ <http://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

1.2 Information about the proposed project and assessment

1.2.1 Background

The 'Lake Vermont Meadowbrook Project' is an extension of the existing Lake Vermont Coal Mine. The Project proposes an underground, multi-seam, longwall coal mining development adjoining the north of the existing Lake Vermont operation. The Project also includes three small-scale 'satellite' open-cut pits and supporting infrastructure.

The proposed project addresses the scheduled future decline in coal output from the existing Lake Vermont Mine, to maintain existing (approved) production levels across an extended life of the mine. The Meadowbrook Project will maximise the use of existing Bowen Basin Coal Pty Ltd owned land and infrastructure at the Lake Vermont Mine, to provide Project efficiencies; and to design, construct and operate a Project that minimises adverse impacts on the environment and complies with all relevant statutory obligations.

1.2.2 Project Location

The Meadowbrook Project is located approximately 30 kilometres northeast of Dysart and approximately 180 kilometres southwest of Mackay, within the Bowen Basin of central Queensland. (Refer Figure 1). The Project is located close to rail, road and power infrastructure and is approximately 320 km (by rail) to the Abbot Point Coal Terminal (APCT) north of Bowen and approximately 430 km to the RG Tanna Coal Terminal (RGTCT) in Gladstone. The Project is also located 235 km (by rail) from the Dalrymple Bay Coal Terminal (DBCT) at the coal export port of Hay Point. (Refer Figure 2). Dysart is an established regional township servicing both mining and pastoral industries.

The Project site is defined by the area of land within the northern portion of MDL 303 and southern portion of MDL 429 that overlaps with the property named 'Meadowbrook' and the existing Lake Vermont Coal Mine on mining lease (ML) 70528, ML 70477 and ML 70331, as shown in Figure 3. The Project does not include the southern portion of MDL 303 (south of Lake Vermont Mine), nor does it include the northern portion of MDL 429 (Refer Figure 3).

1.2.3 Project Operations

The key components of the proposed Project are identified to include:

1. an underground longwall (plus bord and pillar) coal mine to recover the coal resource;
2. three small-scale 'satellite' open-cut pits to recover the coal resource;
3. development of a new infrastructure corridor linking the new mining area to the existing infrastructure of the Lake Vermont Mine;
4. development of a supporting Mine Infrastructure Area (MIA) including a run of mine stockpile, a laydown area, ventilation shafts and supporting buildings;
5. construction of drifts and shafts (to provide access to underground operations); and
6. use of the existing Lake Vermont Coal Mine's Coal Handling and Preparation Plant, tailings storage facility and water/power and rail infrastructure.

1.2.4 Project Status Timeline

The Project is currently in the early stages of a prefeasibility and supporting studies assessment program. It is estimated that the ongoing feasibility assessment program will be completed by late 2021.

Pending approvals, construction of surface and seam access infrastructure is scheduled to commence by the end of 2022, with first underground development coal to be mined by late 2024. Full underground mine production is scheduled for late 2026 with the commencement of longwall operations.

The development timing of future small-scale 'satellite' open-cut pits will occur so as to come online to meet the longer-term future decline in production from the existing Lake Vermont Mine, and thus maintaining production to meet market demands.

In addition to the anticipated EIS process for this Project, it is also acknowledged that an application for an amendment to the existing Lake Vermont Mine EA will be required. This will occur once a Mine Lease application has been made.



Figure 1: Regional Location of the Lake Vermont Meadowbrook Project



Figure 2: Regional transportation infrastructure

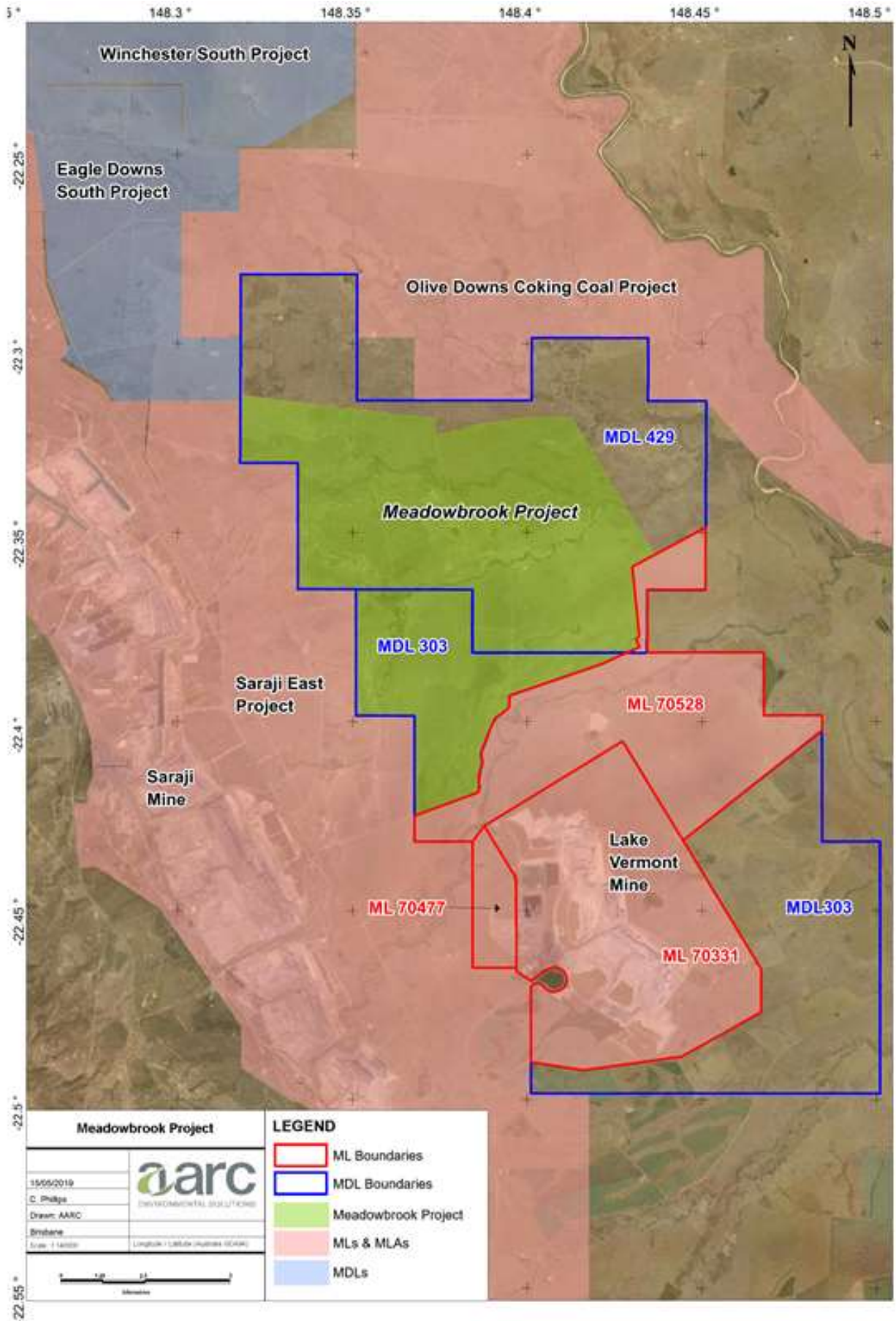


Figure 3: Project boundary and mining tenure

1.2.5 Infrastructure Requirements

The Project is anticipated to require the following infrastructure to facilitate mining:

- a new surface MIA, including:
 - a pit top ROM stockpile pad;
 - mine clean water and waste water dams;
 - workshop facilities;
 - diesel refuelling tank(s) and an oil storage area;
 - an emulsion farm (for storing longwall fluids);
 - a mine warehouse and stores yard;
 - equipment washdown and laydown areas;
 - administrative and operational office facilities;
 - bath house facilities; and
 - potable water and waste water / sewage treatment plants;
- access drifts and shafts;
- access and infrastructure corridor connecting the Project to the existing Lake Vermont Mine, including:
 - provisioning for road access for personnel and material movements;
 - extension of the high voltage power line and water delivery line from the existing Lake Vermont Mine;
 - a coal haulage road, and potentially an overland conveyor connecting the underground MIA to the existing Lake Vermont CHPP;
- a network of gas drainage bores and associated surface infrastructure (consisting of gas and water collection networks and associated access tracks across the underground mine footprint); and
- expansion of the existing Lake Vermont Accommodation Village at Dysart.

Final infrastructure locations will remain subject to ongoing feasibility studies as part of efforts to minimise environmental impacts, with indicative locations currently presented in Figure 4.

1.2.6 Project Proponent

The Proponent for the Project is Bowen Basin Coal Pty Ltd (BBC) of Level 7, 12 Creek Street, Brisbane Queensland (Qld) 4000.

BBC is a private company owned by the Lake Vermont Joint Venture, an unincorporated Australian joint venture operating in Queensland, whose participants and interests are identified in Table 1.

Table 1 Joint venture participants

Name	Registered address	Interest
QCMM (Lake Vermont Holdings Pty Ltd)	Level 7, Comalco Place 12 Creek Street, Brisbane QLD 4000	70%
Marubeni Coal Pty Ltd	123 Eagle Street, Brisbane QLD 4000	10%
CHR Vermont Pty Ltd	Level 34, Central Plaza One, 345 Queen Street, Brisbane QLD 4000	10%
Coranar (Australia) Pty Ltd	Level 37, Riverside Court, 123 Eagle Street, Brisbane QLD 4000	10%

Lake Vermont Resources Pty Ltd manages the Lake Vermont Joint Venture operations, on behalf of the joint venture participants.

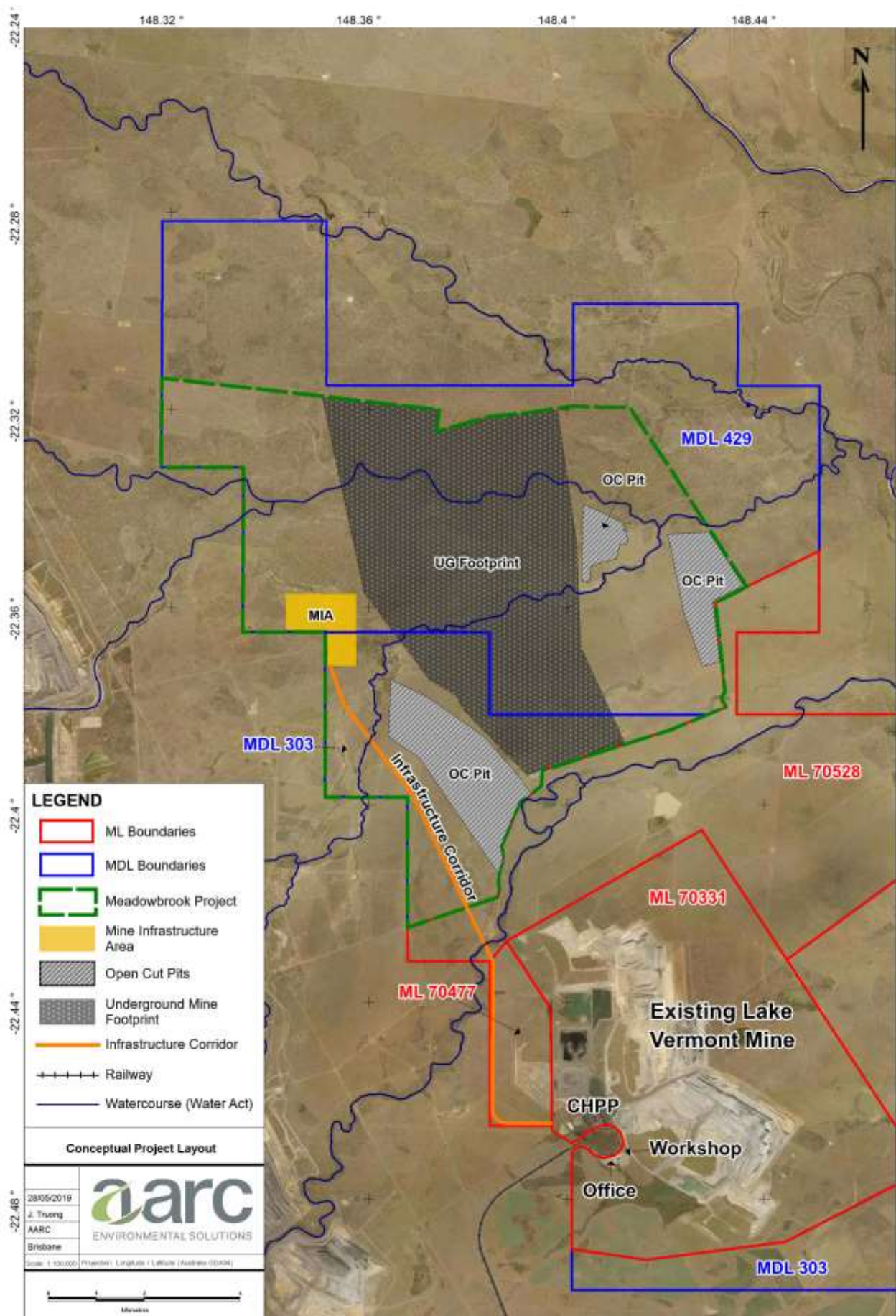


Figure 4: Conceptual Project Layout

1.2.7 Project Description

The proposed Lake Vermont Meadowbrook Project involves the construction and operation of an underground multi-seam, longwall coal mine and is an extension of the existing Lake Vermont Mine.

The proposed project involves the extraction of up to 7 Million tonnes per annum (Mtpa) of run of mine (ROM) coal, equivalent to approximately 5.5 Mtpa of metallurgical product coal (for the export and domestic market). The anticipated increase to the mine life is approximately 25 years. The planned project output will replace the scheduled decline in output from the existing open cut operation, so as to maintain production at the currently approved levels of (up to) 12 Mtpa ROM (equivalent to approximately 9.5 Mtpa product coal).

Longwall extraction will be the primary mining method, with potential opportunities for bord-and-pillar mining also acknowledged. Existing facilities of the Lake Vermont Mine will be used by the proposed Meadowbrook Project; including the Coal Handling and Preparation Plant (CHPP) for coal beneficiation, tailings storage facility and the existing rail infrastructure for transportation of product coal to market. Product coal from the proposed Meadowbrook Project will be railed along the existing Lake Vermont spur line that connects to the Aurizon Goonyella rail system for shipment to Abbot Point Coal Terminal (APCT) in Bowen (refer Figure 2). Product coal will also be railed to the RG Tanna Coal Terminal (RGCT) in Gladstone, and potentially to the Dalrymple Bay Coal Terminal (DBCT) in Mackay, should port capacity be made available. It is noted that the proposed project's product output (for transport via the rail network) is within Aurizon's existing approval limits.

The supply of electricity for the proposed Meadowbrook Project will utilize the existing 66kV line that supplies electricity to the Lake Vermont Mine. Initial power requirement estimates suggest that the proposed project will require 27 megavolt amperes (MVA) of power capacity and that the Dysart Bulk Supply Substation has the capacity to supply this requirement.

Water usage for the proposed project is estimated to be between 200-400 megalitres per annum. The current water supply agreement in place between SunWater's Eungella Water Pipeline Pty Ltd and BBC is for the annual supply of 1,500 megalitres, of which the existing Lake Vermont Mine uses approximately 970 megalitres. This indicates sufficient capacity within the current supply agreement, to meet the anticipated requirements of the proposed project.

The proposed project is located within the Isaac Regional Council Local Government Area (LGA) and spans across Mineral Development Lease (MDL) 429 and 303 and the existing Lake Vermont Mine on Mining Leases (ML) 70331, 70477 and 70528. The proposed project is located over one freehold land parcel, being Lot 10 on Plan CNS93 (the 'Meadowbrook' property) currently owned by BHP Mitsubishi Alliance (BMA). Refer Figure 5.

It is noted however, that BBC is currently finalising documentation with BMA, to acquire the area of the Meadowbrook property relevant to the proposed project. Completion of this process will provide the necessary access to complete all activities associated with the EIS and subsequent project development.

The proposed Meadowbrook project will employ up to 200 contract employees during construction, and approximately 350-400 employees during the underground mine operational phase. This increase in workforce for the planned underground mine will be largely offset by a significant decrease in the open cut workforce numbers reflecting the scheduled future reduction in open cut output. In total however, an overall incremental increase in total manning in the order of 150 to 200 employees (beyond current workforce levels) will be required to operate the combined open cut and underground operations. It is BBC's intention to provide opportunities to existing Lake Vermont Mine employees to transition to the proposed project. The existing Lake Vermont Accommodation Village at Dysart will also be expanded to support the incremental workforce growth associated with the proposed project. Access to the proposed project is available via the Golden Mile Road that runs eastward from Dysart and intersects with the Lake Vermont Mine access road.

1.2.8 Potential Impacts

Potential impacts to land are primarily associated with land clearing and subsidence associated with underground mining. The level of subsidence will be dependent on detailed mine design, with this to be subject to detailed modelling throughout the EIS process. Potential impacts to land may also include ground and surface water contamination, land contamination, and impacts to adjacent sensitive receptors (e.g. odour, visual amenity).

The project has the potential to impact on surface water resources in the following manner:

- altering flow paths, flow velocities and flood inundation areas;
- downstream water quality and quantity being impacted by MAW, or run-off from disturbed areas; and
- increased sediment loads due to erosion of disturbed land.

Groundwater may be impacted by mining activities, such as through the depressurisation of aquifers and the release of contaminants impacting groundwater quality. Localised drawdown or depressurisation of groundwater is a likely result of underground mining activities. Additionally, underground longwall mining may cause subsidence resulting in surface cracking, which is another potential cause of depressurisation of overlying groundwater units. Subsidence cracking may also increase the potential for interaction between adjacent groundwater units and surface water.

In regards to air quality; land clearing activities, open cut mining developments, internal haulage/transportation of coal materials, materials stockpiling and rail haulage all have the potential to generate dust related impacts. Noise and vibration from construction and operational activities may also have the potential to create an impact to sensitive receptors and local environmental values.

1.2.9. Management of Potential Impacts

Minimal land clearing will occur during the initial phases of the project, required only to enable site access via the proposed infrastructure corridor, establish of roads and tracks within the project site, and construction of the MIA. Clearing may potentially destabilise soils, leading to erosion and sediment laden runoff if not properly managed. However, clearing for buildings and conveyor foundations will likely be small in area. The EIS process will determine suitable mitigation measures for management of erosion and runoff.

A Waste Management Plan will be prepared for the project, to ensure effective management of all waste streams generated by the construction and operational phases of the project. The Waste Management Plan will include the development of strategies to minimise waste generation and promote the re-use and recycling of potential waste streams.

During the EIS process a variety of assessments will be undertaken to guide the development of surface water management plans and strategies. These include, but are not limited to:

- the modelling of surface water drainage to inform mine planning, location of infrastructure and effective site drainage design;
- a detailed flood and drainage impact assessment to identify and mitigate surface water impacts;
- a water balance model to simulate the performance of the mine water management system over the life of the Project and assess the ability to maximise the re-use of water and minimise discharge of MAW; and
- preparation of a mine water management assessment to evaluate the performance of the proposed Site Water Management Plan.

Studies conducted as part of the EIS process will assess all potential groundwater impacts related to the proposed development and provide mitigation measures for implementation. Studies will include a groundwater impact assessment (including consideration of potential GDE and stygofauna impacts), a surface water impact assessment and a project flood study. The project will implement a Site Water Management Plan, Receiving Environment Monitoring Program and a Groundwater Monitoring Program to ensure effective water management during construction and operational mining phases.

An Air Quality and GHG Assessment will be undertaken as part of the EIS, to identify potential sensitive receptors and / or develop appropriate mitigation measures. The Proponent will also monitor the project's GHG emissions through its participation in the Australian Government's Emissions and Energy Reporting System (EERS) under the Commonwealth's *National Greenhouse and Energy Reporting Act 2007* (NGER Act). It is required under the EERS to measure and report the GHG emissions and energy consumption on an annual basis.

A noise and vibration assessment will also be undertaken as part of the EIS, including modelling of a range of different scenarios. This will assist in identifying potential sensitive receptors, quantifying potential impacts and in developing mitigation measures where required.

1.2.10. Project Consultation

A social impact assessment and economic impact assessment will be undertaken to assess the potential impacts of the project. As impacts are identified, solutions will be canvassed with the stakeholders through a consultation program.

The stakeholder consultation program will include:

- identifying affected and interested stakeholders;
- development of a schedule of activities to inform the relevant stakeholders;
- development of appropriate communication and consultation models, along with the selection of appropriate communication and consultation tools; and
- ongoing review and maintenance of relevant documentation to address any comments and/or issues of concern from the stakeholders and community.

Communication and consultation tools will be applied depending on the level of interests and convenience and may include the following options:

- face to face meetings;
- phone meetings;
- written notices and communications;
- local and/or regional newspaper notifications;
- newsletters; and
- media releases.

1.2.11 EIS Assessment Process

On 26 August 2019 the department approved an application for *Bowen Basic Coal Pty Ltd* to voluntarily prepare an EIS under the EP Act, for the proposed Lake Vermont Meadowbrook Project. Under section 159 of the EP Act, the EIS will form the application documents for the requirements of Chapter 3 of the EP Act.

The proposed project was determined to be a controlled action (per EPBC Referral 2019/8485) under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 22 November 2019. The controlling provisions are sections 18 and 18A (listed threatened species and communities), sections 20 and 20A (listed migratory species), and, 24D and 24E (a water resource, in relation to coal seam gas development and large coal mining development).

The EIS for the proposed project will be assessed under the EP Act, in accordance with the assessment bilateral agreement between the Australian Government and the State of Queensland.

Further information on the EIS process under the EP Act is described in the department's Guideline entitled '*The environmental impact statement process for resource projects under the Environmental Protection Act 1994*'.²

² <http://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/documents/eis-process-guideline-em1375.pdf>

2 Content requirements of the EIS for the proposed Lake Vermont Meadowbrook Project

The following sections outline the information requirements of an EIS under the EP Act, for the proposed Lake Vermont Meadowbrook 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 within 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.

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;
- proponent's environmental record, including a list of any breach of relevant environmental laws during the previous 10 years; and
- 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 all approvals under federal, state or local legislation that are required to enable the proposed project to be constructed and operated; and note the legislation under which the approvals are assessed and issued. 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.³

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.

³ Guidance on typical associated approvals can be accessed from <https://www.business.qld.gov.au/industry>

6 Consultation process

Describe the consultation that has taken place and how responses from stakeholders, including government agencies 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 a consultation plan for the people and organisations 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 operations and decommissioning. The description of the consultation plan should at least include the following matters:

- the objectives of the consultation process;
- timing of consultation;
- the number and interests of the people and organisations 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; and
- an analysis of the issues 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 but not limited to:

- proposed project title;
- proposed project objectives;
- expected capital expenditure;
- rationale for the proposed project;
- 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;
- transport requirements;
- 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 (if appropriate);
- relationship to other major projects or developments 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; and
- proposed travel arrangements of the workforce to and from work, including use of a fly-in-fly-out (FIFO) or drive-in-drive-out (DIDO) workforce.

7.2 Site description

Provide real property descriptions of the proposed project land and adjacent properties, any easements, any existing underlying resource tenures, and identification number of any resource activity lease for the proposed project land that is subject to application.

Describe and illustrate with 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.

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, buildings, bridges and culvert, haul and access roads, causeways, stockpile areas, barge loading facilities and any areas of dredging or bed levelling. Include discussion of any environmental design features of these facilities including bunding of storage facilities.

Describe and map in plan and cross-sections the geology and terrestrial and/or coastal landforms of the proposed project area. Indicate 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 soil types and profiles of the proposed project area at a scale relevant to the site. 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.

7.3 Proposed construction and operations

Describe the following information about the proposed project, provide maps and concept 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;
- 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
- the location, design and capacity of all other required supporting infrastructure, including water supply and storage, sewerage, electricity from the grid, generators and fuels (whether gas, liquid and/or solid), power stations, and telecommunications;
- 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 surface and groundwater (both direct and in-direct);
- 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;
- the proposed methods and facilities to be used for the storage, processing, transfer, and loading of product;
- 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; and
- 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.

7.4 Feasible alternatives

Present feasible alternatives of the proposed project's configuration, including conceptual, technological and locality alternatives to the proposed project and individual elements that may improve environmental outcomes. Summarise the comparative environmental, social and economic impacts of each alternative, with particular regard to the principles of ecologically sustainable development.

Discuss alternatives in sufficient detail to enable an understanding of the reasons for preferring certain options and courses of action while rejecting others.

Discuss the environmental, social and economic consequences of not proceeding with the proposed project.

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.

Identify and describe 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, Part 3) environmental protection policies (EPPs) 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*
- values identified in the project specific matters in section 9.

Consider all available baseline information relevant to the environmental risks of the proposed project, including seasonal and long-term variations. 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 of the EP Regulation.

Impact assessment must address:

- short-, medium- and long-term scenarios
- the scale of an impact, including but not limited to:
 - 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 but not limited to:

- environmental values of land, air and water, 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; and
- impacts created by the activities on other adjacent, upstream and downstream developments and infrastructure, and landholders.

8.4 Management

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 or mitigate; 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;
- any statutory or policy basis for the mitigation measures;
- include an adaptive management approach to provide confidence that, based on current technologies, the impacts can be effectively managed over the long-term; and
- 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 of the EP Regulation;
- are consistent with best practice environmental management during construction, operation, and decommissioning of the proposed project; and

- 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

Sufficient evidence and detail must be provided in the EIS (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, 126 and 126A of the EP Act as relevant to the specific project; and
- 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 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; or
- 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.

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

- Land (Section 9.2) including subsidence (Section 9.2.1);
- Rehabilitation (Section 9.3);
- Water Quality (Section 9.4.1);
- Water Resources (Section 9.4.2);
- Flooding (Section 9.4.3);
- Flora and Fauna (Section 9.6);
- Social (Section 9.12);
- Economic (Section 9.13) and

Matters of National Environmental Significance (Section 9.15 and Appendix 3).

9 Project specific matters

9.1 Climate

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. Climate data should be provided in a statistical form including long-term averages and extreme values. It should also be illustrated by bar charts, wind rose diagrams or other relevant graphic means as necessary.

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. Measures that would be taken to minimise the risks of these events should be described.

Assess the proposed project's vulnerabilities to climate change (e.g. changing patterns of rainfall, hydrology, temperature and, extreme weather events). Describe possible preferred and alternative 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 (Critical Matter)

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 *EIS information guideline—Land*,⁴ the *DAFF Environmental impact assessment companion guide*⁵ (Department of Agriculture, Fisheries and Forestry, August 2014)⁵ and the Department of Infrastructure, Local Government and Planning's (DILGP's) *RPI Act statutory guideline 11/16 companion guide*⁶ and, if any quarry material is needed for construction, the department's *EIS information guideline—Quarry material*.⁷ Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.

Describe potential impacts of the proposed land uses, taking into consideration the proposed measures that would be used to avoid or minimise 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;^{8,9}
 - 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;¹⁰

⁴ <https://environment.des.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

⁵ <https://publications.qld.gov.au/dataset/daff-environmental-impact-assessment-companion-guide>

⁶ <http://www.dlgrma.qld.gov.au/resources/guideline/rpi-guideline-11-16-dilgp-companion-guide.pdf>

⁷ <https://environment.des.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

⁸ <https://www.business.qld.gov.au/industry/mining/quarries/key-resource-areas>

⁹ <http://www.statedevelopment.qld.gov.au/resources/guideline/spp/spp-guideline-mining-extractive-resources.pdf>

¹⁰ <https://www.dnrm.qld.gov.au/land/accessing-using-land/strategic-cropping-land>

- findings of the Agricultural Land Audit;¹¹ and
- 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 and including the impacts on economic resources and the future availability and viability of the resource including extraction, processing and transport location to markets; and
- Identify any infrastructure proposed to be located within, or which may have impacts on, the stock route network^{12,13} associated with the *Land Protection (Pest and Stock Route Management Act) 2002*.

Assess the proposed project against the requirements of the *Regional Planning Interests Act 2014*.¹⁴ Further advice is provided in DILGP's *RPI Act statutory guideline 11/16 companion guide* (Department of Infrastructure, Local Government and Planning, July 2017)¹⁵ and the *DAFF Environmental impact assessment companion guide* (Department of Agriculture, Fisheries and Forestry, August 2014).¹⁶

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

Show how landforms, during and after disturbance, will be stable over time and will meet any requirements of proposed project or property plans 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 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 *Native title work Procedures*.¹⁷

9.2.1 Subsidence (Critical Matter)

For underground mines and any other projects likely to cause land subsidence, assess and provide comprehensive surface subsidence predictions using tools or techniques that enable the location, extent and scale of subsidence, and its effect over time on surface landforms and hydrology to be understood.¹⁸ Propose detailed mitigation measures for any significant impacts that would result from subsidence including impacts on infrastructure, land, hydrology, flora and fauna.

9.3 Rehabilitation (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 areas will be rehabilitated or restored to achieve sites that are safe to humans and wildlife, non-polluting, stable, and able to sustain an appropriate land use after rehabilitation or restoration

¹¹ <https://www.daf.qld.gov.au/business-priorities/agriculture/sustainable/ag-land-audit/how>

¹² <https://www.qld.gov.au/environment/land/stock-routes/about/>

¹³ https://www.dnrm.qld.gov.au/__data/assets/pdf_file/0010/99622/stock-route-management-strategy.pdf

¹⁴ <http://www.dilgp.qld.gov.au/planning/regional-planning/regional-planning-interests-act.html>

¹⁵ <http://www.dilgp.qld.gov.au/planning/regional-planning/rpi-act-forms-guidelines-and-fact-sheets.html>

¹⁶ <https://publications.qld.gov.au/dataset/daff-environmental-impact-assessment-companion-guide/resource/7b1825c4-5e42-4cf8-aa2d-7fa55c2f5e4c>

¹⁷ <https://www.dnrm.qld.gov.au/land/indigenous-land/queensland-government-native-title-work-procedures>

¹⁸ http://www.environment.gov.au/system/files/resources/e9b69ac4-647c-4bbc-84db-83642227ab0d/files/background-review-subsidence_0.pdf

Environmental objective and outcomes
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 requirements of *Mineral and Energy Resources (Financial Provisioning) Act 2018* to the extent that the requirements of the legislation, including transitional arrangements, apply to the proposed project.

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 8 of the EP Regulation.

Demonstrate that the proposed rehabilitation is consistent with the *Mined land rehabilitation policy*¹⁹ and relevant guidelines²⁰ and best practice approaches about the strategies and methods for progressive and final rehabilitation.

9.3.1 Progressive rehabilitation plan

Provide a progressive rehabilitation plan for the project that shows how and where mining activities (and other related environmentally relevant activities) would be carried out on land in a way that maximises progressive rehabilitation of land to achieve the rehabilitation goals²¹. The plan must provide for the condition and land use suitability to which land must be rehabilitated, before the environmental authority can be surrendered.

The progressive rehabilitation plan must be comprised of three components:

1. progressive rehabilitation plan overview and justification
2. rehabilitation programme (in tabular form) with time-based milestones for actions to progressively achieve the rehabilitation goal
3. supporting technical studies which set out the information, investigations and assumptions required to develop and implement the rehabilitation programme.

9.3.1.1 Progressive rehabilitation plan overview and justification

Provide an overview and justification of the progressive rehabilitation plan, by addressing the following:

- describe each resource tenure, including the area of each tenure
- describe the relevant activities to which the application relates, the likely duration of the relevant activities, and how and where the activities would be carried out including maps and dimensionally accurate spatial, topographical and landscape data for the project site (including the surrounding landscape) that shows all aspects of the project, including changes to the site and surrounding landscape over time due to mining, construction and rehabilitation activities on the site
- detail the consultation undertaken by the proponent in developing the progressive rehabilitation plan and how the proponent would undertake ongoing consultation in relation to the rehabilitation to be carried out under the plan
- state the extent to which the final land use(s) identified by the plan are consistent with the outcome of consultation with the community and any strategies or plans for the land of a local government, the State or the Commonwealth
- for each proposed final land use, state the proposed methods or techniques for rehabilitating the land to achieve the rehabilitation goals in a way that supports the milestones as proposed in the rehabilitation programme
- for any proposed residual void:
 - demonstrate that these areas are limited in number and size to the extent possible
 - demonstrate that these areas are located to prevent or minimise environmental harm by having regard to all reasonably practical alternatives for the location, and the nature of the

¹⁹ <https://www.ehp.qld.gov.au/management/pdf/mined-land-rehabilitation-policy.pdf>

²⁰ See Appendix 2 [Policies, guidelines and references] and further guidance at <https://environment.des.qld.gov.au/land/mining/guidelines.html>

²¹ For the purposes of section 9.3, rehabilitation goals are sites that are safe, stable, non-polluting and able to sustain an appropriate final land use(s).

- environmental harm that may be caused at the proposed location, and the sensitivity of the environment surrounding the proposed location
- demonstrate that these areas are capable of being managed to achieve best practice management and minimise environmental harm.
 - demonstrate that all reasonable attempts have been made to revise mine planning and schedule rehabilitation activities in a way that optimises the final land use for the rehabilitated landform.
 - demonstrate that each proposed final land use is appropriate for the region in which the land is located by stating that the use will be:
 - compatible with the use of land in the surrounding region
 - viable having regard to the use of land in the surrounding region
 - sustainable
 - demonstrate how the amount of land disturbed at any one time, and the residual loss of land and water bodies with ecological or productive value, will be minimised
 - demonstrate that the proposed final landform re-establishes a functional hydrologic system that prevents erosion, maximises connectivity, minimises upstream and downstream surface and groundwater contamination in the long term and is consistent with the surrounding natural topography and landscape
 - include drawings, figures and maps along with spatial, geospatial, topographic and other data that illustrate the final landform(s) in a way that can be viewed
 - include maps and any spatial data at suitable scales showing:
 - for the life of the proposed project include the location of disturbance areas; the relevant mine infrastructure; and the sequence and timing of mining and progressive rehabilitation
 - the proposed final topography, with contours at suitable intervals, showing where proposed residual voids, mined areas, and uncompacted overburden would lie in relation to flood levels up to and including the 'probable maximum flood level' based on the Bureau of Meteorology's 'probable maximum precipitation' forecast for the locality
 - identify the risks of rehabilitation goals not being achieved, and how the proponent intends to manage or minimise the risks
 - include a monitoring and maintenance program that identifies and describes the monitoring systems that will be undertaken in order to demonstrate milestone and milestone criteria have been achieved.

9.3.1.2 Rehabilitation programme

As part of the progressive rehabilitation plan, provide a rehabilitation programme (presented as a table) that identifies the final land use(s) and outlines milestones and timing for progressive rehabilitation to achieve the proposed final land use(s).

The rehabilitation programme must outline milestones for each significant event or step necessary to rehabilitate the final land use area to achieve the rehabilitation goals.

For each milestone, provide criteria that demonstrate how the associated milestone will be achieved²². Milestones and their criteria must be consistent with the SMART principles²³.

For each final land use area, populate a table to provide:

- a description of the area (name, size in hectares, disturbance type (hardstand, stockpile, pit etc.), tenure, reference to associated map)

²² Milestone criteria are necessary to ensure progressive rehabilitation and closure activities are completed, and are not the same as completion criteria (which demonstrate the expectations at relinquishment)

²³ 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 must be completed by

- a reference to a map attached to the rehabilitation programme showing the final rehabilitation outcomes for that final land use area and the boundary of that final land use area, at a scale which allows for easy interpretation
- the date land becomes available for rehabilitation
- the milestones that will be required to achieve rehabilitation goals
- milestone criteria
- completion dates for each milestone.

9.3.1.3 Supporting technical studies and information

Provide reports (as appendices to the plan²⁴) of the underlying information, technical investigations and assumptions used to develop the progressive rehabilitation plan and inform the implementation of the rehabilitation programme.

Examples of typical studies include:

- an assessment of the hydrogeology of the site to predict changes to surface and groundwater flows and exchange, and water quality impacts from the mining activities
- an assessment of flooding susceptibility and influence
- where flooding is a consideration, develop a hydrologic model of the catchment and a hydraulic model of the proposed mining area to assess flood impacts
- an assessment of soil and capping material to understand and develop a soil conservation strategy, topsoil management and rehabilitation methodologies²⁵
- characterisation of mine wastes that describes the likely physical behaviour and chemical reactivity of the waste materials under the conditions in which they would be stored
- landform design that describes the final landform, how it will develop in stages, achieve long-term stability and meet the requirements of the appropriate final land use(s).
- cover system design to manage mined and waste material in a manner that ensures contaminants are not released to the receiving environment
- a water management plan for surface and groundwater resources.
- a revegetation plan to ensure the self-sustaining vegetation communities that are appropriate for the appropriate final land use(s) will be achieved.

9.4 Water

9.4.1 Water quality (Critical Matter)

Environmental objective and outcomes
The activity will be operated in a way that protects environmental values of waters.
The activity will be operated in a way that protects the environmental values of groundwater and any associated surface ecological systems.
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 latest version of the department's *EIS information guideline—Water*,²⁶ the department's *Water quality guidelines*,²⁷ the department's *Water monitoring and sampling*

²⁴ Ensure that the progressive rehabilitation plan is based on sufficient baseline information to describe: site topography; climate; the geological setting; site hydrology and fluvial networks, groundwater levels, connectivity and properties; soil types, properties and productivity; land stability (pre-existing and predisposition to ongoing issues); vegetation communities, protected plants, fauna presence and populations and other ecological data; pre-mining land use and identification of underlying land holders

²⁵ Integrated soil and waste rock characterisation and mapping should form the foundation of rehabilitation strategies

²⁶ <https://environment.des.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

²⁷ <https://www.ehp.qld.gov.au/water/guidelines/>

manual,²⁸ and the *Groundwater quality assessment guideline* (Department of Science, Information Technology and Innovation, March 2017).²⁹ 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) Policy 2019 and section 9 the EP Act, identify the environmental values of surface waters 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 they should be derived according to the *Queensland water quality guidelines*,³⁰ and include any semi-permanent or permanent pools, including stock water.

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 quantity, quality, location, duration and timing³¹ of all potential and/or proposed releases of contaminants. Releases may include controlled water discharges to surface water streams, uncontrolled discharges when the design capacity of storages is exceeded, spills of products during loading or transportation, contaminated run-off from operational areas of the site (including seepage from waste rock dumps) or run-off from disturbed acid sulfate soils.

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) Policy 2019. Appropriate management strategies may 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.

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

9.4.2 Water resources (Critical Matter)

Environmental objective and outcomes
<p>With regard to water resources, the proposed project should meet the following objectives:</p> <ul style="list-style-type: none"> • 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

²⁸ https://www.ehp.qld.gov.au/water/monitoring/sampling-manual/#physical_and_chemical_assessment

²⁹ <https://publications.qld.gov.au/en/dataset/groundwater-quality-assessment-guideline>

³⁰ <https://environment.des.qld.gov.au/water/pdf/water-quality-guidelines.pdf>

³¹ 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

Conduct the impact assessment in accordance with the department's *EIS information guideline—Water*.³² 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,³³ industrial, recreational and environmental 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 transmissivity; and value as water supply sources;
- analyse the movement of underground water to and from the aquifer(s), including how the aquifer(s) interacts with other aquifers and surface water;
- characterise the quality and volume of the groundwater including seasonal variations of groundwater levels; and
- provide surveys of existing groundwater supply facilities (e.g. bores, wells, or excavations).

Consistent with the Department of Natural Resources, Mines and Energy (DNRME) guideline *Quantifying the volume of associated water taken under a mining lease or mineral development licence*³⁴ (2018), 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 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*³⁵ (Australian Government National Water Commission, June 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; and
- direct and indirect impacts arising from the development.

Provide a mine 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 (including coal seam gas water).

Specifically address whether or not the proposed project would take water from, or affect recharge to, aquifers of the Great Artesian Basin. Identify any approval or allocation that would be needed under the Water Act 2000.

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.

³² <https://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

³³ <https://publications.qld.gov.au/dataset/daff-environmental-impact-assessment-companion-guide/resource/7b1825c4-5e42-4cf8-aa2d-7fa55c2f5e4c>

³⁴ https://www.dnrm.qld.gov.au/__data/assets/pdf_file/0004/1256458/guideline-quantifying-volume.pdf

³⁵ <http://www.groundwater.com.au/media/W1siZiIsIjIwMTIvMTAvMTcvMjFfNDFfMzZfOTYwX0F1c3RyYWxpYW5fZ3JvdW5kd2F0ZXJfbW9kZWxsaW5nX2d1aWRlIGluZXMucGRmIl1d/Australian-groundwater-modelling-guidelines.pdf>

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 watercourse diversion design, operation and monitoring based on current engineering practice and the DNRME Guideline '*Works that interfere with water in a watercourse—watercourse diversions authorised under the Water Act 2000*'.³⁶

Describe the options for supplying water to the proposed project and assess any potential consequential impacts in relation to the objectives of any water plan and resource operations plan that may apply.

- Describe the proposed supply of potable water for the proposed project, including temporary demands during the construction period. Also describe on-site storage and treatment requirements for waste water from accommodation and/or offices and workshops.

9.4.2.1 The Independent Expert Scientific Committee

The EIS must include a specific section responding to the information requirements contained in the IESC's *Information guidelines for proposals relating to the development of coal seam gas and large coal mines* where there is a significant impact on water resources (Commonwealth of Australia, 2015).³⁷

9.4.3 Flooding (Critical Matter)

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 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

9.5 Regulated structures

Environmental objective and outcomes

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[#].

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.

Impact assessment

³⁶ https://www.dnrme.qld.gov.au/?a=109113:policy_registry/watercourse-diversions-water-act.pdf&ver=2.00

³⁷ <http://www.iesc.environment.gov.au/publications>

Conduct the impact assessments on regulated structures in accordance with the latest version of the department's *EIS information guideline—Regulated structures*,³⁸ the department's *Guideline on Structures which are dams or levees constructed as part of environmentally relevant activities*,³⁹ and the department's *Manual for assessing hazard consequence categories and hydraulic performance of structures*.⁴⁰

Describe the purpose of all dams or levees proposed on the proposed 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.

Where proposed project infrastructure comprises dams or other structures for storing potentially hazardous materials, undertake a consequence category assessment for each dam or levee, according to the criteria outlined in the department's *Manual for assessing consequence categories and hydraulic performance of structures*.⁴¹ The assessment must be undertaken for the three different failure event scenarios described in the department's manual, i.e. for seepage, overtopping and dam break. Regulated structures must comply with the *Manual for assessing consequence categories and hydraulic performance of structures* in accordance with schedule 8 of the EP Regulation.

Following the consequence category assessment, determine the consequence category ('low, significant, or high') according to table 1 of the department's *Manual for assessing hazard categories and hydraulic performance of structures* 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.

9.6 Flora and fauna (Critical Matter)

Environmental objective and outcomes
<p>The activity will be operated in a way that protects the environmental values of land including soils, subsoils, landforms and associated flora and fauna.</p> <p>There will be no potential or actual adverse effect on a wetland as part of carrying out the activity.</p> <p>The proposed project minimises serious environmental harm on areas of high conservation value and special significance and sensitive land uses at adjacent places.</p> <p>The location for the activity on a site protects all environmental values relevant to adjacent sensitive use.</p> <p>The proposed project manages the impacts on the environment by seeking to achieve ecological sustainability, including, but not limited to, protected wildlife and habitat.</p> <p>Critical habitat receives special management considerations and protection through a management plan for the proposed project.</p> <p>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.</p> <p>The proposed project provides for the conservation of the marine environment, particularly the Great Barrier Reef Marine Park.</p> <p>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.</p>

³⁸ <https://environment.des.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

³⁹ <http://www.ehp.qld.gov.au/assets/documents/regulation/era-gl-structures-dams-levees-eras.pdf>

⁴⁰ <http://www.ehp.qld.gov.au/assets/documents/regulation/era-mn-assessing-consequence-hydraulic-performance.pdf>

⁴¹ <https://environment.des.qld.gov.au/assets/documents/regulation/era-mn-assessing-consequence-hydraulic-performance.pdf>

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 but not limited to the latest version of the department's *EIS information guidelines*⁴² that cover *flora and fauna, aquatic ecology, 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.

The assessment should include the following key elements:

- identification of all significant species and ecological communities, including MSES and MNES, listed flora and fauna species, and regional ecosystems, on the proposed project's site and in its vicinity;
- terrestrial and aquatic ecosystems (including groundwater dependent ecosystems and subterranean fauna, e.g. stygofauna) and their interactions. Stygofauna assessment guidance is available through the department's *Background information on sampling bores and stygofauna*⁴³ and the Department of Science, Information Technology, Innovation and the Arts *Guideline for the environmental assessment of subterranean aquatic fauna*⁴⁴;
- 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; and
- 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*.⁴⁵ Features to consider include regional ecosystems, environmentally sensitive areas, wetlands, nature refuges, protected areas and strategic environmental areas. 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.

⁴² <https://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

⁴³ <https://www.ehp.qld.gov.au/water/monitoring/sampling-manual/pdf/biological-assessment-background-information-on-sampling-bores-for-stygofauna.pdf>

⁴⁴ <https://publications.qld.gov.au/dataset/subterranean-aquatic-fauna>

⁴⁵ This is notwithstanding that the *Vegetation Management Act 1999* does not apply to mining projects. Refer also to <https://www.qld.gov.au/environment/land/vegetation/clearing/>

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 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.

9.6.1 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.⁴⁶
- Where 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 EPBC Act Environmental Offsets Policy (October 2012), the *Offsets assessment guide* and relevant guidelines.⁴⁷

9.6.2 Biosecurity

Environmental objective and outcomes
<p>The construction, operation and decommissioning of the proposed project should ensure:</p> <ul style="list-style-type: none"> • the introduction and spread of weeds, pests (including marine pests) and disease, pathogens and contaminants are avoided 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 *EIS information guideline—Biosecurity*.⁴⁸

Propose detailed measures to remove, control and limit the spread of pests, weeds disease, pathogens and contaminants on the proposed project site and any areas under the proponent’s control, particularly declared plants and animals under Queensland’s *Biosecurity Act 2014*, the Commonwealth *Biosecurity Act 2015* and weeds of national significance (WONS). Weed and pest animal management measures should be 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.

⁴⁶ <https://www.qld.gov.au/environment/pollution/management/offsets/>

⁴⁷ <http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy>

⁴⁸ <https://environment.des.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

9.7 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 an emissions inventory and description of the characteristics of contaminants or materials that would be released from point and diffuse sources and fugitive emissions 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.

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 *EIS information guideline—Air*.⁴⁹ 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). It should also 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)*.

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.⁵⁰

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 NGER technical guidelines⁵¹ as a reference source for emission estimate methods and supplemented with information from other sources where practicable and appropriate.

Coal mining projects must include estimates of coal seam methane to be released as well as emissions resulting from such activities as transportation of products and consumables, and energy use at the proposed project site.

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:

⁴⁹ <https://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

⁵⁰ <http://www.cleanenergyregulator.gov.au/NGER>

⁵¹ <http://www.environment.gov.au/climate-change/greenhouse-gas-measurement/nger/technical-guidelines>

- 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; and
- a description of any opportunities for further offsetting of greenhouse gas emissions through indirect means.

Describe flare emissions if gas flaring will be used during the commissioning stages and/or during the emergency under normal operation. If the flare is expected to be used continuously for more than three months to incinerate the waste gases, then conduct the impact assessment from this source for inclusion in the EIS as a separate item of the assessment.

9.8 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.

Conduct a noise and vibration impact assessment in accordance with the latest version of the department's *EIS information guideline—Noise and vibration*.⁵² 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.

9.9 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 *EIS information guidelines—Waste management*⁵³ and *Application requirements for activities with waste impacts*

⁵³ <https://environment.des.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

(ESR/2015/1836).⁵⁴ 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 and coarse rejects from mining and mineral processing; salt from petroleum and gas projects; and brackish, saline or mine affected water from all types of resource projects.

Describe the quantity, and physical and chemical characteristics of each significant 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.

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.

Describe how nominated quantitative standards and indicators may be achieved for waste management, and how the achievement of the objectives would be monitored, audited and reported, and how corrective actions would be 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. 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.
- 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 infrastructure relevant to environmentally relevant activity (ERA) 63, by referring to relevant department policies and guidelines⁵⁵, depending on the proposed sewage

⁵⁴ <https://environment.des.qld.gov.au/assets/documents/regulation/era-gl-waste-impacts.pdf>

⁵⁵ E.g. <https://www.ehp.qld.gov.au/licences-permits/guidelines.html>

collection and treatment infrastructure proposed the reuse and/or disposal of treated wastewater and sewage wastes generated.

Identify end of waste framework options under the *Waste Reduction and Recycling Act 2011* as per the relevant guidelines for irrigation,⁵⁶ drilling mud,⁵⁷ and associated water.⁵⁸ The uses might include aquaculture, coal washing, dust suppression, construction, landscaping and revegetation, industrial and manufacturing operations, research and development and domestic, stock, stock intensive and incidental land management. Additional end of waste framework guidelines are available on the department's website.⁵⁹

9.10 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 Australian Standard AS2187 Explosives Storage, transport and use • 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:

- potential hazards, accidents, spillages, fire and abnormal events that may occur during all stages of the proposed project, including estimated probabilities of occurrence;
- hazard analysis and risk assessment in accordance with *AS/NZS ISO 31000:2009 Risk management—principles and guidelines* and with *HB203:2006 Environmental risk management principles and processes*;
- demonstrate that any major hazard facility involving dangerous and hazardous materials is appropriately located in accordance with *Planning Act 2016, State Development Assessment Provisions, Module 13*;
- 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*,⁶⁰
- potential wildlife hazards, including a development of a mosquito management plan in accordance with Queensland Health guidelines⁶¹, natural events (e.g. cyclone, storm tide inundation, flooding, bushfire) and implications related to climate change and adaptation;

⁵⁶ https://environment.des.qld.gov.au/__data/assets/pdf_file/0037/89389/wr-ga-irrigation-associated-water.pdf

⁵⁷ https://environment.des.qld.gov.au/__data/assets/pdf_file/0041/87899/wr-ga-drilling-mud.pdf

⁵⁸ https://environment.des.qld.gov.au/__data/assets/pdf_file/0028/88354/wr-ga-associated-water.pdf

⁵⁹ <https://environment.des.qld.gov.au/management/waste/business/end-of-waste-classification>

⁶⁰ *Australian Standard AS 2187, Explosives-storage transport and use*

⁶¹ E.g. Queensland Health – *Guidelines to minimise mosquito and biting midge problems in new developments*, available from <http://www.health.qld.gov.au/ph/documents/cdb/14804.pdf>

- describe natural hazards that may affect the site with at least a 1% Annual Exceedance Probability (AEP) or 100 year average reoccurrence interval (ARI) level, including mapping of the potential hazard areas at the site;

and 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. 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.

Provide an outline of the proposed integrated emergency management planning procedures, including evacuation plans, if required, for the range of situations identified in the risk assessment developed in this section.

Outline any consultation undertaken with the relevant emergency management authorities, including the local disaster management group.

9.11 Cultural heritage

Environmental objective and outcomes

The construction and operation of the proposed project should achieve the purposes of the *Aboriginal 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 *EIS information guideline—Indigenous cultural heritage* and *EIS information guideline—non-Indigenous cultural heritage*.⁶²

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

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.

9.12 Social (Critical Matter)

Environmental objective and outcomes

The construction and operation of the proposed project should ensure that:

- adverse social impacts arising from the proposed project are avoided or mitigated
- benefits for local and regional communities are enhanced.

Impact assessment

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 (March 2018).⁶³

The SIA is to be developed in consultation with the Coordinated Project Delivery Division in the Office of the Coordinator-General, Department of State Development, Manufacturing, Infrastructure and Planning. The SIA is to describe the potential social impacts (both positive and negative) of the proposed project, and must identify relevant and effective impact mitigation and benefit enhancement measures.

⁶² <https://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

⁶³ <https://www.statedevelopment.qld.gov.au/resources/cg/social-impact-assessment-guideline.pdf>

In accordance with Part 12 of the SSRC Act, the information provided in the EIS (including the SIA) will assist the Coordinator-General in deciding whether personnel employed during the construction phase of the proposed project will be workers for the purposes of the SSRC Act.

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9.13 Economic (Critical Matter)

Environmental objective and outcomes

The construction and operation of the proposed project should ensure that it:

- avoids or mitigates adverse economic impacts arising from the proposed project
- capitalises on opportunities potentially available for capable local industries and communities
- creates 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. 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*.⁶⁴ Separately address each major stage of the proposed project (e.g. construction, operation and decommissioning).

9.14 Transport

Environmental objective and outcomes

The construction and operation of the proposed project should aim to:

- 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 *EIS information guideline—Transport*.⁶⁵ 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* (Department of Transport and Main Roads, 2017)⁶⁶ with traffic data in DTMR-suitable formats.
- for impacts on rail level crossings: the *Australian Level Crossing Assessment Model (ALCAM)*.⁶⁷
- for impacts on maritime operations: the *Maritime Safety Queensland guidelines for major development proposals* (Department of Transport and Main Roads, April 2015).⁶⁸

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).

⁶⁴ <http://www.coordinatorgeneral.qld.gov.au/resources/guideline/cg/economic-impact-assessment-guideline.pdf>

⁶⁵ <https://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

⁶⁶ <https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Guide-to-Traffic-Impact-Assessment>

⁶⁷ <http://alcam.com.au/>

⁶⁸ <http://www.msq.qld.gov.au/Waterways/Major-development-proposals.aspx>

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 plan.⁶⁹ 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.

9.15 Matters of National Environmental Significant under EPBC Act (Critical Matter)

The following matters must be considered when preparing the EIS:

- 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.
- The EIS must provide enough information about the proposed project and its relevant impacts 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. Proponents should refer to department's *EIS information guideline—Matters of National Environmental Significance*⁷⁰ for additional guidance.

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

When water resources for a coal seam gas development or large coal mine are a controlling provision, the proposed project's EIS is referred to the Independent Expert Scientific Committee (IESC) on Coal Seam Gas and Large Coal Mining Development. The IESC provides scientific advice to decision makers on potential impacts from CSG and large coal mining developments on Australia's water resources. That typically occurs in time for the IESC's views to be considered by the administering authority when deciding the suitability of the proposed project and developing conditions for any approval.

10 Commitments

The EIS must 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. Should the proposed project proceed, these commitments should be able to be carried over into the approval 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 directly from the departments existing model conditions and eligibility criteria⁷¹ and/or modified or developed to suit site and project specific issues.

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.

⁶⁹ Contact the Department of Transport and Main Road on MDP@tmr.qld.gov.au

⁷⁰ <https://www.qld.gov.au/environment/pollution/management/eis-process/about-the-eis-process/terms-of-reference>

⁷¹ <https://www.ehp.qld.gov.au/land/mining/guidelines.html>; <https://www.ehp.qld.gov.au/licences-permits/compliance-codes/>

The EIS must 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 1994 (GDA94). In relatively flat locations, contours should be at one metre intervals. Geographical coordinates should be presented as latitude and longitude against the GDA94.

All spatial data presented in the EIS must be made available to the administering authority in appropriate electronic form, such as shape files.

All water quality data, including waste water quality, referred to in the EIS must be submitted in an appropriate electronic format.

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Appendix 1 Glossary

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

Acronym/abbreviation	Definition
AEP	annual exceedance probability
AHD	Australian height datum
ALCAM	Australian Level Crossing Assessment Model
APCT	Abbot Point Coal Terminal
ARI	average reoccurrence interval
APCT	Abbot Point Coal Terminal
BBC	Bowen Basin Coal Pty Ltd
BMA	BHP Mitsubishi Alliance
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
CHPP	Coal Handling and Preparation Plant
CSG	coal seam gas
DAF	Department of Agriculture and Fisheries
DAFF	The former Commonwealth Department of Agriculture, Fisheries and Forestry now the Department of Agriculture
DBCT	Dalrymple Bay Coal Terminal
DoEE	Department of the Environment and Energy (Commonwealth)
DES	Department of Environment and Science
DILGP	Department of Infrastructure, Local Government and Planning
DTMR	Department of Transport and Main Roads
EA	Environmental Authority
EHP	The former Department of Environment and Heritage Protection - now the Department of Environment and Science
EIS	Environmental Impact Statement
EP Act	<i>Environmental Protection Act 1994</i> (Qld)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
EPP	Environmental Protection Policy (under the EP Act)
EP Regulation	<i>Environmental Protection Regulation 2019</i> (Qld)
ERA	environmentally relevant activity
FIFO	fly-in-fly-out

Acronym/abbreviation	Definition
GDA94	Geocentric Datum of Australia 1994
IESC	Independent Expert Scientific Committee
LGA	Local government area
MDL	Mineral Development Lease
MIA	Mine Infrastructure Area
ML	Mining Lease
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
Mtpa	Million tonnes per annum
MVA	megavolt amperes
NGER	National Greenhouse Energy Reporting scheme (Commonwealth)
RGCT	RG Tanna Coal Terminal
ROM	run of mine
SIA	Social Impact Assessment
SSRC Act	<i>Strong and Sustainable Resource Communities Act 2017</i>
TOR	Terms of Reference
WONS	Weeds of National Significance

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 proposed Meadowbrook Project.

- ANZECC and ARMCANZ, 2017, *Australian and New Zealand guidelines for fresh and marine water quality, Volume 1, The guidelines*, Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand, <http://www.waterquality.gov.au/anz-guidelines>
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- Department of Environment and Science, 2017, *Model mining conditions*, Queensland Government, Brisbane, <https://www.ehp.qld.gov.au/assets/documents/regulation/rs-gl-model-mining-conditions.pdf>
- Department of Environment and Heritage Protection, 2016, *Noise and vibration from blasting guideline*, Queensland Government, Brisbane, <https://www.ehp.qld.gov.au/assets/documents/regulation/ts-gl-blasting-noise-and-vibration.pdf>
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- <https://www.ehp.qld.gov.au/coastal/development/> Department of Environment and Science, 2019, *EIS information guidelines*, Queensland Government, Brisbane, <https://www.qld.gov.au/environment/pollution/management/eis-process/about-the-eis-process/developing-an-eis>
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Appendix 3 Terms of reference for matters of national environmental significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* requirements⁷²

The proposed project was referred on 23 July 2019 to the Australian Government Department of the Environment and Energy (DoEE) 2019/8485). On 22 November 2019, DoEE determined the proposed project to be a controlled action under the Commonwealth EPBC Act.

The controlling provisions are *sections*:

- 18 and 18A (*listed threatened species and communities*),
- 20 and 20A (*listed migratory species*), and
- 24D and 24E (*A water resource, in relation to coal seam gas development and large coal mining development*)

The proposed project 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 should 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') should 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 should be included as appendices to the draft EIS.

General Content

The MNES section should take into consideration the EPBC Act Significant Impact Guidelines that can be downloaded from the following web site: <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 should consult with DoEE on the preferred presentation of that material, before submitting it to the Minister for approval for publication.

The proponent should ensure that the MNES section assesses compliance of the action with principles of Ecological Sustainable Development as set out in the EPBC Act, and the objects of the 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 should be written so that any conclusions reached 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 should be included in the MNES section. The MNES section should be produced on A4 size paper capable of being photocopied, with maps and diagrams on A4 or A3 size and in colour where possible.

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

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;

⁷² provided by the Commonwealth Department of the Environment and Energy

- (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 and (if relevant) decommissioning components of the action must be described in detail. This should 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.

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 protected by controlling provisions of Part 3 of the EPBC Act for the action; 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 should be discussed.

4 Description of the Environment

A description of the environment of the proposal site and the surrounding areas that may be affected by the action. It is recommended that this include the following information:

- (a) Listed threatened species and ecological communities, and migratory species that are likely to be present in the vicinity of the site, including details of the scope, timing (survey season/s) and methodology for studies or surveys used to provide information on the listed species/community/habitat at the site (and in areas that may be impacted by the project).
- (b) A description of the surface and groundwater resources which may be impacted by the action.

5 Habitat Assessment – Listed threatened species and communities

The MNES section must:

- (a) describe the relevant listed threatened species and ecological communities (including EPBC Act listing status, distribution, life history and specific habitat requirements (e.g. breeding, foraging, dispersal, etc));
- (b) provide details of the scope, methodology, timing and effort of surveys (which must be undertaken by relevant qualified species experts) for the proposed action (including areas outside of each proposed action area which may be impacted by each proposed action); and include details of:
 - (i) the application of best practice survey guidelines
 - (ii) how studies or surveys are consistent with (or a justification for divergence from) published Australian Government guidelines and policy statements;
- (c) describe and assess the impacts to listed threatened species and ecological communities identified below and any others that are found to be or may potentially be present in areas that may be impacted by each proposed action in accordance with the Matters of National Environmental Significance, Significant impact guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999;
- (d) identify which component and phase of the proposed action is of relevance to each listed threatened species or ecological community or if the threat of impact relates to consequential actions; and
- (e) where relevant, have regard to any approved conservation advice. Where relevant, the MNES section must demonstrate that each proposed 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.

The MNES section must address impacts on the following listed threatened species and ecological community for the proposed action:

- Curlew Sandpiper (*Calidris ferruginea*) – Critically Endangered
- Red Goshawk (*Erythrotriorchis radiatus*) – Vulnerable
- Squatter Pigeon (Southern) (*Geophaps scripta scripta*) – Vulnerable
- Painted Honeyeater (*Grantiella picta*) – Vulnerable
- Star Finch (Eastern) (*Neochmia ruficauda ruficauda*) – Endangered
- Australian Painted Snipe (*Rostratula australis*) – Endangered
- Northern Quoll (*Dasyurus hallucatus*) – Endangered
- Ghost Bat (*Macroderma gigas*) – Vulnerable
- Corben's Long-eared Bat (*Nyctophilus corbeni*) - Vulnerable
- Koala (combined populations of Qld, NSW and the ACT) (*Phascolarctos cinereus*) – Vulnerable
- Greater Glider (*Petauroides volans*) – Vulnerable
- Grey-headed Flying Fox (*Pteropus poliocephalus*) - Vulnerable
- *Cycas ophiolitica* – Endangered
- Quassia (*Samadera bidwillii*) – Vulnerable
- Ornamental Snake (*Denisonia maculata*) – Vulnerable
- Yakka Skink (*Egernia rugosa*) – Vulnerable
- Southern Snapping Turtle, White-throated Snapping Turtle (*Elseya albagula*) – Critically endangered
- Dunmall's Snake (*Furina dunmali*) – Vulnerable
- Allan's Lerista, Retro Slider (*Lerista allanae*) – Endangered
- Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle, White-eyed River Diver (*Rheodytes leukops*) – Vulnerable
- Brigalow (*Acacia harpophylla* dominant and co-dominant) – Endangered
- Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin – Endangered
- Poplar Box Grassy Woodland on Alluvial Plains – Endangered

To enable the Department to undertake an assessment of the nature and scale of the likely impacts of the proposed action on the listed threatened species and community above, provide a detailed habitat assessment adjacent to the project site.

The habitat assessments for the above listed threatened species must be informed by desktop analysis and surveys, with consideration of relevant Departmental documents (e.g. approved Conservation Advices, Recovery Plans, draft referral guidelines and Listing Advices), the Species Profile and Threats (SPRAT) Database and published research.

The MNES section must provide known historical records of the above listed threatened species in the local region where the species are not identified in the project area or are considered likely to occur in the project area. All relevant records must include, if available, the source (i.e. Commonwealth and State databases, published research, publicly available survey reports, etc.), the year of the record and a description of the habitat in which the record was identified.

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

Detailed mapping of suitable habitat for all listed threatened species and communities that are found to be, or may potentially be, present, must be included in the MNES section, and must:

- be specific to the habitat assessment undertaken for each listed threatened species and ecological community (i.e. not illustrate relevant Queensland Regional Ecosystems only);
- include an overlay of the project disturbance footprint;
- include known records of individuals derived from desktop analysis and/or field surveys; and
- be provided separately as attachments in JPEG format.

5 Habitat Assessment – Listed migratory species

For the proposed mine site (EPBC 2019/8485) the EIS must:

- (a) describe the listed migratory species identified below (including distribution, life history and habitat);
- (b) provide details of the scope, methodology, timing and effort of surveys for the proposed action (including areas outside of the proposed action area which may be impacted by the proposed action); and include details of:
 - (i) the application of best practice survey guidelines;
 - (ii) how studies or surveys are consistent with (or a justification for divergence from) published Australian Government guidelines and policy statements;
- (c) describe and assess the impacts to the listed migratory species identified below and any others that are found to be or may potentially be present in areas that may be impacted by the proposed action in accordance with the Matters of National Environmental Significance, Significant impact guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999; and
- (d) identify which aspect of the proposed action is of relevance to each species or if the threat of impact relates to consequential actions.

Where relevant, demonstrate that the proposed action will not be inconsistent with:

- (a) Australia's obligations under:
 - (i) the Bonn Convention;
 - (ii) CAMBA;
 - (iii) JAMBA; and
 - (iv) an international agreement approved under subsection 209(4) of the EPBC Act.

List of potential listed migratory species

The EIS must address impacts on the following migratory species:

- Fork-tailed Swift (*Apus pacificus*)
- Oriental Cuckoo, Horsfield's Cuckoo (*Cuculus optatus*)
- Black-faced Monarch (*Monarcha melanopsis*)
- Yellow Wagtail (*Motacilla flava*)
- Satin Flycatcher (*Myiagra cyanoleuca*)
- Common Sandpiper (*Actitis hypoleucos* / *Tringa hypoleucos*)
- Sharp-tailed Sandpiper (*Calidris acuminata*)
- Curlew Sandpiper (*Calidris ferruginea*)
- Pectoral Sandpiper (*Calidris melanotos*)
- Latham's Snipe (*Gallinago hardwickii*)
- Osprey (*Pandion haliaetus*)
- Common Greenshank (*Tringa nebularia*)

6 A water resource, in relation to coal seam gas development and large coal mining development

The National Partnership Agreement on Coal Seam Gas and Large Coal Mining Development, to which Queensland is a signatory, specifies that all coal seam gas and large coal mining proposals that are likely to have a significant impact on water resources are to be referred to the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC) for advice.

In relation to the proposed mine, the EIS must provide details on the current state of groundwater and surface water in the region as well as any use of these resources.

The EIS must describe and assess the impacts to water resources giving consideration to the Significant Impact Guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources.

The EIS must address the information requirements contained in the Information Guidelines for the Independent Expert Scientific Committee advice on coal seam gas and large coal mining development proposals and provide a

cross-reference table to identify where each component of the guidelines has been addressed.

7 Relevant Impacts

The impacts must be assessed in accordance with relevant Department policies and guidelines, and information provided in the SPRAT Database.

(a) The MNES section must include a description of all of the relevant impacts of the action. Relevant impacts are impacts that the action will have or is likely to have on a matter protected by a controlling provision. Impacts during both the construction, operational and (if relevant) the decommissioning phases of the project should 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 whether any relevant impacts are likely to be unknown, unpredictable or irreversible;
- analysis of the significance of the relevant impacts; and
- any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

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

The MNES section should also address the potential cumulative impact of the proposal 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 should be conducted and documented.

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

- listed threatened species and ecological communities;
- a water resource, in relation to coal seam gas development and large coal mining development.

For Brigalow TEC, the total direct impact (in hectares) to each identified patch must be provided in the MNES section compared to its current extent. Further, the impact assessment for Brigalow TEC must include a discussion on the post-impact viability of the Brigalow TEC patches in the project site to be directly impacted from fragmentation as a result of vegetation clearance.

8 Avoidance, Safeguards and Mitigation 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 the proposed action on MNES. The proposed measures should 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;
- 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; and
- information on the timing, frequency and duration of the measures to be implemented.
- An outline of an Environmental Management Plan (EMP) that sets out the framework for management, mitigation and monitoring of relevant impacts of the action, including any provisions for independent environmental auditing.

The MNES section needs to address the project phases (construction, operation, decommission) separately. It must state the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing for each relevant MNES environmental issue.

- The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

The SPRAT Database may provide some relevant mitigation measures for each listed threatened species and the ecological community. All proposed measures for MNES should 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)

9 Environmental Offsets

The MNES section must include an assessment of the likelihood of residual significant impacts occurring on listed threatened species and communities, and water resources after avoidance, mitigation and management measures relating to the proposed action 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 proposed action on relevant MNES, and/or their habitat;
- details of how the environmental offset/s meets the requirements of the Department's 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;
- 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.

If available, include a draft Offsets Management Plan which also provides (where possible):

- a field validation survey and baseline description of the current condition (prior to any management activities) of the offset area/s, including existing vegetation, for relevant MNES, and/or their habitat;
- a description and map (including shapefiles) to clearly define the location and boundaries of the proposed 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 MNES that the environmental offset/s compensates for, and the size of the environmental offset/s in hectares);
- a description of the management measures (including timing, frequency and duration) that will be implemented in the offset area/s;
- a discussion of how proposed management measures take into account relevant approved conservation advices and are consistent with the measures contained in relevant recovery plans and threat abatement plans;

- completion criteria and performance targets for evaluating the effectiveness of the Offset Management Plan implementation, and criteria for triggering corrective actions;
- a program to monitor, report on and review the effectiveness of the Offset Management Plan;
- a description of potential risks to the successful implementation of the environmental offset/s, and contingency measures that would be implemented to mitigate against these risks; and
- details of the mechanism to legally secure the environmental offset/s (under Queensland legislation or equivalent) to provide enduring protection for the offset area/s against development incompatible with conservation.

The draft Offset Management Plan must be prepared by a suitably qualified person and in accordance with the Department's Environmental Management Plan Guidelines (2014), available at:

www.environment.gov.au/epbc/publications/environmental-management-plan-guidelines.

10 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.

11 Consultation

Any consultation about the action, including:

- (a) any consultation that has already taken place;
- (b) proposed consultation about relevant impacts of the action;
- (c) if there has been consultation about the proposed action, any documented response to, or result of, the consultation; and
- (d) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

12 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.

13 Economic and Social Matters

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

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

operational phases).

Economic and social impacts should be considered at the local, regional and national levels. Details of the relevant cost and benefits of alternative options to the proposed action, as identified in section 3 above, should also be included.

14 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.

15 Conclusion

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

Measures proposed or required by way of offset for any unavoidable impacts on MNES, and the relative degree of compensation, should be restated here.

DRAFT

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.