

## ENVIRONMENTAL SCOPING DOCUMENT

<b>Proposal Name:</b>	<b>Sulphur Springs Zinc – Copper Project</b>
<b>Proponent:</b>	<b>Venturex Resources Limited</b>
<b>Assessment Number:</b>	<b>2120</b>
<b>Location:</b>	<b>Fifty seven kilometres (km) west of Marble Bar and 144 km south-east of Port Hedland in the Pilbara region of Western Australia</b>
<b>Local Government Area:</b>	<b>Shire of East Pilbara</b>
<b>Public Review Period:</b>	<b>Environmental review – no public review</b>
<b>EPBC Reference Number:</b>	<b>N/A</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	September 2017
Proponent submits first draft Environmental Review Document	30 March 2018
EPA provides comment on first draft Environmental Review Document (6 weeks from receipt of ERD)	11 May 2018
Proponent submits revised draft Environmental Review Document	8 June 2018
EPA prepares draft assessment report and completes assessment (6 weeks from EPA accepting Response to Submissions)	20 July 2018
EPA finalises assessment report (including two weeks consultation on draft conditions) and gives report to Minister (6 weeks from completion of assessment)	31 August 2018

**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 Venturex Resources Limited's proposed Sulphur Springs Zinc – Copper Project which aims to develop and operate a zinc – copper mine and processing plant in the Sulphur Springs area located 57 km west of Marble Bar and 144 km south-east of Port Hedland in the Pilbara region of Western Australia. The regional location of the proposal is shown in Figure 1 and the development envelope encompassing the physical elements of the proposal is delineated in Figure 2. Locations of the dewatering and water abstraction sites are shown in Figure 3.

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.

**Background information**

On 20 November 2006, CBH Sulphur Springs Pty Ltd referred the Panorama Copper Zinc Project to the EPA. The level of assessment was set at Public Environmental Review (EPA Assessment No. 1664). Venturex Resources Limited acquired the project tenements from CBH Sulphur Springs Pty Ltd in 2011, and requested termination of the assessment (they also renamed the project to Sulphur Springs). The EPA terminated the assessment on 2 July

2012. Venturex Resources Limited referred the current Sulphur Springs Zinc – Copper Project to the EPA on 14 December 2016.

During the assessment of the Panorama Copper Zinc Project, the main concerns raised were whether closure of the Tailings Storage Facility (TSF) could be managed. The then Department of Industry and Resources (DoIR) [now the Department of Mines, Industry Regulation and Safety (DMIRS)] raised major concerns over acid rock drainage and closure issues.

In 2013, Venturex Resources Limited submitted a Mining Proposal (REG ID: 40542) with a revised design to the then Department of Mines and Petroleum (DMP), which was approved in 2014. This Mining Proposal was approved in April 2014 and included Clearing Permit CPS 5658/1 as well as incorporating the existing Mining Proposals:

- REG ID: 19227 (CBH, 2007) – Panorama Project Temporary Exploration Camp Low-Impact Mining Proposal.
- REG ID: 37527 (Atlas Iron Ltd, 2013) – Abydos DSO Project: Proposed Abydos Link Project (Access road) – Clearing Permit 5343/1.

Clearing and construction activities associated with Mining Proposals REG ID: 19227 and REG ID: 37527 have been completed. No activities approved under Mining Proposal REG ID: 40542 and CPS 5658/1 have been carried out to date.

In December 2016, the current proposal was referred to the EPA and in July 2017 the EPA set the level of assessment at Environmental Review – no public review.

**Table 2 Summary of the proposal**

<b>Proposal title</b>	Sulphur Springs Zinc – Copper Project.
<b>Proponent name</b>	Venturex Resources Limited.
<b>Short description</b>	Venturex Resources Limited proposes to develop and operate a zinc – copper mine and processing plant in the Sulphur Springs area located 57 km west of Marble Bar and 144 km south-east of Port Hedland in the Pilbara region of Western Australia.

**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>		
Mine and associated infrastructure.	Figure 2	Clearing no more than 321.9 ha within an 848.3 ha Development Envelope.
<b><i>Operational elements</i></b>		

Tailing Storage Facility	Figure 2	A 58.9 ha conventional ‘valley fill’ Tailings Storage Facility (TSF) with a combined High Density Polyethylene (HDPE) and compacted low permeability sub-base liner (will also take acidic pit water that is not processed for site use). Disposal of no more than 1.30 Million tonnes per annum (Mtpa).
Heap Leach Facility	Figure 2	The lined (HDPE and compacted low permeability sub-base) heap leach facility will occupy the same footprint as the TSF with deposition of no more than 1.07 Mt (life of the mine).
Processing Plant	Figure 2	A 1.5 Mtpa processing plant
Waste Rock Dumps	Figure 2	One 79.6 ha permanent waste rock dump (WRD) and a temporary WRD. With disposal of no more than 17.5 million loose cubic metres in the permanent WRD.
Dewatering	Figure 2	Dewatering of 0.64 gigalitres/year (GL/yr), all to be used on site (no water to be discharged).
Water supply	Figure 3	Water abstraction of up to 0.32 GL/yr.

### 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 and Inland Waters Environmental Quality.

Table 3 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>	Clearing of vegetation, groundwater abstraction, and potential alteration of surface water flows.
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>• The proposal includes clearing of up to 321.9 ha of native vegetation.</li> <li>• Removal and disturbance to conservation significant flora and vegetation.</li> <li>• Loss of groundwater dependent vegetation and groundwater drawdown and alteration to vegetation communities resulting from changed drainage patterns.</li> <li>• Introduction and spread of weeds that outcompete native vegetation.</li> <li>• Increased risk (altered fire regime) for fire resulting in vegetation loss or change.</li> </ul>
<b>Required work</b>	<ol style="list-style-type: none"> <li>1. Identify and characterise flora and vegetation in accordance with the standards of <i>Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment</i> (EPA, December 2016). The detailed survey should take into account areas that are likely to be directly or indirectly impacted as a result of the proposal.</li> <li>2. Undertake baseline mapping of weed affected areas in any area likely to be directly or indirectly impacted as a result of the proposal.</li> <li>3. Provide an analysis of flora and vegetation present within the development envelope and also present in the indirect disturbance areas outside of the Development Envelope. Where relevant, include in this analysis the conservation significance of flora and vegetation in a local and regional context.  Analysis of impacts on vegetation to include: <ul style="list-style-type: none"> <li>• The area (in ha) of each vegetation unit to be impacted (directly and indirectly) as a result of the proposal if no mitigation measures were taken.</li> <li>• The total area (in ha) of each significant vegetation unit to be impacted (directly or indirectly) as a result of the proposal.</li> <li>• Identification of vegetation units which may represent a component of Threatened or Priority Ecological Communities.</li> </ul>  Analysis of impacts on conservation significant flora to include: <ul style="list-style-type: none"> <li>• Identification of any conservation significant flora present or likely to be present.</li> </ul> </li> </ol>

	<ul style="list-style-type: none"><li>• The number of plants, and the number of populations of plants and habitat, to be impacted (directly and indirectly) as a result of the proposal.</li><li>• The total known number of plants and populations within the local area or study area.</li><li>• A summary of the known populations of the species including distribution, number of populations and the number of plants or an estimate of the number of plants in the regional area.</li></ul> <ol style="list-style-type: none"><li>4. Provide tables and figures of the proposed direct impact (or predicted extent of loss) and the predicted indirect impact to flora and vegetation, including but not limited to threatened and/or priority ecological communities, potential groundwater dependent ecosystems, threatened flora, priority flora and unnamed new flora species.</li><li>5. Discuss and quantify (where possible to quantify) the potential exposure of flora and vegetation to deposition of dust during mining, acid mine drainage and seepage from the Tailings Storage Facility (TSF).</li><li>6. Provide a detailed description of the cumulative impacts associated with the proposal on flora and vegetation, including direct impacts from clearing, and indirect impacts such as groundwater drawdown, altered drainage, changes in water quality, spread of weeds, fragmentation of vegetation, altered fire regimes, and dust.</li><li>7. Discuss and determine significance of potential direct, indirect (such as dust, downstream impacts, and weed invasion, etc.) and cumulative impacts to flora and vegetation as a result of the proposal at a local and regional level.</li><li>8. Discuss management measures, outcomes/objectives sought to ensure residual impacts (direct and indirect) are not greater than predicted.</li><li>9. Demonstrate that all practicable measures have been taken to reduce both the area of the proposed disturbance footprint and the development envelope based on progress in the proposal design and understanding of the environmental impacts.</li><li>10. If required, provide a Flora and Vegetation management plan to address significant residual impacts to flora and vegetation. Where relevant, the following should be addressed in the plan:<ul style="list-style-type: none"><li>• Invasive species control - control of weeds, in particular through construction of infrastructure, transport and/or entry and exit points, riparian and GDE areas, vegetation units considered to have high local significance (e.g. rare units, habitat for conservation significant species) and in areas identified as in 'Excellent condition'.</li><li>• Monitoring program - to monitor the significant flora and vegetation communities identified.</li></ul></li></ol>
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	<ul style="list-style-type: none"> <li>• Management program - develop adaptive management actions to be triggered should monitoring show a decline as a result of implementing the proposal.</li> <li>• Management of any offset.</li> </ul> <p>11. Prepare a Mine Closure Plan consistent with DMP and EPA <i>Guidelines for Preparing Mine Closure Plans</i> (2015), which includes methodologies and criteria to ensure progressive rehabilitation of disturbed areas with vegetation composed of native species of local provenance.</p> <p>12. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to flora and vegetation.</p> <p>13. Describe the residual impacts for the proposal and analyse these impacts to identify and detail any that are significant.</p> <p>14. If the proposal is likely to have any significant residual environmental impacts, identify environmental offsets, consistent with the requirements in the:</p> <ul style="list-style-type: none"> <li>- WA Environmental Offsets Guidelines, which includes the use of the WA Environmental Offsets Guidelines template;</li> <li>- EPA Environmental Protection Bulletin No. 1:Environmental Offsets</li> </ul> <p>15. Demonstrate and document in the ERD how the EPA’s objective for this factor can be met.</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</i> (DMP and EPA, 2015).</p> <p><i>Statement of Environmental Principals, Factors and Objectives</i> (EPA, 2016).</p> <p><i>Environmental Factor Guideline – Flora and Vegetation</i> (EPA, 2016).</p> <p><i>Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment</i> (EPA, 2016).</p> <p><i>Instructions on how to prepare an Environmental Review Document</i> (EPA, 2016).</p> <p><i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans</i> (EPA, 2016).</p> <p><b><i>Other policy and guidance</i></b></p> <p><i>EPA Environmental Protection Bulletin No. 1:Environmental Offsets</i> (EPA, 2014)</p> <p><i>WA Environmental Offsets Policy</i> (The Government of Western Australia, 2011).</p> <p><i>WA Environmental Offsets Guidelines</i> (The Government of Western Australia, 2014).</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>	<p>Mining activities including:</p> <ul style="list-style-type: none"> <li>• ground disturbance;</li> <li>• mine pit excavation;</li> <li>• placement of infrastructure such as Tailings Storage Facility and Waste Rock Landforms;</li> <li>• groundwater abstraction;</li> <li>• use and storage of chemicals and</li> <li>• alteration to groundwater flow regime and water quality, pit salinisation, sedimentation of local creeks.</li> </ul>
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>• Loss of subterranean fauna habitat and individuals from mine pit development.</li> <li>• Loss of subterranean fauna habitat and individuals from groundwater drawdown due to groundwater abstraction and dewatering activities.</li> <li>• Spills of hydrocarbons or wastewater, seepage from the TSF and location of infrastructure may degrade subterranean fauna habitat.</li> <li>• Alteration to groundwater flow regime and water quality, pit salinisation, sedimentation of the Sulphur Springs Creek, which contains a locally significant stygofauna population.</li> </ul>
<b>Required work</b>	<p>16. Undertake a desktop study to document the regional context of the subterranean fauna of the proposal area including, but not limited to, existing regional subterranean fauna surveys, and assessment of the likely presence and characteristics of subterranean fauna habitat.</p> <p>17. Conduct Level 2 surveys inside and outside areas subject to direct and indirect impacts, following EPA policy and guidance. Where historical survey reports are relied upon as the primary reference, the information should be updated to include the most recent species, habitat, and proposal information.</p> <p>18. Present the results of all relevant subterranean fauna surveys. Include comprehensive mapping of the distributions of species in relation to the proposed disturbance (including groundwater drawdown), and of the geology or hydrology predicted to support subterranean fauna habitats (including its extent outside the Development Envelope).</p> <p>19. Discuss habitat prospectivity and demonstrate habitat connectivity within and outside the proposed disturbance area.</p>

	<p>20. Identify and assess the potential direct, indirect, and cumulative impacts of the proposal on subterranean fauna, within the proposal area and regionally. Consider temporary (e.g. construction) vs ongoing (e.g. operations) impacts, including altered water regimes and water quality.</p> <p>21. For taxa that may be impacted, provide information, including maps, on habitat connectivity and an explanation of the likely distribution of species within those habitats. Provide detailed descriptions of potential impacts to conservation significant species.</p> <p>22. Identify any limitations associated with the historical survey data or existing knowledge and discuss their implications for the impact assessment.</p> <p>23. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to subterranean fauna.</p> <p>24. Discuss proposed management objectives, measures, and outcomes sought to ensure residual direct and indirect impacts are not greater than predicted.</p> <p>25. Describe the residual impacts for the proposal and analyse these impacts to identify and detail any that are significant.</p> <p>26. Demonstrate and document in the ERD how the EPA's objective for this factor can be met.</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</i> (DMP and EPA, 2015).</p> <p><i>Statement of Environmental Principles, Factors and Objectives</i> (EPA, 2016).</p> <p><i>Environmental Factor Guideline – Subterranean Fauna</i> (EPA, 2016).</p> <p><i>Technical Guidance – Sampling methods for subterranean fauna</i> (EPA, 2016).</p> <p><i>Technical Guidance – Subterranean fauna survey</i> (EPA, 2016).</p> <p><i>Instructions on how to prepare an Environmental Review Document</i> (EPA, 2016).</p> <p><i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans</i> (EPA, 2016).</p> <p><b><i>Other policy and guidance</i></b></p> <p><i>WA Environmental Offsets Policy</i>. (The Government of Western Australia, 2011).</p> <p><i>WA Environmental Offsets Guidelines</i>. (The Government of Western Australia, 2014).</p>

<b>Terrestrial Environmental Quality and Inland Waters Environmental Quality</b>	
<b>EPA objectives</b>	<p>To maintain the quality of land and soils so that environmental values are protected.</p> <p>To maintain the quality of groundwater and surface water so that environmental values are protected.</p>
<b>Relevant activities</b>	<ul style="list-style-type: none"> <li>• Clearing of land and reducing soil quality.</li> <li>• Creation of TSF which along with the tailings will contain highly acidic pit water.</li> <li>• Construction of WRDs (with some waste rock expected to contain potentially acid forming material).</li> <li>• Construction works resulting in the alteration of surface water flows through the Development Envelope.</li> <li>• Use and storage of operational liquids such as processing reagents, chemicals, process liquor, and hydrocarbons.</li> <li>• Operation and closure of the mining operation and associated infrastructure.</li> <li>• Establishment of a pit lake.</li> </ul>
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>• Contamination of soils through spillage of reagents, chemicals, hydrocarbons, tailings or metalliferous, and acidic or saline water.</li> <li>• Unplanned seepage of contaminated water to land from the 'valley fill' TSF/heap leach facility with a combined HDPE and compacted low permeability sub-base liner or from the WRDs.</li> <li>• Contamination of underlying groundwater due to seepage from mine waste landforms (TSF, heap leach facility, and WRDs).</li> <li>• Contamination of underlying groundwater due to mixing with waters formed in a pit lake after closure.</li> <li>• Ecotoxicity risks to birds that visit the pit lake.</li> <li>• Contamination of drainage lines from low pH, metalliferous or saline water, tailings or hydrocarbon spills.</li> <li>• Overflow from extreme rainfall events will result in water from the site run-off pond and evaporation pond discharging into local creeks.</li> <li>• Potential AMD release from dewatering, with PAF exposed to oxygen.</li> </ul>
<b>Required work</b>	<p>27. Include rationale for site selection of WRDs and the TSF (i.e. favourable meteorological, geological and geographical characteristics). Include rationale for the selection of the 'valley fill' TSF design and analysis of other TSF options. Also include rational for including the heap leach facility</p>

	<p>within the footprint of the TSF and analysis of other design options for the heap leach facility.</p> <p>28. Present a baseline soil quality assessment of the Development Envelope.</p> <p>29. Include in the ERD, figures of the mapped soil units.</p> <p>30. Conduct chemical and physical characterisation of the waste materials, including characterisation of tailings pore water.</p> <p>31. Assess the mineralogy for likelihood of asbestiform minerals occurring.</p> <p>32. Conduct long term (1000 years) Landform Evolution Modelling of behaviour and performance of landforms associated with containment systems including the TSF, modelled under a range of climatic events. Include the modelling of the appropriate Probable Maximum Precipitation (PMP) and associated Probable Maximum Flood (PMF) scenarios.</p> <p>33. For the each tailings stream, identify:</p> <ul style="list-style-type: none"><li>• geochemical properties, including acid forming potential; and</li><li>• any issues with drainage and tailings consolidation.</li></ul> <p>34. Assess impacts on the surrounding environment if there was failure of TSF integrity.</p> <p>35. Assess impacts on the surrounding environment from the Heap Leach solution channels and solution ponds or evaporation ponds during an extreme rainfall event.</p> <p>36. Demonstrate conformance with internationally recognised design criteria for TSF design. Include a conceptual design of the TSF should ensure long-term encapsulation of tailings/wastes that reduces any risks to the environment and environmental values to an acceptable level, noting that more detailed reports will be provided to the DMIRS as part of the Mining Proposal.</p> <p>37. Provide a graphical conceptual representation of the final TSF.</p> <p>38. Provide details of stability of the site from a geotechnical and geochemical perspective, noting that more detailed reports will be provided to the DMIRS as part of the Mining Proposal.</p> <p>39. Determine and document if the TSF is likely to be listed as a contaminated site under the <i>Contaminated Sites Act 2003</i> (WA).</p> <p>40. 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. This description should contain recommendations for soil handling to minimise erosion of stockpiled soils.</p> <p>41. Describe how concentrate will be stored and transported.</p> <p>42. Describe how chemical reagents will be stored.</p>
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	<p>43. Characterise the baseline surface water and groundwater quality and quantity, both in a local and regional context, including but not limited to, water levels, water chemistry, spring and stream flows, flood patterns, catchment boundaries. This is to include a detailed description of the hydrogeological framework within the zone to be impacted by groundwater abstraction and potentially impacted by seepage from the TSF. Include any interdependence between surface and groundwater features/bodies. Also include, where relevant influences on water availability.</p> <p>44. Provide a detailed description of the design and location of the proposal with the potential to impact surface water or groundwater.</p> <p>45. Provide a conceptual model of the surface and groundwater systems incorporating the results of monitoring conducted, including the extent of connectivity between surface and groundwater systems.</p> <p>46. Analyse, discuss and assess surface water and groundwater impacts. The analysis should include but not be limited to:</p> <ul style="list-style-type: none"><li>• the nature, extent, and duration of impacts on water quality;</li><li>• the impact of changing water quality on environmental values; and</li><li>• cumulative impacts with other projects and referred proposals, for which relevant information is publicly available.</li></ul> <p>Where relevant, 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 surface and groundwater quality. Management options may include triggers, thresholds and contingencies.</p> <p>47. Identify a suitable water source and discuss the potential direct and indirect impacts. Identify contingency options discuss the impact of each option.</p> <p>48. Provide a conceptual mine water balance over the life of the proposal and discuss the capacity to reuse surplus mine dewater.</p> <p>49. Discuss current and future potential water users in the proposal area and how they may be impacted by the water abstraction during construction and operation. Also impacts to beneficial use from contamination of groundwater should be discussed.</p> <p>50. Characterise wastes, including intermediate processing wastes, effluents and tailings according to contaminant and leachable concentrations including base metals present in the deposits to allow for waste processing and tailings seepage issues to be addressed. Leach test studies should include the use of onsite water and the characterisation of the leaching potential of all waste materials under a range of probable pH conditions and varying solid-liquid ratios.</p>
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	<p>51. Document and include any potential pathways for contamination including but not limited to:</p> <ul style="list-style-type: none"> <li>• dust from the Run of Mine pad, processing plant (processing reagents, chemicals) and the TSF;</li> <li>• seepage of heap leach facility and/or tailings water;</li> <li>• operational leaks and spills;</li> <li>• failure of TSF integrity;</li> <li>• seepage from sewage treatment plants;</li> <li>• seepage or overflow from decant and evaporation ponds;</li> <li>• drainage from and erosion of WRD surfaces; and</li> <li>• saline final void pit lake contaminating surrounding ground water.</li> </ul> <p>52. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to Terrestrial Environmental Quality and Inland Waters Environmental Quality.</p> <p>53. Prepare a Mine Closure Plan consistent with Department of Mines and Petroleum and EPA Guidelines for Preparing Mine Closure Plans (2015) which addresses the development of completion criteria to maintain the quality of land and soils and groundwater and surface water so that environmental values are maintained post closure.</p> <p>54. Undertake consultation with Department of Mines, Industry Regulation and Safety and provide evidence from this consultation that indicates whether mine closure can be readily managed by the Department of Mines, Industry Regulation and Safety through the Mine Closure requirements of the <i>Mining Act 1978</i>.</p> <p>55. Outline the outcomes/objectives, trigger and contingency actions to ensure impacts (direct and indirect) are not greater than predicted.</p> <p>56. Demonstrate and document in the ERD how the EPA's objectives for these factors can be met.</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</i> (DMP and EPA, 2015).</p> <p><i>Statement of Environmental Principles, Factors and Objectives</i> (EPA, 2016).</p> <p><i>Environmental Factor Guideline: Terrestrial Environmental Quality</i> (EPA, 2016).</p> <p><i>Environmental Factors Guidelines – Inland Waters Environmental Quality</i> (EPA, 2016).</p> <p><i>Instructions on how to prepare an Environmental Review Document</i> (EPA, 2016).</p> <p><i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans</i> (EPA, 2016).</p>

	<p><b>Other policy and guidance</b></p> <p><i>WA Environmental Offsets Policy.</i> (The Government of Western Australia, 2011).</p> <p><i>WA Environmental Offsets Guidelines.</i> (The Government of Western Australia, 2014).</p>
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#### 4. Other environmental factors or matters

The EPA has identified the following other environmental factors or matters relevant to the proposal that must be addressed during the environmental review and discussed in the Environmental Review Document:

##### 1. Terrestrial Fauna

The referral documentation indicated that there are several conservation significant fauna species recorded within the development envelope:

- Northern Quoll (*Dasyurus hallucatus*).
- Pilbara Leaf-nosed Bat (*Rhinonictis aurantia*).
- Long-tailed Dunnart (*Sminthopsis longicaudata*).
- Western Pebble-mound Mouse (*Pseudomys chapmani*).
- Rainbow Bee-eater (*Merops ornatus*).

An additional three conservation species have been recorded from the study area:

- Ghost Bat (*Macroderma gigas*).
- Spectacled Hare-Wallaby (*Lagorchestes conspicillatus leichardti*).
- Brush-tailed Mulgara (*Dasyercus blythi*).

The fauna habitat types recorded were not restricted to the development envelope. However, it is noted that in the referral documentation, the proposed disturbance to fauna habitats has only been calculated for the indicative footprint (321.9 ha). The amount of each fauna habitat that occurs in the Development Envelope (848.3 ha) has not been included.

Information needs to be provided to demonstrate that the additional impact of this proposal over and above the already approved clearing, will not cause additional significant impacts (direct or indirect) to conservation significant terrestrial fauna.

##### 2. Social Surroundings

The referral documentation indicated consultation has been undertaken with the Traditional Owners and a number of sites have been identified in the vicinity of the proposal area. The ERD should adequately present and discuss the results of the heritage surveys with respect to the expected impacts of the proposal. The ERD

should also include an assessment of risks to human health from cultural activities in the region, including bush tucker consumption, in the region from contaminants. For guidance on the Social Surroundings factor refer to *Environmental Factor Guideline – Social Surroundings* (EPA, 2016).

### **3. Hydrological Processes**

Sulphur Spring is considered an unusual occurrence and contains acidic and salty water. The ERD should adequately present and discuss the results of the hydrological studies with respect to the expected impacts of the proposal on the function of Sulphur Spring; the hydrological processes in the aquifer the spring connects to; as well as the likelihood of impacts to ecological communities within the spring that may be present.

### **4. Air Quality**

Quantify the predicted annual greenhouse gases emissions (tonnes of CO<sub>2</sub> equivalent per annum) from all aspects of the proposal.

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; and
- any future plans for consultation.

### **6. Decision-making authorities**

At this stage, the EPA has identified the authorities listed in Table 4 as decision-making authorities (DMAs) for the proposal. Additional DMAs may be identified during the course of the assessment.

#### **Table 5 Decision-making authorities**

<b>Decision-making authority</b>	<b>Relevant legislation</b>
1. Minister for Environment	<i>Wildlife Conservation Act 1950.</i>
2. Minister for Water	<i>Rights in Water and Irrigation Act 1914.</i>
3. A/Executive Director Environment Division, Department of Mines, Industry, Regulation and Safety.	<i>Mining Act 1978.</i>
4. Chief Dangerous Goods Officer, Department of Mines, Industry, Regulation and Safety.	<i>Dangerous Goods Safety Act 2004.</i>
5. State Mining Engineer, Department of Mines, Industry, Regulation and Safety.	<i>Mines Safety and Inspection Act 1994.</i>
6. Director General, Department of Water and Environmental Regulation.	<i>Environmental Protection Act 1986.</i>
7. Chief Health Officer, Department of Health.	<i>Health Act 1911 and Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974.</i>
8. Chief Executive Officer, Shire of East Pilbara.	<i>Building Act 2011.</i>

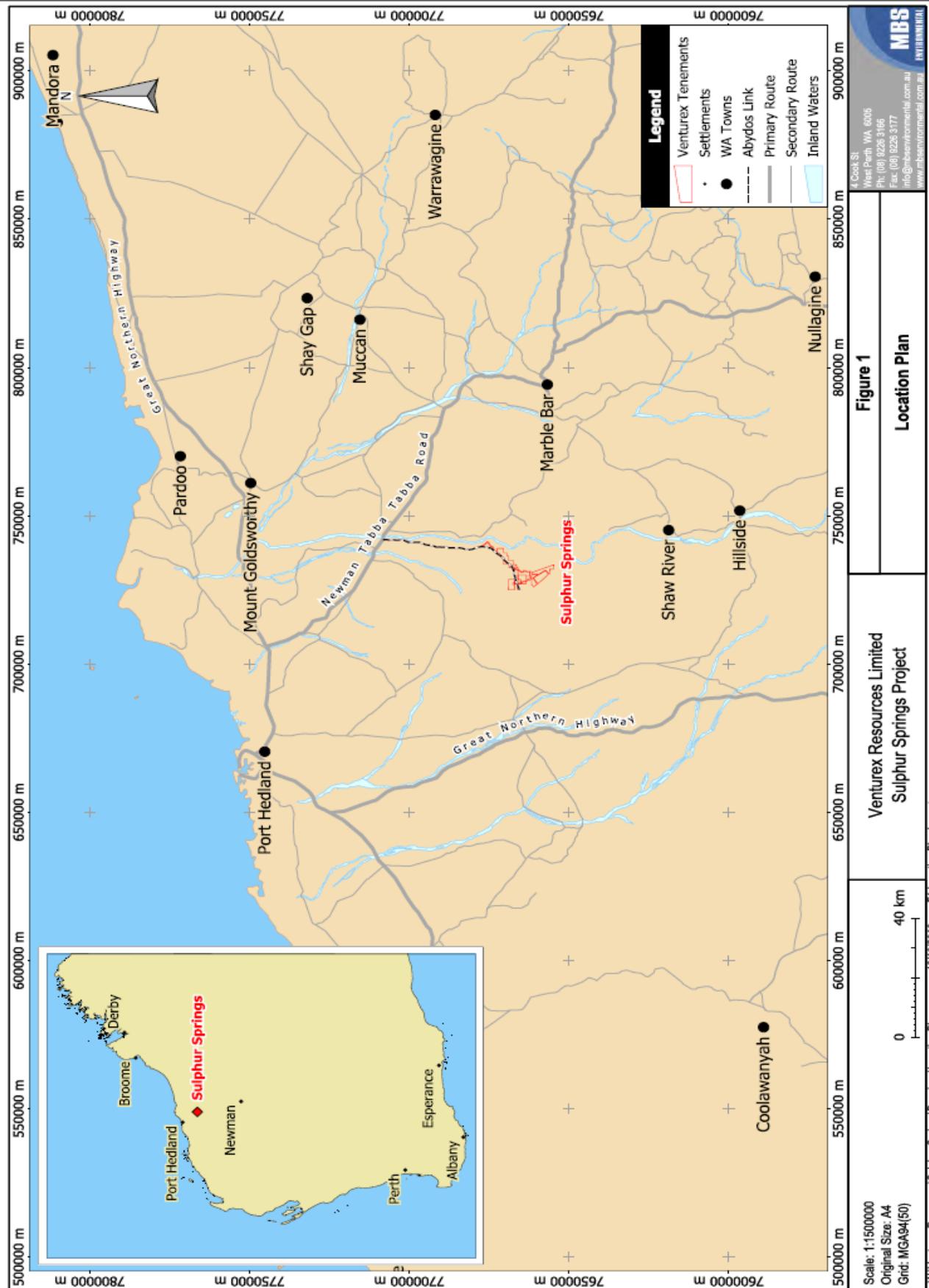


Figure 1 – Regional location

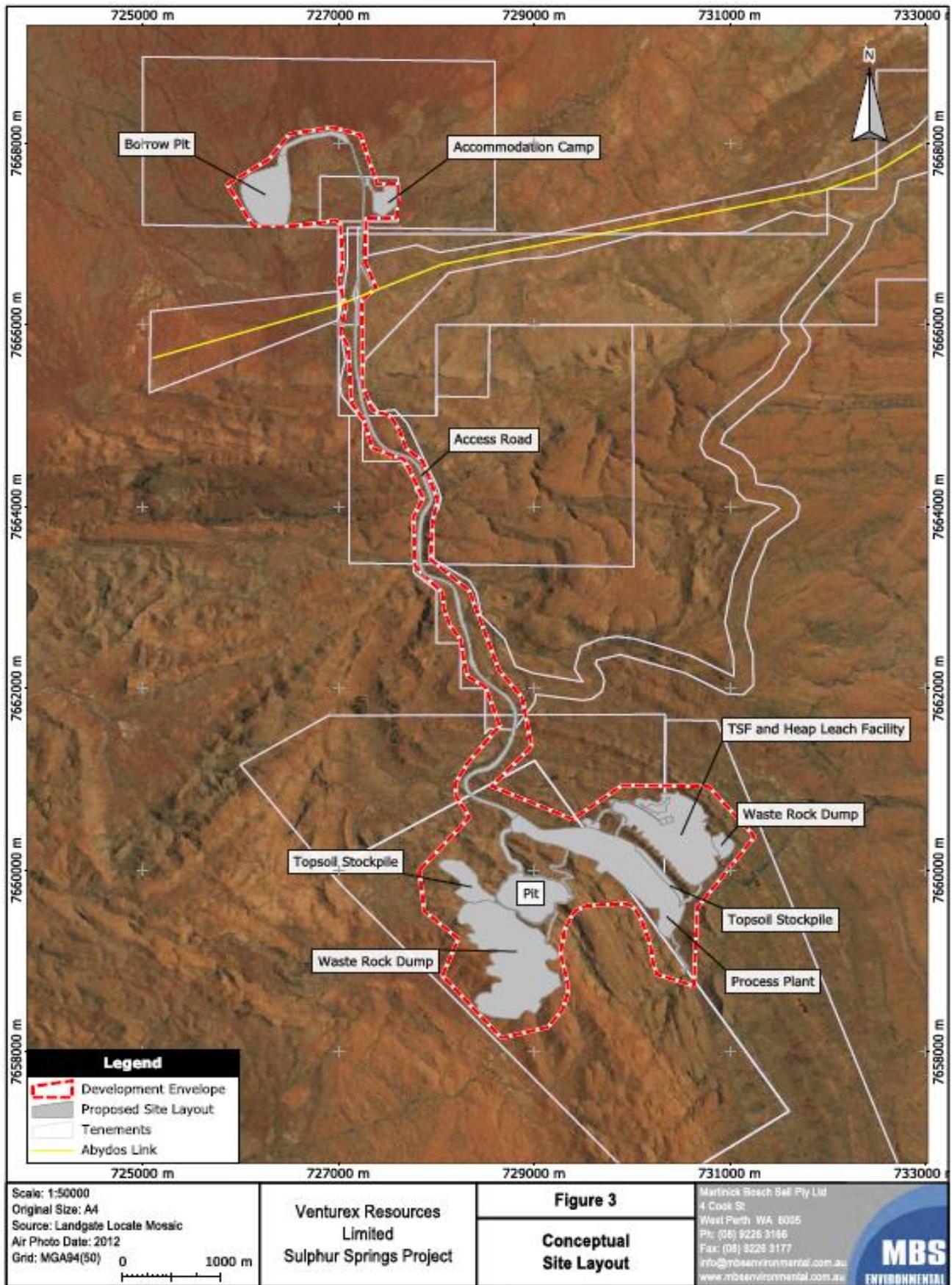


Figure 2 – Development Envelope

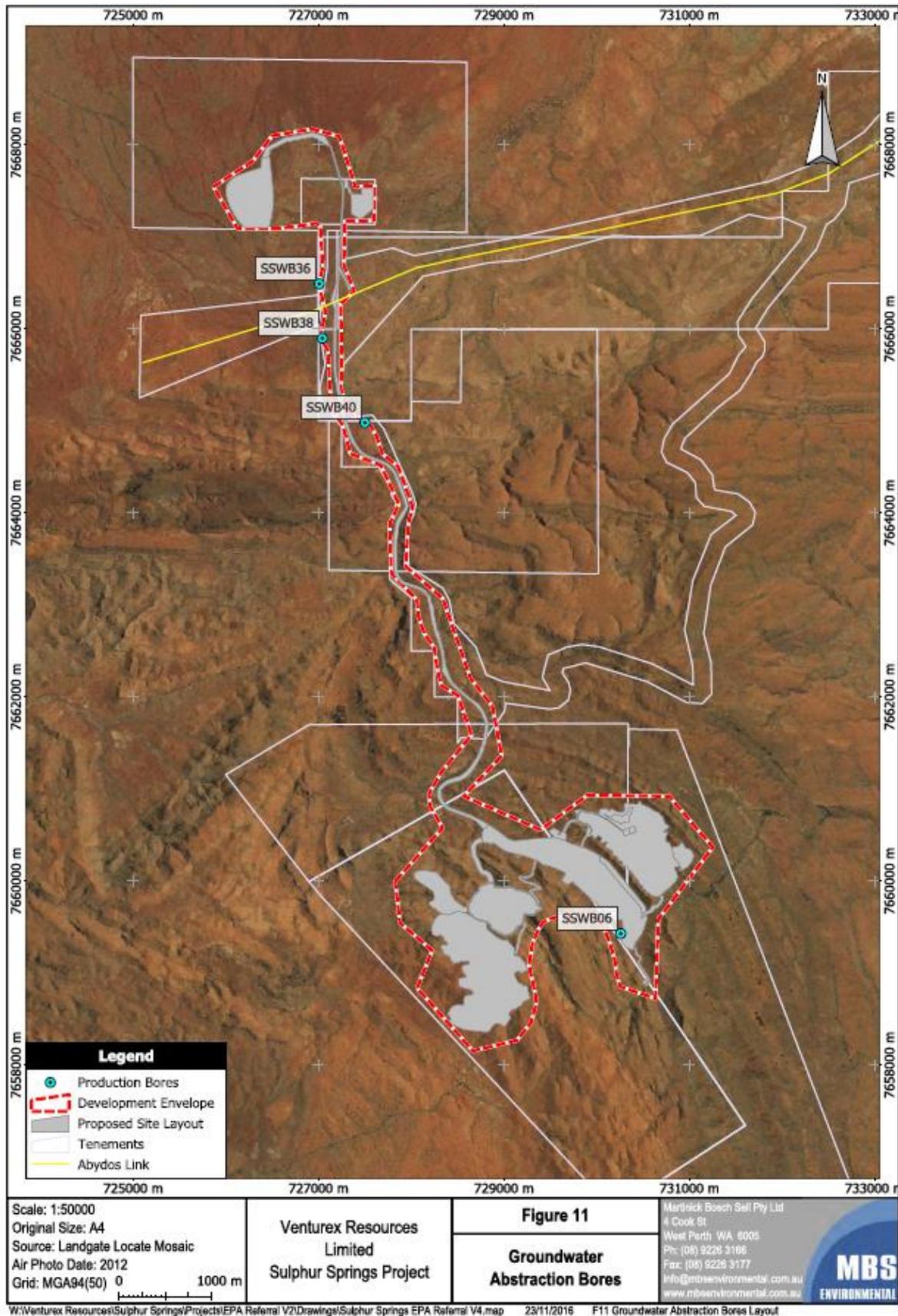


Figure 3 – Dewatering and Water Abstraction sites