

Environmental Impact Statement
Guidelines
Venture Minerals Ltd
Mt Lindsay Tin-Tungsten-Magnetite-
Copper Mine Project

May 2022



ENVIRONMENT PROTECTION AUTHORITY

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General Information for the Proponent

Purpose

The *Environmental Management and Pollution Control Act 1994* (EMPC Act) requires the Board of the Environment Protection Authority (the Board) to provide guidance to the proponent about what should be included in the case for assessment.

These Environmental Impact Statement (EIS) guidelines have been prepared based on a Notice of Intent (NoI) for the proposed Mount Lindsay Mine by Venture Minerals Ltd (Venture).

The Board will assess environmental aspects of the proposal. The relevant Planning Authority (West Coast Council) will assess planning matters in accordance with the *Land Use Planning and Approvals Act 1993* (LUPA Act). The Board has authorised the EPA to undertake administrative tasks and establish the information base to inform decision making on its behalf.

These guidelines provide information on preparing an Environmental Impact Statement (EIS) for an activity being assessed by the Board under the EMPC Act.

Information solely for the purpose of assessment under the relevant Planning Scheme should be supplied to the Planning Authority either:

- as required under s54 of the LUPA Act, where the planning application has commenced the environmental assessment process; or
- where it is intended to submit an EIS (draft or final) with the planning application, a combined planning and environmental report can be prepared. However, the information required for the Board's assessment must be distinguished from that supplied for the purposes of the LUPA Act.

Risk Based Assessment

The EIS should be prepared using a risk-based approach. Not all issues nominated in these guidelines will have the same degree of relevance to all proposed activities. The level of detail provided on each issue should be appropriate to the level of significance of that environmental issue to the proposal.

As well as the issues identified in the guidelines, other significant matters may emerge during preparation of the EIS from environmental studies, public comments, or other sources, which will need to be factored into the EIS. The assessment process may also change the understanding of the level of risk associated with some of the issues. This may in turn change the level of detail needed in the EIS.

After the public consultation phase, additional information may be requested from the proponent in response to public and government agency submissions. This generally takes the form of a supplement to the EIS.

Objectives of the EIS

The EIS should provide:

- Information for individuals and groups to gain an understanding of the proposal, the need for the proposal, the alternatives, the environment that it could affect, the positive and negative environmental impacts that may occur and the measures that will be taken to maximise positive outcomes, and minimise any adverse environmental impacts, including specific management measures.

- A basis for public consultation and informed comment on the proposal.
- A framework against which decision makers, particularly the Board, and the relevant Planning Authority, can consider the proposal and determine the conditions under which any approval might be given.
- A demonstration that the proposal is consistent with the objectives of the relevant laws and policies, including the Tasmanian Resource Management and Planning System (RMPS) and the Environmental Management and Pollution Control System (EMPCS).

Structure and Formatting of the EIS

The following points should be considered when writing the EIS:

- The title page should include the proponent's name, the activity name, the proposal address or location, the EIS version number (where relevant) and the month and year of publication.
- The main text of the EIS should be written in a clear and concise style that is easily understood by the general reader.
- Assertions and assumptions should be supported by adequate argument and/or evidence, and evidence should be referenced.
- Technical terminology should be avoided as far as possible. The detailed technical data and supplementary reports necessary to support the main text should be included in appendices.
- All sources of information should be referenced, and the style of referencing should be consistent throughout. An indication should also be given about how current the information is and how its reliability was tested. In particular, the degree of confidence attached to any predictions should be indicated.
- Where necessary, to enhance understanding of the proposal, information should be presented in maps, plans, diagrams, and photographs. These must be of high quality and reproducible in monochrome with all text and relevant features clearly visible. Maps and plans should include a north arrow and scale.
- When spatial information (including maps, plans, grid coordinates and heights) is provided or referred to, the coordinate reference system¹ must be specified. The following coordinate reference systems should be used:
 - **Horizontal** – Geocentric Datum of Australia 2020, Map Grid of Australia Zone 55 (GDA94 MGA55)
 - **Vertical** – Australian Height Datum (Tasmania) (AHD83)

Information on coordinate reference systems used in Tasmania can be found on the NRE website ([Coordinate, Height and Tide Datums - Tasmania | Department of Natural Resources and Environment Tasmania](#)).

Although the Geocentric Datum of Australia 2020 (GDA2020) is the new official datum for recording the horizontal location of spatial information in Australia, implementation of this new datum in Tasmania is not yet complete and the Geocentric Datum of Australia 1994 (GDA1994) remains in use.

- Any sensitive information, as covered by Section 23 of the EMPC Act, should be provided in a separate, confidential appendix. A comment should be made in the EIS that the information

¹ Information on coordinate reference systems used in Tasmania can be found on the DPIPWE website (<https://dPIPWE.tas.gov.au/land-tasmania/geospatial-infrastructure-surveying/geodetic-survey/coordinate-height-and-tide-datums-tasmania>).

has been provided in this way. The EIS should provide clear justification for placing any information in a confidential appendix.

- Specific management measures must be clearly identified in the text and included in the summary table referred to in Section 9 of these guidelines.
- Where appropriate, information provided in other sections should be referenced to minimise duplication.

Submission of draft and final document

Close consultation with the EPA while preparing the EIS is recommended. It is advisable for the proponent to submit a draft EIS for review before it is finalised. Please note that a draft document may be rejected without detailed review if it is incomplete, contains significant formatting or typographical errors, or does not comply with the EIS Guidelines. More than one draft may be necessary before the document is considered suitable for public release.

The EIS is to be submitted in electronic format (such as Microsoft Word), and suitable for publishing on the internet (PDF format). Printed copies may also be required for public consultation.

Once the proposal is advertised for public comment, copies of the EIS must be made available to the public on request, in either printed or electronic format. The EIS will also be available on the EPA website.

Commonwealth environmental assessment

The Australian Government will also have a role in the environmental assessment and approval of the proposal in addition to Tasmanian requirements. Approval under the *Australian Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is required for an action which has, will have, or is likely to have, a significant impact on a matter of national environmental significance (MNES) or on Australian land.

On 25 March 2022, the Commonwealth determined under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), that the proposal is a controlled action. The relevant controlling provisions are:

- Listed threatened species and communities (sections 18 & 18A).

Information on the EPBC Act can be obtained from the Australian Government Department of Agriculture, Water and Environment website, or by calling 1800 803 772.

The Australian and Tasmanian Governments have signed a bilateral agreement for environmental impact assessment under section 45 of the EPBC Act, which accredits the Tasmanian assessment process. This applies when a proposal is determined to be a controlled action under the EPBC Act and is being assessed under the bilateral agreement.

The EIS should specifically describe the implications of the proposal for the relevant EPBC Act controlling provisions. It must also contain a summary table showing that it addresses the matters specified in Schedule 4 of the *Commonwealth Environment Protection and Biodiversity Conservation Regulations 2000*.

False or misleading statements

Under section 43A of the EMPC Act, the EIS must not include information that is known to be false or misleading; and nothing should be omitted if it is known that without it the EIS would be false or misleading.

Contents of the EIS

Executive Summary

An executive summary of the EIS should be included to provide a clear and concise overview of the proposal, its environmental implications, the approvals process, and the function of the EIS in the context of the approvals process.

For larger EISs, it is recommended that the executive summary be written as a stand-alone document, able to be provided on request to interested parties who may not wish to read or acquire the full EIS.

Table of Contents

A table of the contents of the report with reference to the relevant page numbers. It should also contain a list of figures and tables.

List of Abbreviations

A list of the abbreviations, acronyms and, if relevant, a glossary of terms used in the EIS.

Key Issues to be addressed

While the EIS should evaluate all potential effects of the proposal, it should be principally focused on the key issues identified in the table below. The level of detail provided on other issues should be appropriate to the level of significance of that issue for the proposal. Variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which any limitations of available information may influence the conclusions of the environmental assessment should be discussed.

The key issues identified for this proposal, which should be the focus of the EIS, are:

| Key Issues |
|---|
| 1. Geochemistry and Acid and Metalliferous Drainage Potential |
| 2. Ground Water Quality and Flow |
| 3. Surface Water Quality and Flow |
| 4. Biodiversity and Natural Resources |

The minimum survey requirements and studies required in relation to these key issues are provided in the relevant sections of these guidelines.

Other matters deemed to be significant or matters that emerge as significant from environmental studies, public comments or otherwise during preparation of the EIS, should not be excluded from consideration.

The following guidelines may be of use in preparing the EIS:

- Commonwealth of Australia, 2010, Survey Guidelines for Australia’s Threatened Birds;
- Commonwealth of Australia, 2011, Survey Guidelines for Australia’s Threatened Mammals;
- Commonwealth of Australia, 2013, EPBC Act Policy Statement 1.1 Significant Impact Guidelines – Matters of National Environmental Significance;

- Australian Government Department of Industry, Innovation and Science, Leading practice sustainable development program for the mining industry. [Leading Practice Handbooks for sustainable mining | Department of Industry, Science, Energy and Resources](#);
- The international GARD Guide developed by INAP, the International Network for Acid Prevention. http://www.gardguide.com/index.php?title=Main_Page.

All discussions and conclusions should include a full justification based on best available information, including relevant conservation advice, recovery plans, threat abatement plans and guidance documents, if applicable. Commonwealth documents regarding listed threatened species and ecological communities and listed migratory species can be found at: <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

I Introduction

Provide information on the following:

- Title of the proposal
- Proponent details:
 - Name of proponent (legal entity);
 - Name of proponent (trading name);
 - Registered address of proponent;
 - Postal address of proponent;
 - ABN number;
 - ACN number (where relevant).
- Contact person's details:
 - Name;
 - Telephone;
 - Email address.
- Activity operator details (if the operator will be a different entity to the proponent);
- General background information on the proponent, such as relevant development and operational experience;
- General background information on the proposal, including location, objectives, current status and an overview of the principal components;
- Brief description of anticipated establishment costs, likely markets for the product, and the possibilities for future expansion;
- Examination of how the proposal relates to any other approved or proposed projects in the region;
- Applicable environmental legislation, standards, and guidelines (such as policies, regulations, and industry codes of practice);
- Other relevant Commonwealth, State and Local Government policies, strategies, and management plans with which the proposal would be expected to comply;
- Details of any proceedings against the proponent under a Commonwealth, State or Territory environmental law;
- Details of the proponent's environmental policy and planning framework.

2 Proposal Description

General note

Where the proposal is to be subject to a permit application under the LUPA Act, the proposal description and specification of the site must be consistent with the intended or current permit application. Any works or activity that are for the purpose of the proposal (e.g. access works) must be included.

Provide a full description of the proposal, including construction, commissioning, operational and decommissioning phases, as well as any infrastructure and off-site ancillary facilities required for the proposal.

Notwithstanding the requirements below, the proposal description should contain sufficient information about the proposal to allow a full assessment of its environmental impacts.

2.1 Definition of the land

Provide a definition of The Land on which the activity will take place. The boundary must be consistent with any intended or current permit application under the LUPA Act. Information requirements will vary depending on how The Land is defined.

See: Spatial and visual information requirements for detailed mapping instructions.

2.1.1 Existing defined boundary

If 'The Land' is delineated by an existing defined boundary, the definition of The Land may be indicated by:

- Cadastral boundaries (Title Reference, Property ID), e.g. Title Reference 136529/1;
- Lease boundaries (Mining Lease, Crown Lease, Marine Farming Lease), e.g. Mining Lease 901 IP/M.

2.1.2 Other boundary

If The Land is not delineated by an existing defined boundary, it may be necessary to define a new boundary by reference to specific topographic features and or surveyed grid coordinates. A boundary survey may be requested during the assessment process if it is required to adequately identify The Land. In this case:

- Provide a plan which clearly shows the boundary of The Land in relation to topographic features or grid coordinates;
- Provide the boundary of The Land in a geospatial vector format (shapefile or DXF).

2.2 General location map

Provide a general location map (e.g. 1:25,000 scale or better as appropriate) identifying the following features:

- The location of the proposal site;
- Topographical features, aspect and direction of drainage;
- Geological mapping and sections of the proposal footprint;
- Road access to and from the site;

- Location of water features and drains (including ephemeral);
- The distance(s) to any nearby sensitive uses (such as residences);
- Electricity transmission lines / substations;
- The land boundary;
- Surrounding land tenure;
- Surrounding land use (identify areas of conservation or recreational significance);
- Surrounding land zoning in the local government planning scheme;
- Locations of historical workings.

2.3 Site plan

Site plans are required which identify:

- The proposal site including the project components listed in Section 2.5;
- The layout and total footprint of construction activities to be described in response to Section 2.7.

Boundary information must be consistent with any intended permit application under the LUPA Act. Coordinates of the land should be provided.

2.4 Timing

Timetable for proposal including anticipated month/years, including best and most likely case of:

- Start of construction;
- Start of commissioning;
- Start of operation;
- Start of closure;
- Completion of closure.

2.5 The Project

Provide detailed description of key physical components of the proposal, including function, composition, size, footprint area, capacity, operational life, technical and performance requirements, inter-relationships accompanied by clear plans and sections as necessary to adequately describe the proposal and its environmental impacts.

2.5.1 Underground mine

Physical components

- Location and layout;
- A description of the mineral resource and associated waste rock;
- Plans and sections illustrating conceptual form of the mine including stopes, declines, shafts and drives;
- Infrastructure for controlling ventilation;
- Infrastructure for managing mine pit water;
- Infrastructure for transport of personnel, equipment, ore and waste rock within the mine;
- Maximum lateral and vertical extent of mining.

Activities

- Sequential description of mining methods;
- Description of proposed mine development over time including a block model showing, anticipated lithology, resource, AMD Potential, and waste rock generation;
- Volumes, material types, process and timing for backfilling excavated stopes;
- Statement of current understanding of potential future resources within the mine, beyond those within the current block model.

2.5.2 Process plant, including

Physical components

- Location and layout;
- ROM pad and stockpiles;
- Plant buildings;
- Key plant and equipment;
- Conveyance systems;
- Backfill paste plant;
- Any stacks / exhaust points;
- Waste management facilities (in addition to WRD and TSF);
- Product storage and loading facilities;
- Physical emission controls systems for air and noise emissions.

Activities

- Process flow charts for all ore types processed, with key inputs and outputs for each stage of the process.

2.5.3 Waste Rock Dump (WRD)

Physical components

- Location and layout;
- Description of morphology including cross sections;
- Capacity, size and dimensions over time;
- Waste rock types including lithology, geochemistry and physical properties (where necessary cross-referencing response to Section 6.1);
- Any separate areas or cells for storage of PAF and NAF waste rock;
- Proposed lining, capping and internal segregation, including proposed materials and design permeabilities;
- Monitoring infrastructure (oxygen, temperature, pH etc).

Activities

- The anticipated physical, mineralogical, and chemical properties of the waste rock;
- Rate of waste rock deposition;
- Process for identifying, classifying and separating NAF and PAF waste rock;
- Methods for placement of waste rock;
- Methods for managing WRD to minimise AMD.

2.5.4 Tailings Storage Facility (TSF)²

Physical components

- Location and layout;
- Embankment design, plans and cross sections including details on all intended raises over the life of the mine;
- Decant systems, decant pond, spillway and maximum extent of inundation;
- The hydrogeological and geotechnical basis for design of embankments and their foundations (where necessary cross-referencing information required in the relevant parts of Section 6);
- The design permeability of the embankments, estimated seepage, and how the design minimises potential for seepage;
- The design of features (such as liners) required to achieve specific design permeabilities;
- Description of the geological features, structures, and permeability of the impoundment area;
- How the TSF will be designed, constructed and operated to separate PAF and NAF tailings;
- Tailings pipeline network, capacity, including pipeline alignments, corridors, pumping stations and tailing deposition systems.

Activities

- The anticipated physical, mineralogical, and chemical properties of each tailings stream, including settling properties, AMD potential based on static and kinetic testing (with reference to the requirements of 6.1);
- The rate of deposition of the different types of tailings into the TSF;
- The method of tailings deposition, including whether subaqueous or subaerial deposition is proposed;
- How deposition method will:
 - Affect permeability and geotechnical stability of the tailings;
 - Manage potential for Acid and Metalliferous Drainage (AMD) over time;
 - Segregate NAF and PAF tailings;
- A Draft Tailings Management Plan must be included as an appendix which describes management arrangements to address relevant issues within the EIS. This will form the basis for an operational Tailings Management Plan.

2.5.5 Water management

Physical components

- Details of infrastructure to collect mine water and transfer to the surface (sumps, pumps etc);
- Details of design for infrastructure to collect, transfer and treat wastewater including for each waste stream listed in 'wastewater' below, including:
 - Description of the function and anticipated performance in removing contaminants, including any proposed pH control limits;

² Note that a separate approval for dam works may be required from DPIPWE Dam Safety, in accordance with the *Water Management Act 1999*.

- Description of any active measures to control pollution and acid generation such as the addition of alkali reagents (such as lime) and flocculants;
- Infrastructure to collect, transfer and treat other surface water runoff including drains, cut offs, retention basins and runoff discharge points;
- Details of diversions or other works to existing creeks, drainage lines or water bodies;
- Infrastructure to collect, transfer and store water for use by the proposal;
- Infrastructure for monitoring of flow and water quality;
- Location and design of all wastewater discharge points;
- Infrastructure for abstraction, distribution and storage of water for use on the site.

Water balance

Quantitative analyses of the water balance of the proposal as the mine evolves (including for low, average, and high rainfall scenarios) and including:

- In flows to the proposal (such as surface water, abstracted water, mine pit water/ intersected groundwater, and precipitation);
- Inflows and outflows for all the key project elements;
- Out flows from the proposal (such as evaporation, stormwater, groundwater infiltration, point source and diffuse emissions of wastewater (see ‘wastewater’ below));
- Water use requirements;
- Water storage, re-use and recycling;
- Effect of changing precipitation and evaporation rates due to climate change during operation of the proposal and after closure based on appropriate IPCC climate change scenarios (see Section 8 in relation to closure assumptions).

Wastewater

- The wastewater generated by the operation, estimated flows, compositions, and measures to treat them, including:
 - Site runoff (distinguishing between that separated from and subject to contamination by contact with the proposal);
 - TSF Decant;
 - Seepage from TSF and WRD;
 - AMD contaminated runoff;
 - Mine pit water;
 - Drainage from process or refuelling area hardstands;
 - Domestic wastewater;
 - Any other wastewater.

2.5.6 Other proposed infrastructure on site (and underground)

- Pollution monitoring and control instrumentation and infrastructure for each component of the project;
- Haul roads and access roads, and associated infrastructure;
- Communication, telemetry and control systems (summarising aspects relevant to environmental management);
- Power generation, power supply corridors and (if applicable) means of site generation;
- Pipelines and associated infrastructure including leak detection systems;
- Any accommodation for personnel;
- Facilities for storing fuel and other hazardous materials, including capacities.

- Any on-site facilities not listed above such as offices, car parks, workshops, refuelling areas, vehicle washing facilities.

2.6 Off-site infrastructure

Describe any new infrastructure or off-site ancillary infrastructure needed for the proposal, including any new off-site infrastructure required to support the operation of truck haulage from the mine site to Burnie Port.

2.7 Construction

Describe all the activities required to construct the proposal, including (but not limited to):

- A plan of all potential areas that may be disturbed during construction including any borrow areas;
- A step-by-step description and timetable for significant construction activities until closure including:
 - Pre-construction activities, including:
 - Diversions or other works to existing utilities or infrastructure;
 - Temporary or permanent removal of vegetation;
 - Stockpiling of soil, vegetation and other materials;
 - Proposed use of cleared vegetation, such as timber sale, habitat creation, closure material.
 - Methods for construction of water management infrastructure described in Section 2.5 including water course diversions;
 - Ground preparation for different project components (see Section 2.5) including blasting, excavation and embankment construction;
 - Construction methods for each of the project components listed in Section 2.5;
 - Plant building fabrication and equipment installation.
- Construction infrastructure including site offices temporary working areas, construction access roads, laydown areas, temporary stockpiles including maps showing locations;
- Estimates of the quantities, types and sources of raw materials required for construction, including proposed use of materials to be sourced on site;
- Any proposed borrow areas for construction materials including location, material type, properties and suitability for proposed use, estimated reserves, method of extraction and conveyance to site;
- Systems to manage runoff during construction including details of drainage control measures such as cut-off drains, sediment settling ponds, discharge points, monitoring facilities;
- Type, number and capacity of construction equipment required on-site;
- Number, type, origin, destination, timing and routes for construction vehicle movements, including a breakdown for over-dimension and heavy vehicles;
- The number of workers construction personnel, sources of labour, transport of workers to and from the site, accommodation, and support servicing requirements;
- Proposed hours per day and days per week of construction activities;
- Areas to be rehabilitated following temporary use during construction and description of proposed rehabilitation measures;
- Areas from which construction activity will be excluded and how these will be demarcated.

2.8 Commissioning

Describe the key activities required to commission the project prior to the start of mining operations. This should include:

- Indicative durations;
- Any specific wastes or emissions that relate to commissioning;
- Sequencing of major steps;
- The point at which commissioning is deemed complete;
- Descriptions of any specific activities required to commission pollution control systems.

2.9 Operation

Provide a description of the key activities that make up the operation, including (but not limited to):

2.9.1 General operational details

- Operational life of the mine;
- Hours of operation (hours per day and days per week);
- Predicted daily maximum, daily average, and annual production rates, including for:
 - Ore (by type);
 - Concentrates;
 - Waste rock by type;
 - Tails by type (NAF / PAF).
- For each of the key elements of the mining operation (including underground mining, process plant, WRD, TSF) provide the following:
 - Sequential description of activity steps;
 - Raw materials for the process other than ore (type, rate of consumption);
 - Wastes generated (other than waste rock and tailings) (types, rate of production, proposed management);
 - Standard emissions control procedures / activities;
 - Water demand;
 - Energy use;
 - Maintenance requirements (e.g. frequency of maintenance activities, equipment access, shutdowns, etc.) and design life.

2.9.2 Vehicles and mobile plant

- Type and quantity of vehicles and mobile plant on site;
- Overall fuel demand, fuel storage capacity, and refuelling arrangements;
- Vehicle type, route, daily vehicle movements and hours of operation for: internal haul truck movements, product supply trucks, export of concentrates through Burnie and Port Latta, and any movements to and from Grange Resources' Port Latta Plant for processing and export;
- Anticipated average daily vehicle movements for personnel and other vehicle movements;
- Any proposed bus services for personnel.

2.9.3 Personnel

- The number of workers operational personnel, sources of labour, transport of workers to and from the site, accommodation, and support servicing requirements.

2.10 Site Decommissioning and Closure

Provide a conceptual closure plan for the mine sufficient to demonstrate the feasibility of all measures proposed, which describes:

- Environmentally and ecologically sustainable post-closure land use objectives and criteria;
- Schedule for key stages of TSF and WRD backfill.
- Demonstration of how the proponent will meet these objectives, including:
 - Methods for decommissioning and rehabilitation of the site, specifically addressing the approach to decommission each of the project components described in response to Section 2.5;
 - Specific detailed description of proposed deconstruction of temporary WRD and TSF, and deposition below ground, including:
 - Quantity and characteristics of the waste rock and tailings to be deposited underground;
 - Method for excavation, transfer and deposition of waste rock and tailings;
 - Description of proposed underground placement locations including assessment of storage capacity;
 - Dependency of storage capacity on assumptions about extraction of specific ore types (such as magnetite).
 - Proposed final landform, drainage and revegetation to support post mining land use, how the long-term stability of post closure landforms will be ensured;
 - With reference to the requirements of Section 6.1, mechanisms to reduce the long-term potential for pollution including AMD formation and transport of contaminants and any ongoing water quality management requirements;
 - Approximate quantities, types and sources of suitable cover materials required for closure including any rock, clay and soils, with reference to the descriptions of borrow areas described in response to Section 2.7;
- With reference to Sections 2.5, 2.7 and 2.8, how mine closure activities will be fully integrated into planning, design, construction and operation of the mine and any proposed rehabilitation during the operational phase of the project, such as borrow areas or other areas used solely for construction;
- With reference to the requirements of Sections 6, a detailed risk assessment of potential failure to meet the post-closure land use objectives;
- Detailed description of how the site would be managed to ensure safety and prevent environmental pollution and meet post-closure land use objectives and criteria in the case of an unanticipated closure / temporary suspension of activity;
- Monitoring and maintenance required to ensure the long-term performance and integrity of rehabilitated structures/areas including the monitoring and maintenance;
- Cost estimates for both unexpected early and planned final closure and demonstration of the proponent's ability to support them;
- Assessment of how differing climate change scenarios, would influence the long term behaviour of the closure concepts for the site;
- Strategy for consulting stakeholders about mine closure proposals;
- A peer review by a suitably qualified and experienced independent third-party.

3 Project Rationale and Alternatives

3.1 Project rationale

Describe the rationale for the proposal and explain the consequences of taking no action.

3.2 Project alternatives

Describe the alternative means to achieve the aims of the proposal that were considered during its development, including:

- Approach to mining (solely underground versus options involving open pit mining);
- Approach to closure (waste in situ versus waste underground);
- Rail versus road transport.

Evaluate the alternatives identified, including:

- Description of environmental, social, economic, cost, and technical criteria used to assess the suitability of alternatives;
- Detailed description of the environmental, social, economic, cost, and technical aspects of each option examined in relation to the assessment criteria;
- Assessment (providing appropriate evidence) of each alternative against the above criteria, including the short, medium, and long-term advantages and disadvantages of each and the reasons why each alternative was discounted in favour of the proposal;
- Description how any consultation with the community or other stakeholders influenced the selection process.

Alternatives should have regard to best practice environmental management, including those measures listed under section 4(2) of the EMPC Act.

3.3 Extended mine life

Describe the potential consequences, in terms of project components, construction, operation, closure approach and the potential impacts of the proposals, should the life of the proposed mine be extended (e.g. to greater depths) due to the identification of new mineral resources.

4 Public Consultation

Provide details of the nature and results of public consultation undertaken by the proponent during project planning and preparation of the EIS, as well as any proposals for further public consultation during and beyond project implementation.

Early community engagement often leads to better outcomes for all and is strongly encouraged. The Board has produced a guide to community engagement which is available on the EPA website at: <http://epa.tas.gov.au/assessment/assessment-process/guidance-documents>.

The following agencies provided comments on the Notice of Intent:

- Department of Natural Resources and Environment Tasmania (NRE Tasmania) - Water Management and Assessment Branch;
- NRE Tasmania - Parks and Wildlife Service;
- NRE Tasmania -Conservation Assessment Section;
- Mineral Resources Tasmania;
- Aboriginal Heritage Tasmania;



- TasNetworks.

5 The Existing Environment

Describe the proposed site location and provide an overview of the existing environment, which may be affected by construction, and operation of the proposal, including areas associated with any ancillary activities.

Include details of salient features of the existing environment and, where appropriate, include maps, plans, photographs, diagrams, or other descriptive detail.

The following details should be included.

5.1 Planning aspects

Provide a summary of the planning aspects of the proposal and proposal site, including:

- If a permit is required for the proposal under the LUPA Act provide:
 - Use Class of the proposed activity under the applicable Planning Scheme;
 - Permissibility of the activity under the applicable Planning Scheme.
- Information on land tenure and property boundaries on which the proposal is located, with certificate of title details.
- Land zonings for the proposal footprint and surrounding areas.
- Any rights of way, easements and covenants affecting the proposal footprint.
- Land use and planning history of the proposal footprint, including the potential for site contamination³, present use and any existing buildings and significant structures.
- A description of land use and ownership in the vicinity of the proposal and those areas which may be affected by the proposal, including those affected by offsite vehicle movements, including:
 - The location and nature of industrial facilities;
 - Any sensitive uses⁴ or residential zones within applicable attenuation distances including the location of individual residences, schools, hospitals, caravan parks and similar sensitive uses, and the location of any tourist or recreation facilities or routes (such as camping areas, picnic areas, walking tracks, historic routes);
 - Any proposed or potentially sensitive uses potentially affected by the proposal within this distance of the proposal footprint, which have been or are likely to be granted approval under the local planning scheme, should also be considered.

5.2 Environmental aspects

Avoiding unnecessary repetition with the more detailed 'Existing conditions' descriptions in Section 6, provide a summary of the environmental aspects of the proposal site, including:

- General physical characteristics of the proposal footprint and surrounding area;
- Natural processes of importance for maintenance of the existing environment (e.g. fire, flooding, etc);

³ Information on potentially contaminating activities and contaminated site assessment can be found online at <http://epa.tas.gov.au/regulation/contaminated-sites>.

⁴ Defined in the State Planning Provisions as 'a residential use or a use involving the presence of people for extended periods except in the course of their employment such as a caravan park, childcare centre, dwelling, hospital or school.'

- Any existing conservation reserves located on or within 500 metres of the proposal footprint;
- Any high-quality wilderness areas identified in the Tasmanian Regional Forest Agreement in the vicinity of the proposal;
- The landscape, including topography, water features, geology and soils;
- The climate, including wind, precipitation and temperature;
- Species, sites or areas of landscape, aesthetic, wilderness, scientific or otherwise special conservation significance which may be affected by the proposal. Relevant information resources include the LIST (www.thelist.tas.gov.au) and the Natural Values Atlas (<https://www.naturalvaluesatlas.tas.gov.au>);
- The vulnerability of the proposal footprint to natural hazards (e.g. flooding, seismic activity, fire, landslips, or strong winds);
- Any available ambient monitoring results in the vicinity of the proposed development (in tabular or graphical form). The results may be summarised (e.g. as annual averages) if the summary will provide adequate information.

5.3 Socio-economic aspects

Briefly describe the existing social and economic environment that may be affected by the proposal, which may include information on the following:

- A summary of the social or demographic characteristics of the population living in the vicinity of the proposal footprint, identifying any special characteristics which may make people more sensitive to impacts from the proposal than might otherwise be expected;
- A summary of the characteristics of the local and regional economy.

6 Potential Impacts and Their Management

Guide to preparing this section

While some details of the proposal may not be finalised at the time the EIS is submitted, the information in the document should be as up to date as possible. Where information is unavailable or details have not yet been finalised, estimates and the range of alternative options should be provided. However, sufficient technical detail must be provided to enable an appropriate level of assessment. For each potential impact the following should be discussed.

Existing conditions

Describe in detail the features of the existing environment affected by the impacts discussed in this section.

Performance requirements

Identify the environmental performance requirements to be achieved for each environmental impact and provide evidence to demonstrate that these can be complied with. These may be standards or requirements specified in legislation, codes of practice, state policies, national guidelines (including relevant recovery plans and conservation advices) or as determined by agreement with the assessing agencies. Industry best practice standards should be referred to where appropriate. **Unsupported assertions that performance requirements will be achieved will not be considered adequate.**

Potential impacts

Outline the short-term and long-term potential environmental, social, and economic impacts of the proposal (positive and negative) through all stages, including construction, operation, and closure, in the absence of special control measures. Any foreseeable variations in impacts during the start-up and operational phases should be identified.

Include an analysis of the significance of the relevant impacts. When determining significance of impacts to MNES, the EIS should refer to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines – Matters of National Environmental Significance*.

The level of detail provided on each issue should be appropriate to the level of significance of that environmental issue to the proposal.

The evaluation of potential impacts should identify **plausible worst-case consequences**, the vulnerability of the affected environment to the potential impacts, and the unpredictability or reversibility of the impacts. Potential cumulative impacts of this proposal in light of other activities underway or approved also need to be addressed. Interactions between biophysical, socio-economic, and cultural impacts should be identified.

Predictions and evaluations of impacts should be based on scientifically supportable data. Direct, indirect, cumulative, and facilitated impacts should all be identified. The methodologies used or relied on should be referenced, together with the relevant research and investigations supporting them. Assumptions, simplifications, and scientific judgements should be stated clearly, and the nature and magnitude of uncertainties should be clearly defined. Where relevant, the choice of a particular methodology over alternative methodologies should be explained. Where impacts are not quantifiable, they should be adequately described.

Where positive benefits are claimed it will generally be appropriate to explain what measures are to be taken to ensure that those positive outcomes are realised and sustained.

Avoidance and mitigation measures

Describe the measures proposed to avoid or mitigate potential adverse environmental impacts (having regard to best practice environmental management as defined in EMPCA in order to achieve the environmental performance requirements (such as through pollution control technology or management practices). The extent to which they will overcome the anticipated impacts should be specified. The ongoing management and monitoring measures, and the party responsible for each measure. Where there are clear, alternative avoidance or mitigation measures for a particular adverse environmental impact, the alternatives should be reviewed and the preferred option justified. Discussion of the achievability of the measures, including affordability, should be included.

Where pollution control equipment and/or treatment processes are key factors in achieving satisfactory environmental performance, contingencies in the event of breakdown or malfunction of the equipment or processes should be discussed. It should be demonstrated that the maintenance of pollution control equipment can be provided for without causing performance requirements to be exceeded.

Where measures to control environmental impacts are necessary, but will not be undertaken by the proponent, the means by which the proponent will ensure that the necessary measures are implemented should be identified (e.g. lease conditions, trade waste agreement, contractual arrangement or other binding third party commitment). **Mitigation measures over which the proponent has no control will generally not be considered adequate.**

Specific measures can be presented in the form of a management plan, such as an Environmental Management Plan (EMP) that sets out the framework for management, mitigation and monitoring of relevant impacts of the action, including any provisions for independent environmental auditing. The EMP needs to address the project phases (construction, operation, decommission) separately.

Assessment of residual impacts

An assessment of the overall impacts of the development on the environment after allowing for the implementation of proposed avoidance and mitigation measures. This should include an evaluation of the significance of impacts, the potential for emissions to cause environmental and health impacts and comparison with state, national and international regulations and standards. Any net benefits likely to result from the proposal should be identified.

Discuss the impacts of the proposal in terms of the constraints or benefits it may place on the current or future use of land within the proposal site and surrounding area as a result of environmental impacts or emissions, including impacts on other uses, particularly sensitive uses.

Describe the residual impacts on MNES that are likely to occur as a result of the proposed action in its entirety, after proposed avoidance and/or mitigation measures are considered. If applicable, this should include the reasons why avoidance or mitigation of impacts cannot be reasonably achieved.

Offsetting unavoidable adverse impacts

If adverse residual environmental impacts from the proposal are considered unavoidable despite the adoption of best practice environmental management avoidance and mitigation measures, then proposals to offset such impacts should be detailed. For example, if the loss of conservation values, community assets or amenities is considered unavoidable, measures to compensate for those losses should be proposed in proportion to the loss. Any offset actions proposed must be demonstrated to be 'real' actions. That is, **the offset actions must have a measurable and relevant benefit which would otherwise not have occurred.**

Offsetting for significant residual impacts to MNES

If residual impacts to MNES are likely to be significant, an offset package must be proposed to compensate for residual impacts to MNES. This should consist of an offset proposal and key commitments and management actions for delivering and implementing the proposed offset (e.g. an Offset Management Plan). Note, an offset management plan should be prepared as a separate document and attached as an appendix to the documentation.

Offsets must deliver an overall conservation outcome that improves or maintains the ongoing viability of the species and ecological communities, as compared to what is likely to have occurred if neither the action nor the offset had taken place. The proposed offset must meet the requirements of the Commonwealth *EPBC Act Environmental Offsets Policy* (October 2012) available at: www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy.

The *Offset Assessment Guide* can be used as a guide to calculate the area of offset required to adequately compensate for the residual impacts of the project, it is available at: www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy. The offset proposal will be assessed based on the information provided in the offsets proposal using the offsets assessment guide.

Offsets required by the State can contribute to offset obligations under the EPBC Act if those offsets also meet the requirements of the *EPBC Act Environmental Offsets Policy*.

6.1 Key Issue 1. Acid Metalliferous Drainage (AMD) Potential

6.1.1 Assessment requirements

Scope

For construction, operation and closure phases, assess, with the support of appropriate geochemical analysis, the potential for AMD formation, mobilisation of contaminants and creation of pathways to the environment from potentially oxidisable sulphide minerals, including from the following sources:

- The underground mine;
- The TSF;
- The WRD;
- Areas for stockpiling and handling of ore and refined product;
- Construction materials;
- Surfaces exposed in the creation of the mine;

- Spills of materials during transportation.

This assessment should include discussion of the following:

- Reactivity to oxidation of PAF materials in the sources listed above;
- Potential for AMD formation and leaching of pollutants of concern over time;
- Potential AMD pathways to the environment (cross-referencing responses Section 6.2 and 6.3);
- How reactivity of PAF materials will change as mining progresses through the ore body;
- The effect of different tailings deposition and management methods proposed including any proposed pH treatments;
- The effect of changing groundwater levels on AMD formation;
- The effects of any disturbance to settled tailings;
- The effect of changing phreatic surface within the TSF.

The findings of the AMD assessment will inform the assessment of potential impacts on groundwater (Section 6.2), surface water (Section 6.3) and closure concept(s) (Section 2.10).

Method

Sampling

AMD testing should be based on sufficient sampling to build a clear picture of AMD risks.

Describe:

- Sampling methodology for ore, waste material, tailings, construction materials and the geology of the proposal footprint (including borrow areas);
- Sources of samples and rationale for selection;
- Number of samples of each class, lithology and position / depth within the ore body;
- Sample composition including mineralogy.

Testing

The assessment should include sufficient geochemical testing to show the AMD potential for all PAF materials, including from those sources described above. Results should include:

- Detail of testing methodology;
- Material composition and mineralogy;
- Results of static testing / Acid Base Accounting (ABA) based on best practice;
- Results of kinetic testing to predict long-term oxidation and acid generation rates and estimate lag times.

Modelling and assessment

Based on the results of the testing above, proposed approaches to managing waste rock and tailings (see Section 2), describe the potential for the tailings to generate AMD during operation and after closure. This should include:

- Metals, metalloids, acidity, salinity and other chemical elements or ions of potential environmental concern;
- Potential for leaching of these elements and emission of AMD from the sources listed above to the receiving environment;
- Proposed best practice environmental management measures to minimise potential for AMD formation during construction, operation and after closure;

- Measures to detect, collect and treat potential water contaminated with AMD (cross referencing responses to Section 6.2 and 6.3);
- Measures to be taken in the case of unanticipated discovery of AMD.

The findings of the geochemical testing should be incorporated into the modelling and assessment of impacts on groundwater (Section 6.2) and surface water (Section 6.3).

6.2 Key Issue 2. Groundwater

6.2.1 Assessment requirements

Scope

For construction, operation and closure phases, and using the results of geochemical testing described in Section 6.1 where relevant, discuss any potential impacts of the proposal on groundwater. This should include:

- Potential impacts on the level, flows and recharge of local groundwater, including those due to dewatering of the mine and any abstractions for water use, including:
 - Impacts on any identified karst features noting that the majority of the mining lease is mapped as a karst in the CFEV Karst data layer (karst ID 189 'Parsons');
 - Impacts on water resources;
 - Impacts on surface water bodies;
 - Impacts on ecosystems.
- Potential impacts on the quality of ground water including those due to:
 - Contamination by construction activities;
 - Contamination by operation activities;
 - Seepage from the WRD;
 - Seepage from the TSF;
 - Seepage from underground mine;
 - Migration of contaminants through groundwater.

Method

The assessment should include, as a minimum:

- Identification and description of groundwater uses and values;
- Assessment of the presence of potential karst features potentially affected by proposal;
- A conceptual groundwater model for regional and local aquifer flows;
- A map showing the location of any existing and proposed groundwater abstraction or monitoring bores;
- Ambient groundwater quality survey results of the existing receiving environment and including establishment of baseline or reference monitoring sites to assess impact over time;
- Numerical modelling of the impact of the proposal on groundwater, including:
 - Expected rate and extent of water table drawdown and post closure recovery;
 - Expected flow and quality of mine water;
 - Rates of other flows to and from groundwater;
 - The effects of changing groundwater levels / flows;
 - Groundwater pathways for contaminants.

- Assess cumulative impacts of the proposal related to groundwater combined with the proponent's other Venture future activities /proposals (see Section 6.14).

Information on groundwater in Tasmania is available at: <http://wrt.tas.gov.au/groundwater-info>

6.2.2 Legislative and policy requirements

Demonstrate that the proposal is consistent with the objectives and requirements of all relevant water management policies and legislation, including the *Water Management Act 1999* and the *State Policy on Water Quality Management 1997*.

While geotechnical assessment of the existing and proposed structures will inform this section the geotechnical assessment and subsequent design of the facilities will be assessed separately under the *Water Management Act 1999*.

6.3 Key Issue 3. Surface Water

6.3.1 Assessment requirements

Scope

For construction, operation and closure phases, using the results of geochemical testing described in Section 6.1 where relevant, describe any potential impacts of the proposal on surface water (quality and flow), including:

- Potential alterations to the flow and distribution of drainage for each of the local catchments affected by the proposal discharging to Lake Pieman, including those due to:
 - Changes to local runoff caused by the proposal (such as stream diversions, cut off drains, site drainage);
 - Mine dewatering / abstractions;
 - Changes to groundwater levels / flows;
- Potential impacts on water quality of each of the affected local catchments discharging to Lake Pieman and Lake Pieman from the discharge of wastewater by the proposal, including:
 - Diffuse sediment laden runoff;
 - Diffuse AMD from different sources;
 - Point discharges of wastewater from proposed treatment systems (see Section 2.6.5)
 - Discharges from TSF to spillway during peak runoff events;
 - Groundwater interactions with each of the local catchments discharging to Lake Pieman, and Lake Pieman itself);
 - Any other discharges to the local aquatic receiving environment.
- Potential impact on the condition of aquatic and riparian habitat of waterbodies (including the Stanley River and Lake Pieman) affected by the proposal, including:
 - Changes to water quality;
 - Diversion of watercourses;
 - Change to flows;
 - Deposition of sediment;
 - Loss or damage to riparian vegetation.

Method

The assessment should include:

- Detailed description of the existing aquatic receiving environment, including:
 - Recent ambient water quality and flow data for each of water bodies affected by the proposal covering at least a 12-month period, supplemented where possible by appropriate historical recorded data;
 - Description of aquatic and riparian ecology (see Section 6.4);
- Quantity (daily and annual flow rates) and composition (including contaminant concentrations and mass loads, turbidity, acidity, pH) of any planned or potential wastewater discharges to the receiving environment;
- How physical pollution control measures (see Section 2) will limit contaminant concentrations and mass loads;
- Appropriate quantitative analysis of the effects of point and diffuse discharges on each of the local catchments discharging to Lake Pieman and assessment of the dispersion of contaminants within Lake Pieman;
- Description of potential impacts of the proposal on effected watercourses including comparison against relevant water quality guideline values (see EPA technical guidelines regarding determination of guidelines values)⁵;
- Risk assessment of potential impacts resulting from failure of containment of tailings;
- Estimation of runoff volumes and available detention capacity/times and the rainfall intensity data used in the design of runoff management structures;
- Details of any anticipated discharges to municipal sewerage system (including tankered waste);
- Assessment of how differing climate change scenarios (see water balance in Section 2.9), would influence potential impacts from changes to surface water flows and quality.

6.3.2 Legislative and policy requirements

Define the Protected Environmental Values (PEVs) potentially affected by the proposal.

Demonstrate that the proposal is consistent with the objectives and requirements of relevant water management policies and legislation including the *Water Management Act 1999*, the *State Policy on Water Quality Management 1997*, the *State Stormwater Strategy 2010*, and the *Inland Fisheries Act 1995*.

Demonstrate that the proposal will not prejudice the achievement of any water quality objectives set for water bodies under the *State Policy on Water Quality Management 1997* (see <http://epa.tas.gov.au/policy-site/Pages/Water-Quality-Policy.aspx>). Where water quality objectives have not yet been set, consult the EPA to identify the baseline water quality data required to enable the water quality objectives to be determined.

Water Management Act

The proposal will include “dam works” within the meaning of Part 8A of the *Water Management Act 1999*, which will need to be considered by the Minister in accordance with Section 165F of the Act.

⁵ Environment Protection Authority (2020) Technical Guidance for Water Quality Objectives (WQOs) Setting for Tasmania, Environment Protection Authority, Hobart, Tasmania.

In order for the Minister to be able to make a final determination when the proposal is referred, all relevant geotechnical assessments, dam safety hazard category assessments, design drawings and works specifications, and a Dam Safety Emergency Management Plan relevant to any of the “dam works” associated with the proposal should be included either within or as addendums to the final EIS.

These documents must comply with the *Water Management (Safety of Dams) Regulations 2015* and the relevant Guidelines produced by the Department. Any referral to the Minister in the absence of this information will most likely result in a Notice being issued for further information which would add additional time to the assessment process.

6.4 Key Issue 4. Biodiversity and natural values

6.4.1 Assessment requirements

Scope

For construction, operation, and closure phases, describe potential impacts of the proposal on biodiversity and natural values, including:

- Potential impacts on native vegetation and ecological communities, including those due to:
 - Direct loss and fragmentation from site clearance to create the project components as described in response to Sections 2.5-2.10 inclusive;
 - Degradation such as through physical disturbance, introduction of weeds and pathogens, dust from adjoining clearance / operation;
 - Degradation due to changes to water quality, hydrology and groundwater conditions (noting the record of a CFEV karst system underlying the proposal – see Section 6.2).

This should include specific assessment of any communities listed under the *Tasmanian Nature Conservation Act 2002* (NCA) and Commonwealth EPBC Act, including:

- Tasmanian Forests and Woodlands dominated by black gum or Brookers gum (*Eucalyptus ovata* / *E. brookeriana*).
- Potential impacts on native flora, including those due to:
 - Direct loss from site clearance;
 - Loss through degradation of habitat, adjacent to cleared areas such as through physical disturbance, introduction of weeds and pathogens, altered runoff and dust;
 - Loss through changes to hydrology and groundwater conditions.

This should include specific assessment of those species listed under State and Commonwealth legislation, including:

- *Euphrasia amplidens*, pieman eyebright, endangered (TSPA);
- *Epacris curtisiae*, northwest heath, rare (TSPA);
- *Epacris glabella*, smooth heath, endangered (TSPA and EPBC);
- *Hypolepis muelleri x rugosula*, harsh groundfern, rare (TSPA);
- *Hypolepis distans*, Scrambling Ground-fern, endangered (EPBC);
- *Micrantheum serpentinum*, western tridentbush, rare (TSPA).
- Potential impacts on native terrestrial and avian fauna, including those due to:
 - Loss, fragmentation and degradation /alteration of fauna habitat;
 - Disturbance to foraging, breeding, nesting, or migratory behaviour;

- Injury / mortality to individuals during vegetation clearance;
- Injury / mortality to individuals due to interaction with onsite vehicles and machinery;
- Injury / mortality to individuals due to interaction with off site vehicle movements.

This should include specific assessment of those species listed under State and Commonwealth legislation, including:

- *Aquila audax subsp. fleayi*, Tasmanian Wedge-tailed Eagle, endangered (TSPA and EPBC);
 - *Sarcophilus harrisi*, Tasmanian devil, endangered (TSPA and EPBC);
 - *Accipiter novaehollandiae*, Grey Goshawk, endangered (TSPA);
 - *Ceyx azureus subsp. diemenensis*, Tasmanian Azure Kingfisher, endangered (TSPA and EPBC);
 - *Haliaeetus leucogaster*, White-bellied Sea-eagle vulnerable (TSPA);
 - *Dasyurus maculatus subsp. maculatus*, Spotted-tail Quoll, Rare (TSPA), Vulnerable (EPBC);
 - *Tyto novaehollandiae subsp. castanops*, Masked Owl (Tasmanian), endangered (TSPA), Vulnerable (EPBC).
- Potential impacts on the habitat and ecology of watercourses, including those due to:
 - Changes to drainage pattern;
 - Changes to flows (including due to groundwater see response to Section 6.2);
 - Changes to water quality.

This should include specific assessment of those aquatic fauna species listed under State and Commonwealth legislation, including:

- *Beddomeia bowryensis*, Hydrobiid Snail (bowry creek), rare (TSPA).
- Impacts on sites of geoconservation significance or natural processes (such as fluvial or coastal features), including those due to:
 - Direct loss and fragmentation from site clearance described in response to Section 2;
 - Degradation adjacent to cleared areas such as through physical disturbance (such as track formation, trampling and vehicular passage), introduction of weeds and pathogens, dust;
 - Changes to hydrology and groundwater conditions.

This should include specific assessment of those sites of geo-conservation significance such as those listed on the Tasmanian Geoconservation Database, including:

- Western Tasmanian Blanket Bogs;
 - Any features of geoconservation importance associated with karst features.
- Impacts on the extent, integrity or natural values of areas reserved for its conservation values, with reference to the management objectives of the reserve(s) and the reserve management plan(s) (if any).
 - Impacts on high quality wilderness areas identified in the Tasmanian Regional Forest Agreement (Tasmanian RFA) which may be affected by the proposal.
 - Other species, sites or areas of landscape, aesthetic, wilderness, scientific, geodiversity or otherwise special conservation significance.

Method

General requirements for biodiversity and natural values assessment

The assessment of biodiversity and natural values should be adequate to inform the assessment of impacts as described in the scope above and any other effects predicted in the EIS, and should:

- Include flora and fauna survey data with detailed, representative spatial and temporal coverage sufficient to establish a baseline for the assessment of ecological impacts for all impacts listed under ‘Scope’ above.
- Use up-to-date survey information. The existing survey data on the site was gathered in 2011/ 2012 and are out of date. While past reporting can be included for reference, all flora and fauna surveys required by these guidelines must be undertaken within 2 years of their submission date.
- Include baseline data gathered in a staged approach comprising first a detailed vegetation community, flora and fauna habitat survey of the area potentially affected by the proposal, followed by targeted surveys for specific species and groups identified as being potentially present in the area. Scope and method of targeted surveys for specific species and groups should be discussed with the EPA and NRE prior to commencing field work.
- Be undertaken by a suitably qualified person.
- Use methodologies for surveys developed in consultation with the EPA.
- Include the following information:
 - Details of surveys undertaken, including survey effort, coverage, timing, and an assessment of the adequacy of the surveys;
 - Details of any areas that were not surveyed such as those deemed by the survey team to be physically inaccessible;
 - Description of any aerial surveys, remote sensing, geospatial or other methods used to substitute for or augment ground-based surveys;
 - Include clear mapping with adequate detail to inform the statements made in the impact assessment;
 - Information detailing known/recorded populations and known or potential habitat, including habitat in the area surrounding the proposed action;
 - Details on whether any impacts are likely to be unknown, unpredictable, or irreversible;
 - Where impacts cannot be avoided, details of proposed measures to mitigate and/or offset adverse impacts on biodiversity and nature conservation values;
 - Details of proposed rehabilitation of disturbed areas following the completion of construction activities, including any proposed seed collection and progressive rehabilitation program;
 - Description of any ecological monitoring proposed in during construction or operation;
 - As a minimum, comply with the requirements of the document Guidelines for Natural Values Assessments⁶, the Commonwealth of Australia, 2011, Survey

⁶ Natural and Cultural Heritage Division (2015) Guidelines for Natural Values Surveys - Terrestrial Development Proposals. Department of Primary Industries, Parks, Water and Environment (DPIPWE) (<http://nre.tas.gov.au/conservation/development-planning-conservation-assessment/survey-guidelines-for-development-assessments>)

Guidelines for Australia's Threatened Mammals, and the Commonwealth of Australia, 2010, Survey Guidelines for Australia's Threatened Birds;

- The assessment of Biodiversity and Natural Values must be subject to a peer review (which should include a site-based evaluation) by a suitably qualified and experienced independent third-party.

Native vegetation communities and flora species

The assessment of native vegetation communities and flora species must include:

- Survey of native vegetation communities according to *Guidelines for Natural Values Assessments*;
- Threatened flora surveys of all the proposal footprint conducted at appropriate times of the year to detect threatened flora, including spring and summer flowering plants.

Avifauna

The assessment of avifauna must include:

- A survey for wedge tailed eagle and white-bellied sea-eagle nests, in areas of moderate to high nesting habitat suitability, based on data extracted from the Nesting Habitat Model (represented by a grid score of >5), in the proposal footprint and an area 1 km from its boundary⁷. The survey should:
 - be undertaken outside the eagle breeding season which generally extends from July to January inclusive, but advice should be sought prior to survey work as this period can extend.
 - Include all suitable habitat within 500m of the disturbance footprint and within 1km line-of-sight of the disturbance footprint;
 - Be undertaken in accordance with advice from NRE, with reference to the FPA's Wedge Tailed Eagle guidance⁸;
- A survey for grey goshawk in suitable habitat potentially affected by the proposal.
- A survey for Tasmanian azure kingfisher of the riparian corridors potentially affected by the proposal.
- A survey for Tasmanian masked owl in suitable habitat potentially affected by the proposal.

Terrestrial fauna

The assessment of terrestrial fauna must include:

- For Tasmanian Devil and Spotted-tailed quoll:

⁷ Breeding eagles are sensitive to aircraft (in particular helicopters) approaching the nest which they may attack. Searches for eagle nests must be undertaken outside the breeding season (the timing of which should be confirmed with DPIPW or the Forest Practices Authority).

⁸ Fauna Technical Note No. 1 Eagle nest searching, activity checking and nest management, 2015. Forest Practices Authority
https://www.fpa.tas.gov.au/__data/assets/pdf_file/0003/225273/Fauna_Tech_Note_1_Eagle_nest_management_May_2015.pdf

- Surveys carried out in accordance with the Tasmanian Devils - Devil Survey Guidelines and Advice (the Devil Guidelines)⁹;
- Assessment of quality and extent of Tasmanian Devil breeding and foraging habitat;
- Description of how any potential Tasmanian Devil den sites found to exist within the site will be managed in accordance with the Devil Guidelines;
- Mapping of suitable denning habitat to assist in determining a site layout that minimises impacts on devils and quolls;
- Analysis of roadkill risk associated with the proposed action as described in sections 2.5-2.10 inclusive. The analysis should include specific focus on scenarios where anticipated construction and operational traffic increases night-time (i.e. between one hour before dusk to one hour after dawn) traffic by more than 10% on existing roads and analysis of roadkill risk on all new roads/tracks proposed, identifying high-risk roadkill areas, and on impacts associated with offsite vehicle movements. The analysis should include the cumulative impact of the proposal combined with other current and future activities /proposals in the region;
- Description of roadkill mitigation measures implemented in accordance with the Devil Guidelines, including description of how staff movements, to and from the proposal footprint will be managed to minimise potential impacts to nocturnal, native fauna along prescribed access roads.

Habitat and ecology of watercourses

The assessment of habitat and ecology of watercourse impacts must include:

- Assessment to identify any freshwater ecosystems of high Conservation Management Priority Potential using the Conservation of Freshwater Ecosystem Values (CFEV) database;
- Macro-invertebrate surveys for all streams potentially be impacted by the activity, including:
 - *Beddomeia bowryensis*, Hydrobiid Snail (bowry creek), rare (TSPA).

Geoconservation

The assessment of impacts on sites of geo-conservation significance must include:

- Detailed mapping and description of soils and geomorphology within the proposal footprint including validation from geomorphological survey and soils investigations.
- Assessment of potential effect on the Western Tasmania Blanket Bogs listed in Tasmanian Geoconservation database.

Pests, weeds and plant and animal diseases

The assessment of impacts of pests, weeds and plant and animal diseases must include:

- Mapping of weed occurrences particularly for areas to be disturbed by the proposal.

⁹ Tasmanian Devil Survey Guidelines and Management Advice for Development Proposals (<http://dpiwwe.tas.gov.au/conservation/development-planning-conservation-assessment/survey-guidelines-for-development-assessments>)

- Preparation of a Weed and Pathogen Management Plan, in accordance with the the Weed and Disease Planning Hygiene Guidelines¹⁰, for any activities with potential to import weeds or pathogens to the proposal footprint or spread them within it.

6.4.2 Legislative and policy requirements

Regard should be given to the Australia's Biodiversity Conservation Strategy 2010-2030, the draft Tasmania's Nature Conservation Strategy and the Threatened Species Strategy for Tasmania. *Nature Conservation Act 2002*, *Forest Practices Act 1985*, *Forest Practices Regulations 2017*, the Forest Practices Code 2015 and Policy for Maintaining of the Permanent Native Forest Estate 2017.

All surveys should refer to relevant survey guidelines, including an assessment of the adequacy and appropriateness of the surveys with respect to these guidelines. Documents regarding listed threatened and migratory species can be found at: <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>.

Assessments relating to EPBC Act listed threatened species and ecological communities should address the relevant Recovery Plans, Threat Abatement Plans and Approved Conservation Advice.

6.5 Air Quality

6.5.1 Assessment requirements

Scope

For construction, operation and closure describe potential impacts of the proposal on the local and regional air environment, including:

- The impact of emissions from point sources on sensitive receptors;
- The impact of fugitive dust emissions from on-site activities on sensitive flora and fauna (this may be incorporated into the assessment described in Section 6.4);
- The impact of dust from off-site vehicle movement on sensitive human receptors.

Method

The air quality assessment must:

- Describe dust and other air emissions during construction and operation stages of the facility (e.g. process plant emissions, machinery onsite, disturbed topsoil, stockpiles, blasting, crushing and traffic movements on and off site) and the potential to create environmental nuisance or harm, taking into consideration:
 - Site layout (refer to the Site Plan) and land use in the vicinity of the activity;
 - Nearest sensitive receptors (refer to the Location Map);
 - Terrain and local climatic conditions especially the direction and strength of prevailing winds and rainfall;
 - Nature of the material excavated, method of excavation and processing/handling on site;

¹⁰ Department of Primary Industries, Parks, Water and Environment (2015). Weed and Disease Planning and Hygiene Guidelines - Preventing the spread of weeds and diseases in Tasmania. (Eds.) Karen Stewart and Michael Askey-Doran. Department of Primary Industries, Parks, Water and Environment, Hobart, Tasmania.

- o Traffic related emissions associated with traffic growth along the proposed trucking route for product shipments.
- Describe measures that will be employed to reduce the potential for environmental nuisance or harm, especially during unfavourable meteorological conditions.

6.5.2 Legislative and policy requirements

Consideration should be given to the requirements of the Tasmanian Environment Protection Policy (Air Quality) (see <http://epa.tas.gov.au/policy-site/Pages/Air-Quality-EPP.aspx>).

6.6 Noise emissions

6.6.1 Assessment requirements

Scope

For construction, operation and closure describe potential impacts of the proposal on sensitive receptors (noise impacts on sensitive flora and fauna this may be incorporated into the assessment described in Section 6.4), including:

- The impact of noise from on-site activities;
- The impact of noise from off-site vehicle movement.

Method

The noise assessment must include:

- Identification and description of all major on-site sources of noise;
- A map of the location of all major on-site sources of noise;
- Estimated sound power levels for all major on-site noise sources for both construction and operation;
- Assessment of sound power levels and air over-pressure for any blasting activities required;
- Estimated noise levels resulting from the activity at nearby noise sensitive receptors;
- Assessment of the noise impacts from vehicle traffic generated by the proposal on sensitive receptors on affected roads, including LA_{max} noise levels to assess for sleep disturbance during the night-time period. This assessment should include the cumulative impact of the proposal combined with the proponent's other future activities /proposals.

6.6.2 Legislative and policy requirements

Consideration should be given to the requirements of the Tasmanian *Environment Protection Policy (Noise) 2009* (see [http://epa.tas.gov.au/policy/statutory-policies/state-policies-and-environment-protection-policies/environment-protection-policy-\(noise\)-2009](http://epa.tas.gov.au/policy/statutory-policies/state-policies-and-environment-protection-policies/environment-protection-policy-(noise)-2009)).

6.7 Waste management

1.1.1 Assessment requirements

Scope

Except for tailings and waste rock (which are addressed elsewhere) for construction and operation and closure phases, describe the impacts of all types of waste generated by the proposal.

Method

The assessment of waste impacts must describe:

- The source, nature and quantities of all wastes, (liquid, atmospheric or solid) likely to arise, including sludges / residues, by-products from the various processing stages and general refuse;
- All solid waste streams not dealt with elsewhere in these guidelines (including their physical and chemical composition);
- Methods and facilities proposed to collect, store, reuse, treat or dispose of each waste stream should be identified;
- Maintenance requirements for all waste facilities;
- The source, nature, quantity, and method of treatment, storage, and disposal for any controlled wastes.

6.7.1 Legislative and policy requirements

Waste management measures must be in accordance with the following hierarchy of waste management, arranged in decreasing order of desirability:

- avoidance;
- recycling/reclamation;
- re-use;
- treatment to reduce potentially adverse impacts;
- disposal.

Controlled waste is defined in the EMPC Act and associated regulations. A non-exhaustive listing of categories of Controlled waste can be found on the internet at <http://epa.tas.gov.au/regulation/identify-a-material-as-a-controlled-waste>

6.8 Dangerous goods and environmentally hazardous materials

1.1.2 Assessment requirements

Scope

For construction, operation and closure phases, describe the impacts of the proposal in relation to dangerous goods and environmentally hazardous materials (any substance or mixture of substances of a nature or held in quantities which present a reasonably foreseeable risk of causing serious or material environmental harm if released to the environment and includes fuels, oils, waste and chemicals).

Method

The assessment of waste impacts must include:

- Description of nature, quantity and storage location of all environmentally hazardous materials including Dangerous Goods (as defined in the Australian Code for the Transport of Dangerous Goods by Road and Rail) that will be used during the construction and operation of the proposal;
- A map showing the location of temporary and permanent storage areas for fuels, oils, and other dangerous goods or chemicals;
- The measures (such as bunded areas or spill trays) to be adopted to prevent or control any accidental releases of dangerous goods and environmentally hazardous materials;
- Contingency plans for control measure failure, equipment break down or accidentally spills to the environment, including proposed emergency and clean-up measures and notification procedures;

- Identify any safety management requirements for the protection of human health and safety affecting the community;
- Particular reference should be made to the management of fuels, lubricants, processing inputs (reagents etc.) required for equipment during construction, processing and maintenance activities.

6.9 Greenhouse gases and ozone depleting substances

1.1.3 Assessment requirements

Scope

For construction, operation and closure phases describe the impacts of the proposal in relation to Greenhouse Gases and ozone depleting substances.

Method

The assessment of greenhouse gas and ozone depleting substances must describe:

- Provide an estimate of scope 1, scope 2 and total greenhouse gas emissions, energy production, and energy consumption for a year of operation. Calculators are available on the Australian Government Clean Energy Regulator website. Discuss potential annual variation that may occur. Scope 1 emissions should include greenhouse emissions associated with vegetation removal and soil disturbance;
- Demonstrate that the development will use cost-effective greenhouse best practice measures to minimise future greenhouse gas emissions;
- Include details of proposed measures to minimise emissions and the anticipated effectiveness of these measures. Where less emissions-intensive options are not adopted, provide sufficient justification and/or mechanisms to offset greenhouse gas emissions;
- Provide a competent estimate for 'whole of life' greenhouse gas emissions for the proposed development;
- Discuss impacts of the proposal in terms of the evolving national response to climate change and greenhouse gas emissions and the targets set in the Climate Change Action Plan 2017-2021.

6.9.1 Legislative and policy requirements

Discuss impacts of the proposal in terms of the evolving national response to climate change and greenhouse gas emissions and the targets set in the *Climate Change State Action Act 2008* and *Climate Smart Tasmania: A 2020 Climate Change Strategy*. Proponents will need to determine whether they are required to report to the Commonwealth under the *National Greenhouse and Energy Reporting Act 2007*.

6.10 Socio-economic issues

Scope

For construction, operation and closure phases discuss the social and economic impacts of the proposal.

Method

Details may include the following:

- An estimate of total capital investment for the proposal and where that capital will be expended (particularly in relation to the source of large capital items of processing equipment);
- Operational expenditures and revenues;
- The impacts on local and State labour markets for both the construction and operational phases of the proposal. The number and nature of direct and indirect jobs arising from the proposal must be detailed;
- Skills and training opportunities;
- The impacts on upstream/downstream industries, both locally and for the State;
- The extent to which raw materials, equipment, goods and services will be sourced locally;
- A qualitative assessment of impacts on present and potential future local social and community amenity values affected by the proposal, including recreational, cultural, health and sporting facilities and services;
- Any proposals to enhance or provide additional community services or facilities;
- Community demographic impacts (changes to cultural background, occupation, incomes);
- Impacts on land values, and demand for land and housing;
- Impacts on the local, regional, state and national economies;
- Any publicly funded subsidies or services to be relied upon for the construction or operation of the proposal;
- Any impacts on Local, State and Federal Government rate, taxation and royalty revenues.

The extent to which socio-economic considerations need to be described depends on the nature and extent of any negative impacts or risks to the environment from the proposal.

Modest proposals with relatively low level and localised environmental impacts or risks may only need details of intended capital expenditure, operational expenditures, revenues, and employment (distinguishing between direct and indirect employment) and a qualitative discussion of other socio-economic aspects of particular relevance.

Proposals with higher level or broader scale environmental impacts will need a more comprehensive analysis of economic and social benefits to allow the Board to assess the benefits and adverse impacts of the proposal. This may include an explanation of the methods used to model impacts and describe the manner and results of engagement with the local community to determine their needs and aspirations in relation to the proposal.

6.11 Hazard analysis and risk assessment

A key part of the assessment of hazard and risk will be the assessment of risk of embankment failure and its consequences required under the *Water Management Act 1999* (see section 6.3.2). Provide a detailed summary of the risks and consequences of embankment failure as they relate to the environmental matters discussed in these guidelines.

Provide a preliminary analysis (appropriate to the scale of the proposal) of the potential for other major hazard events (such as an explosion, major tailings spill, fire) to occur and proposed safeguards to prevent such an occurrence. The preliminary analysis should systematically identify all potential major hazards (internal and external) to people and the environment associated with the construction, operation, maintenance and decommissioning of the proposal.

6.12 Fire risk

Discuss the potential fire risk associated with the proposal, including:

- Consideration of fire within the site, fire escaping from the site and the impact of wildfire originating outside the development and the environmental impacts that could result from such an event.
- The objectives and management principles to be adopted to prevent and respond to potential fire events.
- Where a fire response plan is appropriate, it should be fully integrated with other relevant documents, such as a Tasmania Fire Service Local Area Fire Management Plan, a Forestry Tasmania Fire Management Plan and a Parks and Wildlife Service Fire Action Plan for relevant districts.

6.13 Infrastructure and off-site ancillary facilities

Discuss impacts of the proposal on any significant off-site or infrastructure facilities (including increased use of existing infrastructure, such as roads, ports and quarries), identify measures to avoid and mitigate any possible adverse impacts and assess the overall impacts following implementation of the proposed avoidance and mitigation measures. For example, upgrading or re-routing of roads, rail or other services required as a result of the proposal, should be detailed.

Identify roads and other infrastructure to be used by vehicles for the proposal (during both construction and operation). Potential environmental impacts associated with construction and use of such infrastructure should be assessed.

6.14 Cumulative impacts

The EIS must include an assessment of the potential cumulative impacts of the proposal in combination with other current or future proposed actions in the region, including but not limited to:

- Livingstone DSO (proposed);
- Riley Creek Mine (currently operated).

Specifically, the assessment should describe the cumulative impacts relating to:

- Listed threatened vegetation communities, flora and fauna described in response to Section 6.4
- Diversions, changes to flow and changes to water quality in local streams
- Surface water quality impacts on Lake Pieman
- Noise and air quality impacts from off-site truck movements

Uncertainties about potential impacts in such cases should be identified.

7 Monitoring and Review

Provide a summary of all monitoring, review and reporting programs as described in detail within Section 6 and include a map showing the location of all monitoring sites and a table (s) of summarising the proposed monitoring regimes including location, parameters and , frequency and reporting. Note that description of monitoring proposals within the relevant parts of Section 6 should be designed to meet the following objectives:

- Monitoring compliance with emission standards and other performance requirements identified in the EIS;
- Assessing the effectiveness of the performance requirements and environmental safeguards in achieving environmental quality objectives;
- Assessing the extent to which the predictions of environmental impacts in the EIS have eventuated;
- Assessing compliance with management measures defined in the EIS.

8 Management systems

Provide an outline of the management systems which will be employed to implement the measures described in the EIS. Include, as relevant:

- Proposed environmental policies, environmental management systems, and environmental management plans;
- Organisational structure and environmental responsibility within that structure for the proposal;
- An outline Construction Environment Management Plan, summarising management arrangements required for the implementation of mitigation during the construction phase.

Provide a consolidated management measures table listing all management measures detailed throughout the EIS. Measures must be sequentially numbered, unambiguous statements of intent. For each measure, the table must specify when it is to be implemented and refer to the section of the EIS where the measure is detailed.

9 Conclusion

Describe the proposal and draw together the critical environmental, social and economic impacts of the proposal, both positive and negative. Present a balanced overview of the net impacts of the proposal, and the extent to which any adverse impacts can be satisfactorily avoided, mitigated, remediated or compensated and positive impacts promoted and sustained.

The conclusion should also describe how the proposal meets and furthers the objectives of relevant Commonwealth and State legislation, policies, plans and strategies. This should be done by itemising the RMPS and EMPCS objectives and providing a commentary about how the proposal addresses each of the objectives.

With regard to matters of national environmental significance, conclusions regarding the environmental acceptability of the proposal must be made. This should include discussion on compliance with the principles of Ecologically Sustainable Development (ESD) and the objects and requirements of the EPBC Act. To assist the proponent, the *National Strategy for Ecologically Sustainable Development (1992)* is available on the following web site:

<https://www.environment.gov.au/about-us/esd/publications/national-esd-strategy>.

10 References

This section should provide details of authorities consulted, reference documents etc.

11 Appendices

As a means of improving readability of the EIS document, detailed technical information which supports the EIS should be included in appendices. The salient features of the appendices should be included in the main body of the EIS. Care should be taken to avoid inconsistencies between technical content of Appendices and the EIS itself, unless carefully explained.

12 Glossary

AMD - Acid and Metalliferous Drainage arising from the oxidation of sulphide minerals. For the purposes of this document also includes Near Neutral Metalliferous Drainage.

EIS – Environmental Impact Statement

EMPC Act – *Environmental Management and Pollution Control Act 1994*

EMPCS - Environmental Management and Pollution Control System objectives to be found in Schedule 1 of the EMPC Act

EPBC Act - *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*

EPBC Regulations – Environment Protection and Biodiversity Conservation Regulations 2000 (Cth)

JAMBA/CAMBA - Japan-Australia and China-Australia Migratory Bird Agreements

Mine Pit Water - water that collects in a mine and which has to be brought to the surface by water management methods in order to enable the mine to continue working.

Nol – Notice of Intent

PAF - Potentially Acid Forming

RMPS – Resource Management and Planning System of Tasmania objectives to be found in Schedule 1 of the EMPC Act

Runoff - water which flows over the surface of the land following precipitation (also called 'stormwater').

Tasmanian RFA - Tasmanian Regional Forest Agreement

TSF – Tailings Storage Facility

Wastewater - any water released to the receiving environment that has been contaminated or physically changed by the proposal.

13 Appendix A: Other issues and agency contacts

In addition to a permit under the LUPA Act and the EMPC Act, there may be other legal requirements to allow your proposal to proceed. These may include other permits, licences or landowner consent. You may also need to contact other Government agencies to obtain information for the purpose of assessment under the LUPA Act or the EMPC Act.

Your proposal may have been referred to other agencies in the process of preparing Guidelines. Should assessments or approval outside of the Board's responsibilities be required, you should engage with the respective agency to progress them. The following list identifies some of the key agencies you may need to contact.

Conservation Assessments, Department of Natural Resources and Environment Tasmania

Telephone: (03) 6165 4396

Email: conservationassessments@nre.tas.gov.au

Website: www.nre.tas.gov.au/conservation

Purpose: Natural values including flora, fauna, and geoconservation values, or permits to deal with threatened species.

Heritage Tasmania

Telephone: (03) 6165 3700

Email: enquiries@heritage.tas.gov.au

Website: www.heritage.tas.gov.au

Purpose: Historic cultural heritage, including State-level site listings, impacts and permits as required under the Historic Cultural Heritage Act 1995. Where works are proposed in or in close proximity to a heritage place entered on the Tasmanian Heritage Register or likely to be of heritage significance to the whole of Tasmania, and a permit is required under the *Land Use Planning and Approvals Act 1993*, the proposal will be referred to Heritage Tasmania by the planning authority. There may also be additional sites listed under local planning schemes, impacts on which are assessed by the relevant planning authority.

Aboriginal Heritage Tasmania

Telephone: 1300 487 045

Email: aboriginal@heritage.tas.gov.au

Website: www.aboriginalheritage.tas.gov.au

Purpose: Aboriginal heritage, including desktop assessment, artefact survey requirements, permits and advice.



Parks and Wildlife Service

Telephone: (03) 6169 9015

Email: PropertyServices@parks.tas.gov.au

Website: www.parks.tas.gov.au

Purpose: Impacts on parks and reserves managed by Parks and Wildlife, or Crown Land.

Department of State Growth

Telephone: (03) 6166 3369

Email: permits@stategrowth.tas.gov.au

Website: www.transport.tas.gov.au

Purpose: State roads, including where any proposal requires works on or access from a State-managed road.

Mineral Resources Tasmania

Telephone: 03 6165 4800

Email: info@mrt.tas.gov.au

Website: www.mrt.tas.gov.au

Purpose: Mining leases

Agriculture and Water, Department of Natural Resources and Environment Tasmania

Telephone: (03) 6165 3222

Email: Water.Enquiries@dpipwe.tas.gov.au

Website: www.dpipwe.tas.gov.au/water

Purpose: Water licences and works impacting natural waterway flow (e.g., dams or fords).

