

## ENVIRONMENTAL SCOPING DOCUMENT

<b>Proposal name:</b>	<b>Gabanintha Vanadium Project</b>
<b>Proponent:</b>	<b>Technology Metals Australia Limited</b>
<b>Assessment number:</b>	<b>2190</b>
<b>Location:</b>	<b>Approximately 40 kilometres southeast of Meekatharra, adjacent to the Meekatharra-Sandstone Road</b>
<b>Local Government Area:</b>	<b>Shire of Meekatharra</b>
<b>Public review period:</b>	<b>No Public Review</b>

### 1. Introduction

The Environmental Protection Authority (EPA) has determined that the above proposal is to be assessed under Part IV of the *Environmental Protection Act 1986* (EP Act).

The purpose of the Environmental Scoping Document (ESD) is to define the form, content, timing and procedure of the environmental review, required by s. 40(3) of the EP Act. This ESD has been prepared by the EPA in consultation with the proponent, decision-making authorities and interested agencies consistent with the EPA's *Procedures Manual*.

#### **Form**

The EPA requires that the form of the report on the environmental review required under s. 40 (Environmental Review Document, ERD) is according to the [Environmental Review Document template](#).

#### **Content**

The EPA requires that the environmental review includes the content outlined in sections 2 to 6 of this ESD.

#### **Timing**

Table 1 sets out the timeline for the assessment of the proposal agreed between the EPA and the proponent.

**Table 1 Assessment timeline**

Key assessment milestones	Completion Date
EPA approves Environmental Scoping Document	October 2019
Proponent submits first draft Environmental Review Document	December 2019
EPA provides comment on first draft Environmental Review Document (6 weeks from receipt of ERD)	January 2020
Proponent submits revised draft Environmental Review Document	February 2020
EPA accepts ERD as final	March 2020
EPA prepares draft assessment report and completes assessment (6 weeks from EPA accepting ERD as final)	April 2020
EPA finalises assessment report (including two weeks consultation on draft conditions) and gives report to Minister (6 weeks from completion of assessment)	June 2020

**Procedure**

The EPA requires the proponent to undertake the environmental review according to the procedures in the *Administrative Procedures* and the *Procedures Manual*.

This ESD has not been released for public review. The ESD will be available on the EPA website ([www.epa.wa.gov.au](http://www.epa.wa.gov.au)) upon endorsement and must be appended to the ERD.

**2. The proposal**

The subject of this ESD is the Gabanintha Vanadium Project proposed by Technology Metals Australia Limited (the proposal).

The proposal involves the development of multiple vanadium deposits via open pit mining. Supporting infrastructure for the proposal includes waste rock landforms (WRLs), low grade stockpiles, mineralised waste stockpile, processing plant, run of mine, integrated waste landform incorporating a tailings storage facility and calcine storage area (IWL/TSF), mine dewatering infrastructure, workshops, accommodation camp, borefields and associated infrastructure, administration buildings and roads.

The Development Envelope for the proposal, including proposed locations of physical elements, is shown in Figure 1.

The key characteristics of the proposal are set out in Tables 2 and 3. The key proposal characteristics may change as a result of the findings of studies and investigations conducted and the application of the mitigation hierarchy by the proponent.

**Table 2 Summary of the proposal**

<b>Proposal title</b>	Gabanintha Vanadium Project
<b>Proponent name</b>	Technology Metals Australia Limited
<b>Short description</b>	The Gabanintha Vanadium Project is located in the Mid-West region of Western Australia, approximately 615km north-east of Perth and 40km south-east of Meekatharra, adjacent to the Meekatharra-Sandstone Road. The proposal includes development of multiple vanadium deposits via open pit mining. Supporting infrastructure for the proposal includes waste rock landforms, low grade ore/ mineralised waste stockpiles, processing plant, run of mine pad, integrated waste landform incorporating a tailings storage facility and calcine storage area, mine dewatering infrastructure, workshops, accommodation camp, borefields and associated infrastructure, administration buildings and roads.

**Table 3 Location and proposed extent of physical and operational elements**

<b>Element</b>	<b>Location</b>	<b>Proposed Extent</b>
<b><i>Physical Elements</i></b>		
Development Envelope	Figure 1	5,452.52 ha.
Proposal Footprint	Figure 1	Disturbance of up to 1,060 ha within the Development Envelope.
Open Pits	Figure 1	Up to 150 ha within the Development Envelope. It is envisaged that three vanadium deposits will be mined as open pits (Far North, North and Central) with an indicative maximum depth of 230 m.
Waste Rock Landform (WRL)	Figure 1	Up to 275 ha within the Development Envelope. This includes the WRLs, low grade ore stockpiles and clay stockpiles.
Integrated Waste Landform (IWL)	Figure 1	Up to 130 ha within the Development Envelope. The IWL is proposed to have two cells for the disposal of tailings and calcine tailings. The facility is proposed to have a central decant. Waste salt recovered from the adjacent evaporation ponds will be disposed of within the facility.
Processing Plant	Figure 1	Up to 23 ha within the Development Envelope. Ore will be crushed, screened, ground, beneficiated, roasted, leached, filtered and

		precipitated to generate a vanadium pentoxide (V <sub>2</sub> O <sub>5</sub> ) flake.
Borefield and Service Corridors	Figure 1	Disturbance of up to 120 ha within the Development Envelope. Abstraction from up to 25 production bores.
<b>Operational Elements</b>		
Processing Plant		Processing up to 2.3 Mt ore per annum.
Mining rate		Annual mining rates (ore and waste) will range from 5.3 – 22.3 Mt/annum with an average of 12 Mt/annum.
Water abstraction		Up to 3.3 GL/annum or 104L/s.
Ore Processing Waste		Disposal of up to 2.16 Mt per annum of processing waste to the lined IWL (inert tailings, calcine tailings and contaminated salt waste).
Vanadium Production		Between 10,000-13,000 tonnes of fused vanadium pentoxide (V <sub>2</sub> O <sub>5</sub> ) flake per year.
Power Supply		21MW gas power plant 6MW solar field (future option)

### 3. Preliminary key environmental factors and required work

The preliminary key environmental factors for the environmental review are:

1. Flora and Vegetation
2. Subterranean Fauna
3. Terrestrial Environmental Quality
4. Inland Waters

Table 4 outlines the work required for each preliminary key environmental factor and contains the following elements for each factor:

- **EPA factor** and **EPA objective** for that factor.
- **Relevant activities** – the proposal activities that may have a significant impact on that factor.
- **Potential impacts and risks** to that factor.
- **Required work** for that factor.
- **Relevant policy and guidance** – EPA (and other) guidance and policy relevant to the assessment.

**Table 4 Preliminary key environmental factors and required work**

<b>Flora and Vegetation</b>	
<b>EPA objective</b>	To protect flora and vegetation so that biological diversity and ecological integrity are maintained.
<b>Relevant activities</b>	<ul style="list-style-type: none"> <li>• Clearing of native vegetation.</li> <li>• Groundwater abstraction.</li> <li>• Alteration of surface water flows.</li> <li>• Generation of dust through clearing, vehicle and machinery operations.</li> </ul>
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>• Direct loss (clearing) of up to 1,060 ha of native vegetation.</li> <li>• Direct and indirect loss of conservation significant vegetation.</li> <li>• Impacts to vegetation health, loss of individuals and/or changes in community composition and structure due to: <ul style="list-style-type: none"> <li>- changed hydrology, quality and quantity of surface water;</li> <li>- introduction and spread of weeds;</li> <li>- dust deposition;</li> <li>- altered fire regime; and</li> <li>- spillages of saline water, tailings, hydrocarbons and/or chemicals from pipelines, contaminated runoff or dust suppression activities.</li> </ul> </li> </ul>
<b>Required work</b>	<ol style="list-style-type: none"> <li>1. Identify and characterise the flora and vegetation of areas that may be directly or indirectly impacted by the proposal in accordance with Technical Guidance - <i>Flora and Vegetation Surveys for Environmental Impact Assessment</i>, December 2016. This should include sampling more broadly to inform local and regional context. Ensure database searches and taxonomic identifications are up-to-date.  <i>Note: the ERD is to demonstrate how all surveys undertaken are relevant, representative and consistent with EPA Guidance. Where surveys have not been undertaken consistent with the EPA guidance provide a justification for any variation.</i>  <i>If multiple surveys have been undertaken to support the assessment, a consolidated report should be provided including the integrated results of the surveys. Where relevant, an Index of Biodiversity Surveys for Assessment (IBSA) data package should be provided. IBSA data packages should be provided in accordance with EPA guidance.</i></li> <li>2. Identify and describe the vegetation and significant flora species present and likely to be present within the development envelope, and any areas that may be indirectly impacted by the proposal beyond the development envelope. This includes vegetation that may be affected by altered hydrological regimes (including surface water flow and groundwater). Undertake and provide an assessment of the</li> </ol>

	<p>significance of flora and vegetation in a local and regional context (refer to Environmental Factor Guideline – Flora and Vegetation for definition of significance). Include a quantitative assessment of levels of impact on significant flora, priority or threatened ecological communities and all vegetation units.</p> <ol style="list-style-type: none"> <li>a. For significant flora, this includes: <ol style="list-style-type: none"> <li>i. number of individuals and populations in a local and regional context;</li> <li>ii. numbers and proportions of individuals and populations directly or potentially indirectly impacted, and</li> <li>iii. numbers/proportions/populations currently protected within the conservation estate (where known).</li> </ol> </li> <li>b. For significant ecological communities and all vegetation units this includes: <ol style="list-style-type: none"> <li>i. the area (in hectares) and proportions directly or potentially indirectly impacted, and</li> <li>ii. proportions/hectares of the species, community or vegetation unit currently protected within conservation estate (where known).</li> </ol> </li> </ol> <ol style="list-style-type: none"> <li>3. Describe and justify any proposed mitigation to reduce the potential impacts of construction and operation of the proposal. Include any proposed management and/or monitoring plans that will be implemented pre- and post-construction to ensure residual impacts are not greater than predicted.</li> <li>4. Identify, describe and quantify the potential residual impacts (direct, indirect and cumulative) that may occur following implementation of the proposed after considering and applying avoidance and minimisation measures.</li> <li>5. Determine the significance of any significant residual impacts on the identified environmental values by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the <i>WA Environmental Offsets Guidelines</i> (2014). Provide spatial data defining the area of significant residual impacts.</li> <li>6. Where significant residual impacts remain, propose an appropriate offsets package that is consistent with the WA Environmental Offsets Policy and Guidelines. Spatial data defining the area of significant residual impacts should also be provided.</li> </ol>
<p><b>Relevant policy and guidance</b></p>	<p><b><i>EPA Policy and Guidance</i></b>  <i>Statement of Environmental Principles, Factors and Objectives (EPA, 2018).</i></p>

	<p><i>Instructions on how to prepare an Environmental Review Document (EPA, 2016).</i></p> <p><i>Environmental Factor Guideline – Flora and Vegetation (EPA, 2016).</i></p> <p><i>Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016).</i></p> <p><i>Guidelines for Preparing Mine Closure Plans (DMP and EPA, 2015).</i></p> <p><i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA, 2016).</i></p> <p><b>Other Policy and Guidance</b></p> <p><i>WA Environmental Offsets Policy (The Government of Western Australia, 2014).</i></p> <p><i>WA Environmental Offsets Guidelines (The Government of Western Australia, 2014).</i></p>
<b>Subterranean Fauna</b>	
<b>EPA objective</b>	To protect subterranean fauna so that biological diversity and ecological integrity are maintained.
<b>Relevant activities</b>	<ul style="list-style-type: none"> <li>• Mine pit excavation;</li> <li>• Ground disturbance;</li> <li>• Placement of infrastructure such as IWL/TSF and WRLs;</li> <li>• Groundwater abstraction;</li> <li>• Use and storage of chemicals; and</li> <li>• Storage of waste products.</li> </ul>
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>• Direct loss of habitat through mine pit excavation.</li> <li>• Alteration/degradation of habitat, alteration of assemblages and/or loss of individuals as a result of: <ul style="list-style-type: none"> <li>- stockpiling, infrastructure construction and other ground disturbance;</li> <li>- groundwater abstraction and groundwater drawdown;</li> <li>- alteration of surface water flows or drainage patterns; and/or</li> <li>- spills of hydrocarbons or wastewater, chemical and leaching materials from the WRLs and IWL/TSF, and other contamination pathways.</li> </ul> </li> </ul>

<p><b>Required work</b></p>	<p>7. In accordance with EPA Guidance:</p> <ol style="list-style-type: none"> <li>a. Conduct a Level 1 (basic) subterranean fauna survey, including a desktop study, that incorporates existing regional subterranean fauna surveys and databases.</li> <li>b. As required based on EPA Guidance and the outcomes of the Level 1 survey, undertake Level 2 (detailed) surveys in all areas of impact, to identify and characterise subterranean fauna habitat, at a local and regional scale, that may be impacted directly and indirectly by the implementation of the proposal. This should include sampling inside and outside the impact areas and consider cumulative impacts.</li> </ol> <p><i>Note: If surveys are not undertaken justification should be provided to demonstrate that subterranean fauna and habitats will not be directly or indirectly impacted on through implementation of the proposal. If previous surveys are relied on for context, justification should be provided to demonstrate that they are relevant and consistent with EPA Guidance. If multiple surveys have been undertaken to support the assessment, a consolidated report should be provided including the integrated results of the surveys.</i></p> <ol style="list-style-type: none"> <li>8. Describe the characteristics of subterranean fauna habitat that may be impacted directly and indirectly by implementation of the proposal during construction, operation and post-closure, and describe the significance of these values in a local and regional context. Include relevant geological and hydrological information to determine habitat suitability and connectivity, including inside and outside the impact areas.</li> <li>9. Provide tables and maps showing the distributions of all subterranean fauna taxa and habitats in relation to impact areas. The tables and maps should be structured and presented to clearly demonstrate whether each taxon has been recorded inside and/or outside the impact areas, and the specific sites at which it was recorded.</li> <li>10. Describe and assess the extent of direct, indirect and cumulative impacts to subterranean fauna as a result of implementation of the proposal, including construction, operation and post-closure phases, taking into consideration the significance of fauna and fauna habitat.</li> <li>11. Quantify the extent of direct, indirect and cumulative impacts, including percentages, of habitat types to be disturbed or otherwise impacted.</li> <li>12. Predict the residual impacts from the proposal on subterranean fauna after considering and applying the mitigation hierarchy.</li> <li>13. If residual impacts are likely to occur, prepare a management plan outlining the proposed management, monitoring and mitigation</li> </ol>
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	<p>methods to be implemented to ensure residual impacts (direct and indirect) to subterranean fauna are not greater than predicted.</p> <p>14. Determine and quantify any significant residual impacts by applying the:</p> <p>(a) Residual Impact Significance Model (page 11 of the WA Environmental Offsets Guideline) for all direct and indirect impacts, including an explanation of how the information and values within the model have been determined; and</p> <p>(b) the WA Offset Template (Appendix 1) in the <i>WA Environmental Offsets Guidelines</i> (2014), including the provision of supporting information, such as evidence of rehabilitation success.</p> <p>15. Where significant residual impacts remain, propose an appropriate offsets package, with supporting information to demonstrate consistency with the WA Environmental Offsets Policy and Guidelines. Spatial data defining the area of significant residual impacts should also be provided (e.g. vegetation type, vegetation condition, specific fauna species habitat).</p>
<p><b>Relevant policy and guidance</b></p>	<p><b><i>EPA Policy and Guidance</i></b></p> <p><i>Statement of Environmental Principles, Factors and Objectives</i> (EPA, 2018).</p> <p><i>Instructions on how to prepare an Environmental Review Document</i> (EPA, 2016).</p> <p><i>Environmental Factor Guideline – Subterranean Fauna</i> (EPA, 2016).</p> <p><i>Technical Guidance – Subterranean fauna survey</i> (EPA, 2016).</p> <p><i>Technical Guidance – Sampling methods for subterranean fauna</i> EPA, 2016).</p> <p><i>Instructions and Form: IBSA Data Packages.</i></p> <p><i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans</i> (EPA, 2016).</p> <p><i>Guidelines for Preparing Mine Closure Plans</i> (DMP and EPA, 2015).</p> <p><b><i>Other policy and guidance</i></b></p> <p><i>WA Environmental Offsets Policy</i> (The Government of Western Australia, 2014).</p> <p><i>WA Environmental Offsets Guidelines</i> (The Government of Western Australia, 2014).</p> <p><i>Western Australian Environmental Offsets Template, 2014.</i></p> <p>Relevant recovery plans, conservation advice and/or threat abatement plans for conservation significant species that are known to occur, or are likely to occur in the vicinity of the proposal area.</p>

<b>Terrestrial Environmental Quality</b>	
<b>EPA objective</b>	To maintain the quality of land and soils so that environmental values are protected.
<b>Relevant activities</b>	<ul style="list-style-type: none"> <li>• Clearing of land and disturbance of soils.</li> <li>• Stockpiling of waste material.</li> <li>• Use and storage on site of hydrocarbons, chemicals and other potential pollutants.</li> <li>• Operation and closure of the mining operation and associated infrastructure.</li> </ul>
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>• Potential contamination of surrounding soil and land as a result of: <ul style="list-style-type: none"> <li>- Dust generation from mining activities, ROM pad, processing plant, access and haul roads, TSFs and calcine storage areas;</li> <li>- Leaks from calcine storage area;</li> <li>- Operational leaks and spills from processing plant, hydrocarbon and chemical storage and handling;</li> <li>- Contaminated surface water;</li> <li>- Failure of IWL/TSF integrity;</li> <li>- Seepage of IWL/TSF;</li> <li>- Erosion of WRL surfaces;</li> <li>- Metal leachates from WRLs;</li> <li>- Inappropriate waste disposal;</li> <li>- Putrescible waste disposal.</li> </ul> </li> </ul>
<b>Required work</b>	<p>16. Provide details and rationale for locations of WRLs and IWL/TSF (i.e. meteorological, geological and geographical characteristics).</p> <p>17. Provide details of the stability of the site from a geotechnical and geochemical perspective.</p> <p>18. Undertake and provide details of a baseline soil quality assessment of the development envelope.</p> <p>19. Include figures of the mapped soil units in the ERD.</p> <p>20. Provide details on the presence of acid sulphate soils within the proposal area, and if present details of proposed management measures to be implemented during construction to minimise impacts to terrestrial environmental quality.</p> <p>21. Assess the mineralogy for likelihood of asbestiform minerals.</p> <p>22. Conduct a detailed flood risk assessment to justify the locations of high risk landforms such as the WRLs and IWL/TSF.</p> <p>23. Provide a graphical conceptual representation of the final IWL/TSF.</p> <p>24. Conduct long term (1000 years) Landform Evolution Modelling of behaviour and performance of landforms associated with containment systems including IWL/TSF, modelled under a range of climatic events. Include the modelling of the appropriate Probable Maximum Precipitation and associated Probable Maximum Flood scenarios.</p>

	<p>25. Conduct chemical and physical characterisation of the waste materials, including characterisation of tailings pore water.</p> <p>26. For each processing waste/ tailings stream identify:</p> <ul style="list-style-type: none"> <li>• Geochemical properties;</li> <li>• Environmental risk;</li> <li>• Any issues with drainage and tailings consolidation</li> </ul> <p>27. Conduct seepage modelling for the IWL/TSF to estimate seepage geochemistry, volumes and likely extent of plumes, including potential impacts to receptors.</p> <p>28. Assess impacts on surrounding environment if there was a failure of IWL/TSF integrity.</p> <p>29. Provide details of chemical and diesel storage (including quantities), and power generation and management measures, including contingencies in the event of a spill, to ensure that contamination of land does not occur.</p> <p>30. Determine and document if any of the proposal is likely to be listed as a contaminated site under the <i>Contaminated Sites Act 2003 (WA)</i> as a result of implementing the proposal.</p> <p>31. Describe the proposed management, monitoring and mitigation methods to be implemented demonstrating that the design of the proposal has addressed the mitigation hierarchy in relation to impacts (direct and indirect) on soils/lands/receiving environment. This description should contain recommendations for soil handling to minimise erosion of stockpiled soils.</p> <p>32. Provide a Mine Closure Plan prepared in accordance with the <i>Guidelines for Preparing Mine Closure Plans (DMP and EPA, 2015)</i>.</p> <p>33. Outline the outcomes/objectives, trigger and contingency actions to ensure impacts (direct and indirect) are not greater than predicted.</p>
<p><b>Relevant policy and guidance</b></p>	<p><b><i>EPA Policy and Guidance</i></b></p> <p><i>Guidelines for Preparing Mine Closure Plans (DMP and EPA, 2015).</i></p> <p><i>Statement of Environmental Principles, Factors and Objectives (EPA, 2018).</i></p> <p><i>Environmental Factor Guideline – Terrestrial Environmental Quality (EPA, 2016).</i></p> <p><i>Instructions on how to prepare an Environmental Review Document (EPA, 2016).</i></p> <p><i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA, 2016).</i></p> <p><b><i>Other policy and guidance</i></b></p> <p><i>National Waste Policy – Less Waste More Resources (Department of the Environment, Water, Heritage and the Arts, 2009).</i></p>

<b>EPA Factor Inland Waters</b>	
<b>EPA objective</b>	To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.
<b>Relevant activities</b>	<ul style="list-style-type: none"> <li>• Abstraction of groundwater.</li> <li>• Alteration of surface water flows.</li> <li>• Use and storage of hydrocarbons, chemicals and other potential pollutants.</li> <li>• Construction of WRLs and IWL/TSF.</li> <li>• Mine Closure.</li> </ul>
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>• Reduction in groundwater available to groundwater dependent ecosystems and other users due to groundwater abstraction and pit dewatering.</li> <li>• Reduction in surface water available to surface water dependent ecosystems due to alteration of surface water flows.</li> <li>• Increased sediment transport, downstream shadowing, erosion, scouring, flooding, or ponding due to alteration of surface water flows.</li> <li>• Change to surface water availability through formation of pit lakes.</li> <li>• Contamination of surface and groundwater from processing plant, IWL/TSF and WRLs, and spills of hydrocarbons, wastewater, chemicals or other potential pollutants.</li> </ul>
<b>Required work</b>	<p>34. Characterise the baseline hydrological and hydrogeological regimes in local and regional context, including, but not limited to, catchment boundaries, water quality and quantity, water levels, water chemistry, stream flows and flood patterns. 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. Include, where relevant, influences on water availability.</p> <p>35. Identify the location of abstraction bores and identify and discuss any associated impacts of groundwater abstraction and drawdown.</p> <p>36. Provide a detailed description of the design and location of the proposal with the potential to impact surface and groundwater, including the extent of discharges and/or reinjection, and the disturbance of acid sulphate soils, if present.</p> <p>37. Discuss seepage modelling of the IWL/TSF in relation to Inland Waters.</p> <p>38. Undertake hydrological investigations to determine the effects any proposed surface water discharge, reinjection and/or modified drainage will have on the surface and groundwater quality and quantity of the likely direct and indirect impact areas, taking into account potential weather conditions, cumulative impacts and a range of climatic scenarios including probable maximum precipitation.</p>

	<p>39. Provide a Mine Closure Plan prepared in accordance with the Guidelines for Preparing Mine Closure Plans (DMP and EPA, 2015).</p> <p>40. Predict the residual impacts on inland waters for direct, indirect and cumulative impacts, after considering avoidance and minimisation measures.</p> <p>41. Identify management, mitigation and monitoring methods to be implemented for the proposal to ensure residual impacts are not greater than predicted.</p>
<p><b>Relevant policy and guidance</b></p>	<p><b><i>EPA Policy and Guidance</i></b></p> <p><i>Statement of Environmental Principles, Factors and Objectives (EPA, 2018).</i></p> <p><i>Environmental Factor Guideline – Inland Waters (EPA, 2018).</i></p> <p><i>Instructions on how to prepare an Environmental Review Document (EPA, 2016).</i></p> <p><i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA, 2016).</i></p> <p><i>Guidelines for Preparing Mine Closure Plans (DMP and EPA, 2015).</i></p> <p><b><i>Other policy and guidance</i></b></p> <p><i>WA Environmental Offsets Policy (The Government of Western Australia, 2014).</i></p> <p><i>WA Environmental Offsets Guidelines (The Government of Western Australia, 2014).</i></p>

#### 4. Other environmental factors or matters

##### Terrestrial Fauna

The EPA has identified Terrestrial Fauna as an ‘other’ environmental factor relevant to the proposal that must be addressed during the environmental review and discussed in the Environmental Review Document.

EPA Objective: *To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.*

The referral document stated that low numbers of significant fauna have been recorded in the Development Envelope – during surveys, significant vertebrates were represented only by the Long-tailed Dunnart and Peregrine Falcon, and significant invertebrates by only three taxa of ‘potentially’ short-range endemic pseudoscorpions, *Austrophorus* sp. ‘indet.’, *Indolpium* sp. ‘indet.’ And *Olpiidae* sp. ‘indet.’. The documentation also states that the habitat types recorded are regionally widespread. However, it is noted that:

- The development envelope is in a region that has not been studied in great detail in regards to terrestrial fauna;

- the development envelope is a green fields site that, despite having been exposed to a degree of previous disturbance from pastoralism and exploration drilling, contains some areas of habitat assessed as being in 'excellent' condition;
- survey work to date comprises only a single Level 1 survey conducted in autumn 2018, with results from a follow-up site visit conducted in spring 2018 not yet available (it is acknowledged that some survey data from 2017 are also available, but the extent of this information is not made clear in the referral); and
- the existing survey work was applied to only 14.5% of the development envelope, with habitats not mapped and no new survey work undertaken for the remaining 85.5%.

Several significant vertebrate and invertebrate fauna have been identified in the region, including the Night Parrot, for which the Development Envelope falls in DBCA's 'high priority' survey area. While it is acknowledged that their occurrence regionally does not necessarily indicate that these species occur in the development envelope, it is not possible to make predictions on their occurrence based on a habitat map that is only 14.5% complete and in the absence of appropriate survey work throughout the entire development envelope.

To allow assessment of impacts to terrestrial fauna from this activity and to better consider whether Terrestrial Fauna should be considered a Key Environmental Factor, a Level 2 survey (with additional Targeted surveys if warranted) is required for the development envelope. All surveys and survey reports should be consistent with relevant EPA guidance.

The fauna survey reports should be attached to the ERD. The ERD should adequately present and discuss the results of terrestrial fauna surveys with respect to the expected impacts of the Proposal. For the Terrestrial Fauna factor, this should include:

- the assemblages and habitats present, including information on the conservation value of each habitat type from a local and regional perspective;
- comprehensive mapping of fauna habitats, including any necessary differentiation based on use (e.g. breeding, migration, foraging/feeding and/or dispersal habitat);
- habitats, populations/records and mapping of significant species in relation to the proposed disturbance and areas of impact;
- for significant taxa, quantitative analyses of the likely extent of habitat loss, including maps, and where possible, information regarding loss of individuals/population(s);
- descriptions and maps of expected direct, indirect and cumulative impacts (particularly with respect to State and Commonwealth significant taxa);
- evidence of application of the mitigation hierarchy;
- discussion of the proposed management, monitoring and mitigation methods; and
- management plans to ensure impacts are not greater than predicted.

It is also important that the proponent be aware that other factors or matters may be identified during the course of the environmental review that were not apparent at the time that this ESD was prepared. If this situation arises, the proponent must consult with the EPA

to determine whether these factors and/or matters are to be addressed in the ERD, and if so, to what extent.

## 5. Stakeholder consultation

The proponent must consult with stakeholders who are affected by, or are interested in the proposal. This includes the decision-making authorities (see section 6), other relevant state government agencies and local government authorities, the local community and environmental non-government organisations.

The proponent must document the following in the ERD:

- identified stakeholders
- the stakeholder consultation undertaken and the outcomes, including decision-making authorities' specific regulatory approvals and any adjustments to the proposal as a result of consultation
- any future plans for consultation.

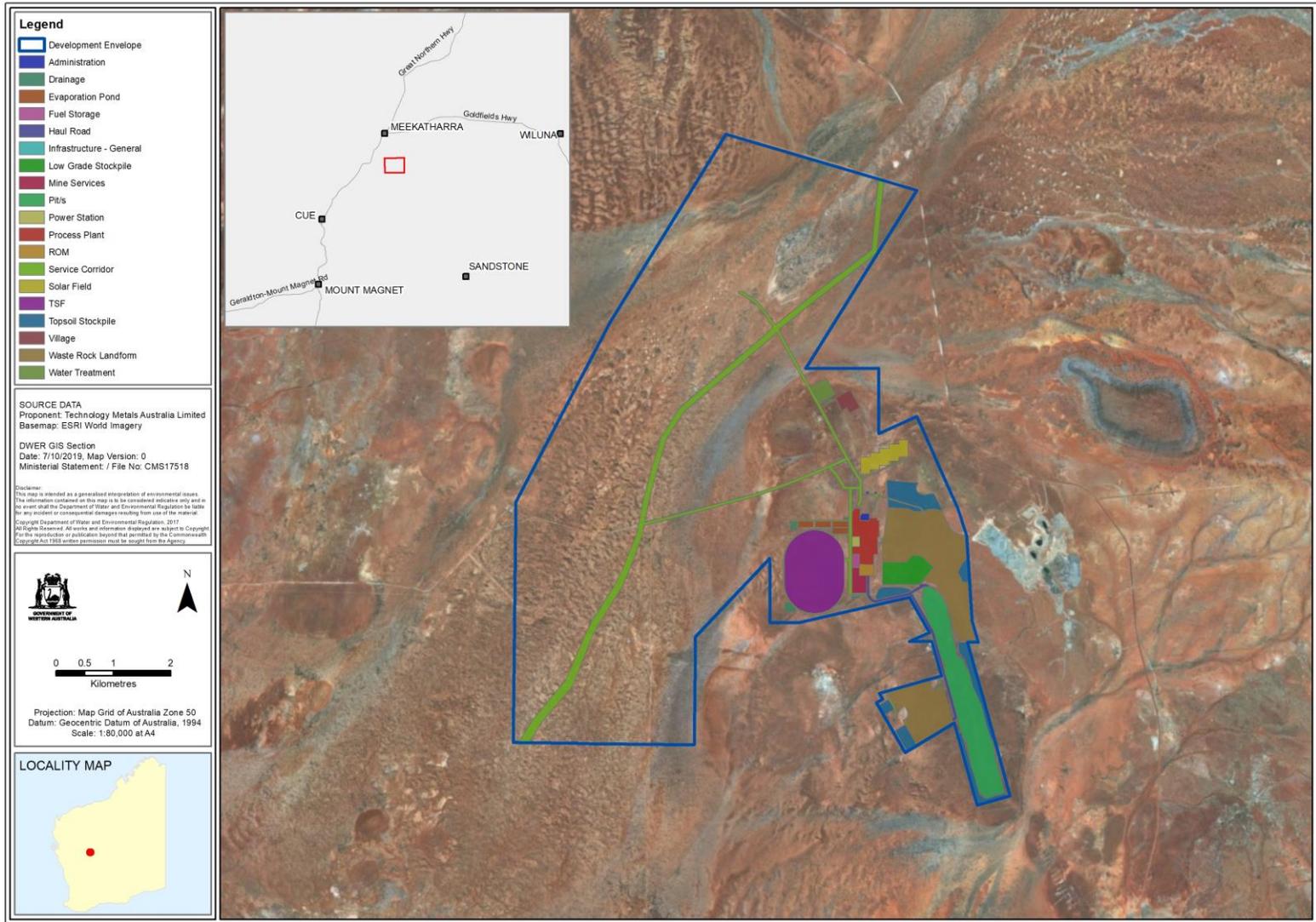
## 6. Decision-making authorities

At this stage, the EPA has identified the authorities listed in Table 5 as decision-making authorities (DMAs) for the proposal. Additional DMAs may be identified during the course of the assessment.

**Table 5 Decision-making authorities**

Decision-making authority	Relevant legislation
Minister for Water	<i>Rights in Water and Irrigation Act 1911</i>
Minister for Mines and Petroleum	<i>Mining Act 1978</i>
Minister for Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i>
Chief Executive Officer, Department of Biodiversity, Conservation and Attractions	<i>Biodiversity Conservation Act 2016</i>
Chief Executive Officer, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i>
Executive Director, Resource and Environmental Compliance Division, Department of Mines, Industry Regulation and Safety.	<i>Mining Act 1978</i>
Chief Dangerous Goods Officer, Department of Mines, Industry Regulation and Safety.	<i>Dangerous Goods Safety Act 2004</i>
State Mining Engineer, Department of Mines, Industry Regulation and Safety.	<i>Mines Safety and Inspection Act 1994</i> <i>Mines Safety and Inspection Regulations 1995</i>

Chief Health Officer	<i>Health Act 1911 and Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulation 1974</i>
Chief Executive Officer, Shire of Meekatharra.	<i>Building Act 2011</i>



**Figure 1 – Gabanintha Vanadium Project - Development Envelope**