Draft terms of reference

Environmental Protection Act 1994

Approved form for submission of draft terms of reference

This is the approved form to be used to submit a draft terms of reference under section 41 of the Environmental Protection Act 1994 *for resource projects undergoing assessment by environmental impact statement under chapter 3, part 1, of the EP Act.*

Ensham Life of Mine Extension Project proposed by Ensham Joint Venture July 2020

Queensland Government

Prepared by: Ensham Joint Venture (Bligh Coal Limited ACN 010 186 393, Idemitsu Australia Resources Pty Ltd ACN 010 236 272 and Bowen Investment (Australia) Pty Ltd ACN 002 806 831)

Completed in the approved form ESR/2017/4038, version 3.01, March 2020 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*.

July 2020

Contents

1. Purpose of the draft TOR

1.1 Introduction

This document is the draft terms of reference (TOR) for the Ensham Life of Mine Extension Project (herein referred to as 'the proposed project') proposed by Bligh Coal Limited, Idemitsu Australia Resources Pty Ltd and Bowen Investment (Australia) Pty Ltd (known as Ensham Joint Venture) 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:

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

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

Proponents that submit a site-specific application for an EA for a new mining activity that relates to a mining lease are required to develop and submit a proposed PRC plan as part of their application. Further guidance is available in the department's guidelines Progressive rehabilitation and closure plans (ESR/2019/4904[1]) and *Public interest evaluation* (when released).

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

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

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

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

adequate.

1.2 Information about the proposed project and assessment

1.2.1 Project proponent

Ensham Mine is operated by Ensham Resources Pty Ltd (Ensham), a wholly owned subsidiary of Idemitsu Australia Resources Pty Ltd (ACN 010236272) (IAR), on behalf of the Ensham Joint Venture (Ensham Joint Venture). The Ensham Joint Venture partners, and holders of the Environmental Authority (EA), are Bligh Coal Limited (ACN 010186393) (47.5 per cent), IAR (37.5 per cent) and Bowen Investment (Australia) Pty Ltd (ACN 002806831) (15 per cent). The Ensham Joint Venture partners are the proponent for the Ensham Life of Mine Extension Project (the proposed project). Ensham currently operates the existing mine under EA EPML00732813, dated 19 March 2020.

IAR is a subsidiary of the Japanese company Idemitsu Kosan Co. Ltd. The company and its associated group members have been operating in Australia for more than 40 years. IAR, previously known as Idemitsu Queensland Pty Limited, was renamed Idemitsu Australia Resources Pty Ltd in December 2006. The combined coal mining operations in Queensland (Ensham Mine) and New South Wales (Boggabri Mine and Muswellbrook Mine) support more than 1,000 local jobs and produce approximately 14 million tonnes per annum of thermal, semi-soft and PCI coals for export.

1.2.2 Proposed project description

Ensham Mine is an existing open-cut and single seam, underground bord and pillar coal mine located approximately 35 kilometres (km) east of Emerald in Queensland. The existing bord and pillar operations are located on ML 7459 and ML 70365 which extracts a portion of the various combined Aries/Castor seam plies.

The proposed project is located in the western part of the central Bowen Basin, within the Central Queensland region. It exists within the Central Highlands Regional Council (CHRC) Local Government Area. The proposed project locality is illustrated in **Figure 1**.

The project area is located within the rural margins between a range of central township nodes. The largest nearby townships include Emerald which is located approximately 35km west, and, Blackwater which is located 49km to the south-east. The small township of Comet is located approximately 18km south-east of the project area.

Resource activities are common within the region. There are 13 other active mine sites located within 65km of the project area.

The proponent proposes to develop the project to extend the life of the existing underground operations into an area identified as the project area commencing from within ML 7459, ML 70326, ML 70365, and ML 70366 to an area west of ML 70365 within part of Mineral Development Licence (MDL) 217.

The proposed project footprint is approximately 2,737 hectares (ha) and includes three zones (see **Figure 2**):

- Zone 1: MDL 217 and requires a ML application to be lodged (approximately 2,134 ha)
- Zone 2: partially includes existing leases ML 70326, ML 70365 and ML 7459 (approximately 394 ha)
- Zone 3: partially includes existing leases ML 7459 and ML 70366 (approximately 209 ha).

With inclusion of the proposed project, Ensham Mine will:

- Continue to produce at current planned production rates of 4.5 million tonnes per annum and would not seek to change the current Environmental Authority (EA) limit (condition A5) which authorises the mining of 12 million tonnes of run of mine coal per annum.
- Enable the extension of the Ensham Mine by up to nine years with sufficient coal reserves to approximately 2037.
- Extend the Ensham Mine underground operation to the west (encompassing a new mining lease area by developing a portion of MDL 217). No additional surface infrastructure or surface disturbance is proposed as part of the new mine lease area (ie. Zone 1).
- Continue to utilise approved operational mine infrastructure.
- Enable Ensham Mine to provide the continuation of long-term employment within the Central Highlands region.

The proposed project will enable Ensham to provide the continuation of employment within the Central Highlands region of approximately 603 full time employee operational personnel until the end of the proposed project in

approximately 2037. Approximately 78 per cent of the current workforce are either Emerald based or drive in / drive out based. The workforce will continue to include a mix of local residents and drive in / drive out personnel, while ensuring local employment opportunities and allowing personnel to choose where they live and work.

The proposed project is expected to commence in 2021. The use of conventional underground mining equipment, or similar forms of continuous miners, is currently anticipated.

Infrastructure requirements

Existing underground and surface infrastructure including road, rail and mine infrastructure equipment will be utilised. The proposed project will utilise the existing mine infrastructure area (MIA) facilities, which includes a coal handling plant. Therefore, no construction activities are required for the proposed project.

An upgrade of the coal handling plant is currently being investigated which would include dry processing which would be designed to comply with existing EA conditions. The coal handling plant upgrade module would be integrated into the existing footprint of the processing plant and on pre-approved disturbed area. The upgrade would assist with the dry removal of contaminants from the coal. Waste rock would continue to be disposed of in the existing open-cut pits as authorised under the current EA.

Currently, 66 kV power is provided to the Ensham Mine from the Ergon Lilyvale substation via an existing 27km overhead transmission line. The underground mine is supplied via an existing 66/11 KV 10MVA transformer located at Red Hill. Demand modelling conducted for the proposed project indicates there is sufficient capacity to supply power for the life of mine and no new surface electrical infrastructure will be required.

The current water supply system, including potable water infrastructure, will be utilised for the proposed project. Additional piping and booster pumps will be installed underground to supply the required water pressure for the project area. Water supply to the proposed project is expected to average approximately 52 mega litres per month. No changes in water licencing arrangements are expected for the proposed project.

No change to the existing water supply surface infrastructure would be required to accommodate for the project.

As the proposed project does not involve any construction activity, no construction workforce is required. It is expected that current operational workforce arrangements will continue for the proposed mine extension and no new accommodation facilities would therefore be required.

The proposed project is not anticipated to generate any increase in traffic volumes on the adjacent road network. Therefore, it is expected that the proposed project will have a negligible impact on the operation of the relevant sections of both the state-controlled (Capricorn Highway) and CHRC controlled (Duckponds Road) networks, and that the existing access facilities for the Ensham Mine via the gated access on Duckponds Road will be suitable for the expected future operations.

As such, there are no significant infrastructure requirements for the proposed project and no additional surface disturbance proposed to Zone 1 of the project area. Zone 2 and 3 of the project area are within approved mining leases for the Ensham Mine.

By using existing infrastructure and maintaining the current level of production, the proposed project aims to remain within the previously assessed levels of impact and current EA conditions.

Underlying tenure

The project area comprises nine registered land parcels. The tenure of these properties consists of freehold, reserve, and lands lease. Part of the project area is also subject to a secondary interest, being a strata easement. No off-lease activities are proposed as part of the proposed project.

For the purposes of land access for the EIS, Ensham Joint Venture holds underlying mining tenements, or has agreement with third party underlying tenement holders to lodge mining lease applications. A mining lease application will be made over parts of the operational land where a mining lease hasn’t been granted (i.e. Zone 1 of the project area).Proposed rehabilitation management

Progressive rehabilitation for the existing Ensham Mine is currently being undertaken and will continue for existing approved operations in accordance with the EA and Rehabilitation Management Plan.

Zones 2 and 3 of the project area partially overlap existing leases ML 70326, ML 70365, ML 7459 and ML 70366 at Ensham Mine. Post-mining, zones 2 and 3 are expected to be returned to pre-mining land use. Land use within zone 1 of the project area is expected to remain unchanged as no surface disturbance is proposed and subsidence is predicted to be negligible.

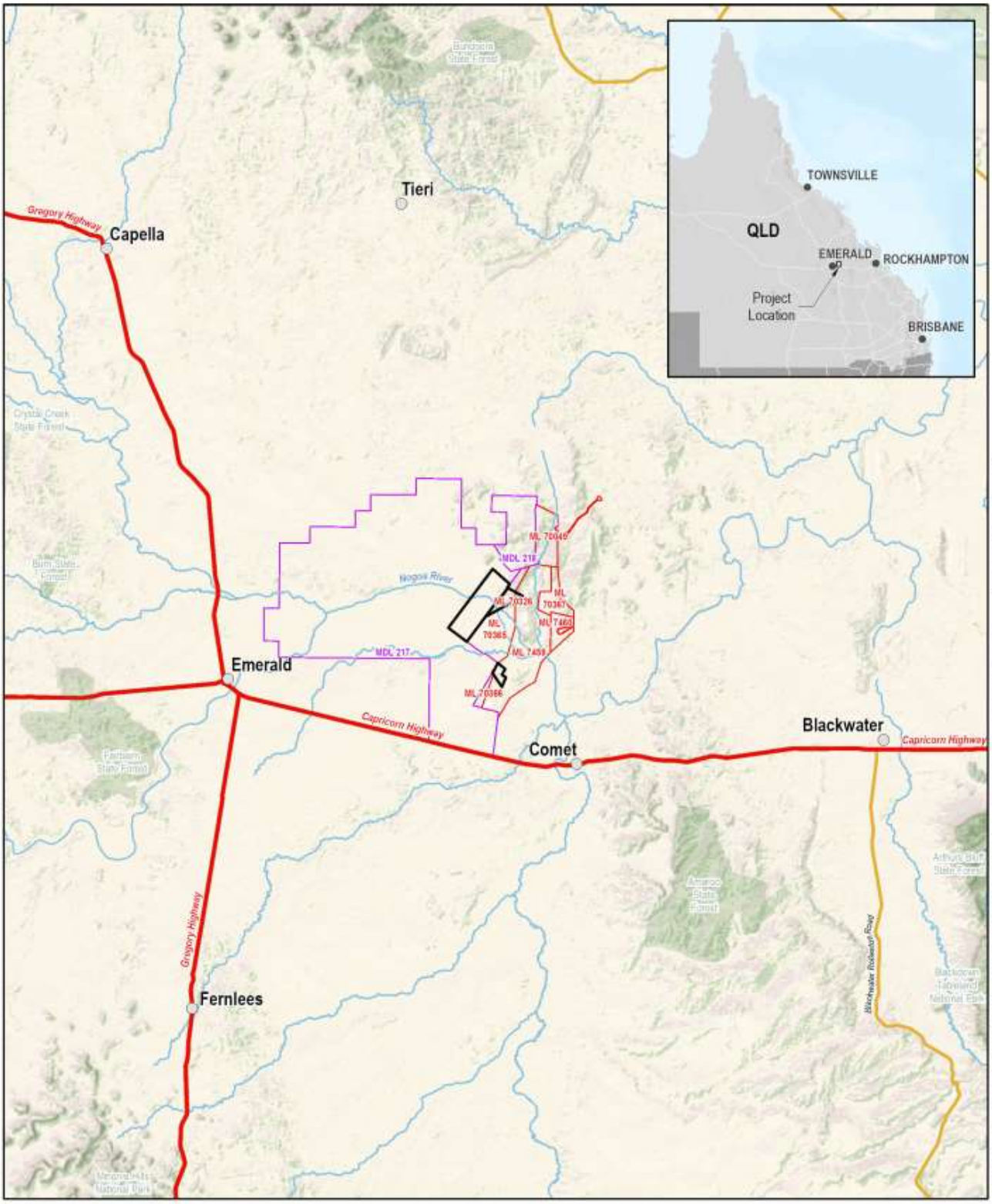

Figure 1
Regional Context

Figure 1 Regional Context

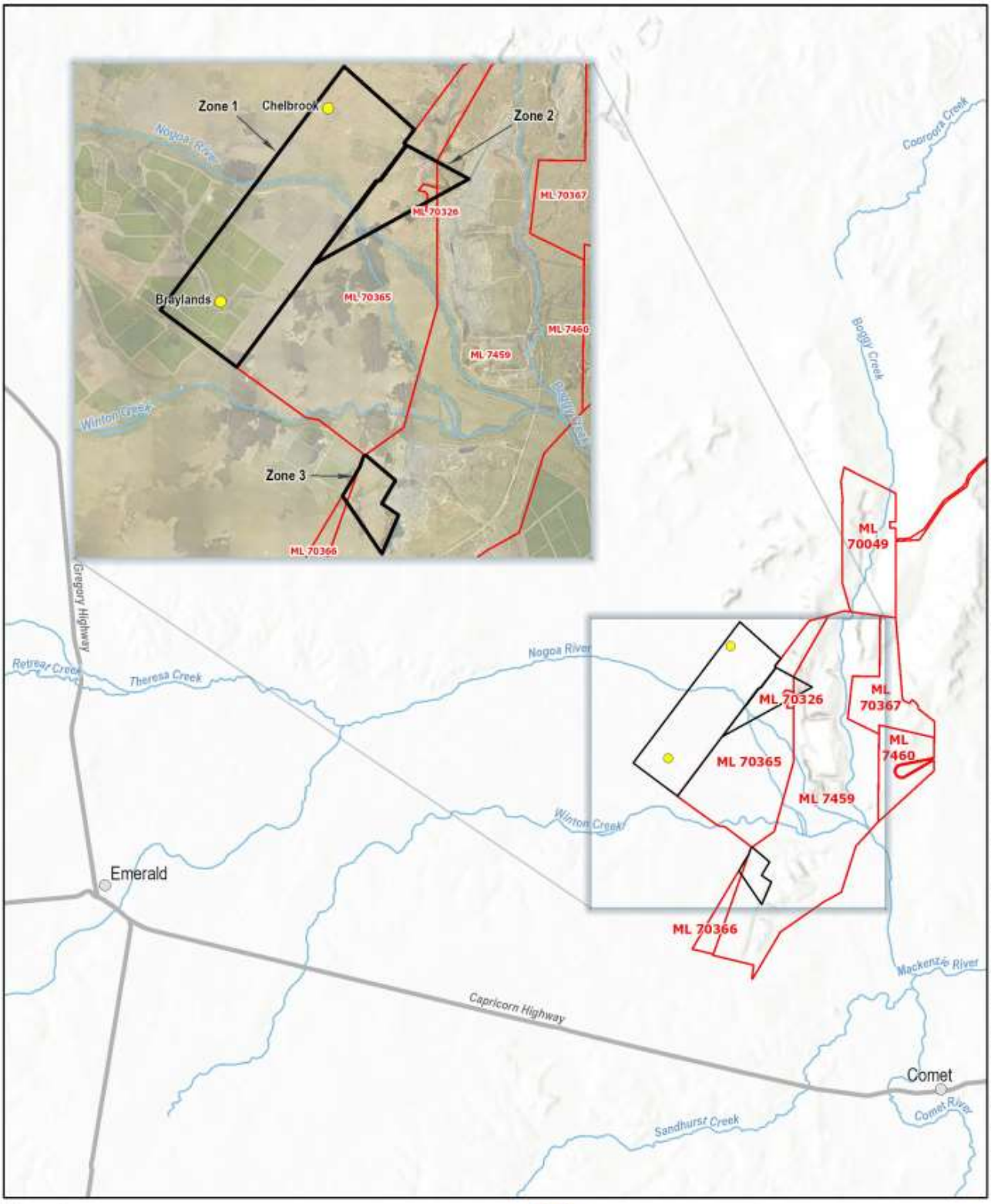

Figure 2 project area

1.2.3 EIS assessment process

On 10 June 2020 the department approved an application for the Ensham Joint Venture to voluntarily prepare an EIS under the EP Act for the Ensham Life of Mine Extension Project. Under section 139 of the EP Act, the EIS will form the application documents for the requirements of chapter 3 of the EP Act.

This is provided that the environmental risks of the activity or way the activity will be carried out, including any proposed PRC plan, do not change between when the EIS was completed under the EP Act and when the EA application was made.

The proposed project was determined to be a controlled action (EPBC 2020/8669) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlling provisions are 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 jointly assessed under the EP Act and the Commonwealth's EPBC Act using the EIS process 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 The environmental impact statement process for resource projects under the *Environmental Protection Act 1994* (ESR/2016/2167[2]) .

2 Content requirements of the EIS

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

3 Glossary

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

4 Executive summary

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

5 Introduction

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

5.1 Project proponent

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

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

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

- the 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.

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

6 Consultation process

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

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

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

7 Proposed project description and alternatives

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

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

7.1 Proposed project

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

- proposed project title
- proposed project objectives
- expected capital expenditure
- rationale for the proposed project
- background to the project's development and justification for its need
- proposed project description, including the nature and scale of all project components and activities
- whether it is a greenfield or brownfield site
- power and water supply
- 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
- relationship to other major projects, developments or actions of which the proponent should reasonably be aware
- the workforce numbers for all project phases
- where personnel would be accommodated and the likely recruitment and rostering arrangements to be adopted
- proposed travel arrangements of the workforce to and from work, including use of a fly-in-fly-out (FIFO) workforce.

7.2 Site description

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

Describe with concept and layout plans, in both plan- and cross-section views, requirements for constructing, upgrading or relocating all infrastructure associated with the proposed project. Show the locations of any necessary infrastructure easements on the plans, including infrastructure such as roads, rail (and the rail corridor), level crossings, conveyors, tracks and pathways, 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, design and layout plans for the following, if applicable to the proposed project:

- existing land uses and any previous land use that might have affected or contaminated the land
- existing buildings, infrastructure and easements on the potentially affected land
- the precise location of works to be undertaken, structures to be built or components of the project
- all pre-construction activities (including vegetation clearing, site access, interference with watercourses, wetlands and floodplain areas)
- the proposed construction methods, associated equipment and techniques
- road and rail infrastructure, and stock routes, including new constructions, closures and/or realignments
- 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
- 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 for the proposed project. Address a range of alternatives including conceptual, technological, locality, configuration, scale and individual elements or components that may improve environmental outcomes as well as the alternative of not proceeding with the proposed project.

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

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

8 The environmental impact assessment process

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

8.1 Environmental values

For the purposes of the EIS process, 'environment' is defined in section 8 of the EP Act.

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), environmental protection policies and associated guidelines
- values under other State legislation, policies and guidelines including the *Vegetation Management Act 1999*, the *Nature Conservation Act 1992*, the *Regional Planning Interests Act 2014*
- 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:
    - the impact's intensity and duration
    - cumulative effects of the proposed project in combination with other major projects or developments of which the proponent should reasonably be aware
    - the risk of environmental harm
    - avoidance, mitigation and management strategies and if necessary, offsets provisions
    - the potential for unforeseen impacts
    - the risks associated with unlikely but potentially major impacts
    - direct, indirect, secondary, permanent, temporary, unknown, unpredictable and/or irreversible impacts
    - both positive and negative impacts
    - impact interactions.

8.3 Cumulative impacts

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

Impact assessment must address cumulative impacts, including:

- environmental values of land, air and water, public health and the health of terrestrial and aquatic ecosystems
- environmental values over time or in combination with other impacts in the dimensions of scale, intensity, duration or frequency of the impacts
- impacts created by the activities on other adjacent, upstream and downstream developments and infrastructure, and landholders.

8.4 Avoidance and mitigation

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

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

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

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

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

8.5 Conditions and commitments

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

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

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

8.6 Information sources

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

8.7 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 has the potential to cause serious or material environmental harm or an environmental nuisance.
- It is relevant to a controlling provision under the EPBC Act.
- It raises obligations under any other legislation applicable for the proposed project (e.g. *Water Act 2000*).

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

8.7.1 Critical environmental matters for this project

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

- Land
- Water Resources
- Water Quality
- Flooding
- Matters of National Environmental Significance.

9 Project specific matters

9.1 Climate

Not a critical matter

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

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

Assess the proposed project's vulnerabilities to projected climate change (e.g. changing patterns of temperature, rainfall, hydrology, and extreme weather events). The assessment of climate hazards and risks should reference relevant climate projection data and employ standard risk assessment methodologies. Describe the adaptation strategies and/or activities designed to minimise climate change impacts to the proposed project, subsequent land uses on that site (e.g. rehabilitation projects) and surrounding land uses. Adaptation activities must be designed to

avoid perverse outcomes, such as increased emissions of greenhouse gases or maladaptive outcomes for surrounding land uses.

9.2 Land

Critical matter (in relation to strategic cropping land and priority agricultural areas within the project area which require assessment under the *Regional Planning Interests Act 2014*)

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

Impact assessment

Conduct the impact assessment in accordance with the latest version of the department's Land—EIS information guideline (DES 2020), Applications for activities with impacts to land (ESR/2015/1839[3]), DAFF Environmental impact assessment companion guide (DAFF 2014), RPI Act statutory guideline 11/16 companion guide (DILGP 2017) and, if any quarry material is needed for construction, the department's Quarry material—EIS information guideline (DES 2020). Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.

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
    - strategic cropping land, priority agricultural areas, priority living area and strategic environmental areas under the *Regional Planning Interests Act 2014* and the trigger map for strategic cropping land
    - findings of the Agricultural land audit
    - impacts on Property and Project Plans approved under the *Soil Conservation Act 1986*
    - constraints to the expansion of existing and potential agricultural land uses.
- Identify any existing or proposed incompatible land uses within and adjacent to the site, including the impacts on economic resources and the future availability and viability of the resource including extraction, processing and transport location to markets.
- Identify any infrastructure proposed to be located within, or which may have impacts on, the stock route network associated with the *Stock Route Management Act 2002.*

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

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

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

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

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. Propose detailed mitigation measures for any significant impacts that would result from subsidence including impacts on infrastructure, land, hydrology, flora and fauna.

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's Native title work procedures (DNRM 2017).

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

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

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

9.3 Rehabilitation and closure

Not a critical matter

Environmental objective and outcomes
Land disturbed by mining activities will be rehabilitated progressively as it becomes available, to minimise the risks of environmental impacts and reduce cumulative areas of disturbed land. The activity is operated in a way that protects the environmental values of land including soils, subsoils, landforms and associated flora and fauna. The activity is operated in a way that disturbed land will be rehabilitated or restored to a stable condition; the land is safe and structurally stable, there is no environmental harm being caused by anything on or in the land, and, the land can sustain a post-mining land use. The progress and outcomes of progressive rehabilitation activities will be monitored and reported on to demonstrate how successful they have been in achieving progress towards the agreed final land use, and to inform corrective action where required.

Impact assessment

Address the 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.

Address the rehabilitation requirements of the EP Act including the provisions requiring a proposed progressive rehabilitation and closure plan (PRC plan). Demonstrate that the proposed rehabilitation is consistent with the department's guideline Progressive rehabilitation and closure plans (ESR/2019/49644) and best practice approaches about the strategies and methods for progressive and final rehabilitation.

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

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

9.3.1 Proposed PRC plan

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

The proposed PRC plan must consist of two components:

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

The proposed PRC plan should be consistent with the information requirements in the department's Submission of a progressive rehabilitation and closure plan (ESR/2019/4957[5]).

9.3.1.1 Rehabilitation planning part

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

- Describe each resource tenure, including the area of each tenure.
- Describe the relevant activities and the likely duration of the relevant activities.
- Include a detailed description, including maps, of how and where the relevant activities are to be carried out.
- Include details of the consultation undertaken by the applicant in developing the proposed PRC plan.
- Include details of how the applicant will undertake ongoing consultation in relation to the rehabilitation to be carried out under the plan.
- State the extent to which each proposed post-mining land use or non-use management area is consistent with the outcome of consultation with the community in developing the plan and any strategies or plans for the land of a local government, the State or the Commonwealth.
- For each proposed post-mining land use, state the applicant's proposed methods or techniques for rehabilitating the land to a stable condition in a way that supports the rehabilitation milestones under the proposed PRCP schedule.
- Identify the risks of a stable condition for land identified as a proposed post-mining land use not being achieved, and how the applicant intends to manage or minimise the risks.
- For each proposed non-use management area, state the reasons the applicant considers the area cannot be rehabilitated to a stable condition because of either of the below:
    - carrying out rehabilitation of the land would cause a greater risk of environmental harm than not carrying out the rehabilitation or
    - the risk of environmental harm as a result of not carrying out rehabilitation of the land is confined to the area of the relevant resource tenure and the applicant considers, having regard to each public interest consideration, that it is in the public interest for the land not to be rehabilitated to a stable condition.
- Include copies of reports or other evidence relied on by the applicant for each proposed non-use management area.
- For each proposed non-use management area, state the applicant's proposed methodology for achieving best practice management of the area to support the management milestones under the proposed PRCP schedule for the area.
- Include other information requirements outlined in the department's statutory guideline Progressive rehabilitation and closure plans (ESR/2019/4964[6]).

9.3.1.2 PRCP schedule

Provide a proposed PRCP schedule[7] which describes time-based milestones for achieving each post-mining land

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

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

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

uses or non-use management areas for the proposed project. Present the proposed PRCP schedule in the table template included in the department's Submission of a progressive rehabilitation and closure plan (ESR/2019/4957[8]).

The proposed PRCP schedule, must identify:

- all land within the resource tenure as either a post-mining land use or non-use management area
- when land becomes available for rehabilitation or improvement
- rehabilitation milestones to achieve a post-mining land use
- management milestones to achieve a non-use management area
- milestone criteria that demonstrate when each milestone has been completed
- completion dates for each milestone to be achieved
- a final site design.

All milestone criteria must be consistent with the SMART principles[9].

schedule.

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

[9] SMART milestones are:

- **S**pecific – it is clear what must be done
- **M**easurable – it must be possible to know when it has been achieved
- **A**chievable – it is capable of being achieved
- **R**easonable/relevant – there is a clear connection between the milestone and the desired outcomes. The requirement is reasonable
- **T**ime Specific – it is clear when the milestone will be completed.

9.4 Water

9.4.1 Water quality

Critical matter (in relation to potential impacts on MNES protected under the EPBC Act)

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 department's Water—EIS information guideline (DES 2020), Applications for activities with impacts to water (ESR/2015/1837[10]), Water quality guidelines (Queensland Government, 2020), Monitoring and sampling manual (DES 2018), and the Groundwater quality assessment guideline (DSITI 2017). Demonstrate that the proposed project can meet the environmental objectives and performance outcomes in Schedule 8 of the EP Regulation.

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

Define the relevant water quality objectives applicable to the environmental values, and demonstrate how these will be met by the proposed project during construction, operation, decommissioning and following proposed project completion. Where water quality objectives are not available local water quality objectives should be derived according to department's latest Water quality guidelines (Queensland Government, 2020) 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 timing[11] 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 and Wetland Biodiversity) 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 measureable 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.

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

[11] 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

9.4.2 Water resources

Critical matter (in relation to potential impacts on MNES protected under the EPBC Act)

Environmental objective and outcomes
With regard to water resources, the proposed project should meet the following objectives: • equitable, sustainable and efficient use of water resources • maintenance of environmental flows and water quality to support the long term condition and viability of terrestrial, riverine, wetland, lacustrine, estuarine, coastal and marine ecosystems • maintenance of the stability of beds and banks of watercourses, and the shores of waterbodies, estuaries and the coast • maintenance of supply to existing users of surface and groundwater resources.

Impact assessment

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

Describe present and potential users and uses of water in areas potentially affected by the proposed project, including municipal, agricultural, industrial, recreational 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 hydraulic properties; 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, and the effect of geological structures on this movement
- characterise the quality and volume of the groundwater including seasonal variations of groundwater levels
- provide surveys of existing groundwater supply facilities (e.g. bores, wells, or excavations).

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

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

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

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

Identify any approvals or entitlements that would be needed under the *Water Act 2000*.Specifically address whether or not the proposed project would take water from, or affect recharge to, aquifers of the Great Artesian Basin. Describe the practices and procedures that would be used to avoid or minimise impacts on water resources.

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

Include maps of suitable scale showing the location of diversions and other water-related infrastructure in relation to resource infrastructure. Detail any significant diversion or interception of overland flow, including the effects of subsidence.

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

Describe the proposed supply of 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 provide the information requirements contained in the IESC's Information guidelines (IESC, 2020) including relevant information guidelines explanatory notes (e.g. uncertainty analysis, assessing groundwater-dependent ecosystems).

9.4.3 Flooding

Critical matter (in relation to potential impacts on MNES protected under the EPBC Act)

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.

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

9.5 Regulated structures

Not a critical matter

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

Conduct the impact assessments on regulated structures in accordance with the latest version of the department's guidelines on Regulated structures— EIS information guideline (DES 2020), Structures which are dams of levees

constructed as part of environmentally relevant activities (ESR/2016/1934[12]), and Manual for assessing hazard consequence categories and hydraulic performance of structures (ESR/2016/1933[13]).

Describe the purpose of all dams or levees proposed on the project site. Show their locations on appropriately scaled maps, and provide plans and cross-sections, illustrating such features as embankment heights, spillways, discharge points, design storage allowances, and maximum volumes. Describe how storage structures and other infrastructure would be sited to avoid or minimise risks from flooding.

Undertake a consequence category assessment for each dam or levee, according to the criteria outlined in department's Manual for assessing hazard consequence categories and hydraulic performance of structures (ESR/2016/1933[14]). The assessment must be undertaken for the three different failure event scenarios described in department's manual, i.e. for seepage, overtopping and dam break. Regulated structures must comply with the Manual for assessing hazard consequence categories and hydraulic performance of structures (ESR/2016/1933[15]) in accordance with schedule 8, division 2 of the EP Regulation.

Following the consequence category assessment, determine the consequence category ('low, significant, or high') according to table 1 of department's Manual for assessing hazard consequence categories and hydraulic performance of structures (ESR/2016/1933[16]) 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

Not a critical matter

Environmental objective and outcomes
The activity will be operated in a way that protects the environmental values of land including soils, subsoils, landforms and associated flora and fauna.
There will be no potential or actual adverse effect on a wetland as part of carrying out the activity.
The proposed project minimises serious environmental harm on areas of high conservation value and special significance and sensitive land uses at adjacent places.
The location for the activity on a site protects all environmental values relevant to adjacent sensitive use.
The proposed project manages the impacts on the environment by seeking to achieve ecological sustainability, including protected wildlife and habitat.
Critical habitat receives special management considerations and protection through a management plan for the proposed project.
The proposed project avoids significant residual impacts to matters of national environmental significance (MNES) and matters of state environmental significance (MSES), mitigates impacts where they cannot be avoided, and offsets any residual impacts.
The 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.

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

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

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

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

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

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

guidelines, including the latest version of the department's EIS information guidelines (DES 2020) that cover *terrestrial ecology, aquatic ecology, coastal groundwater dependent ecosystems, water, matters of national environmental significance,* and *biosecurity*.

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

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 such as stygofauna and their interactions
- biological diversity
- the integrity of ecological processes, including habitats of listed threatened, near threatened or special least-concern species
- connectivity of habitats and ecosystems
- the integrity of landscapes and places, including wilderness and similar natural places
- chronic, low-level exposure to contaminants or the bio-accumulation of contaminants
- direct and indirect impacts on terrestrial and aquatic species and ecosystems whether due to: vegetation clearing; hydrological changes; discharges of contaminants to water, air or land; noise; and other relevant matters
- likely impacts of shipping, transhipping and barge movements on estuarine and marine plants and fauna Describe any actions of the proposed project that require an authority under the *Nature Conservation Act 1992*, and/or would be assessable development for the purposes of the *Vegetation Management Act 1999*, the *Regional Planning Interests Act 2014,* the *Fisheries Act 1994* and the *Planning Act 2016.* Features to consider include regional ecosystems, environmentally sensitive areas, 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.

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 (DES 2020).

- Where the Commonwealth offset policy requires an offset for significant residual impacts on a MNES, the offset proposal(s) must be consistent with the requirements of the latest version of the EPBC Act environmental offsets policy (DSEWPC 2012) and relevant guidelines.

9.6.2 Biosecurity

Environmental objective and outcomes
The construction, operation and decommissioning of the proposed project should ensure: • the introduction and spread of weeds, pests (including marine pests) and disease, pathogens and contaminants are avoided or minimised • existing weeds and pests, including marine pests, are controlled, including biosecurity threats and their management • the performance outcomes correspond to the relevant policies, legislation and guidelines, and that sufficient evidence is supplied (through studies and proposed management measures) to show these outcomes can be achieved.

Impact assessment

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

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

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

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

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

9.7 Air

Not a critical matter

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 Air—EIS information guideline (DES 2020) and Applications for activities with impacts to air (ESR/2015/1840[17]). The description of impacts should take into consideration the sensitivity and assimilative capacity of the receiving environment and the practices and

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

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) or not.

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

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

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

Provide an inventory of projected annual emissions for each relevant greenhouse gas, with total emissions expressed in 'CO_2 equivalent' terms. Estimate emissions from upstream activities associated with the proposed project, including the fossil fuel based electricity to be used during construction, operation and decommissioning and briefly describe the methods used to make the estimates. The *National Greenhouse and Energy Reporting (Measurement) Determination 2008* provides methods and criteria for calculating greenhouse gas emissions and energy data under the NGER Act which can be used in combination with National greenhouse energy report technical guidelines (DAWE, 2020) 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:

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

9.8 Noise and vibration

Not a critical matter

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 Noise and vibration—EIS information guideline (DES 2020) and Applications for activities with noise impacts

(ESR/2015/1838[18]). 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

Not a critical matter

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

Impact assessment

Conduct the impact assessment in accordance with the latest version of the department's Waste—EIS information guidelines (DES 2020) and Applications for activities with waste impacts (ESR/2015/1836[19]). 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 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 and 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.

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

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

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

Identify end of waste codes (Queensland Government, 2020) under the *Waste Reduction and Recycling Act 2011* which may be relevant for the proposed project. This may include associated water (including coal seam gas water), associated water for irrigation (including coal seam gas water), coal seam gas drilling mud, coal combustion products.

9.10 Hazards and safety

Not a critical matter

Environmental objective and outcomes
The construction and operation of the proposed project should ensure: • 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 *Explosives Act 1999* and codes and standards including the *Australian Standard AS2187.1 Explosives - Storage, transport and use - storage* • the proposed project prevents or minimises the production of hazardous contaminants and waste • if the production of hazardous contaminants and waste is unavoidable, the proposed project treats and/or contains hazardous contaminants until their disposal at an approved facility.

Impact assessment

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

- The safety of employees during design and planning of the proposed project.
- Potential hazards (including those associated with petroleum and gas pipelines, abandoned mines, explosive magazines and the storage and use of explosives as part of construction), accidents, spillages, fire and

abnormal events that may occur during all stages of the proposed project, including estimated probabilities of occurrence.

- Hazard analysis and risk assessment in accordance with:
    - *AS/NZS ISO 31000:2018 Risk management guidelines* and with *HB203:2006 Environmental risk management principles and processes* and
    - the Queensland Emergency Risk Management Framework (Queensland Government, 2020) as the endorsed approach to disaster and emergency risk management in Queensland.
- Demonstrate that any major hazard facility involving dangerous and hazardous materials is appropriately located in accordance with State Development Assessment Provisions, Code 21, Hazardous chemical facilities (Queensland Government, 2020).
- Identify all hazardous substances and any explosives to be used, transported, stored, processed or produced and the rate of usage.
- Evaluate the risks associated with the secure storage, use and transportation of explosives to ensure the risks are within an acceptable standard in accordance with *Australian Standard AS2187.1 Explosives - Storage, transport and use – storage*.
- Identify the need for appropriate explosive licences and notice of proposed blasting prior to explosives use.
- Consider geophysical risk management such as earthquakes. The State Earthquake Risk Assessment includes probabilities of major seismic events for all local government areas and should be used to inform risk consideration and management.
- Address the potential cyclone and severe wind hazard and risk to the project and the heat and heatwave risk management refer to the State Heatwave Risk.
- Potential wildlife hazards, including a development of a mosquito management plan in accordance with Queensland Health guidelines, natural events (e.g. cyclone, storm tide inundation, flooding, and bushfire) and implications related to climate change and adaptation.
- Describe natural hazards that may affect the site with at least a 1% annual exceedance probability or 100 year average reoccurrence interval level, including mapping of the potential hazard areas at the site.
- 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.
- How natural processes and the protective function of landforms and vegetation will be maintained in sea erosion and storm tide inundation areas.
- Provide details on the safeguards that would reduce the likelihood and severity of hazards, consequences and risks to persons, within and adjacent to the proposed project area(s). Identify the residual risk following application of proposed mitigation measures. Present an assessment of the overall acceptability of the impacts of the proposed project in light of the residual uncertainties and risk profile.
- As part of the emergency response plan include:
    - a bushfire management plan, certified by a suitably qualified person, in consultation with the Queensland Fire and Emergency Services addressing construction and operations, and including the following information at a minimum:
        i. a bushfire hazard analysis
        ii. mitigation strategies to achieve the relevant development outcomes in Part E of the State Planning Policy– Natural Hazards, Risk and Resilience (DILGP 2017)
        iii. provides details of the proposed ongoing management of fuel loads across the subject site through grazing or mechanical means including the asset protection zone proposed
    - a safety and emergency management plan addressing construction and operations, and including the following information at a minimum:
        i. evacuation plans for the construction and operation phases of the development
        ii. safety management plans and emergency response procedures in consultation with the state and regional emergency service providers (including Queensland Fire and Emergency Services) and provide an adequate level of training to staff who will be tasked with emergency management activities.

- Provide an outline of the proposed integrated emergency management planning procedures, including evacuation plans, 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

Not a critical matter

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

Impact assessment

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

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

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

Not a critical matter

Environmental objective and outcomes
The construction, operation and closure 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 (DSDMIP 2018).

Develop the SIA in consultation with the Office of the Coordinator-General, Department of State Development, Manufacturing Infrastructure and Planning.

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

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

9.12.1 Key SIA outcomes

Describe in the SIA:

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

Consultation for the SIA

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

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

Workforce arrangements

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

- provide workers for the construction and operational phases of the project, and
- receive workers and their families who move to the towns.

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

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

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

Social impact management plan

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

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

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

9.13 Economic

Not a critical matter

Environmental objective and outcomes
The construction and operation of the proposed project should ensure that: • avoid or mitigate adverse economic impacts arising from the proposed project • capitalise on opportunities potentially available for capable local industries and communities • create a net economic benefit to the region and state.

Impact assessment

Identify the potential adverse and beneficial economic impacts of the proposed project on the local and regional area and the state. Estimate the costs and benefits and economic impacts of the proposal using both regional impact analysis and cost–benefit analysis. Undertake the analysis in accordance with the Coordinator-General's

Economic impact assessment guideline (DSDMIP 2017). Separately address each stage of the proposed project (e.g. construction, operation and decommissioning).

Identify recreational, commercial or indigenous fisheries potentially impacted by the proposed project and undertake consultation with these stakeholders.

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

9.14 Transport

Not a critical matter

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 Transport—EIS information guideline (DES 2020). The methods used should include the following matters:

- for impacts on roads: a traffic impact assessment report in accordance with the Guide to traffic impact assessment (DTMR 2018), with traffic data in Department of Transport and Main Roads-suitable formats.
- for impacts on rail level crossings: the Australian Level Crossing Assessment Model (ALCAM, 2020).

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).

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[20]. 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 Significance under the EPBC Act

Critical matter (in relation to potential impacts on MNES protected under the EPBC Act)

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

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

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

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

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 on Coal Seam Gas and Large Coal Mining Development (IESC). 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

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 would be carried over into conditions as relevant.

11 Conditions

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

As part of the PRC plan (refer to Section 9.3) provide a PRCP schedule which sets out the milestones and conditions that relate to the completion of progressive rehabilitation and mine closure. The PRC plan must be consistent with the department's guideline (ESR/2019/4964[21]).

12 Appendices to the EIS

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

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

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

13 Spatial and electronic data presentation

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

Provide spatial data presented in the EIS to the department in appropriate electronic form, such as shape files. This includes all water quality and waste water quality data. Refer to the department's guideline Spatial information submission (ESR/2018/4337[22]) for information on the format for spatial information.

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

Appendix 1 Glossary

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

Acronym/abbreviation	Definition
AHD	Australian Height Datum
Bilateral agreement	an agreement between the Australian Government and the State of Queensland under section 45 of the *Environment Protection and Biodiversity Conservation Act 1999* relating to environmental assessment
CHRC	Central Highlands Regional Council
CSG	coal seam gas
CMU	cumulative management area
Department	the Queensland Department of Environment and Science
EA	environmental authority
EIS	environmental impact statement
EP Act	*Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
EP Regulation	Environmental Protection Regulation 2019
ERA	environmentally relevant activity
FIFO	fly-in-fly-out
GDA2020	Geocentric Datum of Australia 2020
IAR	Idemitsu Australia Resources Pty Ltd
IESC	Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development
MDL	mineral development licence
MIA	mine infrastructure area
ML	mining lease
MNES	matters of national environmental significance
MSES	matters of state environmental significance
NGER Act	*National Greenhouse Energy Reporting Scheme Act*
Proposed PRC plan	proposed progressive rehabilitation and closure plan
Proposed PRCP schedule	proposed progressive rehabilitation and closure plan schedule
SIA	social impact assessment
SSRC Act	*Strong and Sustainable Resource Communities Act 2017*
TOR	terms of reference

Appendix 2 Policies, guidelines and references

The most recent version of the following documents must be considered in the development of the EIS for the Ensham Life of Mine Extension Project.

Australian Level Crossing Assessment Model, viewed March 2020, http://alcam.com.au/documentation.aspx

ANZECC and ARMCANZ, *Australian and New Zealand guidelines for fresh and marine water quality*, Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand, viewed March 2020, https://www.waterquality.gov.au/guidelines/anz-fresh-marine

Barnett B, Townley LR, Post V, Evans RE, Hunt RJ, Peeters L, Richardson S, Werner AD, Knapton A and Boronkay A 2012, *Australian groundwater modelling guidelines,* Australian Government National Water Commission, Canberra.

Department of Agriculture, Fisheries and Forestry 2014, *DAFF Environmental impact assessment companion guide*, Queensland Government, Brisbane, viewed March 2020, https://www.daf.qld.gov.au/business-priorities/agriculture/sustainable/environmental-impact-assessment

Department of Agriculture, Water and the Environment, *National greenhouse energy report technical guidelines*, Australian Government, Canberra, viewed March 2020, http://www.environment.gov.au/climate-change/climate-science-data/greenhouse-gas-measurement/nger/technical-guidelines

Department of Environment and Heritage Protection 2012, *Coal seam gas water management policy*, Queensland Government, Brisbane, viewed March 2020, https://environment.des.qld.gov.au/management/activities/non-mining/water/csg-water

Department of Environment and Science, *End of waste codes*, Queensland Government, viewed March 2020, https://environment.des.qld.gov.au/management/waste/business/end-of-waste-classification

Department of Environment and Science 2018, *Monitoring and sampling manual: Environmental Protection (Water) Policy 2009*, Queensland Government, Brisbane, viewed March 2020, https://environment.des.qld.gov.au/__data/assets/pdf_file/0031/89914/monitoring-sampling-manual-2018.pdf

Department of Environment and Science 2020, *Environmental impact statement information guidelines*, Queensland Government, Brisbane, viewed March 2020, https://www.qld.gov.au/environment/pollution/management/eis-process/about-the-eis-process/developing-an-eis

Department of Natural Resources and Mines 2017, *Native title work procedures*, Queensland Government, Brisbane, viewed March 2020, https://www.dnrme.qld.gov.au/qld/atsi/native-title-work-procedures/work-procedures

Department of Natural Resource, Mines and Energy 2019, *Guideline: Works that interfere with water in a watercourse for a resource activity—watercourse diversions authorised under the* Water Act 2000, OSW/2019/4599, Queensland Government, Brisbane, viewed March 2020, https://www.dnrme.qld.gov.au/?a=109113:policy_registry/watercourse-diversions-water-act.pdf&ver=2.00

Department of Infrastructure, Local Government and Planning 2016, State Planning Policy—State interest guideline coastal environment, Queensland Government, Brisbane, viewed March 2020, http://www.dlgrma.qld.gov.au/resources/guideline/spp/spp-guideline-coastal-environment.pdf

Department of Infrastructure, Local Government and Planning 2017, State Planning Policy, Queensland Government, Brisbane, viewed March 2020, https://www.cabinet.qld.gov.au/documents/2017/May/SPP/Attachments/Policy.pdf

Department of Infrastructure, Local Government and Planning 2017, *RPI Act Statutory Guideline 11/16 Companion Guide. A guide for state agencies and proponents on the requirements of the Regional Planning Interests Act 2014 in the planning and development process*, Queensland Government, Brisbane, viewed March 2020, https://dsdmipprd.blob.core.windows.net/general/rpi-guideline-11-16-dilgp-companion-guide.pdf

Department of Science, Information Technology, Innovation and the Arts 2017, *Groundwater quality assessment guideline: Using monitoring data to assess groundwater quality and potential environmental impacts,* Queensland Government, Brisbane, https://publications.qld.gov.au/en/dataset/groundwater-quality-assessment-guideline/resource/472cc88a-000a-4bb8-a60d-204cfe7e0238

Department of State Development Manufacturing Infrastructure and Planning 2017, *Economic impact assessment guideline*, Queensland Government, Brisbane, viewed March 2020, http://www.coordinatorgeneral.qld.gov.au/resources/guideline/cg/economic-impact-assessment-guideline.pdf

Department of State Development Manufacturing Infrastructure and Planning 2018, *Social impact assessment guideline*, Queensland Government, Brisbane, viewed March 2020, https://www.statedevelopment.qld.gov.au/coordinator-general/strong-and-sustainable-resource-communities/social-impact-assessment.html

Department of State Development Manufacturing Infrastructure and Planning 2020, *State Development Assessment Provisions*, Queensland Government, Brisbane, viewed March 2020, https://www.dlgrma.qld.gov.au/resources/policy/sdap/v2/sdap.pdf

Department of Sustainability, Environment, Water, Populations and Communities 2012, Environment Protection and Biodiversity Conservation Act 1999 *Environmental offsets policy*, Australian Government, Canberra, viewed March 2020, http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy

Department of Transport and Main Roads 2018, *Guide to traffic impact assessment*, Queensland Government, Brisbane, viewed March 2020, https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Guide-to-Traffic-Impact-Assessment

Department of Transport and Main Roads 2019, *Maritime Safety Queensland guidelines for major development proposals*, Queensland Government, Brisbane, viewed March 2020, https://www.msq.qld.gov.au/Waterways/Major-development-proposals.aspx

Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development, IESC Publications and resources, viewed March 2020, http://www.iesc.environment.gov.au/publications

Joint Standards Australia/Standards New Zealand Committee 1998, *Explosives–Storage, transport and use–Storage, AS2187.1*

Joint Standards Australia/Standards New Zealand Committee 2012, *Managing environment-related risk, SA/SNZ HB 203:2012*

Joint Standards Australia/Standards New Zealand Committee 2018, *Risk management—Guidelines AS/NZS ISO 31000:2018*

Queensland Government, *Environmental authority conditions*, Business Queensland, Queensland Government, viewed March 2020, https://www.business.qld.gov.au/running-business/environment/licences-permits/applying/conditions

Queensland Government, *Environmental offsets*, Queensland Government, Brisbane, viewed March 2020, http://www.qld.gov.au/environment/pollution/management/offsets

Queensland Government, *Queensland emergency risk management framework*, viewed March 2020, https://www.disaster.qld.gov.au/qermf/Pages/Resources.aspx

Queensland Government, *Surat Cumulative Management Area*, Queensland Government, Brisbane, viewed March 2020, https://environment.des.qld.gov.au/management/activities/non-mining/coal-seam-gas/cumulative-management

Queensland Government, *Water quality guidelines*, Queensland Government, Brisbane, viewed March 2020, https://environment.des.qld.gov.au/management/water/quality-guidelines

Appendix 3 Terms of reference for matters of national environmental significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* requirements[23]

The proposed action was referred on 29 May 2020 to the Australian Government Department of Agriculture, Water and Environment (DAWE), submitted as referral EPBC 2020/8669. On 29 June 2020, the delegate of the Minister for the Environment determined the proposed action to be a controlled action under the Commonwealth EPBC Act.

The controlling provisions are sections:

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

The proposed action will be assessed under the bilateral agreement between the Commonwealth and the State of Queensland (section 45 of the EPBC Act) using the EIS prepared under the *Environmental Protection Act 1994* (Qld) (EP Act).

General content

The Terms of Reference (TOR) must be addressed by the proponent in a stand-alone section that primarily focuses on the MNES listed above. This section (henceforth called the 'MNES section') must contain sufficient information to be read alone with reference to technical data or supplementary reports, where appropriate. Any detailed technical information to support the text in the MNES section must be included as appendices to the draft EIS. The EIS should enable interested stakeholders and the Minister to understand the environmental consequences of the proposed action. The information should be sufficient to allow the Minister, or their delegate, to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the taking of the action for the purposes of each controlling provision.

The MNES section must take into consideration the EPBC Act Significant Impact Guidelines and other relevant EPBC Act policy statements 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 must consult with DAWE on the preferred presentation of that material, before submitting it to the Minister for approval for publication.

The level of analysis and detail provided should reflect the level of significance of the potential impacts on MNES. Any and all unknown variables or assumptions made in the assessment must be clearly stated and discussed. Further, any claims made need to be adequately justified and supported with evidence. The extent to which the limitations, if any, of available information may influence the conclusions of the environmental assessment should

[23] Provided by the Commonwealth Environment Department

be discussed.

The MNES section must not just state proposed management plans and/or broad objectives to describe avoidance, mitigation and management measures. The MNES section must include detailed measures that will be implemented to avoid, mitigate and manage impacts on water resources. Particularly for avoidance, mitigation and management measures under each MNES, committed language (i.e. 'will') rather than non-committal language (i.e. 'may', 'where possible', 'if required', etc.) must be used.

The proponent must ensure that the MNES section assesses compliance of the action with the principles of Ecological Sustainable Development as set out in the EPBC Act, and the objects of the EPBC Act at Appendix 3: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 Appendix 3:Attachment 2.

Format

The MNES section must be written so that any conclusions reached are supported by clear evidence and can be independently assessed. To this end all sources, include scientific publications, reports, and valid information from internet web pages, used as data sources must be appropriately cited and referenced in the reference list using the Harvard standard.

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

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

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 of the designated proponent, including description of joint venture, if applicable, and postal address of the designated proponent;
c. a description of the EA approval or, if relevant, EA amendment;
d. a description of the mining lease and other state approval required for the action;
e. a clear outline of the objective of the action;
f. the location of the action;
g. the background to the development of the action;
h. 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;
i. the current status of the action; and
j. the consequences of not proceeding with the action.

2. Description of the Action

All construction, operational, rehabilitation and decommissioning components of the action must be described in detail. This must include the precise location (including coordinates) 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. At minimum, this section must also include:

a. Production rate of coal mines per annum;
b. Maximum life of the action, including construction, operation, decommissioning and rehabilitation;
c. Description of the underground bord and pillar underground mine and associated aboveground activities and development of infrastructure;
d. Description of ventilation system and clearing flare gas and if relevant associated infrastructure required for the underground working;
e. Description of aboveground disturbances if new surface infrastructure is required; and
f. Description of post-mining land use.

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

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

3. Feasible alternatives

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

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

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

4. Description of the environment

A description of the environment of the project site and the surrounding areas (i.e. adjacent, upstream, and/or downstream) that may be affected by the action. This section must include (but not limited to) description of the environment relevant to listed threatened species and ecological communities, and their habitat, and water resources, including third-party users.

At a minimum, this section must include details of:

a. Terrestrial, including riparian and aquatic, ecosystems including key vegetation communities;
b. River and non-flowing pools ecosystem including key fauna and flora component;
c. River flow, surface water and groundwater hydrology and quality;
d. Native flora and fauna, both terrestrial and aquatic and, if relevant, the service it provides for MNES;
e. Important area, recognised populations and habitat, including associations with regionally important floristic region;

f. Cultural heritage values and historical anthropogenic land use of the project site; and
g. Current condition of the overall environment within, adjacent to, downstream and upstream of the project site.

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

The MNES section must address, at a minimum, impacts on the following listed threatened species and ecological communities:

- Koala (*Phascolarctos cinereus*) (combined populations of Qld, NSW, and the ACT) – Vulnerable;
- The Fitzroy River Turtle (*Rheodytes leukops*) – Vulnerable;
- The Southern Snapping Turtle (*Elseya albagula*) – Critically endangered;
- Greater Glider (*Petauroides volans*) – Vulnerable;
- Squatter Pigeon (southern) (*Geophaps scripta scripta*) – Vulnerable;
- Ornamental Snake (*Denisonia maculata*) – Vulnerable; and
- Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community, Brigalow TEC – Endangered.

Note: Appendix 3:Attachment 3 provides a list of species that are known, likely or have the potential to occur within and adjacent to the project area. The list at Appendix 3:Attachment 3 may not be a complete list of listed threatened species and ecological communities that will or are likely be impacted by the action. A list of MNES protected under the *Environment Protection and Biodiversity Conservation Act 1999* and likely to occur in the project area can be derived from protected matters search tool: http://environment.gov.au/epbc/protected-matters-search-tool. It is the proponent's responsibility to ensure that any listed threatened species and ecological communities at the time of the controlled action decision, which will or are likely to be impacted by the project, are assessed for the Minister's consideration. Any listing events (e.g. the listing or up-listing of a species) that occur after the controlled action decision (29 June 2020) do not affect the assessment and approval process.

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

a. Description: describe each listed threatened species and ecological communities listed above (including EPBC Act listing status, distribution, life history, etc.).

b. Desktop analysis: describe the desktop assessment methodology used to inform the field surveys within, adjacent to and/or downstream of the project site.

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

c. Survey effort: provide details of the scope, methodology, timing and effort of field surveys (which must be undertaken by qualified species experts with demonstrated experience in detecting the above species) within, adjacent to and/or downstream of the project site. Provide details of:

i. how surveys were undertaken in accordance with relevant Commonwealth, State guidelines or best practice survey guidelines at the time of the surveys;
ii. if relevant, the justification for divergence from relevant Commonwealth, State guidelines or best practice survey guidelines at the time of the surveys; and
iii. the discussion on the sampling size and how survey plots were established to reflect the habitat across the project area.

d. Survey outcomes: state the total number of records (individuals and evidence of presence) of listed threatened species and ecological communities within, adjacent to and/or downstream of the project site. All

records must be supported by the year of the record and a brief description of the habitat in which the record was identified.

e. Habitat assessment: provide a robust assessment of the potential habitat available within, adjacent to and/or downstream of the project site for listed threatened species and ecological communities. This must include the assessment of specific habitat requirement/s relevant to each listed threatened species and ecological community (e.g. breeding, foraging, dispersal, known important habitat, suitable habitats, roosting, etc.). Habitat assessments must be derived from information obtained from:

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

The SPRAT Database can be accessed from the following website: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

The MNES section must not just consider Queensland Regional Ecosystem (RE) mapping to determine habitat for listed threatened species – habitat assessments must consider and align with the information in the SPRAT Database and relevant DAWE documents. However, some Queensland REs align with the descriptions for some ecological communities and therefore the use of Queensland REs is acceptable in these cases.
Noting the information in the referral, DAWE recommends the use of the following habitat descriptions (Table 1) to inform habitat assessments where the below listed threatened species and ecological community are likely or will be impacted by the action.
Please note where habitat for other listed threatened species and communities is identified on site, an assessment must be undertaken regardless of whether or not the species was recorded. As such, the potential for occurrence of listed threatened species and communities must also be considered and assessed.

Table 1. Habitat description aligned with SPRAT database for several listed threatened species

MNES habitat	Habitat description
Koala	Any forest or woodland (including remnant, regrowth and modified vegetation communities) containing species that are Koala food trees or any shrubland with emergent Koala food trees.
Greater Glider	All areas of Eucalypt forests or woodlands that contain hollow-bearing trees.
Squatter Pigeon (Southern) breeding habitat	Any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* species, on sandy or gravelly soils (mapped as Queensland land zones 3, 5 or 7) and where groundcover vegetation is less than 33% of the ground area, within 1 km of a suitable, permanent or seasonal waterbody.
Squatter Pigeon (Southern) foraging habitat	Any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* species, on sandy or gravelly soils (including, but not limited to, areas mapped as Queensland land zones 3, 5 or 7) and where groundcover vegetation is less than 33% of the ground area, within 3 kilometres of a suitable, permanent or seasonal waterbody.
Squatter Pigeon (Southern) dispersal habitat	Any forest or woodland occurring between patches of foraging or breeding habitat that facilitates movement between patches of foraging habitat, breeding habitat and/or waterbodies, and areas of cleared land less than 100 m wide linking areas of suitable breeding and/or foraging habitat.
Ornamental Snake	Gilgai mounds and depressions with cracking-clay soils and moist areas (particularly within, or close to, habitat that is known to be favoured by its prey [frogs]) with microhabitat features (i.e. logs, woody debris and leaf litter), and Brigalow threatened ecological community.

MNES habitat	Habitat description
Brigalow threatened ecological community	The key diagnostic characteristics and condition thresholds in the *Approved Conservation Advice for the Brigalow (Acacia harpophylla dominant and co-dominant) ecological community* (2013), or subsequent revision.

At a minimum, the habitat assessment for each listed threatened species and ecological community above, must:

- identify any specific habitat requirement(s), e.g. breeding, foraging, dispersal, known important habitat, suitable habitat, roosting habitat, etc;
- discuss existing threats, e.g. predators, weed proliferation, sedimentation;
- consider the regional context, describing the connectivity of habitat in the broader landscape; and
- provider the total amount of each type of habitat (in hectares) in the project site.

Provide the total amount of each type of habitat (in hectares) in the project site for each listed threatened species and ecological community. The total amount of each type of habitat must also be presented on a map for each listed threatened species and ecological community. Each map must:

- include an appropriate basemap that provides the geographical context of the project area in the surrounding environment (i.e. aerial imagery);
- be specific to the habitat assessment undertaken for each listed threatened species and ecological community (i.e. not illustrate relevant Queensland REs only);
- include an overlay of the proposed project disturbance footprint; and
- include known records of individuals (or evidence of individuals) derived from desktop analysis and/or field surveys.

DAWE considers that, in the case a species is not recorded to occur during the field survey, it is not unreasonable that a species may still use a project site at some point in time because the vegetation and habitat feature/s to support its requirements are present. As such, the potential for occurrence of listed threatened species and communities must also be considered and assessed in the MNES section. The MNES section must also include a detailed habitat assessment for any other listed threatened species and/or ecological communities identified during field surveys.

f. Impact assessment: describe and assess all impacts (direct, indirect and cumulative) to listed threatened species and ecological communities identified above and any others that are found to be or may potentially be present in areas that may be impacted by the action. The impact assessment must identify which component/s and stage/s of the action is of relevance to each listed threatened species and/or ecological community and/or if the threat of impact relates to consequential actions.

For threatened ecological communities, the total direct impact (in hectares) to each identified patch within and adjacent to the project site must be provided in the MNES section compared to its current extent. The assessment of threatened ecological communities must include description of habitat of the species harboured by the ecological communities. Further, the impact assessment for ecological communities must include a discussion on the post-impact viability of each individual patch within and adjacent to the project site to be directly impacted from fragmentation as a result of vegetation clearance, where relevant.

Provide the total amount of each type of habitat (in hectares) in the disturbance footprint for each listed threatened species and ecological community. Detailed mapping of habitat type/s for relevant listed threatened species and ecological communities that are found to be, or may potentially be, present within, adjacent to

and/or downstream of the project site must be included in the MNES section, and must:

i. Include an appropriate basemap that provides the geographical context of the project area in the surrounding environment (i.e. aerial imagery);
ii. be specific to the habitat assessment undertaken for each listed threatened species and ecological community (i.e. not illustrate relevant Queensland REs only);
iii. include an overlay of the project disturbance footprint; and
iv. include known records of individuals (or evidence of individuals) derived from desktop analysis and/or field surveys.

g. Avoidance, mitigation and management: describe all relevant species-specific measures proposed to avoid, mitigate and manage potential impacts on listed threatened species and ecological communities as required in the 'Avoidance, Mitigation and Management' section below.

The MNES section must not just state proposed management plans and/or broad objectives to describe avoidance, mitigation and management measures. The MNES section must include detailed measures that will be implemented to avoid, mitigate and manage impacts on listed threatened species and ecological communities.

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

h. Statutory requirements: where relevant, briefly discuss how the proponent has had regard to relevant approved conservation advice/s. The MNES section must demonstrate, with supporting evidence, that the action will not be inconsistent with Australia's obligations under:

i. the Biodiversity Convention;
ii. the Convention on Conservation of Nature in the South Pacific (Apia Convention);
iii. the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); and
iv. any relevant recovery plans and threat abatement plans.

i. Significant impact assessment: after consideration of proposed avoidance, mitigation and management measures, provide an assessment of the likelihood of significant impacts on relevant listed threatened species and ecological communities. The significant impact assessment must consider SPRAT Database and relevant departmental policies and guidelines, including the *Significant Impact Guidelines 1.1: Environment Protection and Biodiversity Conservation Act 1999 (2013)*. These guidelines can be found at the following website: http://www.environment.gov.au/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance.

This section must discuss the potential impacts of the action on MNES, including, but not limited to:

- habitat loss and degradation (e.g. riparian vegetation/GDEs, Eucalypt woodlands);
- impacts of groundwater drawdown and changes to surface water baseflows on habitat;
- changes to water quality, including weed proliferation and pollution;
- impacts on turtle nest destruction and foraging and dispersal habitat, considering the turtle species distributions are limited within the respective catchment (Nogoa River is within Fitzroy catchment);
- subsidence effects on habitat including any gilgais; and
- changes to surface water and flooding regimes.

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

6. A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24)

General

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. The information guidelines for IESC advice on coal seam gas and large coal mining development proposals (IESC guidelines) outlining the requirements for submission to the IESC can be found at the following website: http://www.iesc.environment.gov.au/publications/information-guidelines-independent-expert-scientific-committee-advice-coal-seam-gas.

To assist the IESC's consideration of the action's potential impacts on water resources, the MNES section must include a minimum of 2 years of baseline (i.e. pre-action impact) monitoring to inform and support a robust assessment of potential impacts on water resources.

The MNES section must include assessments and documentation to enable the IESC to assess the impacts on, at a minimum, the following:

- Nogoa River baseflow;
- Groundwater quality and levels;
- Surface water quality and levels;
- Groundwater Dependent Ecosystems (GDEs) and ecohydrology, including habitat for listed threatened species;
- Subsidence, including sag subsidence and strata compression, and potential occurrence of sinkholes and local waterlogging;
- Cumulative groundwater and surface water impacts;
- Rehabilitation and Post-mining Impacts; and
- Climate Change Impacts.

This section must also include (but not limited to) the waste mine water and the waste management system, the risk of flooding to the underground work, consideration of the project location beneath river and floodplain, and consideration of the project location in relation to the broader regional land use, for example Priority Agricultural Area and Strategic Cropping Land and existing mining precinct.

The complete monitoring data must be attached to the draft EIS with clear and concise summaries presented in the MNES section.

The MNES section must provide robust scientific information and supporting evidence for every assertion, assumption and/or conclusion made in the assessment of potential impacts, or lack of impacts, on water resources.

The assessment of water resources must consider and apply the guidance provided in the IESC Explanatory Notes available on the IESC website. The IESC provides a number of publications and resources, including the *IESC Explanatory Notes*, which can be used as guidance material in preparing the MNES section. These publications can be found at the following website: http://iesc.environment.gov.au/publications.

Further, DAWE recommends the review of recent IESC advices to identify key target areas for the assessment, recommendations to implement appropriate assessment approaches, and/or useful research to inform survey methodologies (e.g. groundwater-dependent ecosystems).

The water resources assessment must consider climate change in modelling scenarios and in the water balance (e.g. through the use of the Climate Futures Tool), particularly if the action will require external water sources and/or has a long lifetime.

Broadly, the assessment of potential impacts on water resources must include the following:

Description: at a minimum, a description of both groundwater and surface water resources at the project site and in the region, as well as any third party users of these resources (e.g. groundwater-dependent ecosystems, landholders, other mining operations, etc.).

Impact assessment: describe and assess all impacts (direct, indirect and cumulative) to water resources and third party users that may be impacted by the action. The impact assessment must include consideration of the requirements in the 'Relevant Impacts' section below.

Avoidance, mitigation, management and monitoring: describe all relevant measures proposed to avoid, mitigate, manage and monitor potential impacts on water resources as required in the 'Avoidance, Mitigation and Management' section below.

All proposed measures must consider the 'S.M.A.R.T.' principle and, where relevant, the conditions that may be imposed by the Queensland Government in a draft Environmental Authority.

IESC checklist: the MNES section must address the information requirements contained in the Information Guidelines for the IESC and provide a cross-reference table, as an attachment to the draft EIS, to identify where each component of the guidelines has been addressed.

Significant impact assessment: after consideration of avoidance, mitigation and management measures, provide an assessment of the likelihood of significant impacts on water resources. The significant impact assessment must consider the *Significant Impact Guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources* (2013). These guidelines can be found at the following website: http://environment.gov.au/resource/significant-impact-guidelines-13-coal-seam-gas-and-large-coal-mining-developments-impacts.

The MNES section must provide a clear and definitive conclusion of significant impacts on water resources to align with the *EPBC Act Environmental Offsets Policy* (2012). These guidelines can be found at the following website: http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy.

Groundwater

The MNES section must identify and describe the occurrence of groundwater in the project area and its vicinity, including the relevant groundwater-bearing units and groundwater levels.

The groundwater assessment must include conceptual and numerical models. Models must be constructed at a suitable spatial and temporal scale to be able to assess both site-specific and regional cumulative impacts. Any assumptions should be clearly described and justified.

The information provided should allow an independent reviewer to consider the appropriateness of the underlying assumptions and conceptual models on which numerical models are based. Any model must be constructed in

accordance with the conceptual model and calibrated and verified with appropriate baseline data.

DAWE notes that the groundwater model should be calibrated to the target coal seams, which is critical considering they will be depressurised/dewatered from the proposed action. Insufficient model calibration may systematically underestimate modelled underground mine inflows, alluvium drawdown and Nogoa river baseflows.

It is important for modelling to clearly distinguish between impacts from the proposed project and existing operations. For example, the MNES section must clearly identify the absolute amount of drawdown due to the proposed extension and the total predicted cumulative drawdown values. This must include details on how the estimated contributions to cumulative drawdown have been derived.

DAWE recommends, at a minimum, the following approach to the groundwater assessment:

- consider and apply the guidance in the *IESC Explanatory Notes*;
- undertake an appropriate risk analysis;
- construct the groundwater models, considering the type of uncertainty analysis that will be required;
- run the groundwater models, including predictive scenarios and uncertainty analysis;
- review the risk analysis and uncertainty analysis in light of the model predictions; and
- revise and re-run the groundwater models (if required).

A sensitivity analysis must be undertaken. Tested parameters should be varied by at least one order of magnitude or justification provided if less variation is examined.

DAWE notes that a scenario-based uncertainty or sensitivity analysis, incorporating a 'worst-case' scenario of the most sensitive model parameters (e.g. high stream conductance, high hydraulic conductivity of the surrounding alluvium and coal measures) should be provided. This analysis would provide additional confidence about the magnitude and extent of the predicted impacts to the alluvium groundwater levels and Nogoa River baseflows.

DAWE recommends that models are peer-reviewed by an independent expert, considering the *Australian Groundwater Modelling Guidelines* and the *IESC Explanatory Notes*. Recommendations of the peer review should be incorporated into the models. DAWE recommends peer reviewers are engaged early and throughout the groundwater assessment (see above) to ensure it is an iterative process.

If relevant, the proponent should consider the number and location of groundwater monitoring bores (both within and adjacent to the project site) to ensure there is adequate spatial coverage in all aquifers.

- Nested or paired bores must be used to characterise inter-aquifer connectivity (where needed).
- New bores must be located where they are unlikely to be removed for future mining activities.

Site-specific data for all relevant hydraulic properties for each groundwater unit must be available or able to be captured from the proposed monitoring network for input into the groundwater models.

DAWE recommends that the MNES section also include:

- details of the locations of the subcropping coal measures in relation to the alluvium, and confirmation as to whether these have been integrated into the groundwater conceptual model;
- a discussion regarding the degree of hydraulic connectivity between the coal measures, the Nogoa River and the surrounding alluvium, noting (a) the elevated electrical conductivity in the alluvial groundwater and (b) the potential recharge into the alluvium from rainfall and streamflow in localised areas where surficial clays are absent;

- consideration as to whether potential sources of alluvial recharge (e.g. rainfall, streamflow) need to be disaggregated to assist in assessing the potential changes to Nogoa River baseflows during the project operations; and
- given the proximity of the mine to prime agricultural land, the effects of agricultural pumping and discharging on Nogoa River flows and alluvial aquifers should be discussed as part of the groundwater model.

Groundwater-dependent ecosystems (GDEs)

Under the EPBC Act, the proponent must consider impacts to all groundwater dependent ecosystems (GDEs), whether they are partially or wholly dependent on groundwater. The section must include an assessment of direct, indirect and consequential impacts to GDEs, including a discussion of any potential GDEs in the vicinity. This section must also consider both surface water and groundwater impacts to GDEs within the proposed action area and within the zone of potential drawdown (e.g. impacts due to groundwater drawdown, reduction in surface water flow, etc.).

To determine the presence of GDEs in and adjacent to the project site, the GDE assessment must comprise both:

- desktop assessments (e.g. databases, remote sensing, Queensland Government's *Springs database*, the Bureau of Meteorology's *GDEs Atlas* and Geoscience Australia's *Water observations from space* etc.) used to identify potential GDEs for field assessment; and
- field assessments (e.g. soil moisture testing, leaf moisture testing, root depth drilling, etc.) to confirm the outcomes of the desktop assessments.

The above databases can be found at the following websites:

- https://www.data.qld.gov.au/dataset/springs.
- http://www.bom.gov.au/water/groundwater/gde/.
- https://www.ga.gov.au/scientific-topics/community-safety/flood/wofs.

DAWE recommends that the MNES section also include:

- a discussion regarding the presence of GDEs in the context of habitat for listed threatened species and communities (i.e. do any identified GDEs also provide habitat for MNES); and
- an ecohydrological conceptual model that identifies the potential pathways and mechanisms of the effects of altered surface flows on groundwater connectivity, in-stream water quality, and surface and groundwater ecosystems. This conceptual model would help to identify and justify strategies proposed to mitigate and manage potential impacts. The findings should be considered in relation to the potential GDEs identified in the project area.

The desktop and field assessments must consider the *Australian GDE Toolbox* (2011) and the *IESC GDE Explanatory Note*. These documents can be found at the following websites:

- http://www.bom.gov.au/water/groundwater/gde/GDEToolbox_PartOne_Assessment-Framework.pdf
- http://www.bom.gov.au/water/groundwater/gde/GDEToolbox_PartTwo_Assessment-Tools.pdf
- http://www.iesc.environment.gov.au/system/files/resources/422b5f66-dfba-4e89-adda-b169fe408fe1/files/information-guidelines-explanatory-note-assessing-groundwater-dependent-ecosystems.pdf

Note: Sufficient evidence needs to be provided to support any conclusion that particular ecosystems are not groundwater dependent. If GDE field verification surveys are not undertaken, the Department is likely to apply a precautionary approach to the presence of GDEs and the assessment of potential impacts.

Stygofauna

Provide details of field investigations undertaken (and any relevant previous published and/or unpublished studies) to determine the presence and composition of stygofauna communities in the region and proposed action area.

Include the full results of any groundwater bores sampled (e.g. levels and water quality). Justification must be provided regarding the representativeness of the samples taken.

The MNES section must provide an assessment of the suitability of local habitat for subterranean aquatic fauna. This assessment must be based on local geological, hydrological and other information, including the distribution of alluvium present in the proposed action area and likely hydrological connectivity with geological formations targeted for development.

Stygofauna assessment guidance is available through the Queensland Government's *Background information on sampling bores and stygofauna* and *Guideline for the environmental assessment of subterranean aquatic fauna*. These documents can be found at the following websites:

- https://environment.des.qld.gov.au/__data/assets/pdf_file/0029/90767/biological-assessment-background-information-on-sampling-bores-for-stygofauna.pdf
- https://www.publications.qld.gov.au/dataset/subterranean-aquatic-fauna/resource/ba880910-5117-433a-b90d-2c131874a8e6.

Surface water

The MNES section must include a water balance in the assessment which clearly demonstrates how much water will be required for the action, where water will be sourced (where there is a deficit) and/or how water will be disposed (where there is a surplus), including consideration of discharge water quality. The water balance must consider rainfall variability and may need to consider climate change (see above). The water balance must also consider both the existing mining activities and the proposed action. Any surface water management plans associated with the existing Ensham Mine should be summarised in the MNES section. Complete surface water management plans should be included as an Appendix to the draft EIS and referred to in the MNES section.

The MNES section must provide assessment on the flooding occurrence and risk to the underground workings. Flood modelling must be undertaken to predict the behaviour and potential impacts of flood events. Provide full details of the data used to calibrate the modelling, including the size of flow events and the range of floods that is incorporated through the calibration process.

The MNES section must quantify current surface water flow regimes in respective catchments (both within and adjacent to the project site) to ensure there is sufficient baseline information to assess how the location, volume, velocity and timing of flows may change as a result of the action. Changes to the duration of low-flow and no-flow periods must be assessed and subsequent potential ecological impacts must also be assessed.

Water quality monitoring data must be provided, including when and where samples have been obtained. The monitoring data must be provided in full to show the temporal and spatial trends in water quality.

The estimates of discharge quality must also be discussed, including an assessment of potential ecological impacts. The risk of uncontrolled releases from mine affected water storages must also be discussed.

If the groundwater model uncertainty analyses suggest that fluxes to surface waters from groundwater discharge may be large enough to impact water quality, then a catchment salt balance should also be provided to inform the surface water management plans.

The MNES section must assess the potential impacts of any proposed creek diversions, including how existing flows and volumes will be maintained as a result of the diversion.

Note: Where ephemeral watercourses are present, DAWE recommends considering the use of remote sensing techniques would be appropriate as gauging stations may be impractical.

The MNES section must consider using more recent water quality guidelines (i.e. ANZG [2018]) to inform water quality objectives for relevant parameters (e.g. metals/metalloids).

Subsidence

The MNES section must discuss any predicted subsidence as a result of the proposed action.

Information and evidence must be provided to demonstrate that the underground activities will not lead to water being lost from the Nogoa River, Mosquito Creek, smaller tributaries and the alluvium, either temporarily or permanently, as a result of subsidence-induced changes. Mining and subsidence-induced cracks can increase hydraulic conductivity and the interconnection of water-bearing units which could alter base flows.

DAWE notes that there will be sag subsidence and strata compression in the project area, which could lead to low levels of surface effects. This impact should be considered through a surface water assessment.

DAWE notes that the depth of the bord and pillar activities are relatively shallow under the Nogoa River. Information must be provided in the MNES section to provide confidence that this won't lead to sinkholes, which can occur in shallow underground mining.

Evidence should also be provided that geological formations and features (e.g. faults) have been clearly considered in the assessments for the project area.

Discussion must also be provided regarding the potential impacts to both surface drainage and infiltration properties as a result of subsidence from the proposed action. DAWE notes that, in the event the project activities lead to surface depressions, these depressions can retain more runoff than pre-disturbance and can be associated with local waterlogging, which may impact crop yields and disrupt water supply channels. This should be addressed in the context of the agricultural land surrounding the project area.

7. Relevant impacts

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

The MNES section must include a description of all of the relevant impacts of the action (direct, indirect, cumulative and facilitated). Relevant impacts are the impacts that the action will have, or is likely to have, on MNES, including, but not limited to, habitat disturbance, fragmentation and degradation, changes to hydrological regimes, subsidence, impacts to groundwater and surface water quality and quantity, waste and chemical pollution.

Impacts during the construction, operational and the decommissioning stages of the action must be addressed, and the following information provided:

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

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

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

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

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

8. Avoidance, mitigation and management measures

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

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

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

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

9. Environmental offsets

The MNES section must include an assessment of the likelihood of residual significant impacts occurring on listed threatened species and communities, listed migratory species, and water resources after avoidance, mitigation and management measures have been applied. If it is determined that a residual significant impact is likely, include a draft Offset Management Strategy that provides, at a minimum:

- details of the environmental offset/s (in hectares) for residual significant impacts of the proposed action on relevant MNES, and/or their habitat;
- details of how the environmental offset/s meets the requirements of the *EPBC Act Environmental Offsets Policy* (2012) (EPBC Act Offset Policy), including the Offsets Assessments Guide, available at: www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy;
- details of a strategy for the staging of environmental offset/s for each project stage (if proposed);
- details of appropriate offset area/s (including a map) to compensate for the residual significant impact on relevant MNES, and/or their habitat;
- the methodology, with justification and supporting evidence, used to inform the inputs of the Offsets Assessment Guide in relation to the project site for each relevant MNES, including:
    - quantum of impact – area (in hectares)
      quantum of impact – quality (e.g. using the Queensland G*uide to determining terrestrial habitat quality: A toolkit for assessing land-based offsets under the Queensland Environmental Offsets Policy* [Version 1.2, April 2017], or subsequent revision). This guide can be found at the following website: https://environment.des.qld.gov.au/__data/assets/pdf_file/0017/102833/habitat-quality-assessment-guide-v1-3.pdf
- the methodology, with justification and supporting evidence, used to inform the inputs of the Offsets Assessment Guide in relation to each potential offset area/s for each relevant MNES, including:
    - time over which loss is averted (max. 20 years)
    - time until ecological benefit
    - risk of loss (%) without offset
    - risk of loss (%) with offset
    - confidence in result (%)
- evidence that the relevant MNES, and/or their habitat, can be present in the potential offset area/s;
- information about how the proposed offset/s area provides connectivity with other relevant habitats and biodiversity corridors; and
- details of the mechanism to legally secure the environmental offset/s (under Queensland legislation or equivalent) to provide protection for the offset area/s against development incompatible with conservation.

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

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

- a description of the offset area/s, including location, size, condition, environmental values present and surrounding land uses;
- baseline data and other supporting evidence, including the ecological field data, that documents the presence of the relevant MNES, and the quality of their habitat within the offset area/s;
- an assessment of the site habitat quality for the offset area/s using an appropriate methodology, with justification and supporting evidence, (e.g. using the Queensland G*uide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy* [Version 1.2, April 2017], or subsequent revision;
- details of how the offset area/s will provide connectivity with other habitats and biodiversity corridors and/or will contribute to a larger strategic offset for the relevant listed threatened species and communities;
- maps and shapefiles to clearly define the location and boundaries of the offset area/s, accompanied by the offset attributes (e.g. physical address of the offset area/s, coordinates of the boundary points in decimal degrees, the listed threatened species and communities that the environmental offset/s compensates for, and the size of the environmental offset/s in hectares);
- specific offset completion criteria derived from the site habitat quality to demonstrate the improvement in the quality of habitat in the offset area/s over a 20-year period;
- details of the management actions, and timeframes for implementation, to be carried out to meet the offset completion criteria;
- interim milestones that set targets at 5-yearly intervals for progress towards achieving the offset completion criteria;
- details of the nature, timing and frequency of monitoring to inform progress against achieving the 5-yearly interim milestones (the frequency of monitoring must be sufficient to track progress towards each set of milestones, and sufficient to determine whether the offset area/s are likely to achieve those milestones in adequate time to implement all necessary corrective actions);
- proposed timing for the submission of monitoring reports which provide evidence demonstrating whether the interim milestones have been achieved;
- timing for the implementation of corrective actions if monitoring activities indicate the interim milestones have not been achieved;
- risk analysis and a risk management and mitigation strategy for all risks to the successful implementation of the OAMP and timely achievement of the offset completion criteria, including a rating of all initial and post-mitigation residual risks in accordance with a risk assessment matrix;
- if proposed for listed threatened species and communities, evidence of how the management actions and corrective actions take into account relevant approved conservation advices and are consistent with relevant recovery plans and threat abatement plans; and
- details of the legal mechanism for legally securing the proposed offset area/s, such that legal security remains in force over the offset area/s for at least 20 years to provide enduring protection for the offset area/s against development incompatible with conservation.

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

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

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

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

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

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

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

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

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. 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.

12. Economic and social matters

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

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

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

13. 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.

Appendix 3: Attachment 1 – The objects and principles of the EPBC Act sections 3 and 3a

Section 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.

Section 3A Principles of Ecologically Sustainable Development

The following principles are principles of ecologically sustainable development.

(h) Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;
(i) 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;
(j) 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;
(k) The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;
(l) Improved valuation, pricing and incentive mechanisms should be promoted.

Appendix 3: Attachment 2 – Matters that must be addressed in a public environment report (PER) or environmental impact statement (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) (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.

Appendix 3: Attachment 3 – Listed threatened species and communities requiring assessment in the EIS

- 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
- Weeping Myall Woodlands – Endangered
- *Calidris ferruginea* – Critically endangered
- *Erythrotriorchis radiatus* – Vulnerable
- *Geophaps scripta scripta* – Vulnerable
- *Grantiella picta* – Vulnerable
- *Neochmia ruficauda ruficauda* – Endangered
- *Poephila cincta cincta* – Endangered
- *Rostratula australis* – Endangered
- *Chalinobus dwyeri* – Vulnerable
- *Dasyurus hallucatus* – Endangered
- *Macroderma gigas* – Vulnerable
- *Nyctophilus corbeni* – Vulnerable
- *Petauroides volans* – Vulnerable
- *Phascolarctos cinereus* (combined populations of Qld, NSW, and the ACT) – Vulnerable
- *Pteropus poliocephalus* – Vulnerable
- *Cadellia pentastylis* – Vulnerable
- *Dichantium queenslandicum* – Endangered
- *Dichantium setosum* – Vulnerable
- *Marsdenia brevifolia* – Vulnerable
- *Delma torquata* – Vulnerable
- *Denisonia maculata* – Vulnerable
- *Egernia rugosa* – Vulnerable
- *Elseya albagula* – Critically endangered
- *Furina dunmalli* – Vulnerable
- *Lerista allanae* – Endangered
- *Rheodytes leukops* – Vulnerable