

Terms of reference for an environmental impact statement

Peak Downs Mine Continuation project

July 2023

The Department of State Development, Infrastructure, Local Government and Planning connects industries, businesses, communities and government (at all levels) to leverage regions' strengths to generate sustainable and enduring economic growth that supports well-planned, inclusive and resilient communities.

Acknowledgment of Country

The department acknowledges the First Nations peoples in Queensland: Aboriginal and Torres Strait Islander peoples and their connections to the lands, winds and waters we now all share. We pay our respect to Elders, past, present and emerging. We also acknowledge the continuous living culture of First Nations Queenslanders – their diverse languages, customs and traditions, knowledges and systems. We acknowledge the deep relationship, connection and responsibility to land, sea, sky and Country as an integral element of First Nations identity and culture.

The Country is sacred. Everything on the land has meaning and all people are one with it. We acknowledge First Nations peoples' sacred connection as central to culture and being. We acknowledge the stories, traditions and living cultures of First Nations peoples and commit to shaping our state's future together. The department recognises the contribution of First Nations peoples and communities to the State of Queensland and how this continues to enrich our society more broadly.

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Copies of this publication are available on our website at www.statedevelopment.qld.gov.au and further copies are available upon request.

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Part A About these terms of reference

1. Introduction

- 1.1 This document outlines the terms of reference (TOR) for the Peak Downs Mine Continuation project (the project) proposed by BM Alliance Coal Operations Pty Ltd (BMA) (the proponent) and being assessed under the *State Development and Public Works Organisation Act 1971* (SDPWO Act).
- 1.2 The proposed project is an expansion (approximately 4000 hectares (ha)) of the existing Peak Downs Mine footprint to ensure continued production of 18 mtpa of product metallurgical coal for approximately 93 years.
- 1.3 The proposed project involves continued use of:
 - (a) an existing overland conveyor to transport up to 11 mega tonnes per annum (mtpa) of Run of Mine (ROM) coal to the existing Caval Ridge Mine coal handling and preparation plant (CHPP), and continued use of rail transport to transport approximately 18 mtpa of product coal to the Hay Point Coal Terminal near Mackay for export
 - (b) existing tailings emplacement area and on-site landfill
 - (c) existing accommodation within the region for workforce housing, consisting of company-owned housing in local towns and workers accommodation villages (WAVs) at Moranbah and Dysart, provided by BMA
 - (d) existing water management system and development of new water management and storage infrastructure.
- 1.4 The project also involves:
 - (a) realignment of the Peak Downs Mine Road and associated rail crossing
 - (b) relocation of certain off-lease regional infrastructure, including power transmission infrastructure (transmission line, earth return and substation feeder) and the Eungella Water Pipeline Southern Extension
 - (c) relocation of existing BMA infrastructure, including the Bingegang Pipeline, access roads, electricity transmission lines, substation, and existing associated mine infrastructure
 - (d) upgrades of workshops, electricity distribution and other ancillary infrastructure, and development of new mine-supporting ancillary infrastructure
 - (e) progressive diversions of watercourses and waterways, including relocations of Boomerang Creek and Ripstone Creek low-flow diversions and progressive development of an additional Ripstone Creek diversion and relocation of Ripstone dam.
- 1.5 The proposed project is located in the Bowen Basin, approximately 30 kilometres (km) south-east of Moranbah and 40 km north-west of Dysart, in the Isaac Regional Council local government area.
- 1.6 The project area is situated within existing mining leases (ML) (ML1775, ML70411 and ML1885), with some surface areas of these MLs requiring authorisation under the *Mineral Resources Act 1989* and *Central Queensland Coal Associates Agreement Act 1968*.

2. Statutory basis

- 2.1 The Coordinator-General has declared the Peak Downs Mine Continuation project to be a 'coordinated project for which an environmental impact statement (EIS) is required' under section 26(1)(a) of the SDPWO Act. This declaration initiates the statutory environmental impact assessment procedure of Part 4 of the SDPWO Act, for which the proponent is required to prepare an EIS for the project.
- 2.2 This draft TOR set out the matters the proponent is to address in an EIS for the project and is approved by the Coordinator-General under section 30 of the SDPWO Act, following the outcomes of public consultation.

3. Accredited EIS process for controlled actions under Commonwealth legislation

- 3.1 The proponent referred the project to the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEE) (EPBC 2022/09350). On 5 January 2023, the delegate for the Australian Minister for the Environment and Water decided that the Peak Downs Mine Continuation project would be assessed as a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The relevant matters of national environmental significance (MNES) controlling provisions are:
 - (a) listed threatened species and communities (sections 18 and 18A)
 - (b) a water resource, in relation to coal seam gas development and large coal mining development (sections 24D & 24E).
- 3.2 The delegate for the Australian Minister for the Environment and Water also decided that the 'controlled action' would be assessed by an accredited assessment process under section 87(4) of the EPBC Act. The EIS process under Part 4 of the SDPWO Act is the accredited assessment process and a single EIS will be prepared which considers the controlled action.
- 3.3 The assessment of the controlling provisions, mitigation measures and any offsets for residual impacts are to be described and illustrated in a stand-alone report in the EIS that fully addresses the matters relevant to the controlling provisions. Section 16 of this TOR, developed in consultation with the DCCEE, sets out the information which must be included in the EIS relating to MNES.

4. EIS Guidelines

- 4.1 This TOR is to be read in conjunction with the Coordinator-General's *Preparing an environmental impact statement: Guideline for proponents* (see Appendix 2), which provides guidance on the following:
 - (a) participants in the EIS process
 - (b) consultation requirements
 - (c) EIS format and copy requirements.
- 4.2 In addition, subject-specific policies and guidelines are referenced throughout this TOR and are listed in Appendix 2.

5. More information

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

Part B General approach and requirements for an EIS

6. General approach

- 6.1 The objectives of the EIS are to:
- (a) provide a detailed description of the proposed project
 - (b) ensure that all relevant environmental, social and economic impacts of the proposed project are identified and assessed
 - (c) detail the management, monitoring and mitigation measures proposed to avoid, minimise and/or mitigate any adverse impacts
 - (d) demonstrate that the project is based on sound environmental principles and practices.
- 6.2 For the purposes of the EIS process, 'environment' is defined in Schedule 2 of the SDPWO Act and includes:
- (a) ecosystems and their constituent parts, including people and communities
 - (b) all natural and physical resources
 - (c) the qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community
 - (d) the social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).
- 6.3 Address matters relevant to the environmental objective assessment and performance outcomes specified in Schedule 8 of the Environmental Protection Regulation 2019 (Qld) (EP Regulation).
- 6.4 The detail at which the EIS deals with matters relevant to the proposed project is to be proportional to the scale of the potential impacts on environmental values. When determining the scale of an impact, consideration is to be given to its intensity, duration, cumulative effect, irreversibility, the risk of environmental harm, the effectiveness of any proposed management strategies to avoid or at least mitigate impacts and the ability to offset any residual impacts.
- 6.5 The EIS must address other matters not covered in this TOR in the following circumstances:
- (a) studies reveal a matter that had not been foreseen when the TOR was finalised
 - (b) an issue not previously identified but is in the public interest to be addressed
 - (c) the Coordinator-General directs the proponent in writing to address a matter as an information request under section 34B of the SDPWO Act
 - (d) new or amended legislation, guidelines or policies come into effect after the TOR has been finalised, regardless of whether or not the legislation, guidelines or policies have been listed in the TOR¹.
 - (e) the proponent makes amendments to the proposed project that would result in a change in the nature, timing or location of any impacts.²

¹ Note transitional arrangements or exemptions may apply for individual projects.

² The proponent is to notify the Coordinator-General of any amendments to the proposed project as described in the project's initial advice statement.

6.6 Section 15, Climate – Greenhouse Gas Emissions (GHG) of this TOR has been prepared in collaboration with the Department of Environment and Science (DES). In accordance with the Queensland Resources Industry Development Plan (QRIDP) (June 2022), DES is developing a draft Industry Decarbonisation Plan Policy, which may change the requirements of Section 15, Climate – Greenhouse Gas Emissions. The proponent will be required to be consistent with the Industry Decarbonisation Plan Policy once finalised.

7. Requirements of an EIS

7.1 The EIS is to:

- (a) be prepared in accordance with, and meet the minimum requirements of, Schedule 1 of the State Development and Public Works Organisation Regulation 2020
- (b) be prepared in accordance with the latest version of relevant policies, standards and guidelines, including but not limited to those listed in Appendix 2. Application of such guidelines, standards and policies will be confirmed throughout the development of the EIS in consultation between the Coordinator-General, the proponent and advisory agencies
- (c) be prepared and completed by suitably qualified and experienced professionals, relevant to the field of expertise required for each subject matter
- (d) provide all available baseline information relevant to the environmental risk of the proposed project including seasonal and long-term variations. Site specific baseline data should be used. Include details about the quality of the information provided, in particular: the source of the information, how recent the information is, how the reliability of the information was tested, and any assumptions, exclusions and limitations³. All data, modelling and input/output information used in the EIS to determine the existing environment and/or assess impacts must be provided in an appropriate electronic format (e.g. shapefiles).
- (e) assess and justify the extent to which there is a need and demand for the proposed project
- (f) present the feasible project options that were considered in selecting the preferred option including the consequences of not proceeding with the proposed project (the 'do nothing' option). Demonstrate why the preferred option has been selected by summarising the comparative environmental, social and economic impacts of each project option, with particular regard to the principles of ecologically sustainable development
- (g) provide detailed strategies regarding all matters for the protection, or enhancement (as desirable), of all relevant environmental values in terms of outcomes and possible conditions that can be measured and audited. In general, the preferred hierarchy for managing likely impacts is: (a) to avoid, (b) to minimise or otherwise mitigate, (c) remedy and (d) if necessary, and possible, to offset
- (h) include a consolidated commitment register that lists all measures (including monitoring programs and management plans) demonstrated in the EIS assessment to avoid, minimise or otherwise mitigate, remedy or offset project impacts and that would need to

³ Any technical reports supporting the assessment and conclusions made in the EIS should be provided. These reports can be provided as appendices.

be implemented during construction and operation, to meet the predicted project outcomes

- (i) include environmental management plans (EMP) for both the construction and operation phases of the proposed project. The EMP should be developed from, and be consistent with, the information in the EIS and set specific commitments to implement best practice environmental management in order to protect the identified environmental values. The EMP is to be presented as a stand-alone document without reference to other parts of the EIS.

7.2 The contents of the EMP are to comprise:

- (a) the project's commitments to acceptable levels of environmental performance, including environmental objectives (i.e. levels of expected environmental harm, performance standards and associated measurable indicators, including progressive and final rehabilitation, performance monitoring and reporting)
- (b) impact prevention and control strategies to satisfy the commitments
- (c) corrective actions to rectify any deviation from performance standards
- (d) a figure showing the full extent of project disturbance area.

7.3 Each matter assessed in the EIS (as described in sections 15 and 16 of this TOR) is to:

- (a) include a concise description of the potential impacts of the proposed project
- (b) describe the measures proposed to avoid, minimise or otherwise mitigate, or remedy impacts to meet environmental standards and acceptable outcomes, and where necessary to offset those impacts
- (c) demonstrate how monitoring will be used to demonstrate that environmental objectives are being met, including using baseline data to track environmental outcomes
- (d) a figure showing the full extent of proposed disturbance for the project.

7.4 Assess the extent to which the construction, operation, decommissioning and rehabilitation (to the extent known) of the proposed project meets all statutory and regulatory requirements of the state and Commonwealth and that the intended outcomes are consistent with current state and Commonwealth legislation, assessment benchmarks (e.g. State Development Assessment Provisions for off lease development), policies (including passed and uncommenced legislation), plans and guidelines. If there is a conflict, explain how the proposed project can be approved.

7.5 For all the relevant matters, identify and describe the environmental values that are to be protected. Environmental values are specified in the *Environmental Protection Act 1994* (Qld) (EP Act), the Environmental Protection Regulation 2019 (EP Regulation), environmental protection policies (EPPs), State Planning Policy 2017 (SPP) and relevant guidelines.⁴

7.6 Include, as an appendix to the EIS, a table cross-referencing where each requirement of the TOR is addressed in the EIS, to the lowest available subsection.

7.7 Describe the stakeholder engagement activities that have occurred during the preparation of the EIS, identify the issues raised during consultation, and explain how the responses from the

⁴ Examples are included in Appendix 2.

community and agencies have and will be incorporated into the design and outcomes of the proposed project.

- 7.8 The EIS is to be prepared and submitted electronically (USB or large file transfer), inclusive of all plans and documents that form the EIS. The electronic documents submitted are to satisfy the criteria detailed in Table 1.

Table 1 Format requirements

Format requirements	
Document size	The EIS and accompanying appendices are to be produced on A4 size and are to be capable of being photocopied. Each PDF file must meet the accessibility requirements described in the <i>Adobe Acrobat X Pro Accessibility Guide: PDF Accessibility Overview</i> , available at: www.adobe.com/accessibility/products/acrobat/training.html
Format and style	The format and style of the document is to be appropriate for publication on the Internet.
Data	Provide raw sampling and monitoring data in excel spreadsheet format, and other numerical data as requested.
Plans, maps, diagrams and other illustrative material	All plans, maps, diagrams, and other illustrative material is to be provided at a suitable scale and must be included in a PDF format so that they are legible and easily understood.
	Plans, maps and diagrams are to be located within the appropriate EIS chapter/s, as close as possible to where referenced in the text.
	Plans, maps and diagrams are to be to scale on A4 or A3 size with the scale clearly displayed on each. The plan, map or diagram is also to state the original size (e.g. A1). Each should be in colour, where possible, and have a resolution between 300 and 900 dot points per inch (DPI).
Locations	All geographical coordinates throughout the EIS are to be provided in latitude and longitude against the Geocentric Datum of Australia 2020 (GDA2020).
Elevations	Elevations detailed within the EIS are to be provided to Australian Height Datum (AHD). Plans, maps and diagrams included in the EIS should have contours at suitable increments relevant to the scale, location, potential impacts and component of the project.
References	All sources must be appropriately referenced using the Harvard standard. The reference list should include the address of any Internet webpages used as data sources.
Spatial data file format requirements ⁵	
Guidelines	Refer to DES <i>Guideline – Spatial information submission</i> (see Appendix 2)
File names	File names are to be descriptive and provided in one of the following formats: ESRI file geodatabase (.GDB) - preferred ESRI Shapefiles. GDB/shape
Data attributes	All data is to contain descriptive attributes or columns, including but not limited to the following: <ul style="list-style-type: none"> • date data was created • version number • who created the data (i.e. the company name)

⁵ Refer to [Submission of spatial information | Environment | Department of Environment and Science, Queensland \(des.qld.gov.au\)](http://www.des.qld.gov.au) for detailed requirements.

Format requirements	
	<ul style="list-style-type: none"> • datum (e.g. GDA2020) • category or stage
Projection	
Projection	Data can be provided in any projection; however geographic information is preferred. The datum shall be GDA2020.
Metadata	
Use standards	ISO 19115:2015 ANZLIC ISO 1.1

Part C EIS content and suggested structure

8. Executive summary

- 8.1 The executive summary is to describe the proposed project and convey the most important aspects and environmental management options in a concise and readable form. It is to use plain English, avoid jargon, be written as a stand-alone document and structured to align with the EIS.

9. Introduction

- 9.1 The introduction is to clearly explain the function of the EIS, why it has been prepared and what it sets out to achieve. The introduction is also to include an overview of the structure of the document.

Project proponent

- 9.2 Describe the following:
- (a) proponent's full name, postal address and Australian Business Number and details of any joint venture partners
 - (b) nature and extent of proponent's business activities
 - (c) proponent's (including director's) experience in developing major projects
 - (d) proponent's (including director's) environmental record in Australia, including a list of any breach of, or proceedings against the proponent under a law of the Commonwealth or state, for the protection of the environment or the conservation and sustainable use of natural resources (an environmental law), during the previous ten years
 - (e) proponent's environmental, health, safety and community policies
 - (f) experience, qualifications and certification of all suitably qualified consultants and sub-consultants engaged by the proponent to complete the EIS
 - (g) a description and declaration of all potential or actual conflicts of interest for the proponent and all consultants and sub-consultants engaged by the proponent.

The environmental impact assessment process

- 9.3 Provide an outline of the environmental impact assessment process, including the role of the EIS in the Coordinator General's decision-making process, noting which milestones have been completed, and an estimated completion date for each remaining EIS stage(s). The information in this section is required to ensure readers are informed of the process to be followed and are aware of any opportunities for input and participation.
- 9.4 Inform the reader how and when properly made public submissions on the EIS are to be addressed and considered in the assessment and decision-making processes under the SDPWO Act and any other relevant legislation.
- 9.5 Describe the assessment process under the EPBC Act with the accreditation under the SDPWO Act.

10. Project description

Proposed development

- 10.1 The EIS must describe and illustrate the following about the proposed project:
- (a) project title
 - (b) nature, location and scale of all project components and activities (on or off mining leases) relevant to the project construction, operation and decommissioning activities
 - (c) expected capital expenditure
 - (d) need and rationale for the project
 - (e) regional and local infrastructure context of the project's footprints (with maps at suitable scales)
 - (f) relationship to and interaction with, including timing of construction and operations, the existing Peak Downs Mine and other major projects and/or developments of which the proponent should reasonably be aware, particularly the existing and associated infrastructure, including water resources and management, utilities, transport and workforce at the existing Peak Downs Mine
 - (g) workforce numbers to be employed by the project during all project phases and source of local workforce (include peak, direct workforce numbers and estimated proportion of fly-in, fly-out (FIFO)⁶ workforce, expressed as annual average full-time equivalent positions created during each phase)
 - (h) where personnel are to be accommodated during construction and operation of the project
 - (i) where relevant, the likely recruitment of workers from local and regional communities and workers who will live in regional communities and rostering arrangements for local, regional and FIFO workers to be adopted
 - (j) proposed travel arrangements of the workforce to and from work, including use of FIFO workforce or drive-in-drive-out workforce
- 10.2 Detail project components or activities that are proposed to be assessed separately to the EIS process, including details of the assessment process and approval.

Infrastructure requirements

- 10.3 Detail the location of works to be undertaken, with concept and layout plans (in plan and cross-section views and include existing infrastructure within and adjacent to the project sites), requirements for new infrastructure, or the upgrading, retention, relocating and/or decommissioning of existing infrastructure on and off site to service the proposed project.
- 10.4 Provide plans for each project component, with sufficient detail to enable the Coordinator-General and relevant agencies to adequately assess the proposed project in the context of the approvals being sought through the EIS process.

⁶ FIFO is defined in Schedule 1 under the *Strong and Sustainable Resource Communities Act 2017* which means a worker who travels to the project by aeroplane, or another means, from a place that is not a nearby regional community for the project.

- 10.5 Infrastructure to be considered is to include, but is not limited to resource extraction areas (if none are proposed on-site discuss where quarry material for construction will be sourced from), mine infrastructure areas, access roads including connections to public roads and proposed road/rail interfaces, rail spur and interfaces between proposed and existing rail, bridges, conveyors, water supply, energy supply, telecommunications, stormwater, waste storage, treatment and/or disposal or release, sewerage (including location and size of the sewage treatment plant, the sewage collection and transportation system, wet weather storage and any pipelines and waste disposal areas associated with the plant such as proposed effluent irrigation), infrastructure for recreational and/or tourist purposes, on-farm infrastructure affected by the project, and locations of any existing and proposed infrastructure easements and/or service corridors.
- 10.6 Describe the timing of requirements for this infrastructure (from pre-construction through to decommissioning and rehabilitation of the project).
- 10.7 Detail whether the infrastructure is permanent or temporary and nominate if it constitutes waterway barrier works, and include details and location of proposed waterway crossing infrastructure in concept and layout plans.
- 10.8 Provide details of the alignment options assessed for any proposed new or existing access road/s, electricity transmission line, telecommunication, water supply pipelines and railway, including justification for the preferred and final alignment chosen.
- 10.9 Include names of the infrastructure service providers as appropriate, together with evidence as to whether discussions have been held with these providers, regarding the capacity of existing or proposed infrastructure to accommodate/or not accommodate project requirements.
- 10.10 Describe the purpose of all dams, levees and diversion channels proposed on the project area. Show their locations and dimensions on appropriately scaled maps and provide plans and cross-sections illustrating features such as embankment heights, length and crest level, spillway type and dimensions, discharge outlets, design storage allowances, discharge capacities (spillway and outlets) and maximum storage volumes. Describe how storage structures and other infrastructure would be sited to avoid or minimise risks from flooding.

Project staging

- 10.11 Provide a detailed description of the proposed project activities within each phase of the project (design, pre-construction, construction, operation, decommissioning and rehabilitation), including scope of works (on the project area and required infrastructure – new and upgraded), disturbance area, physical layout of the project over time, likely timing of the project including any stages and the sequencing of these stages.
- 10.12 Identify the type, quantity, origin, routes, delivery modes, storage and laydown requirements for materials required during the pre-construction, construction, operation and rehabilitation of the proposed project for works:
- (a) at the mine site
 - (b) at the project component sites, to the degree it is required for subsequent approval processes
 - (c) for the product delivery route.

Pre-construction

- 10.13 Describe the pre-construction activities and their location (on or off a mining lease) with appropriately scaled maps, including:
- (a) pre-disturbance surveys, including geotechnical, contaminated land, flora and fauna, water quality, cultural heritage, air and noise and how this information will be used in the final design and construction of the proposed project. all pre-construction activities including the timing, staging and sequencing (e.g. vegetation clearing, site access, interference with watercourses, waterways, and floodplain areas including wetlands) and days and hours of operation (including night-time works)
 - (b) proposed infrastructure on and off the mining lease
 - (c) proposed vegetation clearing, top- and sub-soil removal and stockpiling
 - (d) project area access arrangements where access to the site is on tenure not held by the proponent
 - (e) proposed upgrades, realignments, relocation, deviation or restricted access to roads and other infrastructure including water, power and telecommunications
 - (f) all environmentally relevant activities (ERAs) on and off the mining lease, notifiable activities and land listed on the Environmental Management Register (EMR) and Contaminated Land Register (CLR)
 - (g) environmental management measures included as part of the project design
 - (h) existing infrastructure and easements on the potentially affected land.

Construction

- 10.14 Describe the construction activities and their location (on or off a mining lease) with appropriately scaled maps, including:
- (a) construction timetable, sequencing and staging plans (provide detailed plans, drawings and maps to illustrate these matters, where relevant)
 - (b) proposed construction methods, associated equipment and techniques
 - (c) days and hours of operation for proposed construction works
 - (d) water sources, use, volumes and storage requirements during construction
 - (e) site drainage, erosion and stormwater management, flood protection and waste-water management
 - (f) dimensions of earth and rock works and excavations
 - (g) known locations of new or altered works and structures and infrastructure necessary for the proposed project at all stages of its development, whether on or off the project area or right of way, and intersections required with existing infrastructure (including but not limited to pipeline, rail, road, power)
 - (h) disturbance areas including buffer zones
 - (i) type, amount and source of construction materials required for the proposed project and mode of delivery
 - (j) nature and location of workforce accommodation.

Operation

- 10.15 Describe the operational activities, including the location (on or off a mining lease) with appropriately scaled maps, including:
- (a) proposed mining and processing methods, associated equipment and techniques in areas of different topographic or geo-technical character
 - (b) proposed sequence and timing of mining each seam/ore body/structural unit within the mining lease, including any proposed ramping of production or staging of development
 - (c) type, quality, quantity and proportion of coal mined at each major stage of the proposed project
 - (d) type and capacity of high-impact plant and equipment utilised to construct and operate the proposed project, their chemical and physical processes
 - (e) type, volume and rate of chemicals and hazardous materials to be used
 - (f) waste material management (for example waste rock, coal fines and tailings)
 - (g) predicted inventory of the location and quantity of soil stockpiles, and ongoing management
 - (h) proposed extractive and processing methods, associated equipment and techniques
 - (i) any new or expanded quarry and screening operations (for example, from off-site locations) required to service the proposed project
 - (j) water sources, use, volumes and storage requirements during different staging of operations.

Rehabilitation and mine closure

- 10.16 Describe the rehabilitation and mine closure activities, including the location (on or off a mining lease) with appropriately scaled maps, including:
- (a) proposed scheduling and extent of rehabilitation works with maps at suitable scales showing the location of disturbance areas, relevant ERA infrastructure and associated disturbance areas and the sequence of mining and progressive rehabilitation (i.e. the method and timing of rehabilitation of areas disturbed during construction/operation)
 - (b) proposed methods or techniques for rehabilitating the land to achieve the rehabilitation goals for each proposed final land use proposed in the rehabilitation program
 - (c) for each final post mining land use area, provide a description and map of the area (including name, size in hectares, disturbance type e.g. hardstand, stockpile, pit etc.) and final post mining land use.
 - (d) closure and decommissioning stage, works, water sources and use requirements to be undertaken for removal of plant, equipment, concrete footings, hardstand and storage tanks and actions take to clean up, manage and dispose of contaminated soils.
- 10.17 Describe how the progressive rehabilitation activities will be planned to reduce cumulative areas of disturbed land.
- 10.18 Describe current and future practices deployed and planned for monitoring progress and outcomes of progressive rehabilitation activities.
- 10.19 Describe how the rehabilitation costs have been considered in the proposed rehabilitation outcomes including compliance with:

- (a) the DES's guideline Estimated rehabilitation cost under the EP Act (ESR/2018/4425)
- (b) the Estimated rehabilitation cost calculator - mining (ESR/2015/1824) and supporting guideline – User guide for estimated rehabilitation cost calculator user guide - mining (ESR/2019/4626).

11. Site description

- 11.1 Provide property descriptions for all land potentially impacted by the proposed project, including adjacent properties. Provide details of proposed tenure arrangements for all properties impacted by the proposed project. Include details of any easements, roads and railways (existing and/or proposed, public and private), leases, reserves, unallocated state land, Native Title land (claims under consideration and decided) and cultural practice areas, approved Indigenous Land Use Agreements, permits to occupy, mining and exploration tenures, stock routes, conservation tenures, state forest, native forest and timber reserves, and legally secured offset areas (if any).
- 11.2 Describe and illustrate with suitably scaled maps all transport corridors, private roads, local and state-controlled roads, pipelines, private and government owned corporation energy infrastructure, rail, air services,⁷ maritime and other infrastructure or services in the region relevant to or impacted by the proposed project (permanently or temporarily), including its construction and operation activities.
- 11.3 Describe and illustrate the topography of the project area and surrounds on maps and highlight any significant features. Include and name rivers and creeks, watercourses, lakes, springs and unmapped features in accordance with the *Water Act 2000* (Qld) (Water Act). Watercourses and drainage features identified on the Vegetation Management Watercourse and Drainage Feature map (s 20AB of the *Vegetation Management Act 1999* (Qld) (VM Act)) must be described and illustrated.
- 11.4 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 infrastructures, plant locations, water or tailings storages, waste storages, buildings, bridges and culvert, haul and access roads, causeways, and stockpiles areas. Include discussion of any environmental design features of these facilities, including bunding of storage facilities.
- 11.5 Describe and illustrate specific information about each component of the proposed project including the precise location of the project area and activities at construction, operation, rehabilitation and closure stages, in relation to any waterbodies, waterways providing for fish⁸ passage,⁹ protected areas (including but not limited to conservation parks, nature refuges, national parks), forest reserves, state forests, legally secured offset area (if any), matters of national and state environmental significance, relevant mapped areas identified in the Mackay, Isaac and Whitsunday Regional Plan (e.g. priority agricultural areas, regional biodiversity corridors and regional biodiversity value areas), the location of any proposed buffers surrounding the working areas, lands identified for conservation (either through retention in their current natural state or to be rehabilitated) and Traditional Owner land and cultural

⁷ As defined in the State Development Assessment Provisions.

⁸ As defined in Section 5 of the *Fisheries Act 1994*

⁹ Waterways is defined in Schedule 1 under the *Fisheries Act 1994* which includes a river, creek, stream, watercourse, drainage feature or inlet of the sea.

practice areas. Include maps at a catchment scale illustrating the relationship between the project location and upstream and downstream riverine, estuarine and coastal ecosystems.

- 11.6 Describe and map in plan and cross-sections the geology and landforms of the project area and surrounds (including the boundaries of water catchment areas). Show geological structures, such as aquifers, faults and economic resources (such as agricultural, timber, quarries and mining projects including historic) and any other relevant projects and known development proposals that could have an influence on, or be influenced by, the project and its construction and operational activities.
- 11.7 Describe, map and illustrate land, soil types and profiles of the project area at a scale relevant to the proposed project. Identify soils that would require specific management due to wetness, erodibility, depth, acidity, salinity or other features.
- 11.8 Describe the site in the context of planning schemes, regional plans, state policies and government priorities for the project area.
- 11.9 Describe the findings of the Queensland Agricultural Land Audit¹⁰ and any land identified as strategic cropping land, priority agricultural area, priority living area or strategic environmental area for the project area.
- 11.10 Describe tourist destinations and sites used for recreation in and adjoining to the product delivery routes.
- 11.11 Provide plans and drawings with sufficient detail to enable the Coordinator-General and relevant agencies to adequately assess the project in the context of the approvals being sought.

12. Project rationale and alternatives

- 12.1 Demonstrate the need for the proposed project, its estimated mine life and its scale, including in a regional, state and national context. The demonstrated need should consider the project's exposure to market downturns arising from the transition to a low emission global economy (given growing global decarbonisation trends), the demand for metallurgical and thermal coal over the life of the project, existing mines and other major resource projects proposed for the region.
- 12.2 Describe the objectives and rationale for the proposed project, including strategic, economic, environmental and social implications, technical feasibility and commercial drivers.
- 12.3 Present feasible alternatives of the proposed project's configuration (including individual infrastructure detailed in section 1), including conceptual, technological, mining method, scale and locality alternatives that may improve environmental outcomes. Detail the criteria used to determine the alternatives. Provide sufficient detail to enable an understanding for preferred option/s.
- 12.4 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.

¹⁰ The Queensland Agricultural Land Audit identifies land important to current and future production and the constraints to development, highlighting the diversity and importance of Queensland's agricultural industries. For more information visit <https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/agribusiness/agricultural-land-audit/land-audit>.

- 12.5 Describe how the selected proposed project configuration (including individual infrastructure detailed in section 1) results in best-case outcomes for each impact to the most important environmental values over alternative project configurations.
- 12.6 For unproven elements of a resource extraction or processing process, technology or activity, identify and describe any global leading practice environmental management that relates to the elements, where available. Demonstrate that the design of the proposed project and its predicted outcomes are consistent with best practice environmental management during construction, operation, and decommissioning of the proposed project.
- 12.7 Present alternatives to development of the proposed project. Describe how these alternatives have been considered and why the project is the preferred option.
- 12.8 Justify the preferred option, including using a cost-benefit analysis as described at section 15 of this TOR. Identify and describe interdependencies of each component of the proposed project, particularly in regard to how infrastructure requirements relate to the viability of the project.
- 12.9 Discuss the consequences of not proceeding with the proposed project.

13. Legislative requirements and project approvals

- 13.1 Identify all existing government approvals that are currently in place and relevant to the proposed project, including any proposed components and project activities that can be undertaken under these existing approvals.
- 13.2 Identify any government approvals that require amendment to allow for the Peak Downs Mine Continuation project to proceed. Include all relevant project component and activities, and describe what amendments are sought. Sufficient information and assessment are required for administering authority to decide whether an amendment to the approval is to be granted.
- 13.3 Identify all new government approvals required for the proposed project and detail all approvals for which conditions are being sought through the EIS process, including relevant project stages and components, administering authority and timeframes (using tabular format). Sufficient information and assessment are required for conditions of approval to be drafted and for the administering authority to decide whether an approval is to be granted. Explain how the EIS process (and the EIS itself) informs the issue of approvals/leases/licences/permits/consents required for the proposed project. Provide details of any works that are accepted development, and those that are assessable development.
- 13.4 Identify any approvals (approvals/leases/licences/permits/consents) required for the proposed project that will be sought separate to the EIS, including relevant project stages and components, administering authority, timeframes and associated public notification requirements (using tabular format).
- 13.5 Provide a table indicating all key approvals, stages, timing considerations and associated public notification requirements. Identify the name of the local government and planning scheme area traversed by the proposed project, any proposed material changes of use and operational works assessment benchmarks for all activities associated with this project under the scheme during pre-construction, construction, operation, rehabilitation and closure of the project.
- 13.6 Provide an assessment against the relevant planning schemes, regional plans, state policies and government priorities for the project area and the region. Consider the provisions relevant to the proposed project and address where required, providing evidence where provisions do not apply.

- 13.7 Consider the provisions of the *Regional Planning Interests Act 2014* (Qld) (RPI Act) and whether a regional interests development approval (RIDA) is required pursuant to the RPI Act. The EIS is to provide, where relevant, the information necessary and in sufficient detail to support an application for a RIDA. The assessment and supporting information, where relevant, is to be sufficient for the administering authority to decide whether a RIDA could be granted. Assessment criteria, environmental attributes, information and approval requirements are specified in the Mackay, Isaac and Whitsunday Regional Plan, the Regional Planning Interests Regulation 2014 (RPI Regulation), the RPI Act and relevant guidelines.
- 13.8 Identify if any approval would be needed to undertake waterway barrier works under the *Fisheries Act 1994* Qld (Fisheries Act).
- 13.9 Describe any existing approvals or entitlements, and any approvals or entitlements being sought, under the Water Act, Water Regulation 2016, Water Plan (Fitzroy Basin) 2011 (Water Plan)¹¹, Water Supply (Safety and Reliability) Act 2008 and the Mineral Resources Act 1989. This description should address relevant legislative requirements, water volume limitations and water sources.
- 13.10 Describe any legislative requirements that would need to be met in relation to the proposed project's potential impacts on protected areas, state forests and legally secured offset areas (if any). If the project's potential impacts are considered to be inconsistent with the values of these areas, include a description of the revocation process for changing the boundaries of protected areas and state forests.
- 13.11 The SPP and the State Development Assessment Provisions¹² (SDAP) prescribed in the Planning Regulation 2017 (Planning Regulation) set out the matters of interest to the state for development assessment. The EIS is to:
- (a) identify the SPP and SDAP state codes relevant to the proposed project
 - (b) demonstrate the proposed project's consistency with the relevant SPP
 - (c) demonstrate the proposed project satisfies the information requirements by providing an assessment against the most up to date version of the relevant SDAP state codes.
- 13.12 The EIS is to provide, where relevant, the information required under section 125, 126A of the EP Act and section 41AA of the EP Regulation in support of the proposed project's application for any new and/or amendments to existing environmentally relevant activities (ERAs). Any ERA to be conducted as part of the proposed project should be listed separately with the appropriate ERA number, activity name and required threshold (see Schedule 2, EP Regulation for a list of ERAs).
- 13.13 The assessment and supporting information for an ERA, where relevant, is to be sufficient for the administering authority to decide whether an approval should be granted.¹³ Environmental values, information and approval requirements are specified in the EP Act, the EP Regulation, EPP and relevant guidelines.
- 13.14 Describe the legislative framework for progressive rehabilitation and closure planning for mining activities under the EP Act, and explain how the framework will apply to the proposed project. Identify, in accordance with the framework and relevant guidance, the approval

¹¹ Water Plan refers to the Water Plan (Fitzroy Basin) 2011 and any draft plan.

¹² Further information on SDAP requirements can be accessed from: <https://planning.dsdmip.qld.gov.au/planning/better-development/the-development-assessment-process/the-states-role/state-development-assessment-provisions>.

¹³ For technical information requirements see <https://www.business.qld.gov.au/running-business/environment/licences-permits/applying/technical>

requirements for progressive rehabilitation and closure plan(s) for the project, and how the project would progress the relevant approval pathway.

- 13.15 Describe the assessment process under the accredited assessment process between the Australian Government and the State of Queensland.

14. Stakeholder consultation

- 14.1 In preparing the EIS, consult with directly affected landholders, relevant stakeholders including local, state and Australian government agencies, Aboriginal and Torres Strait Islander peoples¹⁴ and potentially affected communities,¹⁵ directly affected communities and indirectly affected key stakeholders.¹⁶

- 14.2 Describe in a stakeholder engagement report, the stakeholder engagement activities that have occurred during the preparation of the EIS, identify the issues raised during the consultation, and explain how the responses from stakeholders have been incorporated into the design and outcomes of the proposed project.

15. Assessment of project specific matters

- 15.1 This section sets out the scope of project specific matters that are to be given detailed treatment in the EIS. Assessment of each matter is to consider the potential direct and indirect impacts of the project at the local and/or regional scale.
- 15.2 The proponent is to engage with the Office of the Coordinator-General throughout the development of the EIS to clarify the scope of assessment for each project specific matter.

¹⁴ This includes Aboriginal and Torres Strait Islander peoples with interest in land directly affected by the proposal as well as those that could be potentially impacted (i.e. downstream Traditional Owners). In developing an engagement plan for consulting with Aboriginal and Torres Strait Islander peoples, input from relevant government agencies such as the Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships is required. Any Aboriginal and Torres Strait Islander peoples who hold distinct cultural rights for the purposes of the *Human Rights Act 2019* within the project area.

¹⁵ Potentially affected communities are those local and/or regional communities that may be directly or indirectly affected by the project, whether negatively or positively.

¹⁶ Refer to Appendix 1 of the Coordinator-General's social impact assessment Guideline for a list of key stakeholders.

Land

Objectives

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

- (a) the activity is operated in a way that protects the environmental values of land, including soils, subsoils, landforms and associated flora and fauna
- (b) the activity is operated in a way that protects the environmental and resource values of protected areas, state forests or privately owned lands with particular environmental and forest production values
- (c) the choice of the site, at which the activity is to be carried out, avoids or minimises environmental harm on areas of high conservation value and special significance and sensitive land uses at adjacent places
- (d) the location for the activity on a site protects all environmental and resource values relevant to adjacent sensitive uses located within and adjacent to the project area
- (e) the design of the facility permits the site at which the activity is to be carried out to operate in accordance with best practice environmental management
- (f) the impacts on priority agricultural areas, strategic cropping land, state forests and other privately-owned lands with nature conservation or forest production values are avoided, minimised and/or mitigated
- (g) the 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
- (h) the activity is operated in a way that disturbed land will be rehabilitated or restored to a safe, stable and non-polluting 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
- (i) 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.

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

Land use and tenure

Existing environment

15.3 Describe the following:

- (a) the existing and proposed land uses and infrastructure, in and around the project area, including numbers of private properties, Traditional Owner land and cultural practice areas, state leasehold land, reserves, unallocated state land, watercourses/waterways and road reserves impacted by the proposed project with maps including lot on plan descriptions
- (b) the landscape and visual amenity, in and around the project area

- (c) identify townships and urban areas located near the project area
 - (d) any tenures, including national park, conservation park, state forest, nature refuge, stock routes and biodiversity offset areas (if any) approved by the state or Australian governments overlying and adjacent to the project area or area likely to be impacted
 - (e) identify all planning schemes and regional plans which will affect the proposed project.
- 15.4 Describe and map the extent of any known agriculture, horticulture, petroleum, mining and exploration activities or extractive (quarry) resources of significance, including, but not limited to:
- (a) petroleum pipeline infrastructure
 - (b) registered exploration permits and applications for exploration permits
 - (c) mineral development licences and applications for mineral development licences
 - (d) mining leases and applications for mining leases, including access arrangements
 - (e) geothermal and greenhouse gas storage tenures
 - (f) known extractive resources
 - (g) active, disused, or abandoned mine workings in the project area and surrounds
 - (h) stock route network
 - (i) agricultural land considered as a priority agricultural area and/or of strategic cropping land, and any other matters identified in the RPI Act and RPI Regulation
 - (j) findings of the Queensland Agricultural Land Audit and AgTrends Spatial web mapping app.¹⁷
- 15.5 Illustrate the context of the proposed project in relation to surrounding and impacted protected areas, state forests, timber reserves, privately owned lands with nature conservation and biodiversity offset areas approved by the state or Australian governments or other forest production values. This includes the location of:
- (a) existing and proposed infrastructure
 - (b) proposed buffers (including firebreaks and safety buffers)
 - (c) existing and proposed access tracks required for construction and maintenance¹⁸
 - (d) any areas of disturbance required for the establishment of temporary non-resident workforce accommodation and construction laydown areas.

Impact assessment

- 15.6 The assessment of impacts on land is to be in accordance with Department of Environment and Science (DES) *Application requirements for activities with impacts to land* and *DES Land – EIS information guideline* (see Appendix 2). Demonstrate that the proposed project can meet the environmental objectives and performance outcomes relevant to land in Schedule 8 of the EP Regulation.
- 15.7 Identify all state and regional planning interests (e.g. priority agricultural areas, priority living areas, strategic cropping areas and key resource areas) potentially impacted by the proposed

¹⁷ <https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/agribusiness/agtrends-spatial>

¹⁸ Access tracks to be limited to 10m wide, where possible, or the impacts on wider tracks may trigger assessable vegetation

- project, and the source of mapping to identify those interests. Where mapping is not available, identify the methodology followed to prepare the mapping and its scale.
- 15.8 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.
 - 15.9 Describe potential impacts of the proposed land uses, taking into consideration the proposed measures that would be used to avoid or minimise potential impacts.
 - 15.10 Detail how the construction, operation and rehabilitation phases of the proposed project and the proposed land outcome/s for the area will change existing and potential land uses of the project area(s) and adjacent areas, including constraints to the expansion of existing and potential agricultural land uses.
 - 15.11 Demonstrate that the proposed project can meet the required outcome and prescribed solutions under the regional planning interest's framework for the relevant attributes identified in the Mackay, Isaac and Whitsunday Regional Plan for priority agricultural land uses in priority agricultural areas and priority living areas.
 - 15.12 Address impacts on any identified agriculture, horticulture, petroleum, mining and exploration activities, including any consultation undertaken with tenement holders, with respect to accessing land, impact assessment and mitigation measures. For any impacts on mining and exploration activities, liaise with any authorised tenement holder whose mining interests overlay the development footprint to advise of the proposal and ascertain any future exploration activities.
 - 15.13 Describe any potential impacts on any historical mine workings within or adjacent to the project area.
 - 15.14 Identify existing and potential Native Title rights and interests impacted by the proposed project. Detail and illustrate on maps the following Native Title considerations:
 - (a) current tenure of all land or waters within the project area (which may include creeks)
 - (b) a native title assessment that determines presence, or otherwise, of Native Title over all land or waters within the project area
 - (c) land or waters where Native Title has been determined to exist by the Federal Court
 - (d) land or waters that are covered by a Native Title determination application
 - (e) land or waters that are covered by a registered Indigenous Land Use Agreement.
 - 15.15 Describe any proposed tenure to be applied for as part of this proposed project, including any necessary approvals and/or owners' consent.
 - 15.16 Describe the proposed land acquisition approach/es with stakeholders and state government agencies, including anticipated timelines, necessary to secure tenure for the proposed project. Include any compulsory acquisition process potentially applicable to each tenure impacted. Describe any existing or proposed tenures impacted by the proposed project which will entitle payment of lawfully required compensation and the corresponding parties who will receive or pay compensation for each tenure.
 - 15.17 Identify any infrastructure or access tracks associated with the proposed project to be located within, or which may have impacts on, the stock route network managed under the *Stock Route Management Act 2002* (Qld) (Stock Route Management Act).
 - 15.18 Include a detailed assessment of the likely potential impacts to agricultural interests, including:

- (a) agricultural land of SPP significance to the agriculture state interest. This assessment is to demonstrate how the proposed project is consistent (or otherwise) with protecting Agricultural Land Classification Class A and Class B land for sustainable agricultural use, in accordance with state interest – agriculture 2 (a)-(c)
 - (b) agricultural land considered as a priority agricultural area and/or strategic cropping land, and any other matters identified in the RPI Act and RPI Regulation. Refer to the Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) *RPI Act Statutory guideline 11/16 – Companion guide* and Department of Agriculture and Fisheries (DAF) *DAFF Environmental impact assessment companion guide* (see Appendix 2).
- 15.19 Describe the potential direct and indirect impacts on the natural and cultural resources and values of all protected areas and state forest, in the project area arising from the construction and operation of the proposed project.¹⁹
- 15.20 Describe, using graphics and figures, temporary and permanent changes to the landscape and the visual impacts of the proposed project on communities, particularly those living in townships.
- 15.21 Address the cumulative impacts of the proposed land uses in conjunction with existing and potential future impacts to the land. This includes impacts from contaminants, materials or wastes associated with the proposed project, existing development and possible future development (as described by approved plans and existing project approvals).

Mitigation measures

- 15.22 Describe the proposed mitigation measures to avoid or minimise impacts on existing and proposed land uses.
- 15.23 Demonstrate how historical mine workings have been avoided where possible. If relevant, describe how the proposed project is to incorporate safety measures to mitigate hazards with abandoned mines and ensure the safety of personnel.
- 15.24 Identify the potential for managing impacts on existing and potential Native Title rights and interests by Indigenous Land Use Agreements or other measure in accordance with the *Native Title Act 1993 (Qld)* (Native Title Act) and consistent with the *Queensland Native title work procedures* (see Appendix 2).
- 15.25 Demonstrate how the proposed project will maintain the ongoing functionality and connectivity of the stock route network.
- 15.26 Describe the proposed mitigation measures to avoid or minimise impacts on agricultural land uses. Demonstrate how any adverse impacts will be mitigated to ensure there is no net loss in the availability and utility of that land for an agricultural use. This would include land directly impacted by and adjacent to project activities.
- 15.27 Describe the proposed mitigation measures to avoid or minimise landscape and visual amenity impacts.

¹⁹ 'Natural resources', 'cultural resources' and 'protected areas' within the definitions under the *Nature Conservation Act 1992*.

Topography, geology and soils

Existing environment

- 15.28 Describe, including maps, the geology of the project area, with reference to the physical and chemical properties of surface and sub-surface materials and geological structures within the proposed areas of disturbance.
- 15.29 Describe the geological properties that could impact upon ground stability and influence the nature and location of project activities.
- 15.30 Identify and investigate areas of salinity, sodic, dispersive and cracking clay soils, and potential or actual areas of acid sulfate soils. Where potential areas are identified, further investigations (including field surveys) should be undertaken in accordance with accepted industry guidelines and requirements of the *SPP – State interest guideline emissions and hazardous activities* (see Appendix 2).
- 15.31 Identify and investigate the soil types associated with water movement, salinity, sodicity and cracking clay soils, as well as areas of potential and actual acid sulfate soils.
- 15.32 Detail any known or potential sources of contaminated land (on and off mining lease), including any area which has been or is being used for a 'Notifiable Activity' as listed in Schedule 3 of the EP Act, is potentially contaminated, or is on the Environmental Management Register or Contaminated Land Register.
- 15.33 Provide details, including maps, existing soil conservation works (including but not limited to contour banks, waterway discharge points etc.) and existing erosion control works, in particular, those approved as project plans or property plans approved under the provisions of the *Soil Conservation Act 1986* (Qld) (Soil Conservation Act).

Impact assessment

- 15.34 The assessment of impacts on topography, geology and soils will be in accordance with the *DES Land – EIS information guideline*, *Guideline for soil survey along linear features*, *Guidelines for surveying soil and land resources*, *Australian soil and land survey field handbook*, *Queensland Soil and Land Resource Survey Information Guideline* and *Queensland Land Resource Assessment Guidelines – Volume 1: Soil and land resource assessment* (see Appendix 2) and *Volume 2: Field Test*. If any quarry material is needed for construction, consider the *DES Quarry material – EIS information guideline* (see Appendix 2).
- 15.35 Describe how any proposed land use may result in land becoming contaminated as a result of the proposed project.
- 15.36 Identify activities or operations likely to impact on existing erosion control works and any soil conservation works, in particular, those approved as project plans or property plans under the Soil Conservation Act.

Mitigation measures

- 15.37 Detail proposed measures taken during the construction, project operation and rehabilitation to avoid and minimise land degradation. Land degradation includes but is not limited to soil erosion, the expression of salinity, waterlogging, and mass movement by gravity of soil or rock.
- 15.38 Describe the actions to be undertaken to avoid, identify, remediate, and manage land that is contaminated or becomes contaminated.

- 15.39 Describe the measures to avoid, minimise or mitigate potential impacts of the project on soil values.
- 15.40 Where potential and actual acid sulfate soils have been identified, prepare an acid sulfate soil management plan in accordance with accepted industry guidelines and the requirements of the *SPP – State interest guideline emissions and hazardous activities* that appropriately manages the disturbance of acid sulfate soils to avoid or minimise the mobilisation and release of acid, iron, or other contaminants.
- 15.41 Describe how current and/or expected technologies will be applied when surface mining.
- 15.42 Propose detailed mitigation measures for any significant impacts that would result from subsidence including impacts on infrastructure, land, hydrology, flora and fauna.
- 15.43 For surface mines and projects with activities that disturb the land surface, show how the landform during and post mining will be stable and non-eroding over time, including how it will meet any requirements of project or property plans approved under the Soil Conservation Act.

Rehabilitation and mine closure

Impact assessment

- 15.44 Demonstrate that voids will be backfilled to the greatest extent possible. In doing so, clearly identify the environmental factors considered and provide a comparison of environmental, social, and economic factors that contributed towards the determination of the greatest extent of void backfilling.
- 15.45 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.
- 15.46 Describe any measures to be taken to ensure that rehabilitation activities, that meet the environmental objectives and performance outcomes in Schedule 8A of the EP Regulation, are able to be undertaken within the proposed tenure boundaries for the proposed project. This is to include but not be limited to any buffers between mining pit extent or overburden dumps and the tenure boundary.
- 15.47 With cross-reference to TOR item 13.14, provide a proposed PRCP for the project in accordance with DES *Submission of a progressive rehabilitation and closure plan* (see Appendix 2) and best practice approaches about the strategies and methods for progressive and final rehabilitation. The PRCP must show how and where activities will be carried out on land in a way that maximises the progressive rehabilitation of the land to a stable condition and provide for the condition to which the holder must rehabilitate the land before the Environmental Authority may be surrendered. The PRCP must consist of two components:
 - (a) rehabilitation planning part
 - (b) PRCP schedule.

Rehabilitation planning part

- 15.48 Provide the rehabilitation planning part of the proposed PRCP, by addressing the following:
 - (a) describe each resource tenure, including the area of each tenure
 - (b) describe the relevant activities and the likely duration of the relevant activities

- (c) include a detailed description, including maps, of how and where the relevant activities are to be carried out
 - (d) include details of the consultation undertaken in developing the proposed PRCP
 - (e) include details of how ongoing consultation will be undertaken to discuss rehabilitation to be carried out under the plan
 - (f) state the extent to which each proposed post-mining land use or non-use management area is consistent with the outcome of consultation with the community in developing the plan and any strategies or plans for the land of a local government, the state government or the Australian government
 - (g) for each proposed post-mining land use, state the proposed methods or techniques for rehabilitating the land to a stable condition in a way that supports the rehabilitation milestones under the proposed PRCP schedule
 - (h) identify the risks of a stable condition for land identified as a proposed post-mining land use not being achieved, and detail measures to manage or minimise the risks
 - (i) for each proposed non-use management area, state the reasons why the area cannot be rehabilitated to a stable condition because of either of the below:
 - (i) carrying out rehabilitation of the land would cause a greater risk of environmental harm than not carrying out the rehabilitation or
 - (ii) the risk of environmental harm as a result of not carrying out rehabilitation of the land is confined to the area of the relevant resource tenure and the proponent considers, having regard to each public interest consideration, that it is in the public interest for the land not to be rehabilitated to a stable condition
 - (j) include copies of reports or other evidence relied on for each proposed non-use management area
 - (k) for each proposed non-use management area, state the proposed methodology for achieving best practice management of the area to support the management milestones under the proposed PRCP schedule for the area
 - (l) include other information requirements outlined in the *DES Guideline – Progressive rehabilitation and closure plans* (see Appendix 2).
- 15.49 Show a comparison of pre-activity site topography and the expected final topography of the site with any excavations, waste areas and dam sites on suitably scaled maps.
- 15.50 Show a comparison and provide modelling results of pre-activity, during operations and expected final landform of the site in relation to the river floodplains and flood levels up to and including the 'probable maximum flood level' based on the Bureau of Meteorology's 'probable maximum precipitation' forecast for the locality on suitably scaled maps. The maps and modelling are to detail where final voids, mined areas, subsidence, and uncompacted overburden and workings prior to disturbance, during operations and at the end of operations would lie in relation to the river floodplains and flood levels.
- 15.51 Provide flood plain modelling undertaken in accordance with the guideline Australian Rainfall and Runoff (2019) (see Appendix 2) and exclude any artificial features for the land within the tenure boundary. This is required where a final void^{20*} is proposed as part of the final landform

²⁰ DES *Progressive rehabilitation and closure plans* (see Appendix 2) section 3.4 contains further information about voids in floodplains. Further information is also available in the DES information sheet: Voids in flood plains (ESR/2019/4966)

for the site or where, when all relevant activities carried out on the land have ended, the land is the same height as, or lower than, the level modelled as the peak water level 0.1% AEP for a relevant watercourse under the guideline Australian Rainfall and Runoff (2019).

PRCP schedule

- 15.52 Provide a proposed PRCP schedule²¹ which describes time-based milestones for achieving each post-mining land uses or non-use management areas for the proposed project. Present the proposed PRCP schedule in the table template included in *DES Submission of a progressive rehabilitation and closure plan* (see Appendix 2).
- 15.53 The proposed PRCP schedule, must identify:
- (a) all land within the resource tenure as either a post-mining land use or non-use management area
 - (b) when land becomes available for rehabilitation or improvement
 - (c) rehabilitation milestones to achieve a post-mining land use
 - (d) management milestones to achieve a non-use management area
 - (e) milestone criteria that demonstrate when each milestone has been completed
 - (f) completion dates for each milestone to be achieved
 - (g) a final site design
 - (h) all milestone criteria must be consistent with the SMART principles.²²
- 15.54 Develop a plan of a proposed scheduling and extent of rehabilitation works that would minimise the amount of land disturbed at any one time and minimise the residual loss of land and water bodies with ecological or productive value.
- 15.55 Demonstrate that effective, long-term planning for rehabilitation over the life of mine has been included in the mine planning in line with the matters raised in the *DES Progressive rehabilitation and closure plans* guideline.²³

²¹ *DES Progressive rehabilitation and closure plans* (see Appendix 2) contains further information about how to develop a PRCP schedule.

²² 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.

²³ *DES Progressive rehabilitation and closure plans* (see Appendix 2).

Flora and fauna

Objectives

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

- (a) avoid, minimise and/or mitigate adverse impacts to flora and fauna (including wetlands)
- (b) avoid significant residual impacts to MNES and matters of state environmental significance (MSES), mitigate impacts where they cannot be avoided, and offset any residual impacts
- (c) manage the impacts on the environment by seeking to achieve ecologically sustainable development
- (d) avoid and minimise impacts to all environmental values relevant to adjacent and receiving environmentally sensitive areas
- (e) ensure waterway barrier works in fish habitats are constructed to maintain connectivity, habitat values and fish passage.

Existing environment

- 15.56 Identify and describe MSES,²⁴ state and regionally significant biodiversity and natural environmental values of the terrestrial and aquatic ecosystems likely to be impacted by the proposed project. This is to include watercourses and waterways providing for fish passage impacted by groundwater drawdown or diversion, watercourse floodplain ecology (especially as it relates to potential changed hydrology and water quality from project activities e.g. levees and groundwater drawdown impacts), groundwater dependent ecosystems, waterways that provide for fish passage, instream refuge waterholes and high ecological significance wetlands. Where MSES have been addressed in the section on MNES, specific cross referencing is required. It is recommended that this section is structured to include separate assessment for each MSES.
- 15.57 Describe the existing quality and suitability of habitat for species that are known and have the potential to occur in the project area. Provide the area of existing habitat (in ha) for each MSES/MNES species in the project area.
- 15.58 The location of fauna and flora of cultural, state and national environmental significance in the project area, and in surrounding areas, are to be shown on maps in relation to their habitat and connectivity in the landscape. Include maps showing areas of:
- (a) regulated vegetation including regional ecosystems, essential habitat, wetlands, watercourse and drainage features (over the project and adjoining areas)
 - (b) protected wildlife habitat
 - (c) wetlands (including wetlands of high ecological significance), watercourses and drainage features (over the proposed project and adjoining areas)
 - (d) waterways providing for fish passage
 - (e) protected areas

²⁴ MSES are a component of the biodiversity state interest that is defined under the State Planning Policy (SPP) and defined under the Environmental Offsets Regulation 2014. MSES includes certain environmental values that are protected under Queensland legislation.

- (f) biodiversity offset areas approved by the state or Australian governments (if any).
- 15.59 Provide a detailed description of all native fish species:
- (a) known to occur within the area impacted by the proposed project (as identified through on-ground studies)
 - (b) identified as likely to occur (via desktop assessment).
- 15.60 Describe, using relevant literature, habitat mapping and the results of surveys, the natural and existing upstream and downstream movement and habitat requirements of all aquatic and terrestrial flora and fauna in the project area and surrounding area. Describe the sensitivity to change of aquatic and terrestrial flora and fauna groups, regional ecosystems and significant species in reference to site-specific impacts.

Impact assessment

- 15.61 Using maps at suitable scales, illustrate the context of the proposed project in relation to surrounding MSES. This includes the location of:
- (a) existing and proposed infrastructure, and project activities
 - (b) proposed buffers (including waterway, firebreak and safety buffers)
 - (c) existing and proposed access tracks required for construction and maintenance
 - (d) any other areas of disturbance required to undertake the proposed project.
- 15.62 Describe the potential direct and indirect impacts on the biodiversity and natural environmental values of affected areas in accordance with policies and guidelines listed in the flora and fauna section of Appendix 2. The assessment is to include, but not be limited to, the following:
- (a) all significant flora and fauna species and ecological communities (including but not limited to koala, northern quoll, greater glider, ornamental snake, Australian painted snipe, squatter pigeon, king blue-grass and brigalow) in both terrestrial and aquatic environments and in sensitive areas, biodiversity values, connectivity and supporting ecological processes²⁵
 - (b) flora and fauna of cultural significance to Aboriginal and Torres Strait Islander peoples
 - (c) terrestrial and aquatic ecosystems including groundwater dependent ecosystems
 - (d) alterations to riparian vegetation, habitat availability, connectivity and bank and channel morphology
 - (e) waterways providing for fish and fauna passage (including temporary and permanent impacts), including an assessment against SDAP state code 18
 - (f) the existing integrity of ecological processes, including habitats of listed threatened, near-threatened or special least-concern species
 - (g) connectivity of habitat and ecosystems
 - (h) integrity of landscapes and places, including wilderness and similar natural places
 - (i) chronic, low-level exposure to contaminants or the bioaccumulation of contaminants
 - (j) terrestrial, aquatic and marine species and ecosystems whether acting individually or in combination. Relevant matters include vegetation clearing, hydrological changes,

²⁵ Where a MSES is also a MNES, specific cross referencing to where it has been addressed in the MNES chapter should be provided.

- discharges of contaminants to water, air or land, noise and the influence of climate change
- (k) edge effects of cleared vegetation and access to food resources
 - (l) actions of the proposed project that require an authority under the *Nature Conservation Act 1992* (Qld) (NC Act) and Water Act (e.g. riverine protection permit), *Vegetation Management Act 1999* (Qld) (VM Act)²⁶ and Fisheries Act, and an authority and/or permit under the EP Act
 - (m) biological diversity including listed flora and fauna species and regional ecosystems
 - (n) protected areas, state forest tenures, biodiversity offset areas approved by the state or Australian governments
 - (o) native fauna during construction and operation of the proposed project due to their proximity to the project area (e.g. lighting, noise, waste).
- 15.63 Provide a description of how ecological processes and connectivity is maintained along the riparian corridors of Cherwell Creek, Ripstone Creek and Boomerang Creek (that flow through the site) to the Isaac River state corridor in the east.
- 15.64 Describe the cumulative impacts of the proposed project, in conjunction with existing development and possible future development (as described by approved plans and existing project approvals), to ecosystem resilience, flora and fauna and impacts to the relevant floodplain ecology.
- 15.65 Identify and discuss where proposed vegetation clearing is assessable, accepted or exempt development for the project under the Planning Regulation. Assess proposed assessable vegetation clearing for off-lease activities (including operational work) against SDAP state code 16,²⁷ addressing the relevant assessment benchmarks for a coordinated project for all other purposes. Note that all vegetation, including Category X areas (under the VM Act), on state land tenures is assessable unless an exemption or Accepted Development Vegetation Clearing Code applies.
- 15.66 For any infrastructure that constitutes waterway barrier works, provide cross-sections of the waterway that show the barrier in relation to the bed and banks and long-sections that show the barrier in relation to the bed upstream and downstream of the structure. Describe how the barrier and hydrological conditions provide for bi-directional fish passage.
- 15.67 Describe the potential disruption to flows in waterways and tributaries and demonstrate how the chosen method minimises and mitigates potential impacts on aquatic and riparian habitat (including sediment dams, levees, temporary diversions). Reference is to be made to DAF *Guidelines for Fish Salvage* (see Appendix 2), for example if any dewatering is required. The description is to include:
- (a) proposed fauna passage through any diversions, noting that any diversions are to retain nature habitat features such as a meandering path, pools, riparian and in-stream vegetation.

²⁶ The *Vegetation Management Act 1999* does not apply to mining projects on resource tenements where the clearing has been assessed under a current Environmental Authority. Any other clearing purpose or off-lease clearing may require a development approval unless it is accepted development under Schedule 21 of the Planning Regulation 2017. Refer also to <https://www.qld.gov.au/environment/land/management/vegetation/exemptions>

²⁷ The Guide to the State Development Assessment Provisions State Code 16: Native vegetation clearing (Coordinated project – all other purposes) can be used to inform a response to SDAP state code 16. Refer to Appendix 2.

- (b) proposals for the reinstatement of the waterways after construction has ceased, if applicable.

- 15.68 Describe the potential impacts on ecological function and connectivity, including any impacts downstream/off-site resulting from altered flow paths, changes in flow velocity and changes in inundation periods.
- 15.69 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 of any modelled flood level, including the probable maximum flood level.

Mitigation measures

- 15.70 Describe how the achievement of the flora and fauna objectives are to be monitored and audited, and how corrective actions are to be managed for all phases of the proposed project.
- 15.71 Demonstrate how the proposal avoids native vegetation clearing, or where avoidance is not reasonably possible, minimises clearing to conserve vegetation, avoid land degradation and maintain ecological processes.
- 15.72 Propose practical measures (based on demonstrated successful methodologies) to avoid, minimise and/or mitigate direct or indirect impacts on ecological environmental values, including measures for protecting or enhancing natural values and 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. Provide a salvage and relocation plan for impacted species including MSES.
- 15.73 Assess the need for firebreaks and the need for buffer zones and the retention, rehabilitation or planting of movement corridors (including waterways). The assessment must take into account the role of buffer zones in maintaining and enhancing riparian vegetation and wetlands to promote habitat connectivity, enhance water quality and provide habitat.
- 15.74 Demonstrate that the proposed project will avoid the need for waterway barriers or propose measures to mitigate impacts on affected waterways, drainage features and wetlands. Include mitigation strategies for construction and operation stages of the proposed project.
- 15.75 Propose rehabilitation criteria, based on a standardised and repeatable framework such as the BioCondition assessment framework, in relation to natural values, that would be used to measure progressive rehabilitation of disturbed areas. Proposals for rehabilitation of disturbed areas must incorporate, in suitable habitat, provision of low shrubs, ground level hollow logs, stick piles, nest hollows, ground litter, fish passage and terrestrial and aquatic habitat as appropriate.

Offsets

- 15.76 After demonstrating that all reasonable on-site avoidance and mitigation measures have been applied, identify whether the proposed project will result in a significant residual impact (SRI) on MSES, requiring an offset in accordance with the Queensland Environmental Offsets framework.
- 15.77 Address both state and commonwealth offset obligations, and clearly identify where there are overlaps across jurisdictions. Where a prescribed matter is a MSES under two or more State jurisdictions and/or is also a MNES under the Commonwealth jurisdiction, provide evidence and analysis that demonstrates the MSES is the same or substantially the same prescribed matter and impact as that being assessed under the other jurisdiction/s.

- 15.78 Describe and quantify any SRI and demonstrate any proposed land-based offset sites and their suitability and habitat quality, or alternative offset types, are consistent with the latest version of the *Queensland Environmental Offsets Policy* (see Appendix 2).
- 15.79 Provide as an appendix to the EIS an offset proposal which outlines the proposed offset delivery approach to address the proposed project's SRI on MSES and MNES. The offset delivery approach is to include:
- (a) both state and commonwealth offset obligations, and clearly identify any overlaps across jurisdictions
 - (b) identify, describe, quantify and illustrate the extent of any SRI overlap between MNES and MSES (such as in a map and table)
 - (c) for staged offsets, take into account the full extent of potential impacts on prescribed environmental matters from the entire project as part of the SRI test
 - (d) the results of a habitat quality assessment²⁸ on both the impact area and the proposed offset area/s to compensate for impacts
 - (e) discussion and sound review of the availability of the offset for each MNES and MSES matter proposed to be offset and the ability to enter into long-term conservation agreements
 - (f) an assessment of the vulnerability of any proposed offset site/s under climate change scenarios (e.g. reduced water availability, increased bushfire risk).
- 15.80 Describe any active rehabilitation actions that would be undertaken to improve, enhance and manage native vegetation or threatened species habitat on a proposed offset site.
- 15.81 Describe any proposed measures that would be used to avoid, minimise or mitigate any impact on agricultural values when meeting environmental offset requirements required for the proposed project.

Biosecurity

Objectives

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

- (a) avoid, minimise and/or mitigate the introduction and spread of terrestrial and aquatic weeds, terrestrial and aquatic pest animals, animal and plant pests and diseases, pathogens and contaminants
- (b) control and manage existing terrestrial and aquatic weeds, terrestrial and aquatic pest animals, and animal and plant pests and diseases
- (c) comply with relevant provisions of the *Biosecurity Act 2014* (Qld) (Biosecurity Act), Commonwealth animal and pest strategies, biosecurity plans, Weeds of National Significance and designated pests under the *Public Health Act 2005* (Qld) (Public Health Act).

²⁸ "The site habitat quality score must be derived in accordance with the Queensland Guide to determining terrestrial habitat quality: Methods for assessing habitat quality under the Queensland Environmental Offsets Policy (Version 1.3, February 2020), or subsequent published revision."

Existing environment

- 15.82 Survey terrestrial and aquatic pest animals and weeds in accordance with the requirements of the DES Biosecurity – EIS information guideline (see Appendix 2).
- 15.83 Describe the current distribution and abundance of terrestrial and aquatic pest animals and weeds in the project area and surrounds. This includes prohibited and restricted matters listed in the Biosecurity Act, Biosecurity Regulation 2016 (Qld), Weeds of National Significance, and designated pests under the Public Health Act (see Appendix 2 for relevant guidelines).

Impact assessment

- 15.84 Describe the project's construction and operational impacts on the spread of terrestrial and aquatic pest animals, terrestrial and aquatic weed species and disease within the project area construction and operational access routes and into adjoining properties (where relevant). Conduct the impact assessment in accordance with DES Biosecurity – EIS information guideline (see Appendix 2).

Mitigation measures

- 15.85 Propose detailed measures using best practice to remove, control and limit the spread of pests, weeds, diseases, pathogens and contaminants within and surrounding the project area and adjacent areas. Detail any relevant local government area biosecurity plans. Include a discussion on minimising any susceptibility to biosecurity risks with the introduction and/or expansion of temporary and permanent infrastructure.
- 15.86 All proposed measures are to be in accordance with any relevant biosecurity surveillance or prevention measures authorised under the Biosecurity Act and any requirements under the VM Act.
- 15.87 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.

Water quality

Objectives

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

- (a) avoid, minimise and/or mitigate adverse impacts to water quality
- (b) protect environmental values of waters
- (c) protect environmental values of wetlands
- (d) protect environmental values of groundwater and associated surface ecological systems
- (e) maintain or enhance water quality to achieve water quality objectives.

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

Existing environment

- 15.88 With reference to the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 (EPP (Water and Wetland Biodiversity)) and section 9 the EP Act, identify the environmental values of surface water (including wetlands) and groundwater within the project area, its

surrounds and immediately downstream/downgradient areas that may be affected by the project activities, including all existing human and environmental users and culturally significant values of water.

- 15.89 Describe historic and existing surface water and groundwater quality in terms of physical, chemical and biological characteristics of surface waters and groundwater within and surrounding the project area which may be affected.
- 15.90 Include a description of water quality and variability within the study area associated with climatic and seasonal factors, variability of freshwater flows and extreme events. Using sufficient baseline water quality monitoring data at suitable reference locations and sufficient data to adequately establish baseline condition and define natural variation, including seasonal variation.
- 15.91 The analysis is to include a literature review supplemented by a suitable sampling program and sufficient site-specific baseline data. The following additional matters are to be discussed:
- (a) relationship of water quality to flow, using local catchment examples
 - (b) water quality issues (such as stratification, eutrophication and deoxygenation) within and downstream from existing storages in the system
 - (c) confirmed or likely causes of present water quality impacts (if any)
 - (d) suitability of existing raw water quality for proposed on-site uses and any treatment required
 - (e) correlate groundwater quality results with surface water data to define interactions
 - (f) characterise baseline groundwater quality variability and its suitability for environmental and human use
 - (g) identify any water quality variations along the length of any alluvium upstream and downstream of infrastructure, or surface water locations
 - (h) surface water quality samples must include as a minimum, electrical conductivity, pH, sulphate, fluoride, dissolved oxygen, turbidity, total suspended solids, nutrients, dissolved and total metals and metalloids, total recoverable hydrocarbons and major anions and cations. Groundwater indicators must include the same indicators (except turbidity and total suspended solids) as a minimum and should allow for all water quality objectives for local groundwater to be assessed.

Impact assessment

- 15.92 The assessment of impacts on water is to be in accordance with DES guideline *Application requirements for activities with impacts to water*, *Water – EIS information guideline*, *Monitoring and sampling manual*, *Queensland Water Quality Guidelines*, *Using monitoring data to assess groundwater quality and potential environmental impacts* and *Technical guideline – Licensing wastewater releases to Queensland water* (see Appendix 2). Demonstrate the proposed project can meet the environmental objectives and performance outcomes in Schedule 8, Part 3 of the EP Regulation.
- 15.93 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 project completion. Where water quality objectives are not available, local water quality objectives must be derived according to the latest water quality guidelines (see Appendix 2). Spatially identify any waterways and pools, stock watering

locations, groundwater aquifers (including where surface water interactions are likely) and other environmental values locations.

- 15.94 Identify the predicted quantity and quality (including location, timing and duration) of all potential and/or proposed discharges of water and wastewater sewage by the proposed project, whether as point sources (such as controlled and uncontrolled discharges from regulated dams) or diffuse sources (such as seepage from waste rock dumps/waste management areas or irrigation to land of treated sewage effluent). Provide receiving environment 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 wastewater, including concentrations of constituents, at the point of entering natural surface waters must be discussed along with toxicity of effluent constituents to human health, flora and fauna.
- 15.95 Describe the potential impacts of any discharges on the quality and quantity of receiving waters (including groundwater) taking into consideration the assimilative capacity of the receiving environment given existing water quality and other potential point source discharges in the catchment. The assessment is to include, but not be limited to:
- (a) options for controlled discharge at times of natural stream flow must be investigated to ensure that adequate flushing of wastewater is achieved
 - (b) provide water quality limits that are appropriate to maintain background water quality and protect other water uses
 - (c) necessary streamflow conditions in receiving waters under which controlled discharges will be allowed
 - (d) consider the resultant quality and hydrology of receiving waters and the practices and procedures that would be used to avoid or minimise impacts.
- Refer to DES *Receiving environment monitoring program guideline for use with environmentally relevant activities under the EP Act* (see Appendix 2).
- 15.96 Demonstrate how the proposed project will protect environmental values and achieve water quality objectives and ensure that environmental impacts would be avoided or minimised through the implementation of management strategies that comply with the management hierarchy and management intent of the EPP (Water and Wetland Biodiversity) 2019.
- 15.97 Provide details, including quantities, of existing and proposed sources of fine sediment load discharge for the project and provide a comparison of existing and proposed fine sediment load discharge quantities.
- 15.98 . Address section 41AA of the Environmental Protection Regulation 2019 regarding releases of particular contaminants to Great Barrier Reef (GBR) catchment water and other waters and address the information requirements of the 'Reef discharge standards for industrial activities' guideline. Confirm if:
- (a) the proposed activity will be carried out in the GBR catchment or other waters mentioned in section 41AA subsection (1)(b) of the Environmental Protection Regulation 2019
 - (b) the proposed activity will result in a residual impact (where fine sediment (or dissolved inorganic nitrogen)) is released to water because of the relevant activity and will remain or is likely to remain in the GBR catchment or other waters mentioned in subsection (1)(b)

- (c) mitigation measures are proposed for the relevant activity to avoid or minimise the release of fine sediment or DIN into the GBR catchment or other waters mentioned in subsection (1)(b) and
 - (d) offset measures are proposed to reduce the load of fine sediment or DIN in the GBR catchment or other waters mentioned in subsection (1)(b).”
- 15.99 Demonstrate how the proposed project will meet the outcomes of the Fitzroy Basin as described in the Great Barrier Reef end-of-basin water quality objectives (under the EPP (Water and Wetland Biodiversity) 2019) for fine sediments and dissolved inorganic nitrogen and the objectives of the Reef 2050 Water Quality Improvement Plan during construction, operation and decommissioning.
- 15.100 Describe the impacts of the proposed project on upstream and downstream water quality, environmental values and the water quality objectives of the Fitzroy Water Quality Improvement Plan, the Reef 2050 Water Quality Improvement Plan, the relevant environmental attributes of the Mackay, Isaac and Whitsunday Regional Plan and policies and guidelines outlined in Appendix 2. Information is to be supported with references to relevant legislation, policies and guidelines.
- 15.101 Describe the cumulative impacts of the proposed project, in conjunction with existing development and possible future development (as described by approved plans and existing project approvals) to water quality.

Mitigation measures

- 15.102 Describe and include in the EMP avoidance, mitigation strategies and contingency plans for:
- (a) potential accidental discharges of contaminants and sediments during construction and operation
 - (b) stormwater run-off from the proposed project facilities and associated infrastructure
 - (c) flooding of relevant river systems, the effects of tropical cyclones and other extreme events
 - (d) erosion and sedimentation during construction, operation²⁹ and decommissioning of the project, with reference to the *International Erosion Control Association’s Best Practice Erosion and Sediment Control* (see Appendix 2), including the use of development free buffers
 - (e) management of acid sulfate, sodic and dispersive soils
 - (f) impacts to other properties and the environment during flood events
 - (g) the treatment and disposal processes for all wastewater produced as a result of the proposed project, including construction activities
 - (h) the proposed management of existing, altered and/or constructed waterbodies including any watercourse, waterway, lake or spring on the project area to maintain water quality
 - (i) to avoid and minimise impacts occurring to groundwater.
- 15.103 Describe how monitoring would be used to demonstrate that objectives were being assessed, audited and met. For example, provide measurable criteria, standards and/or indicators that

²⁹ Mine affected water should be managed in accordance with the mine water management plan described in 15.121 of this TOR.

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.

Water resources

Objectives

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

- (a) avoid, minimise and/or mitigate adverse impacts to water resources
- (b) ensure equitable, sustainable and efficient use of water resources
- (c) maintain environmental flows, water quality objectives, in-stream habitat diversity, viability of terrestrial, riverine, wetland, lacustrine and naturally occurring inputs from riparian zones to support aquatic biotic communities
- (d) protect or enhance the condition, environmental values and natural functions of waterways, watercourses, lakes, springs, aquifers and other natural water systems and watercourses – including the stability of beds and banks of waterways and watercourses
- (e) protect the volumes and quality of water resources so that current lawful uses (such as entitlement holders and stock and domestic users) and other beneficial uses of water (such as spring flows, wetlands and groundwater-dependent ecosystems) are not adversely impacted by the development.

Existing environment

- 15.104 Describe water related environmental values, existing surface water resources and adjoining waterways and groundwater aquifer systems within the study area in terms of water levels and quality, recharge and discharge processes and the flow directions.
- 15.105 Describe existing and potential users and uses of water in areas potentially affected by the proposed project, including municipal, agricultural, industrial, mining, recreational and environmental uses of water.
- 15.106 Describe any existing and/or constructed waterbodies including any watercourse, waterway lake or spring within and adjacent to the proposed project.
- 15.107 Describe the quality, quantity and significance of groundwater in the project area and any surrounding area potentially affected by the proposed project's activities. The EIS is to:
 - (a) characterise the nature, type, geology/stratigraphy and depth to and thickness of the aquifers, their hydraulic properties, and value as water supply sources
 - (b) provide an analysis of 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
 - (c) characterise the quality and volume of the groundwater including seasonal variations of groundwater levels
 - (d) provide surveys, location and source of existing groundwater supply facilities (e.g. bores, wells, or excavations).

Impact assessment

- 15.108 The assessment of impacts on water is to be in accordance with DES Water – *EIS information guideline, DES Guideline: Requirements for site-specific and amendment application – underground water rights* and *DAFF Environmental impact assessment companion guide*, with consideration for the Independent Expert Scientific Committee (IESC) *Information guideline for proponents preparing coal seam gas and large coal mining development proposals* (see Appendix 2).
- 15.109 Provide details of proposed monitoring, impoundment, extraction, discharge, injection, use or loss of surface water or groundwater (including volumes and rates).
- 15.110 Provide details of existing and proposed changes to stormwater regimes, including changes to flow paths/patterns such as significant diversion or interception of overland flow and locations of interference/disturbance of watercourses and floodplain areas. Include maps of suitable scale showing the location, extent and dimensions of diversions, changes to flow and other water-related infrastructure in relation to mining infrastructure including water storages, sediment dams, mine affected dams, pipes, water treatment plants, levees, drains, diversions, bunds, monitoring points and release points. Detail any significant diversion or interception of overland flow, including the effects of subsidence.
- 15.111 Describe watercourse diversion design, operation and monitoring based on current engineering practice and relevant guidelines including the Department of Regional Development, Manufacturing and Water (DRDMW) *Works that interfere with water in a watercourse – watercourse diversions* (see Appendix 2).
- 15.112 Provide an assessment of the impact on the receiving environment and aquatic and ecological communities from any interference with waters such as redirection of flood waters through the installation of levees or construction of other facilities and infrastructure such as the waste rock dump and any other proposed water infrastructure.
- 15.113 Describe any quantitative standards and indicators which will be used to describe the ecological values and health of surface water environments.
- 15.114 State how any proposed exercise of underground water rights for the life of the project would be carried out on site and describe
- the aquifers affected or likely to be affected,
 - movement of underground water to and from the aquifer,
 - area where the water level is expected to decline,
 - the predicted annual quantities of water to be taken or interfered with (both direct and indirect) and the environmental values that will be affected, and
 - assessment of cumulative impacts to the quality and quantity of the groundwater,
 - the method for how the direct and indirect take of groundwater will be measured and reported.
- 15.115 Develop hydrological models as necessary to describe the inputs, movements, exchanges and outputs of surface water and groundwater that may be affected by the proposed project. The models should address the range of climatic conditions that may be experienced at the site throughout all phases of the project, and adequately assess the potential cumulative impacts of the proposed project on water resources including to the post-decommissioning phase. Include:
- changes in flow regimes from diversions, water take and discharges

- (b) alterations to riparian vegetation and bank and channel morphology
 - (c) direct and indirect impacts arising from the proposed project
 - (d) management of mine-affected water.
- 15.116 Develop a hydrogeological conceptual model and numerical models that represent groundwater recharge and discharge process, surface-groundwater interaction and impact pathways from current and proposed extraction of groundwater, consistent with all relevant IESC guidelines and other guidelines, including but not limited to those contained in Appendix 2.
- 15.117 The hydrogeological conceptual model must be supported by and be consistent with supporting data, investigation and analysis of all relevant study inputs including but not limited to; surface water assessment, groundwater assessment, structural geological assessment, groundwater dependent ecosystem (GDE) assessment and stygofauna assessment.
- 15.118 A numerical groundwater flow model, consistent with the project conceptual hydrogeological model, is to be developed for impact assessment. The models should include a site water balance (including any voids) to determine the upper and lower bounds of future water levels after mine closure, and the calculated trends of water quality in the voids over time. The model should be capable of simulating:
- (a) quantity of water types extracted over time from the proposed project
 - (b) drawdown or pressure impact in the target formations (formation from which coal is extracted), as well as the surrounding aquifers, from direct and indirect extraction of groundwater
 - (c) change in groundwater level or pressure over time at specific locations of interest in relation to environmental values.
- Details must be provided to demonstrate that the model development process was undertaken in line with the *Australian groundwater modelling guidelines* (2012) (see Appendix 2). The hydrogeological conceptual and numerical models must be peer reviewed by an independent suitably qualified person(s) consistent with the *Australian groundwater modelling guidelines* (2012) (see Appendix 2).
- 15.119 Provide information on the proposed water usage by the proposed project, including details about:
- (a) the sources and ultimate supply required to meet the demand for full production, including timing of demands
 - (b) the quality and quantity of all water supplied to the site during the construction and operational phases based on minimum yield scenarios for water reuse, rainwater reuse and any bore water volumes
 - (c) a water balance analysis
 - (d) a site plan outlining actions to be taken in the event of failure of the main water supply.
- 15.120 Determine the potable water demand for the proposed project, including the temporary demands during the construction period. Include details of any existing town water supply to meet such requirements. Detail should also be provided to describe any proposed on-site water storage and treatment for use by the site office during construction and operational phases.

- 15.121 Describe the options for supplying water to the proposed project and assess any potential consequential impacts in relation to the Water Plan and associated planning documents including the objectives of the Water Plan and water management protocol.
- 15.122 Describe the cumulative impacts of the proposed project, in conjunction with existing development and possible future development (as described by approved plans and existing project approvals), to water resources, including management of impacts on underground water rights under the Water Act.

Mitigation measures

- 15.123 Provide detailed design for all infrastructure utilised in the treatment of on-site water including how any onsite water supplies are to be treated, contaminated water is to be disposed of and any decommissioning requirements and timing of temporary water supply/treatment infrastructure is to occur.
- 15.124 Provide a water management plan, for the life of the project, which details management strategies of mine-affected water, sediment-only-affected water and drainage from areas not disturbed by mining activities.
- 15.125 Describe measures that would be used to avoid, minimise or mitigate any impacts on surface water and groundwater resources.
- 15.126 Describe how the achievement of the water resources objectives would be monitored, audited, reported, and how corrective/preventative actions would be managed. 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.
- 15.127 Provide a policy outline of compensation, mitigation and management measures where impacts are identified. Describe how 'make good' provisions would apply to any water users that may be adversely affected by the project.

Air

Objectives

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

- (a) avoid, minimise and/or mitigate adverse air impacts to sensitive receptors
- (b) protect or enhance the environmental values of the airshed.

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

Existing environment

- 15.128 Describe the existing air quality environment that may be affected by the proposed project in the context of environmental values.
- 15.129 Discuss the existing local and regional air shed environment, including:
- (a) background/ambient levels and sources of particulates, gaseous and odorous compounds, any major constituent and contaminants. Include all available data from any

site-specific air monitoring, the National Pollutant Inventory (NPI) reporting, and/or ambient air quality monitoring undertaken by the Queensland Government.

- (b) pollutants
 - (c) baseline monitoring results
 - (d) locations of sensitive receptors.
- 15.130 Provide baseline data on local meteorology and ambient levels of pollutants for later modelling of air quality. Parameters should include air temperature, wind speed and directions, atmospheric stability, mixing depth and other parameters necessary for input to the model.
- 15.131 The assessment of environmental values is to describe and map at a suitable scale the location of all sensitive air receptors adjacent to all project components. An estimate of typical background air quality levels should be based on surveys at representative sites where data from existing DES monitoring stations cannot be reliably extrapolated.

Impact assessment

- 15.132 The assessment of impacts on air from all components of the proposed project (i.e. on-mine site and off-mine site) is to be in accordance with *DES Air – EIS information guideline* and *Application requirements for activities with impacts to air* (see Appendix 2).
- 15.133 Demonstrate the proposed project can meet the environmental objectives and performance outcomes in Schedule 8, Part 3 of the EP Regulation.
- 15.134 Describe the characteristics of the contaminants or materials released, and the release rates as a result of the construction and operation of the proposed project, including point source and fugitive emissions (e.g. dust emissions from the transport of coal, equipment and pipe leaks, storage tanks and wastewater collection, treatment and disposal systems), treatment and discharge systems. An emissions inventory (point source and fugitive) during construction, commissioning, operations, maintenance, closure and a range of possible/likely upset conditions is to be included.
- 15.135 Predict the potential impacts of the releases to air from project activities on environmental values of the receiving environment using established and accepted methods.
- 15.136 The description of impacts should take into consideration the assimilative capacity of the receiving environment and the practices and procedures that would be used to avoid or minimise impacts. The impact prediction is to:
- (a) address residual impacts on the environmental values (including appropriate indicators and air quality objectives) of the air receiving environment, with reference to sensitive receptors, using recognised quality assured methods. This should include all relevant values potentially impacted by the activity, under the EP Act, EP Regulation and Environmental Protection (Air) Policy 2019 (EPP (Air))
 - (b) address the cumulative impact of the release with other known releases of contaminants, materials or wastes associated with existing development and possible future development (as described by approved plans and existing project approvals). Quantify the human health risk and amenity impacts associated with emissions from the proposed project for all contaminants whether or not they are covered by the National Environmental Protection (Ambient Air Quality) Measure or the EPP (Air).

Mitigation measures

- 15.137 Detail the measures to avoid, minimise and manage impacts on air quality and how the proposed project activities would be consistent with best practice environmental management.
- 15.138 Address the compatibility of the proposed project's air emissions with existing or potential land uses in surrounding areas.
- 15.139 Describe how the achievement of the air objectives would be monitored, audited and reported, and how corrective/preventative actions would be managed for the life of the project.
- 15.140 Describe the proposed mitigation measures to manage air emissions arising from the transport of coal product from the project area to the point of export in accordance with *Aurizon Coal Dust Management Plan* (see Appendix 2).

Noise and vibration

Objectives

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

- (a) avoid, minimise and/or mitigate adverse noise and vibration impacts to sensitive receptors
- (b) protect or enhance the environmental values of the acoustic environment.

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

Existing environment

- 15.141 Describe the existing noise and vibration sources within the project area.
- 15.142 Describe and illustrate the locations of any sensitive receptors that are listed in Schedule 1 of the Environmental Protection (Noise) Policy 2019 (EPP (Noise)) and estimate typical background noise and vibration levels based on surveys at representative sites in accordance with the Noise Measurement Manual 2013, Department of Environment and Science (QLD). Also describe any other environmental values that could be impacted by emissions from the proposed project.
- 15.143 Undertake baseline monitoring at a selection of sensitive receptors potentially affected by the proposed project. Describe the results of any baseline monitoring.

Impact assessment

- 15.144 The assessment of impacts on noise and vibration is to be in accordance with *DES Noise and vibration – EIS information guideline* and *Application requirements for activities with noise impacts* (see Appendix 2).
- 15.145 Describe the characteristics of noise and vibration sources that would be emitted by the proposed project (point source, fugitive emissions and general emissions) during construction, commissioning, upset conditions, operation and closure phases.
- 15.146 Describe the proposed project's noise and vibration impacts on sensitive receptors in accordance with Schedule 1 of the EPP (Noise). The EIS must address the compatibility of the project's noise emissions with existing or potential land uses in surrounding areas. Taking into account the practices and procedures that would be used to avoid or minimise impacts, the impact prediction is to address the:
 - (a) activity's consistency with the objectives

- (b) cumulative impact of the noise with other known emissions of noise associated with existing development and possible future development (as described by approved plans and existing project approvals) potential impacts of any low-frequency (<200 Hertz) noise emissions.

15.147 Demonstrate the proposed project can meet the environmental objectives and performance outcomes in Schedule 8, Part 3 of the EP Regulation.

Mitigation measures

- 15.148 Describe how the environmental objectives for noise and vibration would be monitored, audited and reported, and how corrective/preventative actions would be effectively managed for the life of the project.
- 15.149 Describe how the proposed project activity would be managed to be consistent with best practice environmental management, including the control of background creep in noise as outlined in the EPP (Noise).
- 15.150 Describe any expected exceedances of the acoustic quality objectives following the provision and/or application of avoidance and mitigation measures, and how any residual impacts would be adequately addressed.

Waste management

Objectives

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

- (a) avoid, minimise and/or mitigate adverse impacts of hazardous contaminants and waste generated by the project
- (b) manage any waste transported, generated, or received as part of carrying out the activity in a way that protects all environmental values
- (c) ensure waste infrastructure has the capacity to adequately accommodate waste from the project or is appropriately upgraded.

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

Existing environment

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

Impact assessment

- 15.152 The assessment of impacts on waste is to be in accordance with *DES Waste – EIS information guideline* and *Application requirements for activities with waste impacts* (see Appendix 2).
- 15.153 Describe all the expected waste streams³⁰ including hazardous contaminants, generated by project activities during the construction, operation, rehabilitation and decommissioning.

³⁰ Waste streams for resource projects would typically include waste rock, tailings and course rejects from mining and mineral processing, and brackish, saline or mine affected water.

- 15.154 Describe the quantity, categorisation, disposal requirements, and physical and chemical characteristics, including form (liquid, solid, gas), environmental hazard rating, and toxicity of each significant waste, as well as any attributes that may affect its dispersal in the environment, and its associated risk of causing environmental harm.
- 15.155 Describe how the methods used to produce and treat tailings would be conducted, in accordance with the waste management hierarchy and the tailings management principles guidelines
- 15.156 Detail the geochemistry of all waste rock, including spoil 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.
- 15.157 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.
- 15.158 Provide relevant information on existing and proposed sewage infrastructure relevant to environmentally relevant activity (ERA) 63, by referring to relevant administering authority policies and guidelines (e.g. Assessment guideline - Assessing applications for sewage treatment works (ESR/2015/1652), depending on the proposed sewage collection and treatment infrastructure proposed, the reuse and/or disposal of treated wastewater and sewage wastes generated.
- 15.159 As it relates to the impact and disposal of waste, describe the cumulative impacts of the proposed project, in conjunction with existing development and possible future development (as described by approved plans and existing project approvals).
- 15.160 Provide detail of waste generation and viable options for disposal, including the capacity of the existing on site landfill, and provide volumes of waste types and waste streams proposed to be generated by the activity.

Mitigation measures

- 15.161 Detail waste management planning for the proposed project especially how these plans are to be applied to prevent or minimise environmental impacts from waste for each stage of the project. Waste management planning is to include detail of all identified waste types, waste volumes and proposed locations for waste disposal.
- 15.162 Evidence must be provided to demonstrate that the securing of storage containers or hazardous contaminants during flood events meets the environmental objectives of Schedule 8 of the EP Regulation.
- 15.163 Assess and describe the proposed management measures against the preferred waste management hierarchy, namely: avoid waste generation; cleaner production; recycle; reuse; reprocess and reclaim; waste to energy; treatment; disposal. This includes the generation and storage of waste.
- 15.164 Identify end of waste options using the relevant parts of the DES End of Waste framework under the *Waste Reduction and Recycling Act 2011* (Qld) and comply with relevant parts of the *DES Guidelines – Waste Reduction and Recycling Act 2011 – End of Waste* (see Appendix 2).

- 15.165 Describe how nominated quantitative standards and indicators may be achieved for waste management, and how the achievement of the objectives would be monitored, audited and reported, and how corrective/preventative actions would be managed.
- 15.166 Define and describe objectives and practical measures for protecting or enhancing environmental values from impacts from waste streams.
- 15.167 If the production of hazardous contaminants and waste is unavoidable, describe proposed treatment and/or storage of hazardous contaminants until they can be disposed at an approved facility.

Transport

Objectives

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

- (a) avoid, minimise and/or mitigate adverse impacts to the condition and operation of existing and planned transport infrastructure
- (b) maintain the safety, efficiency and operational integrity of all affected transport modes for the project workforce and other transport system
- (c) ensure impact mitigation works are compatible with transport infrastructure planning.

Existing environment

- 15.168 Provide a detailed description of background traffic growth and existing traffic data.
- 15.169 Include a description of the existing and future (as planned by state or local government) transport network and corridors including detailed maps to appropriate scales showing relevant:
- (a) construction laydown areas
 - (b) road and railway corridors
 - (c) road and rail infrastructure
 - (d) airports, airstrips
 - (e) sea ports
 - (f) nearby mines.

Impact assessment

- 15.170 Provide a detailed description of the total transport activities associated with all stages of the proposed project (from pre-construction through to decommissioning). The information is to include:
- (a) expected annual volumes, weights, origins and destinations of materials, products, hazardous goods and wastes
 - (b) details concerning road transportation for each major transport task (e.g. fuel, plant and equipment, consumables, hazardous goods, wastes) including heavy vehicle classification, load size (highlighting over-mass and over-sized loads), number of trips, service frequency and duration and maps of routes to be used

- (c) details concerning rail transportation including number of trips, load size, service frequency and duration
 - (d) traffic generated by workforce personnel and service providers for all phases of the proposed project.
- 15.171 Identify any project area access points to/from public roads including their suitability for the proposed use and required upgrades in accordance with relevant local and/or state policies, standards and manuals.
- 15.172 Present the transport assessment in separate sections for each project-affected mode (road, rail, air services, port and maritime) as appropriate for each phase of the proposed project.
- 15.173 Provide a detailed assessment by a Registered Professional Engineer of Queensland of how the existing and future safety, condition and performance of transport infrastructure (e.g. existing and future local and state controlled roads, railway corridors, port and air services) will be impacted by the proposed project from pre-construction through to decommissioning.
- 15.174 Provide a detailed traffic impact assessment in accordance with the latest Department of Transport and Main Roads (DTMR) *Guide to Traffic Impact Assessment (GTIA)*, including any practice notes, guidelines and documents referred to in the GTIA. This assessment must assess the proposed project's impacts on all impact types (road safety, access and frontage, intersection delay, road link capacity, pavement, and transport infrastructure) as detailed in GTIA. Particular emphasis is to also be placed on the following sections of GTIA:
- (a) section 8.4.2 Heavy Vehicle Routes
 - (b) section 9 Road Safety
 - (c) section 13 Pavement.
- 15.175 Demonstrate how the proposed project complies with the Queensland *Level Crossing Safety Strategy 2012-2021 and 2019 Update: On Track to Zero Harm*³¹ (see Appendix 2) on new road/rail interfaces and the impacts on existing road/rail interfaces.
- 15.176 Demonstrate that any necessary transport impact mitigation works will not compromise existing and future transport infrastructure corridors planning and works, with reference to the latest version of DTMR's Queensland Transport and Roads Investment Program and the Development Assessment Mapping System. Where accelerated pavement impacts or safety issues are identified, demonstrate proposed mitigation measures such as the implementation of Road Compensation Agreements and Road Use Management Plans with the road authority.
- 15.177 Provide a detailed assessment for the proposed project's impacts on local government roads in accordance with the relevant local government's impact assessment methodology (e.g. GTIA).
- 15.178 Identify, assess and address the proposed project's impacts on all existing and future railway corridors, particularly railway level crossings and any aspect of the project interfacing or interfering with existing and future railway corridors in accordance with relevant standards and requirements such as the SDAP, the Guide for Development in a Transport Environment: Rail, the Manual of Uniform Traffic Control Devices, Part 7: Railways and railway manager standards. This is to include the construction and operation impacts of the proposed project. Traffic data should be provided for development generated traffic during construction and

³¹ Or any subsequent version of these documents and related strategy, policy, and guidance regarding level crossings that is applicable at the time.

operation, background traffic growth and timelines for development staging, construction and delivery.

Mitigation measures

- 15.179 Demonstrate how project impacts will be mitigated. Mitigation measures are to be prepared in consultation with relevant transport authorities (e.g. local governments, DTMR, Civil Aviation Safety Authority, Maritime Safety Queensland, Aurizon and Queensland Rail).
- 15.180 Demonstrate how the project impacts will be mitigated in accordance with the GTIA and any practice notes, guidelines and documents referred to in the GTIA.

Social

Objectives

The construction, operation and closure of the project are to:

- (a) avoid, minimise and/or mitigate adverse social impacts arising from the project
- (b) enhance benefits for local and regional communities, including Aboriginal and Torres Strait Islander peoples.

Existing environment

- 15.181 Identify and describe people, communities, and key stakeholders³² directly or indirectly affected by the proposed project.
- 15.182 Include a social baseline study of the project's potentially affected communities³³ in accordance with the Coordinator-General's *Social Impact Assessment (SIA) Guideline* (see Appendix 2)
- 15.183 Use the latest qualitative and quantitative data and supplement it through stakeholder engagement processes. Identify and reference relevant data contained in local and state government publications, reports, plans and documentation, including regional and community plans
- 15.184 The social baseline study should include:
- (a) an analysis of community characteristics such as community culture and values, demographic profile, community history, community well-being, community aspirations for the future land ownership and utilisation of natural resources
 - (b) assessment of the capacity and accessibility of infrastructure, facilities and services, including health and emergency services. This assessment should include analysis of demand from any existing non-resident worker population, in addition to the established resident population of the community
 - (c) an analysis of the existing housing and accommodation market
 - (d) a profile of the local and regional labour market

³² Refer to Appendix 2 of the SIA Guideline for a list of key stakeholders.

³³ Potentially affected communities are those local and/or regional communities that may be directly or indirectly affected by the project, whether negatively or positively.

- (e) relevant data contained in local and state government publications, reports, plans, and documentation, including regional and community plans
- (f) details of other resource and infrastructure projects in the area, both planned and currently operating, based on publicly accessible information.

Impact assessment and mitigation measures

- 15.185 In consultation with the Office of the Coordinator-General (OCG) prepare a social impact assessment (SIA) for the proposed project that is consistent with the requirements of the Coordinator-General's Social Impact Assessment Guideline (March 2018) (SIA Guideline) (see Appendix 2).
- 15.186 The SIA is to describe the potential impacts (positive and negative) of the proposed project that is informed by an inclusive and collaborative community and stakeholder engagement program,³⁴ consistent with the SIA Guideline.
- 15.187 Describe the outcomes of consultation with directly affected people, communities and key stakeholders including but not limited to landholders, Aboriginal and Torres Strait Islander peoples, local governments, state agencies, local and regional commerce and community development groups, social and public service providers (e.g. Queensland Health and Queensland Emergency Services).
- 15.188 Address and describe the type, level and significance of the project's social impacts (beneficial and adverse), based on the outcomes of community engagement processes and the social baseline study.
- 15.189 Describe any potential impacts on the use of and access to recreational, natural and culturally important areas, waterways and landscapes (Aboriginal and non-Aboriginal) potentially affected by the proposed project.
- 15.190 Include in the SIA a summary of the workforce profile for the construction and operational phases of the proposed project. This is to be informed by analysis of the capacity of towns within the 125 km radius of the proposed project to:
- (a) provide workers for the construction and operational phases of the proposed project
 - (b) receive workers and their families who move to these towns
 - (c) ensure local employment benefits are maximised for the proposed project.
- 15.191 Identify the number of employees requiring local housing and the capacity of the existing proponent owned accommodation to address this demand.
- 15.192 Identify in the SIA measures for prioritising the recruitment of workers from local and regional communities, with specific regard to Aboriginal and Torres Strait Islander peoples, and the proposed methodologies for workforce recruitment. This includes describing how the recruitment hierarchy in section 9(3A) of the *Strong and Sustainable Resource Communities Act 2017* (Qld) (SSRC Act) will be implemented.
- 15.193 The information included in the EIS (including 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 proposed project should be protected by the SSRC Act's anti-discrimination and 100 per cent FIFO provisions.

³⁴ It is recommended that the proponent is to commence engaging at the earliest possible stage with all potentially affected stakeholders to discuss and explain the project and to identify and respond to issues and concerns identified as social impacts.

- 15.194 Consider the impact of new technologies on the operation of the proposed project including possible impacts on the proposed workforce composition, potential new labour requirements and opportunities for local training and development (where relevant).
- 15.195 The SIA must include a social impact management plan (SIMP), developed in consultation with potentially affected people, communities and key stakeholders, identifying mitigation and management measures for proposed project impacts and information on how the proposed project would enhance social benefits in accordance with the SIA guideline. In particular the SIMP must:
- (a) provide management measures for barriers that may impact choice for people in local and regional communities to engage in proposed project employment opportunities, and for workers to permanently reside in local and regional communities during the construction and operational phases of the proposed project
 - (b) provide management measures to accommodate workers to ensure availability and affordability of local and regional housing is not adversely impacted
 - (c) include a target for obtaining a local workforce and set the maximum proportion of FIFO workers for the proposed project. This is to be supported by a rationale to ensure local benefit.
- 15.196 The SIMP must include management measures for the five key matters listed in the SIA Guideline; and describe the framework to monitor the effectiveness of proposed management measures, including timeframes and key performance indicators for implementing these measures. The framework must identify roles and responsibilities, and relevant stakeholders.
- 15.197 The SIMP should consider potential partnerships and opportunities for linkages with other projects planned or operating in the area and possible alignment with existing strategies that would benefit the management of any cumulative social impacts.

Cultural heritage

Objectives

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

- (a) avoid, minimise and/or mitigate adverse impacts on Aboriginal and Torres Strait Islander peoples' cultural heritage
- (b) achieve the purposes of the *Aboriginal Cultural Heritage Act 2003*
- (c) ensure that the nature and scale of the project does not compromise the cultural heritage significance of a heritage place or heritage area.

Existing environment

- 15.198 Identify the Traditional Owners of the land within the project area.
- 15.199 Undertake a cultural heritage assessment and describe the existing cultural heritage values of Aboriginal and Torres Strait Islander peoples that may be affected by the proposed project and the environmental values of the cultural landscapes of the affected area in terms of the physical and cultural integrity of the landforms.
- 15.200 For aspects of non-Indigenous historical heritage identified through the *Queensland Heritage Act 1992* (Qld) (Queensland Heritage Act), undertake a study of, and describe, the known and

potential historical cultural, archaeological, underwater cultural heritage artefacts and landscape heritage values of the area potentially affected by the proposed project in accordance with the *Non-Indigenous cultural heritage – EIS information guideline* (see Appendix 2). Identify values at local and state thresholds and assess the significance of identified values using recognised criteria.

Impact assessment and mitigation measures

- 15.201 Detail potential impacts on Aboriginal and Torres Strait Islander peoples' cultural heritage in accordance with DES *Aboriginal and Torres Strait Islander cultural heritage – EIS information guideline* (see Appendix 2).
- 15.202 Unless section 86 of the *Aboriginal Cultural Heritage Act 2003* (Qld) (ACH Act) applies, the proponent is to develop a Cultural Heritage Management Plan (CHMP) or plans in accordance with the requirements of Part 7 of the ACH Act and any associated agreements that have been reached. The CHMP must be informed by the results of a cultural heritage study or survey.
- 15.203 If section 86 of the ACH Act does not apply, describe consultation undertaken with relevant Traditional Owner party and confirm whether the Cultural Heritage Management Plan for the project needs to be contemporised.
- 15.204 Detail potential impacts on Queensland (non-Indigenous) historical heritage identified under the Queensland Heritage Act.
- 15.205 Provide strategies to mitigate and manage all impacts on cultural heritage values of Aboriginal and Torres Strait Islander peoples and non-Indigenous cultural heritage values. Include a strategy to address unexpected archaeological discoveries and cultural places in accordance with the relevant part of the *Non-Indigenous cultural heritage – EIS information guideline* in Appendix 2.

Economic

Objectives

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

- (a) avoid or mitigate adverse economic impacts arising from the project
- (b) capitalise on opportunities potentially available for capable local businesses and communities, including Aboriginal and Torres Strait Islander owned businesses
- (c) create a net economic benefit to the region and state.

Existing environment

- 15.206 Describe the existing economic environment consistent with the Coordinator-General's *Economic Impact Assessment Guideline* (April 2017) (see Appendix 2). The analysis is to describe the local and regional economies likely to be impacted by the proposed project and identify the relevant stakeholders, and include:
 - (a) map/s illustrating the local and regional economies that could be potentially impacted by the proposed project
 - (b) population of relevant local government areas
 - (c) the regional economy's key industries and their contribution to regional output
 - (d) relevant economic indicators (e.g. energy prices)

- (e) existing and proposed resource projects in the region
- 15.207 Describe the preferred project delivery model (including funding sources) and expected timeframes, outlining assumptions on economic externalities that have the potential to impact on the delivery model and/or expected timeframes.

Impact assessment and mitigation measures

- 15.208 Identify the net economic impacts of the proposed project on the local and regional area and the state ensuring the analysis is consistent with the Coordinator-General's *Economic Impact Assessment Guideline* (April 2017).
- 15.209 The economic impact assessment is to address matters including, but not limited to:
- (a) labour demand, including the ability for labour (including specialists) to be drawn from the existing local, regional and state workforce, and the potential effects this may have on local and regional businesses
 - (b) raw input demand, including the ability for existing local, regional and state suppliers to provide relevant raw and manufactured inputs
 - (c) anticipated impacts the proposed project will have on water prices, grazing, agriculture, domestic and industrial energy prices, wages, economic growth, renewable energy projects
 - (d) the anticipated value of offsets required for all components of the proposed project.
- 15.210 Quantify the employment and value-added contribution of the proposed project to the local, regional and state economies in a regional impact assessment using computable general equilibrium modelling. The assessment is to estimate the changes in key indicators including:
- (a) gross regional product
 - (b) gross state product
 - (c) employment by industry
 - (d) water prices for residential, mining, agriculture and industrial users
 - (e) gross value added by industry.
- 15.211 Undertake a cost-benefit analysis (CBA) which identifies the structure of the proposed project and the relevant direct costs and benefits from the proposed project.
- (a) The CBA is to consider:
 - (i) key construction inputs and milestones
 - (ii) the project timeline
 - (iii) relevant renewal costs related to the proposed project (including projected repair/replacement of infrastructure)
 - (iv) operational costs, including all input costs of production
 - (v) costs associated with environmental management, monitoring, mitigation and offsets associated with the proposed project
 - (vi) benefits, including revenue projections (and stipulating unit/price assumptions)
 - (vii) expected project life and any residual value over the assessment period.

- (b) The CBA should also consider all direct private, indirect, and external social costs and benefits. These would include:
 - (i) external net benefits to the proposed project
 - (ii) external net costs (to third parties, community, local and state government) as a direct result of the proposed project
 - (iii) all beneficiaries (e.g. individuals, the community, local and state government) of the proposed project.
- 15.212 Compare the estimated costs and benefits of the site's proposed final land uses to demonstrate that a variety of configurations have been investigated to optimise the final landform design against the estimated costs and benefits of the following alternative land uses:
- (a) full rehabilitation of the site with no final void(s) and non-use management areas
 - (b) rehabilitation with partial backfilling of void(s) to a variety of configurations including (but not limited to):
 - (i) backfilling to cover the coal seam
 - (ii) backfilling to above the groundwater level
 - (iii) backfilling to the greatest extent achievable, leaving a depressed landform with minimised slopes.
 - (c) usual practice such as overburden waste dumps and stockpiles
 - (d) alternative location and configuration of infrastructure and structures.

Climate

Objectives

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

- (a) avoid, minimise and/or mitigate the risk of, and adverse impacts to the project from projected climate change (e.g. changing patterns of temperature, rainfall, hydrology and extreme weather events), with particular reference to any additional environmental management measures required, and how those measures may change over time
- (b) contribute toward Queensland's emission reduction and renewable energy targets by developing and implementing decarbonisation measures for the project.

Existing environment

- 15.213 Describe the extremes of climate (e.g. drought, floods and bushfires) relevant to the project area with particular reference to the Australian Government's 'Changes to Fire Weather in Queensland' (see Appendix 2).
- 15.214 Describe the rainfall patterns (including magnitude and seasonal variability of rainfall), overland flow paths, air temperatures, humidity, wind (direction and speed) and any other special factors (e.g. temperature inversions) that may affect management of the proposed project.

Impact assessment and mitigation measures

- 15.215 Conduct the assessment in accordance with DES *Climate – EIS Information Guideline* and *Air – EIS information guideline* (see Appendix 2).
- 15.216 Describe the project area's climate patterns that are relevant to the environmental impact assessment, particularly the proposed project's discharges to water and air, and propagation of noise.
- 15.217 Climate information is to be presented in a statistical form including long-term averages and extreme values reflecting extreme weather events (e.g. droughts, floods and bushfires), as necessary. It should also be illustrated by bar charts, wind rose diagrams or other relevant graphic means as necessary.
- 15.218 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 (e.g. Queensland Future Climate high-resolution climate projection data)³⁵ and employ an appropriate climate risk assessment methodology.
- 15.219 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 are to be designed to avoid perverse outcomes, such as increased emissions of greenhouse gases or maladaptive outcomes for surrounding land uses.

³⁵ Available from <https://longpaddock.qld.gov.au/qld-future-climate/dashboard>.

Greenhouse gas emissions

Note: The QRIDP, released in June 2022, includes an action to require industry to develop plans to decarbonise operations. The QRIDP states that the Queensland Government, led by DES, will work with the resources industry to develop a decarbonisation plan policy that:

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

This section, requiring consideration of GHG emissions attributed to the Peak Downs Mine Continuation project, has been prepared in collaboration with DES. DES is developing the draft Industry Decarbonisation Plan Policy in accordance with the QRIDP, which will be subject to industry and community consultation. Accordingly, this section may change prior to finalisation of the TOR for the project. The proponent will be required to be consistent with the Industry Decarbonisation Plan Policy once finalised.

Existing environment

15.220 Describe the existing local and regional air shed environment of GHG.

Impact assessment and mitigation measures

15.221 Provide an inventory of projected annual emissions for the life of the proposed project for each GHG, with total emission expressed in 'CO₂ equivalent terms' for the following categories as per the National Greenhouse and Energy Reporting Scheme (NGER Scheme):

- scope 1 emissions – direct emissions of greenhouse gases from sources within the boundary of the facility and as a result of the facilities, (including, emissions from vegetation clearing)
- scope 2 emissions – emissions of greenhouse gases from the production of electricity, heat or steam that the facility will consume, but that are physically produced by another facility
- scope 3 emissions – emissions of greenhouse gases which occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business.

15.222 For the life of the project, estimate the following:

- emissions from associated upstream activities, including the fossil fuel-based electricity to be used during construction, operation and decommissioning
- coal seam methane emissions
- emissions resulting from ancillary activities, such as transportation of products and consumables

- 15.223 Estimate both unmitigated emissions and predicted emissions after all avoidance and mitigation measures have been accounted using an appropriate methodology in accordance with Australian and international guidelines.
- 15.224 Assess the potential impacts of the proposed project on the state and national GHG inventories including the Queensland and Australia's published emissions targets.
- 15.225 Provide a decarbonisation plan³⁶ for the life of the proposed project, which includes the following:
- (a) how the proposed project will be developed and operated to meet Queensland and Australia's published emission targets
 - (b) measures to reduce emissions from other projects or across other tenures held by the proponent in Queensland may be used to show how the projects cumulatively contribute to Queensland and Australia's published emissions targets
 - (c) a detailed assessment and explanation of feasible alternatives that were considered to avoid or reduce the proposed project's emissions (including the option of not proceeding)
 - (d) a description of:
 - (i) measures (preferred and alternatives) proposed to avoid and/or minimise Scope 1 and Scope 2 GHG emissions of the proposed project
 - (ii) opportunities and commitments for offsetting GHG emissions through accredited and verified offsets that represent genuine emissions reductions within Australia (i.e. will be recognised in the National Greenhouse Accounts)
 - (iii) opportunities to reduce greenhouse gas emissions through renewable energy use and innovation
 - (iv) any voluntary initiatives or research into reducing the lifecycle and embodied energy carbon intensity of the proposed project's processes or products
 - (v) any additional carbon offsetting options for emissions that cannot be reduced (including, but not limited to, through carbon offsets, vegetation management)
 - (e) a process for regularly reviewing new technologies to identify opportunities to further reduce GHG emissions and use energy efficiently, consistent with best practice environmental management
 - (f) an assessment of the practicality, effectiveness and risks for each avoidance and mitigation measure, and clear evidence that mitigation and avoidance measures have been factored into the economic feasibility of the proposed project
 - (g) a commitment to:
 - (i) periodic energy audits that measure progress towards improving energy efficiency
 - (ii) monitoring and transparent public reporting of GHG emissions as per the NGER Scheme, as well as public reporting on the success of mitigation measures outlined in the decarbonisation plan

³⁶ As per requirements in section 6.4, should a new policy or legislation be passed to regulate greenhouse gases the proponent must meet all requirements of the policy that apply to the project.

- (iii) ongoing training and capacity building around decarbonisation options, technology and reporting.

Hazards, health and safety

Objectives

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

- (a) avoid, minimise and/or mitigate the risk of, and adverse impacts from, natural and human-made hazards to protect human life and property
- (b) enhance the community's resilience to natural hazards
- (c) ensure development is appropriately located, designed, and constructed to minimise health and safety risks to communities, individuals, and adverse effects on the environment
- (d) ensure 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
- (e) if the production of hazardous contaminants and waste is unavoidable, the project treats and/or contains hazardous contaminants until their disposal at an approved facility.

Existing environment

- 15.226 Describe the likelihood and severity of hazards and health and safety risks in the vicinity of the proposed project including, but not limited to cyclone, flooding, bushfire, earthquakes, landslide, heatwave.

Impact assessment

- 15.227 Describe the potential risks to people, property, waterways, flora and fauna that may be associated with the proposed project in the form of a risk assessment for all components of the project and in accordance with relevant standards. The assessment is to include:
- (a) the safety of employees during design and planning of the proposed project
 - (b) potential hazards, accidents, spillages, fire, structural failure (including failure of any existing or proposed dams) and abnormal events that may occur during all stages of the proposed project, including estimated probabilities of occurrence
 - (c) the identification of all hazardous substances (including hazardous waste) and any explosives to be used, transported, stored, processed or produced and the rate of usage
 - (d) potential hazards posed by wildlife interactions, natural events (for example, cyclone, flooding, bushfire, earthquakes,³⁷ landslide, heatwave³⁸) and implications related to climate change. Identify the cumulative impact of a number of natural hazards occurring at the one time. Describe possible adaptation strategies (preferred and alternative) based on climate change projections for the proposed project area

³⁷ The State Earthquake Risk Assessment includes probabilities of major seismic events for all local government areas and is to be used to inform risk consideration and management.

³⁸ Use State Heatwave Risk.

- (e) how the proposed project may potentially affect hazards away from the project area (for example, changing flooding characteristics, bushfire, landslide).
- 15.228 The hazard analysis and risk assessment must be undertaken in accordance with:
- (a) AS/NZS ISO 31000:2018 *Risk management – Guidelines* and with HB 203:2012 *Managing environment related risk* (see Appendix 2)
 - (b) refer to relevant Local Disaster Management Group Plans and Queensland Emergency Risk Management Framework, including state risk assessment plans for heatwave, earthquake and severe wind.³⁹
- 15.229 Assess the vulnerability of the area to natural and induced hazards, including drought, severe wind, heat, floods, storms, 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.
- 15.230 Describe natural hazards that may affect the site with at least a one per cent annual exceedance probability or 100-year average reoccurrence interval level, including mapping of the potential hazard areas at the site.

Mitigation measures

- 15.231 Describe the proposed procedures and safeguards built into the design and management/operational practices to:
- (a) reduce the potential for chemical leaks and spills
 - (b) enable the detection of spills and leaks and management measures to be implemented to rectify
 - (c) provide procedures for managing water in containment areas
 - (d) outline an inventory and describe the characteristics and management involved in the handling, storage, spill management, transport and disposal of all chemicals, products/by-products and potential contaminants as a result of construction, operation, maintenance, commissioning and decommissioning.
- 15.232 Include identification of buffer zones and all means that will be incorporated to ensure human health and the environment are not impacted by chemical leaks and spills.
- 15.233 Detail measures required to ensure that the project avoids the release of hazardous materials as a result of a natural hazard event/s.
- 15.234 Detail measures required to manage mosquitoes in accordance with Queensland Health guidelines.
- 15.235 Provide details on the safeguards that will reduce the likelihood and severity of natural and induced hazards, consequences and risks to persons, waterways, flora and fauna within and adjacent to the proposed project area/s, including any need for safety fire breaks and buffer zones in consideration of fauna movement, riparian and wetland corridors. Identify the residual risk following application of mitigation measures. Present an assessment of the overall acceptability of the impacts of the proposed project with consideration to the residual uncertainties and risk profile.

³⁹ See <https://www.disaster.qld.gov.au/qermf/Pages/Assessment-and-plans.aspx>

- 15.236 Provide an outline of the proposed integrated emergency management planning procedures (including any evacuation plans) for the range of situations identified in the risk assessment developed in this section. The emergency plan is to detail:
- (a) a bushfire management plan, prepared and certified by a suitably qualified person, in consultation with the Queensland Fire and Emergency Services, for the construction and operational phases, and any proposed offset locations (if applicable). The bushfire management plan is to include:
 - (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*
 - (iii) details of the proposed ongoing management of fuel loads across the project area through grazing or mechanical means, including the asset protection zone
 - (b) a safety and emergency management plan for the construction and operational phases. The safety and emergency management plan is to include:
 - (i) evacuation plans
 - (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 Queensland Ambulance Service) and provide an adequate level of training to staff who will be tasked with emergency management activities.
- 15.237 Describe how the achievement of the hazards, health and safety objectives would be monitored, audited and reported, and how corrective/preventative actions would be managed.
- 15.238 Detail any consultation undertaken with the relevant state, district and local emergency response authorities and organisations, including the Local Disaster Management Group and how outcomes of the consultation has been included in the impact analysis and planning.

Flooding and regulated dams

Objectives

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

- (a) avoid, minimise and/or mitigate the risk of, and adverse impacts from, flooding or dam failure to protect human life, property and the environment
- (b) operate in accordance with best practice environmental management.

Existing environment

- 15.239 Describe the history of flooding onsite and in proximity to the project site. Describe current flood risk for a range of annual exceedance probabilities (AEP) up to the probable maximum flood (PMF) for project site.

Impact assessment

- 15.240 Use flood modelling (and any additional data)⁴⁰ to assess how the proposed project may potentially change flooding and run-off characteristics onsite and both upstream and downstream of the site comparing pre-development and current conditions at a range of AEPs and the PMF for the site. The assessment must consider all infrastructure and works associated with or near the proposed project including levees, roads and linear infrastructure, proposals to divert creeks/watercourses or construction in-stream infrastructure and all proposed measures to avoid or minimise impacts.
- 15.241 Detail potential flooding impacts on on-site construction and permanent workers accommodation camp (if required).
- 15.242 Detail whether changes identified in the flood modelling assessment are temporary or permanent and whether staging is proposed.
- 15.243 Provide maps, plans (in plan and cross-section views) illustrating flood heights, depths and velocities, including identification of areas where these change, together with coding to show the magnitude of those changes (both positive and negative).
- 15.244 Detail potential impacts on any existing stream or flood warning monitoring gauges within the proposed project area, including backwater effects, or impacts on stream ratings and gauge behaviour.
- 15.245 Environmental objectives and performance outcomes for dams or levees are to be developed with reference to guidelines prepared by industry, the Australian National Committee on Large Dams and DES *Guideline – Structures which are dams or levees constructed as part of the environmentally relevant activities* (see Appendix 2).
- 15.246 Describe the purpose of all dams or levees proposed on the proposed project area. 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.
- 15.247 Describe, illustrate and assess where any proposed project infrastructure or components, including tailing storage facilities or dams, voids and waste rock dumps, disturbed and rehabilitated areas, would lie in relation to the extent of any modelled flood level, including the PMF.
- 15.248 Conduct the impact assessments on regulated structures in accordance with DES *Regulated structures – EIS information guideline, Guideline – Structures which are dams or levees constructed as part of environmentally relevant activities* and *Manual for assessing consequence categories and hydraulic performance of structures* (see Appendix 2).
- 15.249 The EIS must list and describe all dams and levees proposed on the project area and undertake a consequence category assessment⁴⁰ of each dam or levee according to the criteria outlined in the DES *Manual for assessing consequence categories and hydraulic performance of structures* (see Appendix 2). The assessment must be undertaken for the three different failure event scenarios described in DES manual, e.g. for seepage, overtopping and dam break. Regulated structures must comply with the DES *Manual for assessing consequence categories and hydraulic performance of structures* (see Appendix 2) in accordance with Schedule 8, Division 2 of the EP Regulation.

⁴⁰ Bureau of Meteorology and Isaac Regional Council flood and water monitoring gauges

- 15.250 Following the consequence category assessment, determine the consequence category ('low, significant, or high') according to Table 1 of *DES Manual for assessing consequence categories and hydraulic performance of structures*, present the results in the EIS and provide certified copies of the consequence category determination for each of the proposed dams or levees assessed.

Mitigation measures

- 15.251 Illustrate how any regulated structure on site would be monitored and managed during periods of high incidental rainfall and/or flooding on site so that any potential impacts to land or water are minimised.
- 15.252 Describe monitoring and management measures to minimise impacts of flooding to mine infrastructure and manage mine pit water post-flooding. Describe how storage structures and other infrastructure would be sited to avoid or minimise risks from flooding.
- 15.253 Describe how risks associated with dam or storage failure, seepage through the floor, embankments of the dams, and/or with overtopping of the structures will be avoided, minimised or mitigated to protect people, property and the environment.

16. Matters of national environmental significance (MNES)

Note

The project was referred on 8 September 2022 to DCCEEW (EPBC 2022/09350).

On 5 January 2023, the delegate for the Minister for the Environment and Water determined the project to be a 'controlled action' under section 75 of the EPBC Act.

The controlling provisions for the action are as follows:

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

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

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

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

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

Format

- 16.1 The MNES section should be written so that any conclusions reached can be independently assessed. To this end, all sources must be appropriately referenced using Harvard standard. The reference list should include the address of any Internet websites that were used as data sources.
- 16.2 Maps, diagrams and other illustrative material should be included in the MNES section. The MNES section should be produced on A4 size paper that is able to be photocopied, with maps and diagrams on A4 or A3 size (and in colour where possible).
- 16.3 The proponent should consider the format and style of the document appropriate for publication on the Internet. The capacity of the website to store data and display the material may have some bearing on how the document is drafted.

General content

- 16.4 The MNES section must take into consideration the *EPBC Act significant impact guidelines* (see Appendix 2).
- 16.5 The proponent must ensure that the MNES section assesses compliance of the action with principles of Ecologically Sustainable Development and the objects of the EPBC Act (see Chapter 1, Part 1 of the EPBC Act).

Specific content

Note

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

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

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

General information

- 16.6 Provide the background and context of the action including:
- (a) the title of the action
 - (b) the full name and postal address of the designated proponent
 - (c) a clear outline of the objective of the action
 - (d) the location of the action
 - (e) the background to the development of the action
 - (f) how the action relates to any other actions (of which the proponent should reasonably be aware) that have been, are currently, or will be, taken or that have been approved in the region affected by the action (a map showing relevant regional projects must be provided)
 - (g) the current status of the action
 - (h) the consequences of not proceeding with the action.

Description of the action

- 16.7 All components of the action are to be described in detail, including construction, operation, maintenance, decommissioning and rehabilitation. This is to include the precise location of all works to be undertaken, structures to be built, and elements of the action that may have impacts on MNES.
- 16.8 The description of the action is to 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. At a minimum, this description is to also include details of:
- (a) all infrastructure proposed to be constructed and construction methods
 - (b) ancillary infrastructure proposed to be constructed and upgrades of existing ancillary infrastructure
 - (c) realignment or replacement of services, structures, access etc. required as a result of the action
 - (d) establishment of new quarries (resource extraction areas) which includes location, size, method of extraction of materials and transport of materials

- (e) treatment of contaminated land, including method of treatment, disposal of waste and contaminated material, standards and minimum thresholds required for removal/disposal
 - (f) maximum life of the action, including construction, operation, decommissioning and rehabilitation
 - (g) number of jobs for the life of the action, including number of jobs for Aboriginal and Torres Strait Islander employees
 - (h) associated works and supporting infrastructure deemed necessary as part of the action or safety works
 - (i) other activities including but not limited to, changes to hydrological flow, concrete batching plant, material storage, workers accommodation village and facilities, fines and dust control management, waste management generally and management of spills/contaminants/pollutants (e.g. prevention from entering waterways and groundwater).
- 16.9 The description of the action is to provide the total size (in hectares) of the proposed project area and the total size (in hectares) of the disturbance footprint. If the disturbance footprint is the same as the project area, the MNES section is to include a statement to this effect.
- 16.10 The MNES section must include a map (or maps) which clearly identify all components of the action and their location within the project area.

Feasible alternatives

- 16.11 Outline 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 listed threatened species and communities, and a water resource, in relation to coal seam gas and large coal mining
 - (c) sufficient detail to make clear why any alternative is preferred to another
 - (d) short, medium and long-term advantages and disadvantages of the feasible alternatives.

Description of the environment

- 16.12 Describe the environment of the project area and surrounding areas (i.e. adjacent, upstream and/or downstream) that may be affected by the action. At a minimum, this section is to include details of:
- (a) listed threatened species and ecological communities that are likely to be present in the vicinity of the site
 - (b) terrestrial and aquatic ecosystems, including key vegetation communities and relevant watercourses (e.g. Isaac River Catchment and the Fitzroy Basin)
 - (c) native flora and fauna, both terrestrial and aquatic
 - (d) pest species and weeds
 - (e) important habitat areas, recognised populations and habitat, and aggregations of listed species
 - (f) surface water and groundwater hydrology and quality, including but not limited to that of Harrow Creek, Ripplestone Creek, Ripstone Creek, Cherwell Creek, Boomerang Creek and any relevant tributaries

- (g) groundwater dependent ecosystems of potentially affected creeks and tributaries, including but not limited to Harrow Creek, Ripplestone Creek, Ripstone Creek, Cherwell Creek, and Boomerang Creek
- (h) cultural heritage values, people and communities and other relevant social considerations
- (i) historical anthropogenic uses of the project area (if relevant), intensity and longevity of that use, and existing condition of the overall environment within, adjacent to, downstream and upstream of the project area.

Relevant impacts

- 16.13 All relevant impacts of the action are to be assessed in accordance with relevant DCCEEW policies and guidelines, and information provided in the Species Profile and Threats (SPRAT) Database, including but not limited to; habitat clearance, fragmentation and degradation, introduction and increase in numbers of pests, changes to hydrological regimes (including flow changes), impacts to water quality (including indirect and facilitated impacts), waste and chemical pollution and greenhouse gas emissions.
- 16.14 The MNES section is to include a description of all relevant impacts of the action (direct, indirect, cumulative⁴¹ and facilitated), including the magnitude, duration and frequency of the impacts. Relevant impacts are the impacts that the action will have, or is likely to have, on MNES. All stages and components of the action must be addressed, and the following information provided:
- (a) a detailed assessment of the nature and extent of the likely short-term and long-term relevant impacts
 - (b) a statement, with supporting evidence, whether any relevant impacts are likely to be unknown, unpredictable or irreversible
 - (c) any technical data and other information used or needed to make a detailed assessment of the relevant impacts.
- 16.15 The MNES section is to provide a detailed assessment of any likely impact that the action may have on (at the local, regional, state, national and international scale) the MNES above, taking account of approved conservation advices, threat abatement plans, strategic assessments, recovery plans and other relevant documents.
- 16.16 The MNES section is to identify and assess the cumulative impacts on MNES (terrestrial and aquatic) created by the proposed project, including known future projects or expansions by the proponent, and the activities of other existing and proposed adjacent, upstream and downstream relevant developments, water users and land users.
- 16.17 The MNES section must establish and describe clear spatial and temporal boundaries for the assessment of cumulative impacts.

Avoidance, mitigation and management measures

- 16.18 The MNES section is to 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 are to be based on best available practices, appropriate

⁴¹ Cumulative impact assessment is to assess all relevant impacts of the project, and other development and other activities in the area.

standards and supported by scientific evidence (e.g. outcomes of successful field trials, research papers, other projects, etc.). The MNES section is to include:

- (a) proposed measures to be undertaken to avoid and mitigate the relevant impacts of the action on MNES, including those required by other Australian Government, state and local government approvals
- (b) an assessment of the predicted effectiveness of the proposed measures
- (c) 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
- (d) details of ongoing management, including monitoring programs to support an adaptive management approach and determine the effectiveness of the proposed measures
- (e) a discussion of how impacts on surface water flow and quality and on groundwater quality and regimes will be managed during construction, operation and decommissioning of the proposed project
- (f) details about how final voids (if any) will be managed to avoid ongoing impacts to MNES following the end of the operation phase of the proposed project
- (g) details of measures, if any, proposed to be undertaken by state and local government, including the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program
- (h) information on the timing, frequency and duration of the measures to be implemented.

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

16.20 The SPRAT Database, and associated statutory documents, may provide some relevant mitigation measures for listed threatened species and ecological communities. All proposed measures for MNES are to consider the 'SMART' principle:

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

16.21 Any management plans relied upon to mitigate and monitor impacts on MNES must be included as appendices to the EIS in draft or final format.

16.22 An outline of an Environmental Management Plan (EMP) that sets out the framework for management, mitigation and monitoring of relevant impacts of the proposed actions, including any provisions for independent environmental auditing, may be included as an appendix to the EIS.

Note

According to the EPBC Act *Environmental Offsets Policy* (2012) (Offsets Policy), environmental offsets are measures that compensate for the residual adverse impacts of an action on the environment. Offsets provide environmental benefits to counterbalance the impacts that remain after avoidance and mitigation measures. It is important to consider environmental offsets early in the assessment process and correspondence with DCCEEW regarding offsetting is highly encouraged.

It is DCCEEW's standard practice that if environmental offsets are required, a draft Offset Strategy and/or a draft Offset Area Management Plan (OAMP) are included in the EIS for assessment and approval. Further, it is DCCEEW's expectation that the environmental offset is legally secured under relevant Queensland legislation prior to the commencement of the action. Where this is not achievable, DCCEEW will recommend to the Minister (or delegate) that the conditions of approval require the environmental offset/s or the OAMP be approved, and legally secured, prior to the commencement of the action.

- 16.23 The MNES section is to include an assessment of the likelihood of residual significant impacts occurring on MNES after avoidance, mitigation and management measures have been applied. If it is determined that a residual significant impact is likely, include a draft Offset Strategy as an appendix to the EIS that provides, at a minimum:
- (a) specific details of the nature of the conservation gain to be achieved for relevant MNES, including the creation, restoration and revegetation of habitat in the proposed offset area/s
 - (b) details of the environmental offset/s (in hectares) to compensate for the residual significant impacts of the proposed action on relevant MNES
 - (c) details of the potential offset area/s (including a map) to compensate for the residual significant impacts of the proposed action on relevant MNES
 - (d) the methodology, with justification and supporting evidence, used to inform the inputs of the Offsets Assessment Guide in relation to the for each relevant MNES, including:
 - (i) total area of habitat (in hectares)
 - (ii) habitat quality (e.g. using the *Queensland Guide to determining terrestrial habitat quality: Methods for assessing habitat quality under the Queensland Environmental Offsets Policy*). Before undertaking habitat quality assessments consult with OCG regarding which version of the guide should be used.
 - (e) details, with supporting evidence, of how the environmental offset/s meets the requirements of the Offsets Policy (see Appendix 2)
 - (f) 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:
 - (i) time over which loss is averted (max. 20 years)
 - (ii) time until ecological benefit
 - (iii) risk of loss (%) without offset
 - (iv) risk of loss (%) with offset

(v) confidence in result (%).

- (g) evidence that the relevant MNES, and/or their habitat, can be present in the potential offset area/s
- (h) information about how the potential offset area/s provides connectivity with other relevant habitats and biodiversity corridors
- (i) details and execution timing of the mechanism to legally secure the environmental offset/s (under Queensland legislation or equivalent) to provide enduring protection for the potential offset area/s against development incompatible with conservation.

16.24 Where offset area/s have been nominated, include a draft OAMP as an appendix to the EIS which includes information to demonstrate how the environmental offset/s compensate for SRI of the action on relevant MNES, and/or their habitat, in accordance with the principles of the Offsets Policy and all requirements of the Offsets Assessment Guide. The draft OAMP is to include:

- (a) specific, committal and measurable environmental outcomes which detail the nature of the conservation gain to be achieved for relevant MNES, including the creation, restoration and revegetation of habitat in the proposed offset area/s
- (b) details, with supporting evidence, to demonstrate how the environmental offset/s compensate for residual significant impacts of the proposed action on relevant MNES, and/or their habitat, in accordance with the principles of the Offsets Policy and all requirements of the Offsets Assessment Guide including:
 - (i) time over which loss is averted (max. 20 years)
 - (ii) time until ecological benefit
 - (iii) risk of loss (%) without offset
 - (iv) risk of loss (%) with offset
 - (v) confidence in result (%).
- (c) a description of the offset area/s, including location, size, condition, environmental values present and surrounding land uses
- (d) baseline data and other supporting evidence that documents the presence of the relevant MNES, and the quality of their habitat within the offset area/s.
- (e) an assessment of the site habitat quality for the impact site and offset area/s (e.g. using the Queensland Government Guide to determining terrestrial habitat quality: *methods for assessing habitat quality under the Queensland Environmental Offsets Policy 2020* (see Appendix 2). Before undertaking habitat quality assessments consult with OCG regarding which version of the guide should be used.
- (f) details of how the offset area/s will provide connectivity with other habitats and biodiversity corridors and/or will contribute to a larger strategic offset for the relevant MNES
- (g) maps and shapefiles to clearly define the location and boundaries of the offset area/s, accompanied by the offset attributes (e.g. physical address of the offset area/s, coordinates of the boundary points in decimal degrees, the relevant MNES that the environmental offset/s compensates for, and the size of the environmental offset/s in hectares)

- (h) 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
 - (i) details of the management actions, and timeframes for implementation, to be carried out to meet the offset completion criteria
 - (j) interim milestones that set targets at 5-yearly intervals for progress towards achieving the offset completion criteria
 - (k) 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)
 - (l) proposed timing for the submission of monitoring reports which provide evidence demonstrating whether the interim milestones have been achieved
 - (m) timing for the implementation of tangible, on-ground corrective actions to be implemented if monitoring activities indicate the interim milestones have not been achieved
 - (n) 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
 - (o) 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
 - (p) details and execution timing of the mechanism to legally secure the proposed offset area/s, such that legal security remains in force over the offset area/s for at least 20 years to provide enduring protection for the offset area/s against development incompatible with conservation
 - (q) all proposed management actions, monitoring approach and corrective actions must be written using committed language (e.g. 'will' and 'must').
- 16.25 The draft OAMP must be prepared by a suitably qualified person and in accordance with DCCEE's *Environmental Management Plan Guidelines* (2014).⁴²
- 16.26 The draft OAMP is to provide evidence, derived from field validation 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 environmental offset/s. Field validation surveys are to be undertaken in accordance with Commonwealth guidelines, state guidelines and/or best practice survey methodologies.
- 16.27 Supporting evidence is to 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 Biosecurity Act, existing grazing regimes, etc.) as required by the principles of the EPBC Act Offsets Policy.

⁴² DCCEE expects that an EPBC Act protected matter is present in the proposed environmental offset/s if it is present in the project area to align with the EPBC Act Offsets Policy.

- 16.28 The draft OAMP is to 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 environmental offset/s for a listed threatened species or ecological community.
- 16.29 Where the proposed environmental offset/s supports an offset for multiple MNES, proposed management action/s for one EPBC Act protected matter must not be detrimental (i.e. have an impact) to other EPBC Act protected matters.
- 16.30 Where an environmental offset/s 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.).

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

- 16.31 The MNES section is to address, at a minimum, impacts on listed threatened species and communities listed for the action at Appendix 1.⁴³

Information requirements

- 16.32 The structure of the assessment of listed threatened species and communities in the MNES section for the action must be the following:
- (a) description
 - (b) desktop analysis
 - (c) survey effort
 - (d) survey outcomes
 - (e) habitat assessment
 - (f) impact assessment⁴⁴
 - (g) avoidance, mitigation and management⁴⁵ measures
 - (h) rehabilitation requirements
 - (i) statutory requirements
 - (j) significant impact assessment.⁴⁶

Description

- 16.33 Describe each listed threatened species and ecological community (including EPBC Act listing status, distribution, habitat, life history, etc.); these descriptions should align primarily with relevant DCCEEW statutory documents⁴⁷ and the SPRAT database. Other sources such as

⁴³ This may not be a complete list of listed threatened species and ecological communities that will or are likely be impacted by the action. It is the proponent's responsibility to ensure that any listed threatened species and ecological communities at the time of the controlled action decision, which will or are likely to be impacted by the project, are assessed for the Minister's consideration. Any listing events (e.g. the listing or up-listing of a species) that occur after the controlled action decision (20 September 2022) do not affect the assessment and approval process.

⁴⁴ The impact assessment must meet the requirements outlined in the 'Relevant Impacts' sections 16.13-16.17 above.

⁴⁵ As outlined at the 'Avoidance, Mitigation and Management Measures' sections 16.18-16.22 above.

⁴⁶ As outlined at the 'Environmental Offsets' sections 16.23-16.30 above.

⁴⁷ DCCEEW strongly recommends that the habitat assessment is undertaken in line with the habitat descriptions outlined in SPRAT Database and relevant DCCEEW documents. However, the proponent may deviate from the information available in the SPRAT Database when undertaking the habitat assessments if appropriate. Any variation in habitat assessment approach must be discussed with DCCEEW prior to the submission of the environmental impact statement and must be supported by scientific evidence including published research, independent

the Central Queensland Threatened Species Habitat Descriptions (CQTSHD) may also be used to describe listed threatened species and ecological communities in instances where it is not inconsistent with the relevant DCCEEW documents or SPRAT database.

Desktop analysis

- 16.34 Describe the desktop assessment methodology used to inform the field surveys within, adjacent to and/or downstream of the project area. The MNES section must identify and describe known historical records of listed threatened species and ecological communities in the broader region. Appropriate sources should be used (i.e. Commonwealth and State databases, published research, publicly available survey reports, etc.), and where relevant, the year of the record should be noted.

Survey effort

- 16.35 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 relevant listed threatened species and ecological communities) within, adjacent to, downstream and/or upstream of the project area. Provide details of:
- (a) how surveys were undertaken in accordance with relevant Commonwealth and state guidelines or best practice survey guidelines at the time of the surveys; and
 - (b) if relevant, the justification for divergence from relevant Commonwealth and state guidelines or best practice survey guidelines at the time of the surveys.
- 16.36 Surveys are to be of a suitable standard, including the scope, timing and spatial and temporal replication, to be able to detect cryptic or difficult to detect terrestrial and aquatic species. Surveys are to also target areas upstream, downstream and adjacent to the project area, particularly for species which regularly disperse through the landscape or aquatic environments (particularly seasonally), are present only in suitable conditions, and/or have large home ranges.

Survey outcomes

- 16.37 State the total number of records (individuals and evidence of presence) of listed threatened species and ecological communities within, adjacent to, upstream and/or downstream of the project area. All records are to include the year of the record and a brief description of the habitat in which the record was identified.

Habitat assessment

- 16.38 Provide a robust assessment of the potential habitat available within, adjacent to, upstream and/or downstream of the project area for listed threatened species and ecological communities. This is to 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 are to be derived from information obtained from:

- (a) field surveys and vegetation assessments (e.g. hollow-bearing tree surveys)

expert advice and information derived from field surveys (DCCEEW does not accept the consideration of Queensland Regional Ecosystem (RE) mapping to determine habitat for listed threatened species).

- (b) Central Queensland threatened species habitat descriptions (e.g. where not inconsistent with SPRAT and DCCEEW documents)
 - (c) the SPRAT Database
 - (d) relevant DCCEEW documents (e.g. approved conservation advices, recovery plans, listing advices, draft referral guidelines, etc.)
 - (e) published research and other relevant sources.
- 16.39 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, upstream and/or downstream of the project area are to be included in the MNES section, and must:
- (a) be specific to the habitat assessment undertaken for each listed threatened species and ecological community
 - (b) include an overlay of the disturbance footprint
 - (c) include known records of individuals (or evidence of individuals) derived from desktop analysis and/or field surveys.
- 16.40 Habitat assessment must include the measurement of tree diameter, in relation to habitat suitability assessments for listed threatened species such as the Greater Glider (basal diameter > 30cm can be used as a proxy for hollow-bearing trees suitable for this species).
- 16.41 The MNES section must not just consider Queensland Regional Ecosystem (RE) mapping to determine habitat for listed threatened species; habitat assessments are to consider and align with relevant DCCEEW documents and/or SPRAT database (and other documents where relevant). However, some Queensland REs align with the descriptions for some ecological communities and therefore the use of Queensland REs is acceptable in these cases.
- 16.42 Provide the total amount of each type of habitat (in hectares) within, adjacent to, upstream and downstream of the project area for each listed threatened species and ecological community.
- 16.43 The MNES section must include a detailed habitat assessment for the listed threatened species and communities in Appendix 1 and any other listed threatened species and/or ecological communities identified during desktop analysis and/or field surveys. Habitat quality should be assessed using methods appropriate to the relevant species or community, and consistent with the methods used to assess habitat quality at offset sites. This assessment, including justification for the methodology must be included in the MNES section.
- 16.44 When assessing the total amount of Brigalow (*Acacia harpophylla* dominant and codominant) present within, adjacent to, upstream, and downstream of the project area, non-remnant patches meeting the requirements outlined in the [approved Conservation Advice](#) must be considered part of the TEC. Evidence for any potential patches not meeting the requirements must be provided, and should include the use of aerial imagery, survey plots or transects and other methods as appropriate.
- 16.45 DCCEEW considers it is not unreasonable that a species may use a project area at some point in time if the vegetation and/or habitat feature/s to support its requirements are present. As such, even if a listed threatened species and/or community is not recorded during field surveys, the potential for occurrence of listed threatened species and communities is to also be considered and assessed in the MNES section.

Impact assessment ⁴⁸

- 16.46 Describe and assess all relevant impacts (direct, indirect, facilitated and cumulative) to listed threatened species and ecological communities listed in Appendix 1 and to any other listed threatened species and communities that are found to be or may potentially be present in areas that may be impacted by the action.⁴⁹
- 16.47 Where relevant, consider the anticipated/predicted future climatic conditions at the site in the assessment of impacts on Commonwealth matters. Assess how changes in climate and the frequency and severity of weather events may interact with, exacerbate or reduce the impacts of the proposed project on MNES at, adjacent to, or downstream of the project area or affect MNES at offset site(s) over the life of the project. This should include, but not be limited to the:
- (a) loss, fragmentation, or drying of potential climate refugia and/or climate refuges for Commonwealth matters as a result of the proposed action – consider the potential impacts of removing or otherwise impacting this climate refugia and/or climate refuges for the long-term survival of the species in the region
 - (b) increased risk of fire as a result of mining operations under drier conditions and periods of extreme heat
 - (c) overtopping of containment dams during extreme rain events and the downstream impacts on Commonwealth matters
 - (d) inclusion of different climate scenarios in surface water modelling.
- 16.48 For threatened ecological communities, the total direct impact (in hectares) to each identified patch within and adjacent to the project area is to be provided in the MNES section and compared to its current extent. Further, the impact assessment for ecological communities is to include a discussion on the post-impact viability of each individual patch within and adjacent to the project area that may be impacted by fragmentation as a result of vegetation clearance.
- 16.49 Provide the total amount of each type of habitat (in hectares) in the disturbance footprint for each listed threatened species and ecological community.
- 16.50 Assess the impacts of habitat fragmentation in the proposed action area and surrounding areas, including consideration of species' movement patterns.
- 16.51 Assess the likely duration of impacts to MNES as a result of the proposed action.
- 16.52 Discuss whether the impacts are likely to be repeated as part of maintenance.
- 16.53 Discuss whether any impacts are likely to be unknown, unpredictable or irreversible.
- 16.54 Assess the impacts of noise, vibration, dust and vehicle strike resulting from the construction and operation of the proposed project to habitat in the project area and surrounding areas.
- 16.55 Identify which component/s and stage/s of the action and/or consequential actions are of relevance to each listed threatened species and/or ecological community.

Avoidance, mitigation and management

- 16.56 Describe all relevant species-specific measures proposed to avoid, mitigate and manage potential impacts on listed threatened species and ecological communities.⁵⁰

⁴⁸ Impact assessment must include the indirect, facilitated and cumulative impacts the action will have on listed threatened species and ecological communities in downstream catchment areas and wetlands, including estuarine, coastal and marine environments.

⁴⁹ The impact assessment must meet the requirements outlined in the 'Relevant Impacts' sections 16.13-16.17 above.

⁵⁰ As outlined at the 'Avoidance, Mitigation and Management Measures' sections 16.18-16.22 above.

- 16.57 The MNES section must not just state proposed management plans and/or broad objectives to describe avoidance, mitigation and management measures.⁵¹ The MNES section is to include detailed measures that will be implemented to avoid, mitigate and manage impacts on listed threatened species and ecological communities. Committal language (i.e. 'will') rather than non-committal language (i.e. 'may', 'where possible', 'if required', etc.) must be used.

Rehabilitation requirements

- 16.58 Describe how rehabilitation and post mining land uses will provide for the restoration of habitat for relevant listed threatened species and communities.
- 16.59 Provide a summary of the procedures, including contingency measures, that will be undertaken to achieve the rehabilitation acceptance criteria.
- 16.60 Provide a summary of a monitoring program to determine the success of rehabilitation activities implemented by the proponent.
- 16.61 Describe the details of any rehabilitation activities proposed to be undertaken as required by Commonwealth, state or territory, and local government legislation. Attach relevant Commonwealth, state or territory, and local government approvals and permits as supporting documents to the preliminary documentation.

Statutory requirements

- 16.62 Where relevant, discuss how the proponent has had regard to relevant approved conservation advice/s.
- 16.63 The MNES section must demonstrate, with supporting evidence, that the action will not be inconsistent with Australia's obligations under:
- (a) the Biodiversity Convention
 - (b) the Convention on Conservation of Nature in the South Pacific (Apia Convention)
 - (c) the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
 - (d) an approved recovery plan or threat abatement plan.

Significant impact assessment⁵²

- 16.64 After consideration of proposed avoidance, mitigation and management measures, provide an assessment of the likelihood of residual significant impacts on relevant listed threatened species and ecological communities. The significant impact assessment is to consider the DCCEE's *Significant impact guidelines 1.1* (see Appendix 2).
- 16.65 The MNES section must provide a clear and definitive conclusion (i.e. 'likely' or 'unlikely'), including the extent and nature, of residual significant impacts on relevant listed threatened species and ecological communities to align with the *EPBC Act Environmental Offsets Policy* (see Appendix 2).

⁵¹ 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.

⁵² As outlined at the 'Environmental Offsets' sections 16.23-16.30 above.

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

Note

The National Partnership Agreement on Coal Seam Gas and Large Coal Mining, 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 (IESC) for advice. The IESC provides scientific advice to decision makers on potential impacts from coal seam gas 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 Coordinator-General when deciding the suitability of the proposed project and developing conditions for any approval.

Information requirements

- 16.66 The EIS must provide details on the current state of groundwater and surface water in the region in relation to the proposed project.
- 16.67 The MNES section must provide details on the scale of use and interference with the groundwater and surface water.
- 16.68 The MNES section must provide an assessment of the proposed project impacts to groundwater levels, changes in hydraulic connection, ground and surface water interactions, and surface water. This assessment should include any use of these resources by other existing projects in the region, especially where this use may result in cumulative impacts.
- 16.69 Describe relevant monitoring, mitigation and management strategies for groundwater dependent ecosystem (GDE) impacts, including relevant state monitoring requirements.
- 16.70 The MNES section is to describe the potential impacts of altered hydrological regimes and potential increased water take to downstream users and the environment. Ensure the EIS is informed by modelling to detail potential impacts of water quantity changes within and downstream of the site.
- 16.71 The MNES section should specifically consider the diversion of Ripstone Creek and changes to Boomerang Creek infrastructure.
- 16.72 The MNES section should assess potential impacts to any downstream water related assets and highlight mitigation measures to prevent or minimise those impacts.
- 16.73 The MNES section is to include investigation into the potential changes to downstream water quality as a result of planned or unplanned water release of mine affected water. An analysis of the impacts to water quality for downstream users, creeks in the area, water dependant assets and the environment must be included.
- 16.74 The MNES section is to address potential surface water extractions and the water licencing from the low-flow diversions of Ripstone Creek and Boomerang Creek, where applicable.
- 16.75 A surface water and groundwater sampling program should be undertaken to take into consideration seasonal changes. It is recommended that the proponent establish a systematic water collection program for at least 24 months in order to properly characterise the water quality conditions, including seasonal variations, and include in the draft EIS.

- 16.76 The EIS must describe and assess the impacts on water resources against the Significant Impact Guidelines 1.3: Coal seam gas and large coal mining developments – impacts of water resources.
- 16.77 The MNES section is to address the information requirements contained in the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC) *Information guidelines for proponents preparing coal seam gas and large coal mining development proposals* (see Appendix 2) and provide a cross-reference table to identify where each component of the guidelines has been addressed.
- 16.78 Consider and apply the guidance in the IESC Explanatory notes:
- (a) *Uncertainty analysis—Guidance for groundwater modelling within a risk management framework*
 - (b) *Assessing groundwater-dependent ecosystems; and*
 - (c) *Deriving site-specific guideline values for physico-chemical parameters and toxicants.*

Avoidance, mitigation, and management

- 16.79 The MNES section should include, at minimum, draft management and mitigation plans for all expected impacts on groundwater and surface water.
- 16.80 The MNES section must not just state proposed management plans and/or broad objectives to describe avoidance, mitigation, and management measures.⁵³ The MNES section is to include detailed measures that will be implemented to avoid, mitigate, and manage impacts on surface and groundwater. Alternatively, the MNES section can state the detailed outcomes to be achieved and how these will be monitored and measured. Committal language ('will') rather than non-committal language (i.e. 'may', 'where possible', 'if required', etc.) must be used.

Significant impact assessment

- 16.81 After consideration of proposed avoidance, mitigation, and management measures, provide an assessment of the likelihood of residual significant impacts to water resources. The significant impact assessment is to consider the DCCEEW's *Significant Impact Guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources* (see Appendix 2).

Other approvals and conditions

- 16.82 The MNES section is to include information on any other approvals or requirements for approvals and any conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action. This is to 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
 - (ii) how the scheme provides for the prevention, minimisation and management of any relevant impacts.

⁵³ 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.

- (b) a description of any approval that has been obtained from a state, territory or Commonwealth government agency or authority (other than an approval under the EPBC Act), including any conditions that apply to the action
- (c) a statement identifying any additional approval that is required
- (d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

Environmental record of person(s) proposing to take the action

- 16.83 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
 - (b) for an action for which a person has applied for a permit, the person making the application.
- 16.84 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.

Economic and social matters

- 16.85 The economic and social impacts of the action, both positive and negative, are to be analysed in the MNES section. Matters of interest may include:
- (a) details of any public consultation activities undertaken, including any consultation with Aboriginal and Torres Strait Islander stakeholders, and their outcomes
 - (b) projected economic costs (e.g. capital investment) and benefits of the action, including the basis for their estimation through cost/benefit analysis or similar studies
 - (c) employment opportunities expected to be generated by the action (including construction and operational phases), including number of jobs for Aboriginal and Torres Strait Islander employees.
- 16.86 Consultation with Aboriginal and Torres Strait stakeholders must be undertaken in accordance with the *Interim Engaging with First Nations People and Communities on Assessments and Approvals under the Environment Protection and Biodiversity Conservation Act 1999 (2023)*. An explanation of how Indigenous stakeholders' views of the action's impacts to biodiversity and cultural heritage have been sought and considered must be included.
- 16.87 Economic and social impacts are to 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, are to also be included.

Principles of Ecologically Sustainable Development (ESD)

- 16.88 Provide a discussion of how the proposed project will conform to the principles of ESD, as described under Part 1, section 3A of the EPBC Act:
- (a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
 - (b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation

- (c) the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- (d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making
- (e) improved valuation, pricing and incentive mechanisms should be promoted.

Information sources provided in the MNES section

16.89 For information given in the MNES section, the MNES section is to state:

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

17. Appendices to the EIS

- 17.1 Appendices are to provide the complete technical evidence used to develop assumptions, statements and findings in the main text of the EIS.
- 17.2 No significant issue or matter is to be mentioned for the first time in an appendix—it is to be addressed in the main text of the EIS.
- 17.3 Include a table listing the section and sub-section of the EIS where each requirement of the TOR is addressed.
- 17.4 Include a list citing all reference material used or relied on in the EIS.
- 17.5 Include a glossary of terms and a list of acronyms and abbreviations.

Part D Acronyms and abbreviations

Table 2 Acronyms and abbreviations

Acronym/abbreviation	Definition
ACH Act	<i>Aboriginal Cultural Heritage Act 2003 (Qld)</i>
AHD	Australian height datum
Biosecurity Act	<i>Biosecurity Act 2014 (Qld)</i>
Biosecurity Regulation	Biosecurity Regulation 2016 (Qld)
CBA	cost-benefit analysis
Cth	Commonwealth
DAF	Department of Agriculture and Fisheries
DCCEEW	Australian Government Department of Climate Change, Energy, the Environment and Water (formerly known as DAWE - the Australian Government Department of Agriculture, Water and the Environment)
DES	Department of Environment and Science
DPI	dots per inch
DTMR	Department of Transport and Main Roads
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning
e.g.	for example
EIS	environmental impact statement
EMP	environmental management plan
EOW	end of waste
EP Act	<i>Environmental Protection Act 1994 (Qld)</i>
EP Regulation	Environmental Protection Regulation 2019 (Qld)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
EPPs	Environmental protection policies
ERA	Environmentally relevant activity
ESD	Ecologically sustainable development
FIFO	fly-in, fly-out
Fisheries Act	<i>Fisheries Act 1994 (Qld)</i>
GDA2020	geocentric datum of Australia 2020
GHG	greenhouse gas
GTIA	Guide to Traffic Impact Assessment
ha	hectare
i.e.	that is
km	kilometre
MNES	matters of national environmental significance
MSES	matters of state environmental significance

Acronym/abbreviation	Definition
mtpa	million tonnes per annum
Native Title Act	<i>Native Title Act 1993 (Qld)</i>
NC Act	<i>Nature Conservation Act 1992 (Qld)</i>
OAMP	offset area management plan
PDF	portable document format
Planning Act	<i>Planning Act 2016 (Qld)</i>
Planning Regulation	Planning Regulation 2017
PRCP	progressive rehabilitation and closure plan
Public Health Act	Public Health Act 2005 (Qld)
Qld	Queensland
Queensland Heritage Act	<i>Queensland Heritage Act 1992 (Qld)</i>
RE	regional ecosystem
RIDA	regional interests development approval
RPI Act	<i>Regional Planning Interests Act 2014 (Qld)</i>
ROM	Run of mine
SDAP	State Development Assessment Provisions
SDPWO Act	<i>State Development and Public Works Organisation Act 1971 (Qld)</i>
SIA	social impact assessment
SIMP	social impact management plan
SIA Guideline	Coordinator-General's Social Impact Assessment Guideline 2018
Soil Conservation Act	<i>Soil Conservation Act 1986 (Qld)</i>
SPP	State Planning Policy
SRI	significant residual impact
Stock Route Management Act	<i>Stock Route Management Act 2002 (Qld)</i>
SSRC Act	<i>Strong and Sustainable Resource Communities Act 2017 (Qld)</i>
TOR	terms of reference
USB	universal serial bus
VM Act	<i>Vegetation Management Act 1999 (Qld)</i>
Water Act	<i>Water Act 2000</i>
Water Plan	Water Plan (Fitzroy Basin) 2011

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

Table 3 and Table 4 list the threatened ecological communities and species relevant to the controlled action under the EPBC Act, which at a minimum, is to be included in the impact assessment in the MNES section.

Note: The lists at Table 3 and Table 4 may not be a complete list of listed threatened species and ecological communities that will or are likely be impacted by the action. It is the proponent's responsibility to ensure that any listed threatened species and ecological communities at the time of the controlled action decision, which will or are likely to be impacted by the action, are assessed for the Australian Minister for the Environment and Water's consideration. Any listing events (e.g. the listing or up-listing of a species) that occur after the controlled action decision (5 January 2023) are not required to be considered in the assessment.

Table 3 Relevant threatened ecological communities for EPBC 2022/09350

Species name	Status under the EPBC Act
Brigalow (<i>Acacia harpophylla</i> dominant and codominant)	Endangered
Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin	Endangered
Poplar Box Grassy Woodland on Alluvial Plains	Endangered

Table 4 Relevant threatened species for EPBC 2022/09350

Species name	Status under the EPBC Act
Birds	
Curlew Sandpiper (<i>Calidris ferruginea</i>)	Critically Endangered
Red Goshawk (<i>Erythrotriorchis radiatus</i>)	Vulnerable
Grey Falcon (<i>Falco hypoleucos</i>)	Vulnerable
Squatter Pigeon (southern) (<i>Geophaps scripta scripta</i>)	Vulnerable
Painted Honeyeater (<i>Grantiella picta</i>)	Vulnerable
Star Finch (eastern), Star Finch (southern) (<i>Neochmia ruficauda ruficauda</i>)	Endangered
Australian Painted Snipe (<i>Rostratula australis</i>)	Endangered
Mammals	
Greater Glider (southern and central) (<i>Petauroides volans</i>)	Endangered

Species name	Status under the EPBC Act
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (<i>Phascolarctos cinereus</i>)	Endangered
Plants	
King Blue-grass (<i>Dichanthium queenslandicum</i>)	Endangered
Black Ironbox (<i>Eucalyptus ravertiana</i>)	Vulnerable
Reptiles	
Ornamental Snake (<i>Denisonia maculate</i>)	Vulnerable
Yakka Skink (<i>Egernia rugosa</i>)	Vulnerable
Dunmall's Snake (<i>Furina dunmalli</i>)	Vulnerable
Grey Snake (<i>Hemiaspis damelii</i>)	Vulnerable
Allan's Lerista, Retro Slider (<i>Lerista allanae</i>)	Endangered

Appendix 2. Policies and guidelines

General

Queensland Government, *DAF Environmental impact assessment companion guide*, 2014, Department of Agriculture, Fisheries and Forestry, [DAF environmental impact assessment companion guide | Business Queensland](#)

Queensland Government, *Guideline – Model mining conditions*, ESR/2016/1936, Version 6.02, 2017, Department of Environment and Science, https://environment.des.qld.gov.au/data/assets/pdf_file/0033/88926/rs-gl-model-mining-conditions.pdf

Queensland Government, *Guideline – Spatial information submission*, ESR/208/4337, Version 5.00, 2022, Department of Environment and Science, https://environment.des.qld.gov.au/data/assets/pdf_file/0027/90288/rs-gl-spatial-information.pdf

Queensland Government, *Preparing an environmental impact statement – Guideline for proponents*, 2020, Department of State Development, Tourism and Innovation, https://www.statedevelopment.qld.gov.au/data/assets/pdf_file/0027/33498/preparing-an-eis-guideline-for-proponents.pdf

Land

Australian Government, *Mine closure – Leading practice sustainable development program for the mining industry*, 2016, Department of Foreign Affairs and Trade, <https://www.industry.gov.au/sites/default/files/2019-05/lpsdp-mine-closure-handbook-english.pdf>

Australian Rainfall and Runoff (2019): Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors) *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia (Geoscience Australia), 2019, <https://arr.ga.gov.au/arr-guideline>

International Erosion Control Association, *Best Practice Erosion and Sediment Control*, 2008, <https://austieca.com.au/publications/best-practice-erosion-and-sediment-control-bpesc-document>

National Committee on Soil and Terrain, *Australian Soil and Land Survey Field Handbook*, 3rd edition, 2009, [https://www.publish.csiro.au/book/5230/](https://www.publish.csiro.au/book/5230)

NJ McKenzie, MJ Grundy, R Webster, AJ Ringrose-Voase, *Guidelines for surveying soil and land resources*, 2nd edition, 2008, <https://www.publish.csiro.au/book/5650/>

Queensland Government, *Application requirements for activities with impacts to land*, ESR/2015/1839, Version 4.03, 2021, Department of Environment and Science, https://environment.des.qld.gov.au/data/assets/pdf_file/0024/88008/era-gl-land-impacts.pdf

Queensland Government, *Contaminated land – EIS information guideline*, ESR/2020/5300, Version 1.01, 2022, Department of Environment and Science, https://www.qld.gov.au/data/assets/pdf_file/0013/140008/eis-tm-contaminated-land-information-guide.pdf

Queensland Government, *EIS Information guideline – Rehabilitation*, ESR/2020/5308, Version 1.02, 2022, Department of Environment and Science, https://www.qld.gov.au/data/assets/pdf_file/0017/242315/eis-tm-rehabilitation-information-guide.pdf

Queensland Government, *Guideline – Progressive rehabilitation and closure plans (PRC Plans)*, ESR/2019/4964, Version 3.00, 2021, Department of Environment and Science, https://environment.des.qld.gov.au/data/assets/pdf_file/0026/95444/rs-gl-prc-plan.pdf

Queensland Government, *Information Sheet, Voids in flood plains*, ESR/2019/4966 Version 1.00, Effective: 11 MAR 2020, https://environment.des.qld.gov.au/data/assets/pdf_file/0024/95442/rs-is-modelling-flood-plain.pdf

Queensland Government, *Land – EIS information guideline*, ESR/2020/5303, Version 1.03, 2022, Department of Environment and Science, https://www.qld.gov.au/data/assets/pdf_file/0006/140010/eis-tm-land-information-guide.pdf

Queensland Government, *Queensland Government Native Title Work Procedures*, Department of Natural Resources and Mines, <https://www.resources.qld.gov.au/qld/atsi/native-title-work-procedures/work-procedures>

Queensland Government, *Quarry material – EIS information guideline*, ESR/2020/5306, Version 1.01, 2022, Department of Environment and Science, https://www.qld.gov.au/data/assets/pdf_file/0017/113480/eis-tm-quarry-material-information-guide.pdf

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