

## APPENDIX 2: CHECKLISTS

# Checklist for Documents Submitted for EIA of Proposals that have the Potential to Significantly Impact on Sea and Land Factors

## PART 1 – GENERAL QUALITY OF DOCUMENTS

Ensure that the following standard elements are present in all documentation (including appendices):

- |   |                                     |
|---|-------------------------------------|
| A clear and concise title that outlines basic information about the proposal and purpose of the document.   | <input checked="" type="checkbox"/> |
| Date and document revision number.  | <input checked="" type="checkbox"/> |
| Information identifying the document's author and publishing entity.  | <input checked="" type="checkbox"/> |
| All issues identified in a scoping guideline or scoping document have been addressed and covered in the report (note: there should also be a stand-alone document that explicitly considers each element of the scoping document and how/where it is addressed).  | <input checked="" type="checkbox"/> |
| Complete and correct tables of contents, maps, tables and figures.  | <input checked="" type="checkbox"/> |
| Suitably-sized scale maps placing the proposal into both a regional and local context.  | <input checked="" type="checkbox"/> |
| Figures, plates, maps, technical drawings or similar including scale bar, legend, informative caption, labels identifying important or relevant locations/features referred to in the document text.  | <input checked="" type="checkbox"/> |
| Proposed footprint and development envelope are shown on scale maps and associated spatial data is provided in an appropriate format and coordinate system/projection (GDA94/MGA Zone or GDA94). For EPA notes on spatial data please refer to Appendix 1 of Environmental Assessment Guideline No. 1 Defining the Key Characteristics of a Proposal. | <input checked="" type="checkbox"/> |
| All survey site locations and derived data products (e.g. benthic habitat maps, vegetation maps) have been provided in map and appropriate electronic spatial data format.  | <input checked="" type="checkbox"/> |
| All survey data from biological surveys have been provided in electronic database form (Access/Excel) with coordinate system/projection specified (GDA94/MGA Zone or GDA94).  | <input type="checkbox"/>            |
| A list of references that have been cross-checked to ensure that all references in the reference list are cited in the text (and vice versa).   | <input checked="" type="checkbox"/> |
| All information based on 'expert' opinion/judgement are explicitly attributed, by name and qualification, to a person/s or organisation.  | <input checked="" type="checkbox"/> |
| Where relevant, appendices are attached to the main EIA document that describe the details of technical work undertaken to underpin the content of the main document, and explicitly attributed by name to the author/s and (if applicable) their organisation.   | <input checked="" type="checkbox"/> |
| Description(s) of the proposal are internally consistent throughout all documentation and are couched to allow potential environmental impacts to be placed in local and regional contexts, including cumulative impacts of existing and approved developments. Please identify relevant sections of the report below:                                | <input checked="" type="checkbox"/> |
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- Section 3 – Project Description

Descriptions of the local and regional environmental features most likely to be directly or indirectly affected by the proposal. Please identify relevant sections of the report in the box below:

- Section 4 – Existing Environment

## PART 2 – MARINE ENVIRONMENTAL ISSUES

For proposals where benthic communities and habitats is a relevant factor, and where it is likely to impact on tropical arid zone mangroves in the Pilbara, the EIA document describes how potential impacts have been addressed in the context of *Guidance Statement No.1: Guidance Statement for Protection of Tropical Arid Zone Mangroves Along the Pilbara Coastline (April 2001)*. If applicable, please identify relevant sections of the report. N/A

For proposals likely to impact on benthic primary producer habitat, including tropical arid zone mangroves in the Pilbara, the EIA document describes how potential impacts have been addressed in the context of *Environmental Assessment Guideline No.3 Protection of Benthic Primary Producer Habitats in Western Australia's Marine Environment (December 2009)*, including:

- Details of the measures taken to address the Overarching Environmental Protection Principles;
- Scale benthic habitat maps showing the current extent and distribution of benthic habitats and the areas of habitat predicted to be lost if the proposal proceeds;
- Descriptions of technical work (e.g. benthic habitat surveys) carried out to underpin the benthic habitat map (e.g. a technical appendix); and
- Clearly set out calculations of cumulative loss. N/A

If applicable, please identify relevant sections of the report in the box below:

- Section 4.3.13 Benthic Primary Producer Habitat
- Section 11.1 Benthic Communities and Habitat

For proposals likely to impact on benthic primary producer habitat in Port Hedland, the Local Assessment Unit for application of EAG 3 is consistent with *Environmental Protection Bulletin No. 14: Guidance for the assessment of benthic primary producer habitat loss in and around Port Hedland*. N/A

For proposals that involve marine dredging activities, potential impacts have been addressed in the context of the Environmental Assessment Guideline No. 7 for Marine Dredging Proposals (September 2011) to ensure that the predicted extent, severity and duration of impacts to benthic habitats are presented in a clear and consistent manner. N/A

For proposals that involve any type of waste discharge or disposal in State coastal waters potential impacts have been addressed in the context of: N/A

- *Environmental Assessment Guideline No.15 for Protecting the Quality of Western Australia's Marine Environment (EAG 15)*; as well as
- *Environmental Quality Criteria Reference Document for Cockburn Sound (EPA, 2015)*, *Perth's Coastal Waters: Environmental Values and Objectives (EPA, 2000)*, or *Pilbara Coastal Water Quality Project Consultation Outcomes document (DoE, 2006)* for the relevant regions; and
- Relevant guidance provided in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000)*.

For proposals with potential to impact on an existing or proposed marine conservation reserve, potential impacts are couched in the context of the guidance provided in the relevant indicative or final Management Plan for the reserve on the advice of DEC or another designated management agency. If applicable, please identify relevant sections of the report. N/A

For proposals with light emissions likely to impact marine turtles, the potential impacts have been addressed in the context of *Environmental Assessment Guideline No. 5 Environmental Assessment Guideline for Protecting Marine Turtles from Light Impacts (November 2010)* to ensure appropriate avoidance and management approaches are in place. N/A

If numerical modelling has been carried out to inform the prediction of environmental impacts, the report(s) associated with this modelling, including the key assumptions, is (are) provided as a technical appendix. If applicable, please identify the relevant appendix in the box below.

- Appendix 8 – H3 Hydrogeological Assessment
- Appendix 12 – Mine Site Development Envelope Air Quality Assessment
- Appendix 13 – Mine Site Development Envelope Noise Assessment
- Appendix 17 – Derby Port Development Envelope Air Quality Assessment
- Appendix 18 – Derby Port Development Envelope Noise Assessment
- Appendix 21 – Radiation Assessment

### PART 3 – TERRESTRIAL BIODIVERSITY ISSUES

For proposals likely to impact on native flora and vegetation, the EIA document describes how potential direct and indirect impacts have been addressed in the context of *EPA Guidance Statement No. 51 - Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (June 2004)* and *Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment* EPA and DPaW (2015) including:

- Determining the level of flora and vegetation survey, including a survey area encompassing direct and indirect impacts, utilising suitable survey methodology and listing survey limitations;
- Maps illustrating the survey area in both a local and regional context, location of quadrats, vegetation unit mapping, location of significant species or vegetation, vegetation condition and predicted extent of impact on the vegetation;
- Maps and text describing the survey area/plot sites, location of significant species, vegetation mapping, vegetation condition assessment and predicted extent of impact on the vegetation;
- A comprehensive list of flora species (using the nomenclature of the WA Herbarium) which are known or reasonably expected to occur in the area and a quantitative assessment of direct and indirect impacts to threatened, priority or other significant flora and/or threatened, priority or other significant vegetation (as defined in Technical Guide);
- An evaluation of the impact of the proposal on flora and vegetation, including analysis of the local, regional and cumulative impacts of the project; and
- Quadrat data provided as excel spreadsheet in raw form, in addition to hardcopy reports.

If applicable, please identify relevant sections of the report below:

- Section 4.2.7 Flora and Vegetation (Existing Environment)
- Section 8.1 Flora and Vegetation (Environmental Impact Assessment)
- Appendix 9 – Flora and Fauna Studies

For proposals likely to impact on vertebrate fauna or fauna habitat, the EIA document describes how potential impacts have been addressed in the context of EPA Guidance Statement No. 56, *Terrestrial Fauna Surveys for Environmental Impact Assessment* (June 2004) and Technical Guide – *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* EPA and DEC (2010), including:

- Determining the level of fauna survey consistent with that expected;
- Describing the survey methodologies, including timing, duration and survey effort used to sample each of the fauna groups sampled, any survey limitations and the nomenclature used (WA Museum/Birdlife Australia);
- Maps illustrating the survey area in both a regional and local context; fauna habitats within and outside the development envelope; description of predicted extent of impact on the habitat; location of survey sites and conservation significant fauna in relation to the proposal; and
- A comprehensive list and assessment of vertebrate fauna known or reasonably expected to occur in the area, including Specially Protected, Priority and other significant fauna (as defined in Guidance Statement No. 56), and an evaluation of the impact of the proposal on the species and key habitat/s.

If applicable, please identify relevant sections of the report in the box below:

- Section 4.2.8 Terrestrial Fauna and Habitats (Existing Environment)
- Section 4.3.10 Derby Port Development Envelope Terrestrial Fauna and Habitats (Existing Environment)
- Section 8.2 Terrestrial Fauna (Environmental Impact Assessment)
- Appendix 9 – Flora and Fauna Studies
- Appendix 9 – Peer Review of Fauna Surveys
- Appendix 11 – Fauna Which Have Potential to Occur at the Mine Site Development Envelope

For proposals with the potential to impact on short range endemic (SRE) invertebrate fauna or SRE habitat, the EIA document describes how potential impacts have been addressed in the context of EPA Guidance Statement No. 20, *Sampling of Short Range Invertebrate Fauna for Environmental Impact Assessment in Western Australia* (May 2009), including:

- Assessment for restricted habitat types that have potential to support SRE fauna, including advice from the WA Museum, DPaW and OEPA;
- Maps illustrating the survey area in both a regional and local context, and identifying potential SRE habitats within and outside the development envelope and extent of predicted impact on the habitat;
- A description of the survey methodologies, including timing and survey effort used to sample each of the fauna groups and any survey limitations;
- The results and interpretation of any molecular analysis used; and
- A survey report with assessment of SRE fauna found or reasonably expected to occur in the area, their conservation status, their known occurrence/habitats locally and their wider status if known, and an evaluation of the risk of the proposal to long-term survival of the species and community.

If applicable, please identify relevant sections of the report in the box below:

- Section 4.2.8 Mine Site Development Envelope Terrestrial Fauna and Habitats (Existing Environment)
- Section 4.3.10 Derby Port Development Envelope Terrestrial Fauna and Habitats (Existing Environment)
- Section 8.2 Terrestrial Fauna (Environmental Impact Assessment)
- Appendix 9 – Flora and Fauna Studies
- Appendix 9 – Peer Review of Fauna Surveys
- Appendix 9 – Fauna Which Have Potential to Occur at the Mine Site Development Envelope

For proposals with the potential to impact on subterranean (stygo fauna and troglo fauna) fauna, the EIA document describes how potential impacts have been addressed in the context of EPA Environmental Assessment Guideline 12 Consideration of subterranean fauna in EIA in WA and EPA Guidance Statement No. 54 and 54a, *Sampling Methods and Survey Considerations for Subterranean Fauna in Western Australia* (Draft, August 2007), including:

- An assessment of the likely presence of habitat that could support subterranean fauna, including advice from the WA Museum and OEPA;
- Maps identifying survey sites and illustrating the known or predicted extent of habitats in relation to the proposal; a description of the geology/habitat supporting subterranean fauna within and outside the development envelope; extent of predicted impacts on the subterranean fauna and habitat;
- A description of the survey methodologies (see Guidance Statement No. 54a), including reference to site selection, sampling techniques, survey effort, specimen collection and molecular analysis used undertaken as part of the survey, and any survey limitations; and
- A list of subterranean fauna recorded and their distribution or reasonably expected to occur in the area, including their conservation status, their known occurrence/habitats locally and their wider status if known, and an evaluation of the risk of the proposal to long-term survival of the species and community.

If applicable, please identify relevant sections of the report below:

- Section 4.2.9 Subterranean Fauna (Existing Environment)
- Section 10.2 Subterranean Fauna (Environmental Impact Assessment)
- Appendix 9 – Flora and Fauna Studies
- Appendix 9 – Peer Review of Fauna Surveys
- Appendix 9 – Fauna Which Have Potential to Occur at the Mine Site Development Envelope

**PART 4 – PROPONENT’S CERTIFICATION OF COMPLETENESS AND ACCURACY OF RESPONSES**

Name  
.....

Position  
.....

Signature  
.....

Date ...../...../2017

## Environmental Scoping Document Check List

ESD Item	Description/Task	PER Section
1	Characterise Derby Port marine environment quality via baseline contamination and acid sulfate soil assessment.	4.3.7
2	Undertake a radiological assessment of the products to be loaded and transported via Derby Port and King Sound. A preliminary radiological assessment of mineral products from the Thunderbird Mineral Sands Project has been carried out by SGS (2014). It found the mineral products do not require transportation as radioactive substances.	10.5.2, Appendix 21.
	<ul style="list-style-type: none"> <li>Undertake detailed radiological assessment (in progress).</li> </ul>	
3	Assess impacts of loading, barging and transshipment of mineral products, including impacts from radiation, on the marine environment quality. Radiation impacts will be assessed as part of an overall radiation assessment for the proposal.	9.1.2
4	Detail management and mitigation measures and further monitoring to achieve proposed outcomes and ensure residual impacts are not greater than anticipated.	9.1.3, Appendix 24
5	Undertake export activities in accordance with a Radiation Management Plan.	See letter to EPA dated 22/12/16.
6	Identify and characterise flora and vegetation within the Mining Area through Flora and Vegetation Survey in accordance with <i>EPA Guidance Statement 51</i> . The survey area should take into account vegetation that may be indirectly impacted and within the Mining Lease and Miscellaneous Licence boundaries to assist in determination of local and regional impacts. Flora and vegetation surveys have been completed:	4.2.7
	<ul style="list-style-type: none"> <li>Level 1 Flora and Fauna Assessment (Ecologia 2012).</li> </ul>	
	<ul style="list-style-type: none"> <li>Level 2 Flora and Vegetation Survey (Ecologia 2014a).</li> <li>Haul Road and Accommodation Camp Flora and Fauna Assessment (Ecologia 2015a).</li> </ul>	
7	Conduct a detailed analysis of vegetation communities to establish local and regional conservation significance of each vegetation community:	4.2.8.4
	Identify those communities which are likely to be groundwater dependent ecosystems (GDE). Provide details of the methodology used in the identification and mapping of vegetation community.	
7	Provide a detailed description with figures clearly showing vegetation communities including the potential Priority Ecological Community MaMvEtCpCc and the area to be cleared and indirectly impacted as defined in EPA Guidance Statement 51.	4.2.8.2, Figure 28
	Conduct a technical peer review to ensure that surveys are relevant, representative of the development envelope, provide suitably current information on populations and locations of flora of conservation significance, and condition of vegetation units and have been carried out using methods consistent with EPA guidance.	
8	Should further or supplementary surveys be undertaken they will be consistent with the EPA/DPaW Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment (2015).	4.2.7
10	Identify conservation significant species and communities present in the development envelope: A Level 2 Flora and Vegetation Survey did not identify any declared rare flora (DRF) or EPBC Act listed species within 50 km of the study area. Three Priority 3 species were identified in the development envelope during the surveys. Of these, two were located in the proposed disturbance area.	4.2.8.3
	Conduct a targeted flora survey for conservation significant species (CS) in accordance with EPA Guidance Statement 51 and EPA and DPaW	4.2.7

ESD Item	Description/Task	PER Section
	Technical Guide – Flora and Vegetation Surveys for EIA.	
	Provide a detailed description with figures clearly showing Priority flora, range extension species and vegetation communities including the potential Priority Ecological Community (PEC) MaMvEtCpCc and the area to be cleared and indirectly impacted as defined in EPA Guidance Statement 51.	4.2.8.3
	Predict the residual impacts from the proposal on flora and vegetation, both direct and indirect, after considering and applying avoidance and minimisation measures:	
	Quantify impacts on Priority flora species and range extension species, including the number of plants in the affected populations, the percentage of plants in the affected populations, the number of plants and populations to be impacted in a 'worst case scenario'.	8.1.2
11	Provide information on the representation of Priority and range extension species on the remaining, unmined survey areas and other known occurrences/populations.	4.2.7
	Quantify the extent and duration of impacts on the different vegetation communities including MaMvEtCpCc which is similar to the Lolly Well Springs PEC and is associated with an ephemeral spring (potential GDE).	8.1.2
	Provide information on the representation of vegetation communities on the remaining, unmined survey areas. Analysis will include local and regional distribution of vegetation communities.	4.2.7
	Assess the impacts of altered surface hydrology and groundwater extraction on vegetation communities.	8.1.2
12	Identify management and mitigation measures for flora and vegetation to ensure residual impacts are not greater than predicted.	8.1.3
13	Summarise residual impacts, after considering avoidance and minimisation impacts are not greater than predicted.	8.1.4
14	Demonstrate and document in the PER how the EPA's objective for this factor can be met.	8.1.4
15	Complete the EPA Checklist for documents submitted for Environmental Impact Assessment on terrestrial biodiversity.	Appendix 2
	Conduct terrestrial fauna surveys of direct and indirect impacted area and surrounds in accordance with <i>EPA Guidance Statement Number 56</i> . Conduct Targeted surveys of conservation significant fauna identified during fauna surveys that are significant. Fauna surveys and a Targeted Greater Bilby survey in accordance with <i>EPA Guidance Note 56</i> have been conducted as follows:	
16	Level 1 Flora and Fauna Assessment (Ecologia 2012).	4.2.9
	Level 2 Terrestrial and Subterranean Fauna Assessment (Ecologia 2014a).	
	Haul Road and Accommodation Camp Flora and Fauna Assessment (Ecologia 2015a).	
	Targeted Greater Bilby Assessment (Draft) (Ecologia 2015b).	
17	Conduct a technical peer review of the Targeted Bilby Survey Report to ensure consistent with guidance and appropriate for the scale of impacts.	4.2.9, Appendix 9
18	Conduct a literature review and provide justification that completed fauna surveys are relevant, representative of the development envelope, provide suitably current information on populations and locations of fauna of conservation significance and have been carried out using methods consistent with EPA guidance.	4.2.9

ESD Item	Description/Task	PER Section
19	Assess direct and indirect impacts on fauna, conservation significant fauna and fauna habitats. Provide figures showing the likely extent of loss of habitat types and the extent of habitat areas expected to recover from both direct and indirect impacts. As part of the assessment, prepare a comprehensive list of all terrestrial fauna species likely to occur in habitats to be directly or indirectly impacted.	8.2.2
20	Assess the likelihood of the habitats to support short range endemic (SRE) invertebrate species. Provide figures clearly showing impacts to SREs.	8.2.2.3, 4.2.9.5
21	Identify management and mitigation measures to ensure residual impacts are not greater than predicted. The PER is to include a Greater Bilby Management Plan including environmental outcomes/objectives; other key regulatory requirements; management actions; monitoring (including methodology, frequency, location and rationale); trigger criteria; contingency actions; review, reporting and consultation.	8.2.3, Appendix 23
22	Demonstrate and document in the PER how the EPA's objective for this factor can be met.	8.2.4
23	Characterise the baseline hydrological and hydrogeological regimes and water quality, both in a local and regional context, including, but not limited to, water levels, water chemistry, stream flows, flood patterns, and water quantity and quality. This is to include a detailed description of the geological framework within the zone to be impacted by groundwater abstraction and any interdependence between surface and groundwater features/bodies.	4.2.5, 4.2.6
24	Identify borefield locations and design requirements to meet project needs (water supply and mine pit dewatering), expected abstraction over life of project, and sustainability of borefields.	3.5
25	Assess nature, extent and duration of potential impacts of groundwater abstraction with a focus on possible impacts on creeks, soaks/wetlands, groundwater dependent ecosystems and quality.	8.3.2, 8.4.2
26	Establish potential impacts and consequences that proposed mine infrastructure could have on existing surface drainage.	8.3.2.2
27	Identify any mine waste water discharges in the site water circuit (balance) and establish possible impacts these may have on the environment and mitigation measures.	3.5.2.3, 8.3.2, 8.4.2
28	The impact assessment will take climate change and cumulative effects into consideration.	8.3.2
29	Characterise hydrological properties for the port area including tides, flood levels and drainage.	4.3.8, 4.3.11.2
30	Describe proposed management, monitoring and mitigation methods to be implemented.	8.3.3
31	Undertake an investigation to characterise hydrogeological processes within the Mining Area and determine what effect the proposal will have on groundwater quality and quantity. This will include:	
	Hydrogeological conceptual model and numerical groundwater model of groundwater systems.	4.2.5.2, Appendix 8
	Site water balance.	3.5.1, 3.5.2
	Geochemical characterisation of aquifer sediments.	4.2.5, Appendix 8
	Potential for the aquifer to transport contaminants.	8.4.2
	Potential impacts on sensitive receptors.	8.4.2
32	Undertake an investigation to characterise hydrological processes within the Mining Area and determine what effect the proposal will have on surface water quality and quantity.	8.3.2, 8.4.2
33	Assess impacts of backfilling mine waste in mine pit void and TSF. Characterisation of mine waste backfill is addressed under 'Other Factor: Terrestrial Environmental Quality'.	8.4.2

ESD Item	Description/Task	PER Section
34	Detail management measures to ensure residual impacts on inland water quality are not greater than predicted.	8.4.3
35	Characterise noise impacts on sensitive receptors along the transport route and Derby Township via a noise assessment in accordance with <i>EPA Environmental Assessment Guideline 13</i> . Demonstrate that noise can be managed such that it complies with the <i>Environmental Protection (Noise) Regulations 1997</i> at sensitive receptor locations.	9.2.2.2, Appendix 18,
36	Provide noise predictions for noise-sensitive premises in relation to the proposed transport route, storage area and loading facilities including duration and severity of impacts.	9.2.2.2
37	Characterise air quality impacts on sensitive receptors along the transport route and at the Derby townsite.	9.2.2.1; Appendix 17
38	Demonstrate that the proposal has been designed as far as practicable to avoid and minimise impacts.	9.2.3
39	Identify and document in the PER management, monitoring, trigger and contingency actions, within environmental management plans, to ensure residual impacts (direct and indirect) are not greater than predicted.	9.2.3, Appendix 24
40	Demonstrate and document in the PER how the EPA's objective for this factor can be met.	9.2.4
41	Characterise the heritage and cultural values of the Mining Area and any other areas that may be indirectly impacted to identify sites of significance and their relevance within a wider regional context.	
	Conduct Aboriginal heritage surveys to identify Aboriginal sites of significance and identify concerns in regard to impacts from proposed mining operations.	4.2.13.1
42	Provide a detailed description of the heritage values of the Mining Area and provide a figure(s) of the heritage locations and proposed disturbance.	4.2.13
43	Assess the impacts of the proposal on heritage sites and/or cultural associations as a result of implementation of the proposal, including those arising from changes to the environment which may impact on ethnographic and archaeological heritage significance. This assessment will be conducted in accordance with <i>EPA Guidance Statement 41</i> .	8.5.2
44	Predict the residual impacts on heritage, for direct, indirect and cumulative impacts after considering avoidance and minimisation measures.	8.5.2
45	Outline the outcomes/objectives, management, monitoring, trigger and contingency actions to ensure impacts to heritage (direct and indirect) are not greater than predicted.	8.5.3
46	Describe the residual impacts for the proposal and analyse these impacts to identify and detail any that are significant.	8.5.4
47	If the proposal is likely to have any significant residual environmental impacts, identify environmental offsets, consistent with the requirements in the:	
	WA Environmental Offsets Guidelines, which includes the use of the WA Environmental Offsets Calculation Spreadsheet and EPA Environmental Protection Bulletin No.1: Environmental Offsets.	14.1, 14.2, 14.3.1
	DoE Environmental Offset Policy including the DoE Offsets calculation spreadsheet.	14.3.1
48	Provide an assessment on the physical and chemical characteristics of rehabilitation materials, including soil, mine and process wastes.	Appendix 4, Appendix 19, Appendix 20
49	Prepare a Mine Closure Plan consistent with DMP and <i>EPA Guidelines for Preparing Mine Closure Plans (2015)</i> .	Appendix 4

ESD Item	Description/Task	PER Section
50	Describe the proposed rehabilitation methodology, including but not limited to:	
	Topsoil management.	Appendix 4
	Retention or reuse of cleared vegetation material.	Appendix 4
	Return of species and communities (where feasible) consistent with the pre-existing composition of the affected area.	Appendix 4
	Timeframes for rehabilitation, including sequencing of mining, backfilling and progressive rehabilitation.	Appendix 4
51	Characterise the benthic environment at Derby Port and mooring location through desktop assessment.	4.3.13
52	Assess the impact of minor dredging and installation works on the benthic communities and habitats.	11.1.2
53	Provide a summary of residual impacts of proposed works.	11.1.4
54	Document management and mitigation measures to ensure risk is not greater than predicted.	11.1.3
55	Assess the likely impacts to Humpback whales in their breeding and calving grounds off the Kimberley coast arising from shipping movements servicing the mine or exporting products from the mine.	11.2.2
56	Assess the consequential impacts of water abstraction for flow volumes in waterways, and indirect impacts on species such as the Norther River Shark and sawfish dependant on those waterways.	11.2.2.3
57	If appropriate, identify management and mitigations measures to ensure residual impacts are not greater than predicted. If warranted, the PER is to include a Humpback whale management plan including environmental outcomes/objectives; other key regulatory requirements; management actions; monitoring (including methodology, frequency, location and rationale); trigger criteria; contingency actions; review, reporting and consultation.	11.2.3
58	Demonstrate and document how the Commonwealth's objectives for this factor can be met.	11.2.4
59	Characterise affected landforms:	
	Describe the geology, soils and morphology of affected landforms.	4.2.4
	Determine the spatial extent of the landform and local assessment unit likely to be impacted.	4.2.4.2
	Compare and contrast the character and condition of the landform with others of the same type on a local and regional scale.	4.2.4
	Describe whether the landform is robust and less sensitive to damage or degradation from human activities, or whether it is easily disturbed or damaged.	4.2.4.1
	Assess the integrity of the landform, including the local assessment unit, and the degree to which the landform has been previously disturbed and fragmented.	4.2.4.2
60	Identify any ecological functions supported by the landform. Assess how the proposal will affect the role of the landform in maintaining these ecological functions.	4.2.4.2
61	Identify any significant scientific or evolutionary values associated with the landform.	4.2.4.2
62	Estimate the cumulative impacts on the landform and local assessment unit from reasonably foreseeable future development.	10.1.2

ESD Item	Description/Task	PER Section
63	Characterise the subterranean fauna environment in the Mining Area and surrounds. Undertake a subterranean fauna assessment in accordance with <i>Guidance Statement 54a</i> , of the direct and indirect impact areas (groundwater abstraction) including stygofauna and troglofauna.	
	A Level 2 subterranean fauna survey has been completed (Ecologia 2014b) and identified no conservation significant species of stygofauna or troglofauna.	4.2.10
	The survey found that the potential impact area is unlikely to contain a diverse or significant troglofauna community and as such no further sampling is required.	4.2.10
	It is unlikely that a significant or diverse stygofauna community exists within the study area.	4.2.10
64	Predict the severity, duration and extent of the impacts:	
	Assess the impacts of groundwater abstraction and water quality changes on subterranean fauna and their habitat as identified in Ecologia (2014b).	10.2.2
	Provide a summary of the findings of the impact assessment and Level 2 survey and supporting figures as required.	4.2.10, 10.2.2
65	Detail management measures to ensure residual impacts are not greater than predicted.	10.2.3
66	Characterise mine and process waste materials with potential to affect terrestrial environment quality:	
	Carry out materials characterisation of soils, mine and process waste materials. Materials characterisation will include geotechnical and geochemical characterisation of process residues. Characterisation will take into account all material types to be encountered throughout the mine life.	4.2.4.4, 4.2.7
	Carry out radiation assessment on waste to be placed within the mine pit. A preliminary radiation assessment has been carried out and determined the waste for mine pit backfilling, once blended with other waste, to be low level. A detailed assessment will be undertaken (in progress).	Appendix 21
	Carry out geotechnical assessment of the soil profile at key locations including the TSF to ensure stability and suitability of area for permanent waste disposal.	8.4.2.4
67	Identify aspects of the proposal which may impact terrestrial environment and predict severity and duration of impacts.	10.3.2
68	Identify management measures, outcomes/objectives to ensure residual impacts are not greater than predicted:	
	Impacts associated with materials management can be effectively managed under processes as defined in the Mining Act (1978) administered by DMP.	12
	Design, construction, management and closure of the TSF can be effectively managed under Mining Proposal and Mine Closure Plan in accordance with the Mining Act (1978).	12
69	Characterise baseline air quality in the Mining Area.	4.2.14
70	Describe expected impacts on air quality from the implementation of the proposal including direct and indirect diffuse and point emission sources.	10.4.2
71	Predict impacts from reduced air quality, particularly from point sources such as the secondary processing facility and power plant.	10.4.2
72	Estimate potential greenhouse gas emissions associated with construction and operation of the mine and associated infrastructure.	10.4.2.2
73	Document the proposed management, monitoring and mitigation methods.	10.4.3
74	Outline the objectives, management, monitoring, trigger and contingency actions within environmental management plans to ensure impacts are not greater than predicted.	10.4.3

ESD Item	Description/Task	PER Section
75	Characterise radiation and environment including sensitive receptors and predict the extent and severity of the impact. This will include consideration to exposure of long term mine and process waste disposal in the mine void and TSF, including the potential for tailings to become airborne and disperse as a result of dust from tailings. Identify measures, outcomes/objectives to ensure residual impacts are not greater than expected:	
	Undertake radiation assessment of ore, process streams, waste streams and final product and potential exposure pathways.	Appendix 21
	Radiation assessment of ore, process streams, waste streams and final product has been carried out by SGS (2014). Assessment found that the proposal will be considered a radiation practice requiring compliance with applicable regulations.	Updated by Radiation Professionals Appendix 21
	Further assessment is underway by SGS.	Updated by Radiation Professionals. Appendix 21
76	Characterise radiation aspects including the extent and severity of impacts on sensitive receptors. Identify measures, outcomes/objectives to ensure residual impacts are not greater than expected:	
	Undertake radiation assessment of mineral products to be transported and stored at Derby Port for ship loading.	11.4.2, Appendix 21
	Radiation assessment of product to be transported to Derby Port has been carried out by SGS (2014) and found the material to be below the threshold for transport as a radioactive substance.	Appendix 21
	Final products are below 10 Bq/g-1 but typically exceed 1 Bq/g-1 and consequently will be considered a radiation practice requiring compliance with applicable regulations.	Appendix 21
77	Radiation impacts can be effectively managed under the <i>Mines Safety and Inspection Act (1995)</i> and <i>Radiation Safety Act (1975)</i> jointly by DMP and Radiological Council of WA.	10.5