ENVIRONMENTAL SCOPING DOCUMENT

Proposal name:	Greater Paraburdoo Iron Ore Hub
Proponent:	Hamersley Iron Pty Limited
Assessment number:	2189
Location:	The Greater Paraburdoo Iron Ore Hub is located approximately 6 kilometres south of the town of Paraburdoo in the Pilbara region of Western Australia
Local Government Area:	Shire of Ashburton
Public review period:	Environmental Review Document – 2 weeks

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 section 40(3) of the EP Act. Hamersley Iron Pty Limited (the Proponent) has prepared this draft ESD according to the procedures in the EPA's *Procedures Manual*.

Form

The EPA requires that the form of the report on the environmental review required under s. 40(3) (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. To meet the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the ERD must address the requirements set out in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000.

Timing

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

Table 1: Assessment timeline

Key Assessment Milestones	Completion Date
EPA approves ESD	24 June 2019
Proponent submits draft Environmental Review Document	19 August 2019
EPA provides comment on draft Environmental Review Document *(6 weeks from receipt of Environmental Review Document)*	30 September 2019
Proponent submits revised final Environmental Review Document	6 January 2020
EPA authorises release of Environmental Review Document for public review *(2 weeks from EPA approval of Environmental Review Document)*	20 January 2020
Proponent releases Environmental Review Document for public review *(2 weeks)*	17 February 2020
Close of public review period	3 March 2020

Key Assessment Milestones	Completion Date
EPA provides Submissions *(3 weeks from close of public review period)*	24 March 2020
Proponent provides Response to Submissions	18 May 2020
EPA reviews the Response to Submissions *(4 weeks from receipt of Response to Submissions)*	16 June 2020
EPA prepares draft Assessment Report and completes assessment *(6 weeks from EPA accepting Response to Submissions)*	28 July 2020
EPA finalises Assessment Report (including two weeks consultation on draft conditions) and gives report to Minister *(6 weeks from completion of assessment)*	8 September 2020

Procedure

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

Assessment as an accredited assessment (EPBC 2018/8341)

The proposal has been referred to the Commonwealth Department of Environment and Energy (DotEE) under the EPBC Act. The DotEE determined that the proposed action is a controlled action on 24 January 2019. The proposal will require assessment and approval under the EPBC Act before it can proceed. The proposal will be assessed by an accredited assessment under the *Environmental Protection Act 1986* (WA).

2 The proposal

The subject of this ESD is the Proponent's Greater Paraburdoo Iron Ore Hub Proposal (the proposal). The proposal includes the development of a new mine at Western Range and the extension of existing operations at Paraburdoo and Eastern Range.

The regional location of the proposal is shown in Figure 1 and the proposed development envelope and conceptual footprint are delineated in Figure 2. The key characteristics of the proposal are set out in Tables 2 and 3.

The key components of the proposal are:

- New mine pits:
  - development of Above Water Table (AWT) and Below Water Table (BWT) pits at Western Range;
  - development of 4 East Extension (4EE) at Paraburdoo as an extension of the existing 4 East BWT pit including new dewatering of the Wittenoom Formation; and
  - development of new AWT pits at Paraburdoo and Eastern Range.
- Activities required to facilitate the development of the new mine pits which may include as relevant, but are not limited to, the following:
  - Mineral waste management: including waste dumps, land bridges, low grade ore dumps, topsoil and sub-soil stockpiles, waste fines storage.
  - Processing infrastructure at Western Range and new and upgraded processing infrastructure at Paraburdoo.

- Support facilities: including workshops, hydrocarbon storage, laydown areas, and offices.
- Linear infrastructure: including heavy and light vehicle access roads, conveyors, pipelines and power (including sub-stations) and communications distribution networks.
- Infrastructure for surface water management: including diversion drains, levees and culverts.
- Groundwater abstraction and utilisation to meet operational demands, including associated infrastructure.
- Dewatering to enable BWT mining and associated infrastructure including bores and pipelines.
- Surplus water management and associated infrastructure: including options for discharge to surface water systems, discharge to disused mine pits, and aquifer reinjection.

Exclusions

The scope of the proposal subject to assessment under Part IV of the EP Act excludes:

- Low impact activities, including drilling and associated activities (such as upgrades to existing roads/tracks) for the purposes of resource evaluation, geotechnical assessment and hydrogeological investigation prior to Part IV approval of the proposal (which are subject to relevant provisions under Part V of the EP Act, and the Rights in Water and Irrigation Act 1914 (RiWI Act)).
- Construction camp and associated activities (currently authorised under Clearing Permits issued under Part V of the EP Act).
- Environmental, heritage and other studies/investigations involving fieldwork.
- The existing mining operations at Paraburdoo and Eastern Range are not subject to Ministerial Statements issued under Part IV of the *Environmental Protection Act 1986* (EP Act). Therefore activities that are part of or required for continuation of the existing mining operations at Paraburdoo and Eastern Range are excluded from this proposal.

  For the avoidance of doubt this includes, but is not limited to, the following:

  - Upgrades to existing facilities, including processing facilities and waste fines storage facility.
  - Upgrades to accommodation and facilities at the Paraburdoo townsite and airport, and associated activities.
  - Operation of dewatering and water supply bore fields within the abstraction limits of current section 5C groundwater licences issued under the RiWI Act.

  Current operational activities are authorised via statutory environmental approvals under Part V of the EP Act and the RiWI Act. The Proponent notes that, whilst the proposal is under assessment, additional approvals or amendments to existing approvals may be required to support the continuation of existing operations that do not relate to the implementation of this proposal. Therefore, the above exclusions are not limited to only those activities already approved.

Table 2: Summary of the proposal

Proposal title	Greater Paraburdoo Iron Ore Hub
Proponent name	Hamersley Iron Pty Limited
Short description	The proposal is to extend the existing Greater Paraburdoo iron ore mining operations located approximately 6 km to the south of the town of Paraburdoo in the Pilbara Region of Western Australia. The proposal includes the development of a new mine at Western Range including above and below water table iron ore deposits and the extension of existing operations at Paraburdoo and Eastern Range and associated infrastructure, including: • mineral waste management, including in-pit storage of waste fines • dewatering and surplus dewater management including use in ore processing, on-site use, surface discharge and/or aquifer reinjection • other associated mine infrastructure and support facilities.

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

Element	Location	Existing extent / approvals	Proposed extent*
Physical elements			
Mine and associated infrastructure	Figure 2	Existing disturbance footprint – 3,225 ha** Clearing of 1,415 ha is currently authorised under the following Clearing Permits: - CPS 4032 – 600 ha - CPS 4594 – 220 ha - CPS 5090 – 595 ha	Additional clearing of up to 4,300 ha within a 17,422 ha development envelope.
Operational elements			
Dewatering	Figure 2	Abstraction of up to 9 GL/a authorised under RiWI Act licence GWL109318.	Total abstraction estimated to not exceed 14 GL/a.
Management of surplus water	Figure 2	Discharge of up to 0.8 GL/a from Joe's Crossing (Seven Mile Creek) authorised under Part V licence L5275/1972.	Up to 6 GL/a managed via options including: • Controlled discharge of surplus water to watercourses; • Discharge to disused mine pits (passive recharge); and • Aquifer reinjection.

* Note: Development of the mine plan and hydrogeological models is in progress. Therefore clearing requirements and surplus water discharge options (and any associated discharge extents) will be refined as outputs from this work become available. Total disturbance (including existing historical and current approved disturbance) within the development envelope will be up to 8,500 ha.

** Historical clearing authorised under current and historical approvals.

3 Preliminary key environmental factors and required work

The preliminary key environmental factors to be addressed in the ERD are:

1. Flora and Vegetation
2. Terrestrial Fauna
3. Subterranean Fauna
4. Inland Waters
5. Social Surroundings

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

- **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 resulting from the proposal.
- **Required work** for that factor.
- **Relevant policy and guidance** (EPA and other) relevant to the assessment.

Table 4: Preliminary key environmental factors and required work

Flora and Vegetation	
EPA objective	To protect flora and vegetation so that biological diversity and ecological integrity are maintained.
Relevant activities	Clearing of native vegetation, groundwater abstraction, potential alteration of surface water flows, and discharge of surplus dewatering water to surface water systems and aquifer reinjection.
Potential impacts and risks	Direct impacts: • Loss native vegetation. • Loss of some individuals of Threatened and Priority flora species. Indirect impacts: • Introduction/spread of weeds. • Degradation/alteration of vegetation as a result of altered hydrological regimes. • Impacts to riparian vegetation as a result of groundwater drawdown from mine dewatering. • Impacts to riparian vegetation as a result of surplus water discharge to surface water systems.
Required work	1. Identify and characterise the flora and vegetation of areas that may be directly or indirectly impacted by the proposal in accordance with the requirements of the EPA Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (2016). This should include sampling more broadly to inform local and regional context. Demonstrate how surveys are relevant and consistent with current EPA policy and guidance. Ensure database searches and taxonomic identifications are up to date. 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. Include an analysis of the significance of flora and vegetation in local, regional and State contexts as appropriate in accordance with the relevant guidance set out below. 3. Provide maps depicting the recorded locations of the significant flora, listed ecological communities and significant vegetation in relation to the development envelope in accordance with the relevant guidelines set out below. 4. Map weed occurrences in areas likely to be directly and indirectly impacted by the proposal. 5. Assess the potential direct and indirect impacts of the construction and operational elements of the proposal on identified environmental values. Include an assessment of impacts to groundwater/surface water dependent vegetation, including riparian vegetation. Include a quantitative assessment of levels of impact on significant flora, listed ecological communities and all vegetation units. Describe and assess the extent of any cumulative impacts within local, regional and State contexts as appropriate. 6. 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 to identified environmental values (direct and indirect) are not greater than predicted. 7. Identify, describe and quantify the potential residual impacts to identified environmental values (direct, indirect and cumulative) that may occur following implementation of the proposal after considering and applying avoidance and minimisation measures. 8. Prepare a Mine Closure Plan, consistent with DMP and EPA Guidelines for Preparing Mine Closure Plans (2015), which includes methodologies to ensure progressive rehabilitation of disturbed land meets closure objectives, including vegetation composed of native species of

	local provenance. 9. Provide a report that details the likely success of future rehabilitation activities in establishing self-sustaining areas of rehabilitation, taking into account: a) evidence of success of rehabilitation undertaken to date in the region b) relevant contemporary scientific evidence c) the types of area to be rehabilitated d) the scale of rehabilitation activities. 10. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the WA Environmental Offsets Guidelines (2014) and include reference to the Commonwealth Assessment Guide for any Matters of National Environmental Significance (MNES). 11. 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 for each environmental value should also be provided (e.g. vegetation type, vegetation condition, specific fauna species habitat). 12. Demonstrate in the ERD how the Proponent proposes to ensure the EPA objective for this factor can be met.
Relevant policy and guidance	<u>EPA Policy and Guidance</u> EPA *Statement of Environmental Principles, Factors and Objectives* (2018). EPA *Environmental Factor Guideline: Flora and Vegetation* (2016). EPA *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (2016). EPA *Instructions on how to prepare an Environmental Review Document* (2018). EPA *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans* (2018). DMP and EPA *Guidelines for Preparing Mine Closure Plans* (2015). <u>Other policy and guidance</u> Government of Western Australia *WA Environmental Offsets Policy* (2011). Government of Western Australia *WA Environmental Offsets Guidelines* (2014).
Terrestrial Fauna	
EPA objective	To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Relevant activities	Clearing of fauna habitat, vehicle and machinery movements, groundwater abstraction, aquifer reinjection, discharge of surplus water to surface water systems, and construction and mining operations (noise, vibration and dust).
Potential impacts and risks	Direct impacts: • Loss of potential fauna habitat as a result of clearing. • Loss of fauna individuals as a result of clearing (or other interactions). Indirect impacts: • Degradation/alteration of foraging and dispersal habitat as a result of altered hydrological regimes. • Habitat fragmentation and barriers to fauna movement. • Habitat degradation associated with construction activity and/or increased human activity,

	including transmission of weeds, dust and increased abundance of introduced fauna species. • Disturbance from light, noise and/or vibration, and possible displacement of fauna associated with construction activity and mining operations.
Required work	13. In accordance with the requirements of EPA Technical Guidance: a) conduct a desktop study, incorporating existing regional terrestrial fauna surveys (including SRE invertebrate species) and databases b) undertake terrestrial fauna (including short-range endemic (SRE) invertebrate species) surveys in all areas of impact, to identify and characterise terrestrial fauna and 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. 14. Describe the values and significance of fauna and fauna habitat that may be impacted directly and indirectly by implementation of the proposal during both construction and operations and describe the significance of these values in a local and regional context. Identify important or restricted habitats e.g. breeding habitat, foraging / feeding / dispersal habitat. 15. Provide figures and maps illustrating the known recorded locations of conservation or other significant species and SRE invertebrate species in relation to the proposal impact areas and fauna habitats. 16. Describe and assess the extent of direct and indirect impacts as a result of implementation of the proposal during both construction and operations to terrestrial fauna taking into consideration cumulative impacts and the significance of fauna and fauna habitat. 17. Quantify the extent of direct, indirect and cumulative impacts, including percentages of habitat types to be disturbed or otherwise impacted. 18. Discuss known existing threats to any significant species, whether or not attributable to the proposal, with reference to relevant impacts from the proposal. 19. Describe and justify any proposed mitigation to reduce the potential impacts of construction and operation of the proposal on significant terrestrial fauna. Include any proposed management and/or monitoring plans that will be implemented pre- and post-construction to ensure residual impacts (direct and indirect) are not greater than predicted. Including for example, consideration of appropriate buffer zones around Pilbara leaf-nosed bat and Ghost bat roost sites based on: a) discussion of the characteristics of the geology between the proposed disturbance and identified caves and the caves itself (i.e. fractures, sound transmissions, cave length, cave humidity/temperature (microclimate) direction b) evaluation of the appropriateness of the proposed buffer width/distance based on the characteristics above. 20. Demonstrate how the proposal is not inconsistent with relevant statutory recovery plans and threat abatement plans. 21. Prepare a Mine Closure Plan, consistent with DMP and EPA Guidelines for Preparing Mine Closure Plans (2015) which includes methodologies to ensure progressive rehabilitation of disturbed land meets closure objectives. 22. Identify, describe and quantify the potential residual impacts (direct, indirect and cumulative) that may occur following implementation of the proposal after considering and applying avoidance and minimisation measures. 23. Provide a report that details the likely success of future rehabilitation activities in establishing self-sustaining areas of rehabilitation, taking into account: a) evidence of success of rehabilitation undertaken to date in the region

	b) relevant contemporary scientific evidence c) the types of area to be rehabilitated d) the scale of rehabilitation activities. 24. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the WA Environmental Offsets Guidelines (2014) and include reference to the Commonwealth Assessment Guide for any MNES. 25. 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 for each environmental value should also be provided (e.g. vegetation type, vegetation condition, specific fauna species habitat). 26. In the circumstance that offsetting of residual significant impacts on MNES is a requirement, include a discussion of the consideration of the *EPBC Environmental Offsets Policy* including, but not limited to: a) The extent to which the proposed offset correlated to the residual significant impacts on MNES. 27. Demonstrate in the ERD how the Proponent proposes to ensure the EPA objective for this factor can be met.
Relevant policy and guidance	<u>EPA Policy and Guidance</u> EPA *Statement of Environmental Principles, Factors and Objectives* (2018). EPA *Environmental Factor Guideline: Terrestrial Fauna* (2016). EPA Technical Guidance: *Sampling Methods for Terrestrial Vertebrate Fauna* (2016). EPA Technical Guidance: *Terrestrial Fauna Surveys* (2016). EPA Technical Guidance: *Sampling of Short Range Endemic Invertebrate Fauna* (2016). EPA *Instructions on how to prepare an Environmental Review Document* (2018). EPA *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans* (2018). DMP (now DMIRS) and EPA *Guidelines for Preparing Mine Closure Plans* (2015). <u>Other policy and guidance</u> Government of Western Australia *WA Environmental Offsets Policy* (2011). Government of Western Australia *WA Environmental Offsets Guidelines* (2014). Australian Government *Environmental Management Plan Guidelines* (2014). Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy, Department of Sustainability, Environment, Water, Population and Communities, October 2012. 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.

Subterranean Fauna	
EPA objective	To protect subterranean fauna so that biological diversity and ecological integrity are maintained.
Relevant activities	Excavation of mine pits, blasting, groundwater abstraction, clearing of native vegetation, placement of infrastructure and waste landforms, exposure of PAF material and post-closure formation of pit lake, in-pit deposition of waste fines, storage and handling of hazardous materials and wastes
Potential impacts and risks	Direct impacts: • Removal and/ or loss of potential subterranean fauna habitat. • Loss/ mortality of subterranean fauna individuals. • Reduction in stygofauna habitat through mine dewatering. Indirect impacts: • Degradation of potential subterranean fauna habitat from: - Clearing - Vibration - Compaction - Changes in surface hydrology - Contamination
Required work	28. In accordance with EPA Technical Guidance: a) conduct a desktop study, incorporating existing regional subterranean fauna surveys and databases b) undertake surveys in all areas of impact, to identify and characterise subterranean fauna and 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. 29. Describe the characteristics of subterranean fauna habitat that may be impacted directly and indirectly by implementation of the proposal during both construction and operations, 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. 30. Provide figures and maps showing the extent of subterranean fauna habitat in relation to the proposal and species distributions. 31. Describe and assess the extent of direct, indirect and cumulative impacts as a result of implementation of the proposal during both construction and operations to subterranean fauna, taking into consideration the significance of fauna and fauna habitat. 32. Quantify the extent of direct, indirect and cumulative impacts, including where feasible, percentages of habitat types to be disturbed or otherwise impacted. 33. 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 (direct and indirect) are not greater than predicted. 34. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the WA Environmental Offsets Guidelines (2014) and include reference to the Commonwealth Assessment Guide for any MNES. 35. 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 for each environmental value should also be provided (e.g.

	vegetation type, vegetation condition, specific fauna species habitat). 36. Demonstrate in the ERD how the Proponent proposes to ensure the EPA objective for this factor can be met.
Relevant policy and guidance	<u>EPA Policy and Guidance</u> EPA *Statement of Environmental Principles, Factors and Objectives* (2018). EPA *Environmental Factor Guideline: Subterranean Fauna* (2016). EPA Technical Guidance: *Subterranean Fauna Survey* (2016). EPA Technical Guidance: *Sampling Methods for Subterranean Fauna* (2016). EPA *Instructions on how to prepare an Environmental Review Document* (2018). <u>Other policy and guidance</u> Government of Western Australia *WA Environmental Offsets Policy* (2011). Government of Western Australia *WA Environmental Offsets Guidelines* (2014).
Inland Waters	
EPA objective	To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.
Relevant activities	Abstraction of groundwater from the Wittenoom Formation, aquifer reinjection, discharge of surplus water to surface water systems and disused mine pits, surface water management, mineral waste management, waste fines storage, below water table excavation for mining activities, storage and handling of hazardous materials, and formation of pit lakes.
Potential impacts and risks	Direct: • Alteration to groundwater aquifers due to abstraction of groundwater. • Alteration to hydrological regimes of surface water systems from discharge of surplus dewatering water. • Alteration to groundwater aquifers from discharge of surplus dewatering water to disused mine pits and via aquifer reinjection. • Alteration to existing surface water catchments, surface water flow paths and sheetflows. Indirect: • Reduction in quality of groundwater and surface water as a result of: - Surface water discharge. - Waste rock dumps - Waste fines storage. - Post closure formation of permanent and ephemeral pit lakes. - Increased sediments from infrastructure and drainage - Storage and handling of hazardous materials and waste.
Required work	37. Characterise the baseline hydrological and hydrogeological regimes, ecological values and water quality, both in a local and regional context, including, but not limited to, catchment boundaries, creek flows, flood patterns, groundwater levels, aquatic fauna assemblages and water quality. 38. Provide a hydrogeological assessment for the proposal (including drillings, test pumping and groundwater modelling). 39. Describe and map any sensitive/significant environmental (water) receptors which may be impacted by changes to hydrological/hydrogeological regimes. Clarify/map the area of potential impact, including areas that are downstream and outside of the development envelope.

	40. Provide a detailed description of the design and location of the proposal (including maps/figures where appropriate) as it relates to potential to impact surface or groundwater. 41. Provide a numerical groundwater model and surplus water discharge model for the proposal. 42. Provide a conceptual site water balance model over the life of the proposal and provide an assessment of water management options and discuss the capacity to reuse surplus mine dewater. Demonstrate application of the waste hierarchy to minimise discharge of surplus mine dewater to mine pits, surface water and via aquifer reinjection. 43. If surplus discharge is required, include predictions of the extent of the wetting front and assess any environmental impacts from changed flow regimes. 44. Undertake groundwater modelling to show the impacts of aquifer reinjection and groundwater drawdown. 45. Undertake modelling to show the formation and long term quality of pit lakes. This modelling should be used to inform the closure objectives, completion criteria and preliminary management measures for the Mine Closure Plan. 46. Assess the nature, extent and duration of potential impacts of groundwater abstraction with a focus on possible impacts to groundwater dependent ecosystems. 47. Characterise the geochemical and physical properties of waste rock and waste fines to allow an assessment of the potential risk from waste rock dumps and waste fines storage facilities. 48. Analyse, discuss and assess potential groundwater and surface water impacts (direct and indirect). The analysis should include, but not be limited to: a) Changes in groundwater levels and surface water flows associated with the proposal b) Presence of PAF materials and risks associated with Acid Mine Drainage (AMD) c) Changes in groundwater and surface water chemistry d) Assessment of the function, reliance and potential impacts to groundwater dependent vegetation e) Assessment and description of direct and indirect impacts to aquatic fauna through drawdown, discharge or changes to hydrological regimes f) The nature, extent and duration of the potential impacts g) Impacts to the environmental values of significant receptors h) Impacts associated with the post-closure formation of permanent pit lakes. 49. Apply the mitigation hierarchy and discuss proposed objectives/outcomes, monitoring, management and mitigation measures where necessary to be implemented to appropriately avoid and minimise impacts to inland waters. 50. Prepare a Closure Plan consistent with DMP and EPA *Guidelines for Preparing Mine Closure Plans* (2015), which includes criteria to ensure hydrological regimes and the quality of groundwater and surface water resources are suitable so that any dependant environmental values are maintained post closure. 51. Demonstrate in the ERD how the Proponent proposes to ensure the EPA objective for this factor can be met.
Relevant policy and guidance	<u>EPA Policy and Guidance</u> EPA *Statement of Environmental Principles, Factors and Objectives* (2018). EPA *Environmental Factor Guideline: Inland Waters* (2018). *Inland Waters of the Pilbara Western Australia (Part 1)* (EPA 1998a). *Inland Waters of the Pilbara Western Australia (Part 2)* (EPA 1998b). EPA *Instructions on how to prepare an Environmental Review Document* (2018). DMP (now DMIRS) and EPA *Guidelines for Preparing Mine Closure Plans* (2015). DWER *Operational Policy 5.12 – Hydrogeological reporting associated with a groundwater well*

	licence (2009). Other policy and guidance Department of Water *Western Australian water in mining guideline* (2013).
Social Surroundings (Aboriginal heritage and culture)	
EPA objective	To protect social surroundings from significant harm.
Relevant activities	Clearing and excavation for mining, placement of waste dumps and other infrastructure, discharge of surplus water to surface water systems, surface water management.
Potential impacts and risks	Direct: • Disturbance of sites of cultural and heritage significance. • Changes to local landforms which may result in altered visual landscapes within the region. Indirect: • Changes to the physical and biological attributes of the environment which may impact the values associated with significant heritage sites.
Required work	52. Characterise and describe the heritage and cultural values within the development envelope and any sensitive receptors that may be directly or indirectly impacted as a result of this proposal to identify sites of social significance and their significance within a regional context. 53. Conduct investigations, including ethnographic and archaeological surveys in consultation with the Traditional Owners, to determine the significance of potential impacts (direct, indirect and cumulative) to social surroundings as a result of this proposal. 54. Describe and assess the potential impacts to social surroundings as a result of changes to the environment from the proposal. 55. Discuss consultation that has been, and will continue to be, undertaken with Traditional Owners. 56. Apply the mitigation hierarchy and discuss proposed objectives/outcomes, monitoring, management and mitigation measures where necessary to be implemented to appropriately avoid and minimise impacts to social surroundings. 57. Prepare a Mine Closure Plan consistent with DMP and EPA *Guidelines for Preparing Mine Closure Plans* (2015), which considers social surroundings. 58. Demonstrate in the ERD how the Proponent proposes to ensure the EPA objective for this factor can be met.
Relevant policy and guidance	EPA Policy and Guidance EPA *Statement of Environmental Principles, Factors and Objectives* (2018). EPA *Environmental Factor Guideline: Social surroundings* (2016). EPA *Instructions on how to prepare an Environmental Review Document* (2018). DMP (now DMIRS) and EPA *Guidelines for Preparing Mine Closure Plans* (2015). Other policy and guidance Department of Aboriginal Affairs and Department of Premier and Cabinet *Due Diligence Guidelines, Version 3.0* (2013).

4 Other environmental factors

At time of preparing this ESD, the Proponent was not aware of any other environmental factors or matters that warrant addressing in the ERD. If the Proponent identifies any other environmental factors or matters during the course of the environmental review, the Proponent will consult with the DWER - EPA Services 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 will continue to consult with relevant stakeholders during the EPA's environmental impact assessment process. This includes the decision-making authorities (see section 6), other relevant state government agencies and local government authorities, local communities and environmental non-government organisations.

The Proponent has identified the following stakeholders for this proposal:

- Department of Water and Environmental Regulation (DWER)
- Department of the Environment and Energy (DotEE) (Cwth)
- Department of Biodiversity, Conservation and Attractions (DBCA)
- Department of Mines, Industry Regulation and Safety (DMIRS)
- Department of Jobs, Tourism, Science and Innovation (DJTSI)
- Department of Planning, Lands and Heritage (DPLH)
- Shire of Ashburton
- Mininer Pastoral Station
- Rocklea Pastoral Station
- Yinhawangka Traditional Owners.

The Proponent will 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
- plans for future consultation.

6 Decision-making authorities

The Proponent has identified the decision-making authorities listed in Table 5 for this proposal. Additional decision-making authorities may be identified during the course of the assessment.

Table 5: Decision-making authorities

Decision-making authority	Relevant legislation
Minister for Aboriginal Affairs	*Aboriginal Heritage Act 1972*
Minister for Environment	*Biodiversity Conservation Act 2016*
Minister for State Development	*Iron Ore (Hamersley Iron) Agreement Act 1968 (Paraburdoo)*
Minister for Water	*Rights in Water and Irrigation Act 1914*
Chief Dangerous Good Officer, Department of Mines, Industry Regulation and Safety	*Dangerous Goods Safety Act 2004*
Chief Executive Officer, Department of Water and Environmental Regulation	*Environmental Protection Act 1986* – Part V *Environmental Protection (Clearing of Native Vegetation) Regulations 2014*
State Mining Engineer, Department of Mines, Industry Regulation and Safety.	*Mines Safety and Inspection Act 1994*

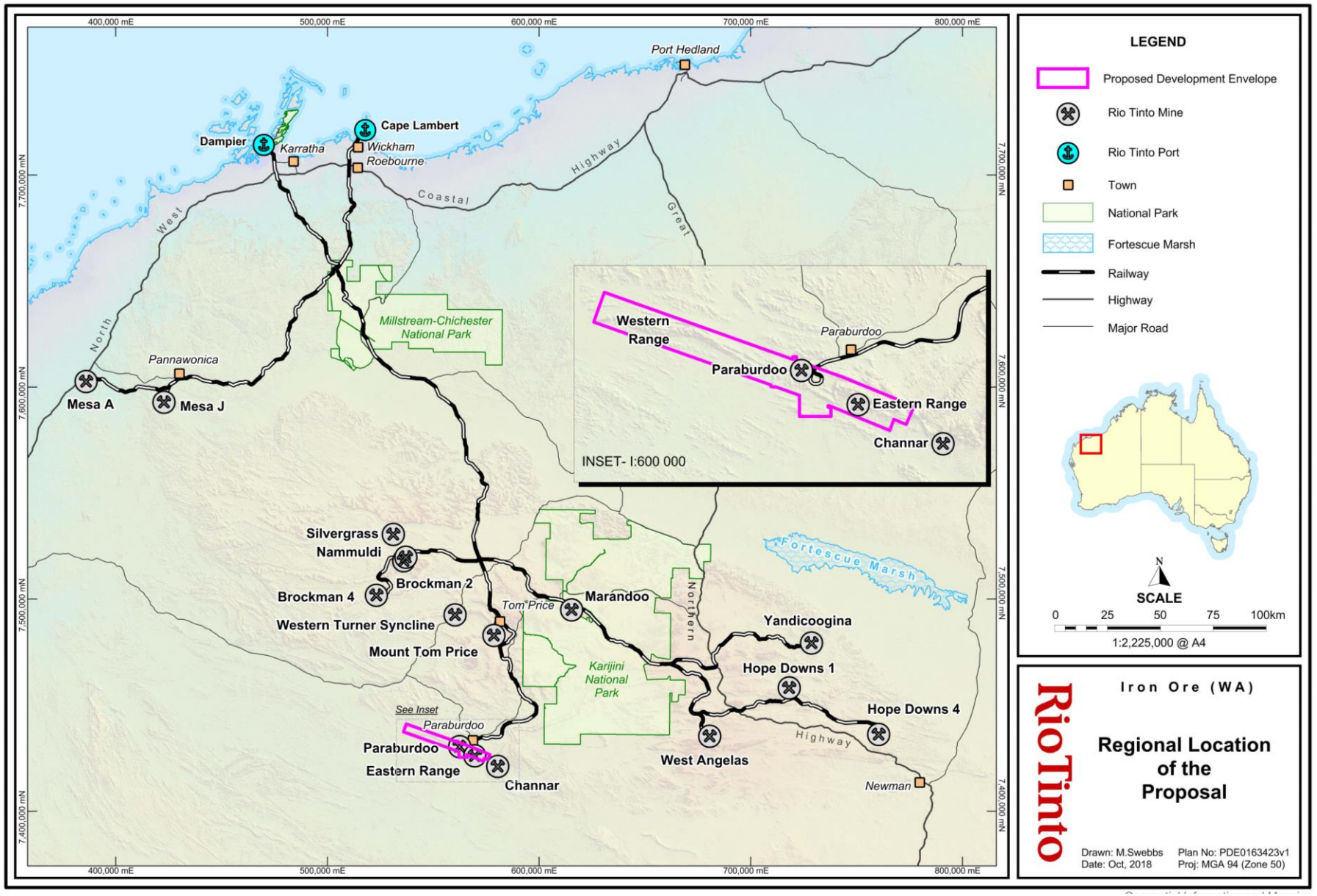

Figure 1: Regional location of the proposal

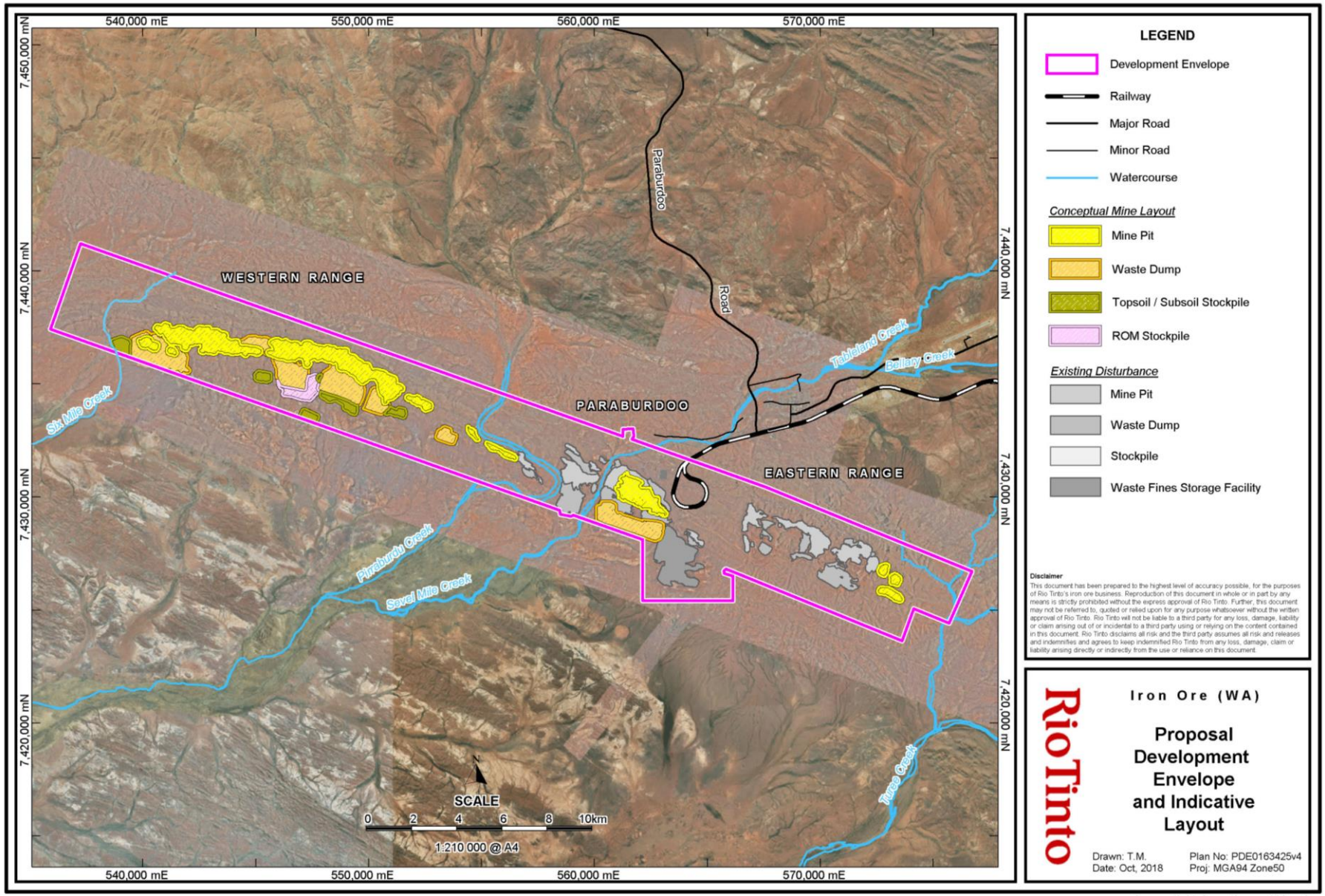

Figure 2: Proposal development envelope and indicative layout