Proposal name: Eliwana Iron Ore Mine Project
Proponent: Fortescue Metals Group Limited
Assessment number: 2125
Location: Eliwana, 90 km west-north-west of Tom Price in the Pilbara region of Western Australia
Local Government Area: Shire of Ashburton
Public review period: Environmental Review Document – 4 weeks
EPBC reference no: EPBC 2017/8024

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 Proponent; Fortescue Metals Group Limited (Fortescue) according to 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

<table>
<thead>
<tr>
<th>Key assessment milestones</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA approves Environmental Scoping Document</td>
<td>29 December 2017</td>
</tr>
<tr>
<td>Proponent submits first draft Environmental Review Document</td>
<td>31 January 2018</td>
</tr>
<tr>
<td>EPA provides comment on first draft Environmental Review Document</td>
<td>14 March 2018</td>
</tr>
<tr>
<td>(6 weeks from receipt of ERD)</td>
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<tr>
<td>Proponent submits revised draft Environmental Review Document</td>
<td>11 April 2018</td>
</tr>
<tr>
<td>EPA authorises release of Environmental Review Document for public review</td>
<td>23 May 2018</td>
</tr>
<tr>
<td>(2 weeks from EPA approval of ERD)</td>
<td></td>
</tr>
<tr>
<td>Proponent releases Environmental Review Document for public review for 4 weeks</td>
<td>6 June 2018</td>
</tr>
<tr>
<td>Close of public review period</td>
<td>4 July 2018</td>
</tr>
<tr>
<td>EPA provides Summary of Submissions</td>
<td>25 July 2018</td>
</tr>
<tr>
<td>(3 weeks from close of public review period)</td>
<td></td>
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<tr>
<td>Proponent provides Response to Submissions</td>
<td>22 August 2018</td>
</tr>
<tr>
<td>EPA reviews the Response to Submissions</td>
<td>19 September 2018</td>
</tr>
<tr>
<td>(4 weeks from receipt of Response to Submissions)</td>
<td></td>
</tr>
<tr>
<td>EPA prepares draft assessment report and completes assessment</td>
<td>7 November 2018</td>
</tr>
<tr>
<td>(7 weeks from EPA accepting Response to Submissions)</td>
<td></td>
</tr>
<tr>
<td>EPA finalises assessment report (including two weeks consultation on draft conditions)</td>
<td>19 December 2018</td>
</tr>
<tr>
<td>and gives report to Minister (6 weeks from completion of assessment)</td>
<td></td>
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</tbody>
</table>

**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) upon endorsement and will be appended to the PER document.

**Assessment under an accredited assessment**

The proposal has been referred and determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* and is being assessed as an
accredited assessment. The relevant matters of national environmental significance (MNES) for this proposal are:

- Listed threatened species and communities (s18 and 18A)

This ESD includes work required to be carried out and reported on in the ERD document in relation to MNES. The ERD will also address the matters in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000.

MNES that may be impacted by the proposal will be identified and the potential impacts on these matters addressed within each relevant preliminary environmental factor as identified in Table 5. The ERD will include a separate section which summarises the potential impacts on MNES and describes, to the extent practicable, any feasible alternatives to the proposed action and possible mitigation measures. Proposed offsets to address significant residual impacts on MNES are also to be discussed.

2. The Proposal

The subject of this ESD is a proposal by Fortescue Metals Group Ltd (Fortescue) to develop the Eliwana Iron Ore Mine Project (the Proposal) in the Pilbara region of Western Australia. The Proposal Area is located approximately 90 km west-north-west of Tom Price (Figure 1).

Fortescue currently owns and operates a number of mining and infrastructure projects in the Pilbara; including the Cloudbreak, Solomon and Christmas Creek iron ore mines along with the Fortescue rail network and the Anderson Point port facility.

While preliminary planning for the location of these components and associated infrastructure has been undertaken, detailed design of the Proposal is still underway. To accommodate refinements in project layout during the design process, the Proposal Area has been defined through the use of a development envelope. The development envelope encompassing the physical elements of the proposal is delineated in Figure 2 and includes the Eliwana and Flying Fish deposits.

Over the life of the mine, the average annual production rate is estimated at 30 Mtpa, with infrastructure to be constructed to accommodate annual production rates up to 50 Mtpa, allowing future flexibility. The estimated mine life is at least 24 years.

Key Characteristics

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

<table>
<thead>
<tr>
<th>Proposal title</th>
<th>Eliwana Iron Ore Mine Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proponent name</td>
<td>Fortescue Metals Group Limited</td>
</tr>
<tr>
<td>Short description</td>
<td>The Proposal is to develop above and below water table iron ore deposits, 90 km west-north-west of Tom Price, in the Pilbara region of Western Australia (Figure 1). The Proposal includes the development of mine pits and associated infrastructure, processing facilities, water management infrastructure for groundwater abstraction and surplus water disposal, temporary and permanent waste landforms and tailings storage facilities.</td>
</tr>
</tbody>
</table>

Table 3  Location and proposed extent of physical and operational elements

<table>
<thead>
<tr>
<th>Element</th>
<th>Location</th>
<th>Proposed extent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical elements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mine and associated infrastructure</td>
<td>Figure 2</td>
<td>Clearing of up to 8,560 ha of native vegetation within the 70,000 ha Mine Development Envelope</td>
</tr>
<tr>
<td><strong>Operational elements</strong></td>
<td></td>
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</tbody>
</table>
| Mining voids                     | N/A      | Eliwana Area:  
• Below water table mining  
• Episodic mining void water body  
• Permanent and episodic post-closure mining void water body  

Flying Fish Area:  
• Above water table mining  
• Episodic mining void water body  

Ore processing (waste) | N/A | Disposal of up to 1.2 Gt of waste rock to temporary and permanent waste dumps  

Ore processing (tailings) | N/A | Disposal of up to 84 Mt of tailings into tailings storage facilities  

Power supply | N/A | Onsite power generation  

Water supply | N/A | Up to 12 GL/a, supplied from a combination of mine dewatering and water supply borefields.  

Dewatering | N/A | Abstraction of up to 14 GL/a of groundwater  

Surplus Water Management | N/A | Up to 4 GL/a of surplus water will be managed through a combination of surface discharge and controlled aquifer reinjection.  

Endorsed 18 December 2017
Timing and Proposal Staging

Pending receipt of all relevant approvals, and a final decision regarding Fortescue’s Firetail Replacement Strategy, the company plans to commence broad scale construction of the Proposal in early 2019. The target date for first ore production is early 2020. The Proposal is not a staged development.

Fortescue anticipates that a number of activities associated with the implementation of the Proposal, where potential impacts of the activities are not significant, may be progressed under s 41A(3) as minor or preliminary works. These may include (but are not limited to):

- accommodation camps and associated supporting infrastructure
- airstrip
- access roads
- fuel and explosives storage areas
- communications infrastructure
- construction laydown areas
- construction and potable water supply borefields and associated infrastructure.

A formal request will be submitted to the EPA, in accordance with the Instructions and checklist for request for EPA consent to undertake minor or preliminary work under s 41A(3) of the EP Act.

Proposed Infrastructure

Table 4 provides a list of major infrastructure associated with the development envelope for the Proposal.

Table 4 Proposed Infrastructure: Mine Development Envelope

<table>
<thead>
<tr>
<th>Open cut mining voids</th>
<th>Culverts and surface water management infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste dumps</td>
<td>Water storage infrastructure</td>
</tr>
<tr>
<td>Tailings storage facilities (above and below water table)</td>
<td>Airport</td>
</tr>
<tr>
<td>Ore processing facility</td>
<td>Accommodation camps (construction)</td>
</tr>
<tr>
<td>ROM (run-of-mine) facility</td>
<td>Accommodation camp (operations)</td>
</tr>
<tr>
<td>Crushing and screening facilities</td>
<td>Communications infrastructure</td>
</tr>
<tr>
<td>Borrow areas</td>
<td>Landfill and bioremediation facilities</td>
</tr>
<tr>
<td>Ore stockpiles</td>
<td>Explosives storage facility</td>
</tr>
<tr>
<td>Topsoil stockpiles</td>
<td>Laydown areas</td>
</tr>
<tr>
<td>Conveyors</td>
<td>Fuel storage</td>
</tr>
<tr>
<td>Haul roads</td>
<td>Power station</td>
</tr>
<tr>
<td>Access roads</td>
<td>Power transmission lines</td>
</tr>
<tr>
<td>Dewatering and surplus water management infrastructure</td>
<td>Workshops and warehouses</td>
</tr>
<tr>
<td>Gas and water pipelines</td>
<td>Laboratory and sample stations</td>
</tr>
<tr>
<td>Water supply borefield</td>
<td>Administration buildings</td>
</tr>
<tr>
<td>Bridges</td>
<td>Wastewater treatment plants</td>
</tr>
</tbody>
</table>
Tenure

The Mine Development Envelope is defined in Figure 2. The Mine Development Envelope contains portions of Fortescue-managed mining tenure, third party mining tenure and unallocated crown land. Fortescue-managed tenure within the Mine Development Envelope includes:

- M47/1509
- M47/1522 (Pending)
- M47/1523 (Pending)
- M47/1524 (Pending)
- M47/1525 (Pending)
- M47/1526 (Pending)
- E47/1194
- E47/1195
- E47/1196
- E47/1500
- E47/1533
- E47/1861
- E47/2037
- E47/3291
- E47/3334
- E47/3686
- P47/1650
- P47/1665
- E47/1299
- E47/1300
- E47/1301
- E47/1302
- E47/1373
- P47/1667
- P47/1668
- P47/1669
- P47/1670
- P47/1671.

The Mine Development Envelope may be refined as the Proposal progresses.

3. Preliminary key environmental factors and required work

The preliminary key environmental factors for the environmental review are:

1. Hydrological Processes and Inland waters Environmental Quality
2. Flora and Vegetation
3. Terrestrial Fauna
4. Subterranean Fauna
5. Social Surrounds
6. Air Quality

Table 5 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 5  Preliminary key environmental factors and required work

<table>
<thead>
<tr>
<th>Hydrological Processes and Inland Waters Environmental Quality</th>
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<tbody>
<tr>
<td><strong>EPA objectives</strong></td>
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<tr>
<td><strong>Relevant activities</strong></td>
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<tr>
<td><strong>Potential impacts and risks</strong></td>
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</table>
| Required work | 1. Characterise the current hydrology and hydrogeological regimes, both in a local and regional context, including but not limited to:  
| | a) geological framework  
| | b) water levels  
| | c) water quantity  
| | d) stream flows  
| | e) flood patterns  
| | f) catchment boundaries  
| | g) environmental values of significance.  
| | 2. Characterise the baseline water quality and provide analysis of existing water chemistry and water quality data, both in a local and regional context.  
| | 3. Provide conceptual models of the surface and groundwater systems, including the extent of connectivity between surface and groundwater systems.  
| | 4. Provide a conceptual mine water balance over the life of the Proposal to discuss the capacity to reuse surplus groundwater obtained during mine dewatering.  
| | 5. Provide a conceptual mining void water balance assessment over the life of the Proposal.  
| | 6. Discuss current and future potential water users in the Proposal area and how they may be impacted by the water abstraction during construction, operation and post-closure.  
| | 7. Discuss the potential environmental impacts and benefits of identified surplus water management options (i.e. reuse on site, injection, discharge and storage in mining voids, controlled surface discharge) and discuss the most appropriate water management strategy for the Proposal.  
| | 8. Analyse, discuss and assess surface water and groundwater impacts during operations and post-closure. The analysis should include but not be limited to:  
| | a) changes in groundwater levels and changes to surface water flows associated with the Proposal;  
| | b) the nature, extent, and duration of impacts;  
| | c) cumulative impacts with other projects and referred Proposals, for which relevant information is publicly available  
| | d) impacts to current and future potential water users in the Proposal area; and  
| | e) impacts on the environmental values of significant receptors.  
| | 9. Document and include any potential pathways for contamination including but not limited to:  
| | • dust;  
| | • operational leaks and spills;  
| | • seepage from sewage treatment plants;  
| | • drainage from and erosion of disturbed areas of landform surfaces; |
• disposal of excess water via surface discharge or groundwater injection; and
• saline final void pit lake contaminating surrounding groundwater.

10. Describe Geochemical and physical properties of the waste streams for each of the proposed disposal methods into the waste dumps and tailings disposal (both above and below ground) identify if any alternative management is required.

11. Provide materials and waste characterisation work including available static and kinetic test results and existing water chemistry to enable through assessment of acid and metalliferous drainage risk posed by the project. If Potentially Acid Forming (PAF) material is identified, provide mine scheduling detail to demonstrate that PAF material will not be disturbed during mining and/or that effective strategies will be in place to ensure PAF material is adequately managed should it be exposed and/or disturbed.

12. Include details on the pit lake characteristics (e.g. flow-through or sink)

13. Provide a conceptual mining void water body salinity assessment over the life of the Proposal.

14. Discuss the potential environmental impacts and benefits of identified surplus water management options in relation to water quality (i.e. reuse on site, injection, surface discharge).

15. Analyse, discuss and assess surface water and groundwater impacts. The analysis should include but not be limited to:
   a) changes to salinity of groundwater and changes to surface water quality associated with the Proposal;
   b) the nature, extent, and duration of impacts;
   c) cumulative impacts with other projects and referred Proposals, for which relevant information is publicly available.

16. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to Hydrological Processes (including post-closure).

17. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to Inland Waters Environmental Quality (including post-closure).

18. Discuss management measures, outcomes/objectives sought to ensure residual impacts (direct and indirect) are not greater than predicted. Include identification of water quality trigger levels, to be implemented during construction, operation and following closure to ensure that the EPA’s objectives for these factors are met.

19. Prepare a Mine Closure Plan consistent with DMP and EPA Guidelines for Preparing Mine Closure Plans (2015), which addresses the development of completion criteria to maintain of the hydrological regimes and the quality of groundwater and surface water so that environmental values are maintained post closure.


21. Demonstrate and document in the ERD how the EPA’s objectives for these factors can be met.
### Relevant policy and guidance

**EPA Policy and Guidance**

- *Instructions on how to prepare an Environmental Review Document* (EPA 2016)
- *Environmental Factor Guideline: Inland Waters Environmental Quality* (EPA 2016)
- *Statement of Environmental Principals, Factors and Objectives* (EPA 2016)

**Other policy and guidance**

- *Western Australian Water in Mining Guideline* (DoW 2013)
- *Strategic Policy 2.09: Use of Mine Dewatering Surplus* (DoW 2013)
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC and ARMCANZ 2000)

### Peer Review

Commission and provide an independent peer review of the groundwater and surface water models in order to assess the:

- validity of technical modelling approach
- validity of assumptions within the models.

### 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
- groundwater injection
- alteration of surface water flows
- potential surface discharge of excess water
- dust (from mining activities).

#### Potential impacts and risks

- Direct clearing of up to 8,560 ha of native vegetation.
- Direct and/or indirect impacts to significant vegetation (should any be identified during baseline surveys).
- Direct and/or indirect impacts to significant flora species recorded within the Mine Development Envelope.
- Fragmentation of significant vegetation.
- Impacts to riparian vegetation associated with controlled surface discharge of excess water.
- Introduction and/or spread of introduced species (weeds).

#### Required work

22. Identify and characterise flora and vegetation within the Mine Development Envelope in accordance with the requirements of...
Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment, December 2016. Demonstrate how surveys are relevant and representative and demonstrate consistency with EPA policy. Include a summary of survey findings.


24. Provide an analysis of the vegetation and significant flora species present and likely to be present within the Mine Development Envelope, including any indirect impact areas outside of the Mine Development Envelope. Include an assessment of the significance of flora and vegetation in a local and regional context. Include a quantitative assessment of levels of impact on significant flora and significant vegetation.

   For significant flora, this includes:
   a) numbers and proportions of individuals in a local and regional context, and
   b) numbers and proportions of populations directly or potentially indirectly impacted; and
   c) numbers/proportions/populations within the conservation estate (where known).

   For ecological communities and significant vegetation units this includes:
   a) the area (in hectares) and proportions directly or potentially indirectly impacted.
   b) proportions/hectares of ecological community or vegetation unit currently protected within conservation estate (where known).

25. Provide a clear set of data, including tables and maps; that shows the proposed impact (direct and indirect) for the Proposal, including but not limited to impacts to:

   a) significant flora
   b) significant vegetation
   c) conservation areas (including Karijini National Park and DBCA-managed lands).

26. Provide a detailed description of the cumulative impacts (direct and indirect) associated with the Proposal. Discuss and determine significance of potential direct, indirect and cumulative impacts to flora and vegetation as a result of the Proposal at a local and regional level.

27. Demonstrate that all practicable measures have been taken to reduce both the area of the proposed disturbance footprint and the Mine Development Envelope based on progress in the Proposal design and understanding of the environmental impacts.

28. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to flora and vegetation (including post-closure).

29. Discuss management measures, outcomes/objectives sought to ensure residual impacts (direct and indirect) are not greater than predicted.

30. Prepare a Mine Closure Plan consistent with DMP and EPA Guidelines for Preparing Mine Closure Plans (2015), which includes methodologies
and criteria to ensure progressive rehabilitation of disturbed areas with vegetation composed of local Pilbara native species.

31. Describe rehabilitation and revegetation measures relevant to flora and vegetation, including relevant practice and demonstrated outcomes, as consistent with the Rehabilitation and Revegetation Management Plan (45-PL-EN-0023).

32. Review and revise the existing, approved Fortescue Significant Flora and Vegetation Management Plan (45-PL-EN-0017) or Vegetation Health Monitoring and Management Plan (100-PL-EN-1020) [whichever is currently approved by the EPA at the time of ERD submission] to incorporate the Proposal.

33. Describe the impacts for the Proposal and analyse these impacts to identify and detail any that are significant.

34. Predict the inherent and residual impacts before and after applying the mitigation hierarchy and identify whether the residual impacts are significant by applying the Significant Residual Impact Model in the WA Environmental Offsets Guideline.

35. Quantify any significant residual impacts by completing the Offset Template, spatially defining the area of 'good' to 'excellent' native vegetation that will be disturbed as a result of this proposal and propose an appropriate offsets package that demonstrates application of the WA Environmental Offsets Policy and Guideline.

36. Demonstrate and document in the ERD how the EPA's objective for this factor can be met.

**Relevant policy and guidance**

<table>
<thead>
<tr>
<th>EPA Policy and Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Environmental Factor Guideline: Flora and Vegetation (EPA 2016)</td>
</tr>
<tr>
<td>• Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016)</td>
</tr>
<tr>
<td>• Advice of the Environmental Protection Authority to the Minister for Environment under Section 16 of the Environmental Protection Act 1986, Cumulative environmental impacts of development in the Pilbara region (EPA 2014)</td>
</tr>
<tr>
<td>• Instructions on how to prepare an Environmental Review Document (EPA 2016)</td>
</tr>
<tr>
<td>• Statement of Environmental Principals, Factors and Objectives (EPA 2016)</td>
</tr>
<tr>
<td>• Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA 2016)</td>
</tr>
<tr>
<td>• Guidelines for Preparing Mine Closure Plans (DMP and EPA, 2015)</td>
</tr>
</tbody>
</table>

**Other policy and guidance**

| • WA Environmental Offsets Policy (The Government of Western Australia 2011) |
| • WA Environmental Offsets Guidelines (The Government of Western Australia 2014). |
## EPA objective

To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.

### Relevant activities

- Clearing/modification of fauna habitat
- Groundwater abstraction
- Groundwater injection
- Alteration of surface water flows (including release of excess water by controlled surface discharge)
- Light, noise and vibration from mining operations
- Dust from mining operations
- Vehicle movements.

### Potential impacts and risks

- Direct clearing of up to 8,560 ha of fauna habitat.
- Fragmentation of fauna and SRE habitat due to linear infrastructure or landforms within the Mine Development Envelope.
- Mortality and/or indirect impacts to fauna due to infrastructure or landform placement, vehicle interactions, artificial water bodies, modification of water quality and water regimes, modification of natural levels of light, noise and vibration, increased dust, altered fire regime, introduction or spread of weeds and attraction of feral species (in relation to predation of and competition with native species).

### Required work

37. Conduct a Level 2 terrestrial fauna survey (incorporating a desktop assessment) in areas that are likely to be directly or indirectly impacted. Surveys are to be undertaken in accordance with relevant EPA and DOEE policy and, where available, species-specific survey guidelines for relevant species listed under the *Wildlife Conservation Act 1950* and the *Environment Protection Biodiversity Conservation Act 1999*. Demonstrate how surveys are relevant and representative and demonstrate consistency with EPA policy.

38. Conduct a Level 2 short-range endemic fauna survey (incorporating a desktop assessment) in accordance with *Technical Guidance – Sampling of Short Range Endemic Invertebrate Fauna* (EPA 2016). Demonstrate how surveys are relevant and representative and demonstrate consistency with EPA policy.

39. Provide a summary of survey findings, including a comprehensive listing of:
   a) fauna known or likely to occur in the habitats present
   b) identification of short range endemic species of conservation significance known or likely to occur in the area
   c) identification of conservation significant vertebrate fauna species known or likely to occur in the area.
40. Conduct additional targeted surveys for conservation significant fauna that are known to or likely to occupy habitats in the Proposal area if demonstrated to be required based on the results of the Level 2 surveys.

41. Identify and map the fauna habitat types within the Mine Development Envelope. Consider habitat types that provide important ecological function within the Proposal area (e.g. geological features which may support unique ecosystems).

42. Provide information on the conservation value of each habitat type from a local and regional perspective, including the percentage representation of each habitat type to be disturbed in relation to its local and regional extent.

43. For each relevant conservation significant species known or likely to occur within the Proposal area, provide:
   a) baseline information on distribution (including known occurrences), ecology, and habitat preferences at both the site and regional levels;
   b) size and the importance of the population from a local and regional perspective and potential percentage loss of the conservation significant species locally due to loss of habitat;
   c) maps illustrating the known recorded locations of conservation significant species in relation to fauna habitat and the proposed disturbance and areas to be impacted;
   d) discussion of known existing threats to the species, with reference to relevant impacts from the proposed action (including taking into consideration any relevant guidelines, policies, plans and statutory provisions);
   e) detailed description of the potential direct, indirect and cumulative impacts to the species within the Proposal area and on a regional scale.

44. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to terrestrial fauna (including post-closure).

45. Discuss management measures, outcomes/objectives sought to ensure residual impacts (direct and indirect) are not greater than predicted.

46. Describe the residual impacts for the Proposal and analyse these impacts to identify and detail any that are significant.

47. Review and revise the existing, approved Fortescue Conservation Significant Fauna Management Plan (100-PL-EN-0022) to incorporate the Proposal.

48. Predict the inherent and residual impacts before and after applying the mitigation hierarchy and identify whether the residual impacts are significant by applying the Significant Residual Impact Model in the WA Environmental Offsets Guidelines.

49. Quantify any significant residual impacts by completing the Offset Template, spatially defining the habitat area for each significant fauna species that will be disturbed as a result of this proposal and propose an appropriate offsets package that demonstrates application of the
WA Environmental Offsets Policy and Guideline. Demonstrate how the project has considered the WA guidance for offsets. Demonstrate and document in the ERD how the EPA’s objective for this factor can be met.

### Relevant policy and guidance

**EPA Policy and Guidance**

- Environmental Factor Guideline: Terrestrial Fauna (EPA 2016)
- Technical Guidance – Terrestrial Fauna Surveys (EPA 2016)
- Technical Guidance – Sampling of Short Range Endemic Invertebrate Fauna (EPA 2016)
- Advice of the Environmental Protection Authority to the Minister for Environment under Section 16 of the Environmental Protection Act 1986, *Cumulative environmental impacts of development in the Pilbara region* (EPA 2014)
- Instructions on how to prepare an Environmental Review Document (EPA 2016)
- Statement of Environmental Principals, Factors and Objectives (EPA 2016)
- Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA 2016)
- Guidelines for Preparing Mine Closure Plans (DMP and EPA, 2015)

**Other policy and guidance**

- WA Environmental Offsets Policy (The Government of Western Australia 2011)
- *Survey guidelines for Australia’s threatened mammals.* EPBC Act survey guidelines 6.5 (Department of Sustainability, Environment, Water, Population and Communities 2011),
- *Survey guidelines for Australia’s threatened reptiles.* EPBC Act survey guidelines 6.6 (Department of Sustainability, Environment, Water, Population and Communities 2011).

### Subterranean Fauna

**EPA objective**

To protect subterranean fauna so that biological diversity and ecological integrity are maintained.

**Relevant activities**

- removal of iron ore and waste material during mining
- groundwater abstraction
### Potential impacts and risks

- Impact to subterranean fauna habitat, assemblage and individuals due to mining, groundwater abstraction and groundwater injection.
- Indirect impacts to stygofauna due to changes in hydrology associated with placement of infrastructure or landforms.
- Indirect impacts to stygofauna due to elevated concentrations of contaminants in water due to chemical or hydrocarbon spills, leaching from waste dumps or tailings storage facilities.

### Required work

50. Conduct a Level 2 subterranean fauna survey (incorporating a desktop assessment) in areas that are likely to be directly or indirectly impacted as a result of the Proposal in accordance with the requirements of *Technical Guidance – Sampling methods for subterranean fauna* and *Technical Guidance – Subterranean fauna survey*. Demonstrate how surveys are relevant and representative and demonstrate consistency with EPA policy. Provide a summary of survey findings, including:
   a) a comprehensive listing of subterranean fauna known or likely to occur in the habitats present, and
   b) identification of conservation significant fauna species known or likely to occur in the area.

51. Assess the impacts to subterranean fauna with reference to relevant impacts from the proposed action (including taking into consideration any relevant guidelines, policies, plans and statutory provisions). For species which are likely to be impacted, provide information, including maps of habitat extent (linked to geological and hydrological information) and an appropriate explanation of the likely distribution of species within those habitats including evidence to demonstrate whether there is habitat connectivity.

52. Provide a detailed description of the potential direct, indirect and cumulative impacts to conservation significant species, species which are only known from the area of impact and other species within the Proposal area and on a regional scale.

53. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to subterranean fauna (including post-closure).

54. Discuss management measures, outcomes/objectives sought to ensure residual impacts (direct and indirect) are not greater than predicted.

55. Describe the residual impacts for the Proposal and analyse these impacts to identify and detail any that are significant.

56. Review and revise the existing, approved Fortescue *Subterranean Fauna Survey Plan* (45-PL-EN-0010) to incorporate the Proposal (if required).
57. Predict the inherent and residual impacts before and after applying the mitigation hierarchy and identify whether the residual impacts are significant by applying the Significant Residual Impact Model in the WA Environmental Offsets Guideline. Quantify any significant residual impacts by completing the Offset Template and propose an appropriate offsets package that demonstrates application of the WA Environmental Offsets Policy and Guideline.

58. Demonstrate and document in the ERD how the EPA's objective for this factor can be met.

### EPA Policy and Guidance

- Environmental Factor Guideline: Subterranean Fauna (EPA 2016)
- Technical Guidance – Subterranean Fauna Surveys (EPA 2016)
- Statement of Environmental Principals, Factors and Objectives (EPA 2016)
- Instructions on how to prepare an Environmental Review Document (EPA 2016)

### Other policy and guidance

- WA Environmental Offsets Policy (The Government of Western Australia 2011)

### EPA objective

Provide for the protection of the environment, especially matters of national environmental significance.

### Relevant activities

- Clearing/modification of fauna habitat
- groundwater abstraction
- groundwater injection
- alteration of surface water flows
- light, noise and vibration from mining operations
- dust from mining operations
- vehicle movements.

### Potential impacts and risks

- Direct clearing of fauna habitat supporting listed threatened species (MNES).
- Mortality or displacement of listed threatened fauna species (MNES) due to infrastructure or landform placement, vehicle interactions, artificial water bodies, modification of water quality and water regimes, modification of natural levels of light, noise and vibration, increased dust, introduction or spread of weeds,
| Required work | 59. Specify any MNES being assessed as part of the accredited assessment. For specific MNES species (or any other flora or fauna MNES species identified within the Mine Development Area), address the following:

i. Pilbara Leaf-nosed Bat and Ghost Bat
   a) Provide a review of bat populations and habitat in the local and regional area.
   b) Investigate and provide a description of any potential bat populations and habitat in the Mine Development Envelope, and potential impacts from the Proposal.
   c) Detail the extent to which clearing will remove foraging/hunting habitat for these species and the likely impacts of this on the local population.

ii. Northern Quoll:
   a) Provide a review of quoll populations and habitat in the local and regional area.
   b) Detail the extent to which clearing will remove critical habitat and be expected to impact the species; and

iii. Pilbara Olive Python:
   a) Provide a review of python populations and habitat in the local and regional area.
   b) Detail the extent to which clearing will remove critical habitat and be expected to impact this species.

iv. Night Parrot:
   a) Provide a review of Night Parrot records and potentially suitable habitat in the local and regional area.
   b) Detail the extent to which clearing will remove critical habitat and be expected to impact this species.

60. Assess direct and indirect impacts on MNES fauna, and fauna habitats. Provide figures showing the likely extent of loss of habitat types and the extent of habitat areas expected to recover from both direct and indirect impacts and provide information on the potential outcome of clearing habitat on the fauna populations.

61. Review and revise the existing, approved Fortescue Conservation Significant Fauna Management Plan (100-PL-EN-0022) to incorporate the Proposal. This Plan addresses the following:

i. Identification of potential direct and indirect impacts to conservation significant fauna and their critical habitats

ii. Establishment of management strategies to minimise the potential impacts to conservation significant fauna and their critical habitats

iii. Development of monitoring programs to detect any impacts on conservation significant fauna and their critical habitats, identifying:
   a) Monitoring sites for each species
b) Monitoring methods and parameters  
c) Trigger criteria and contingency measures.

- Describe potential regulation for each environmental aspect associated with matters of national environmental significance, including an assessment of the sufficiency of likely EP Act regulation in protecting MNES.

<table>
<thead>
<tr>
<th>Relevant policy and guidance</th>
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<tbody>
<tr>
<td><strong>EPA Policy and Guidance</strong></td>
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<td>- Instructions on how to prepare an Environmental Review Document (EPA 2016)</td>
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<tr>
<td>- Environmental Factor Guideline: Terrestrial Fauna (EPA 2016)</td>
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<td>- Technical Guidance – Terrestrial Fauna Surveys (EPA 2016)</td>
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<tr>
<td>- Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA 2016)</td>
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<tr>
<td><strong>Other policy and guidance</strong></td>
<td></td>
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<tr>
<td>- WA Environmental Offsets Policy (The Government of Western Australia 2011)</td>
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<tr>
<td>- Survey guidelines for Australia’s threatened mammals. EPBC Act survey guidelines 6.5 (Department of Sustainability, Environment, Water, Population and Communities 2011),</td>
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<tr>
<td>- Survey Guidelines for Australia’s Threatened Bats. EPBC Act survey guidelines 6.1 (Department of the Environment, Water, Heritage and the Arts 2010)</td>
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<tr>
<td>- Survey guidelines for Australia’s threatened reptiles. EPBC Act survey guidelines 6.6 (Department of Sustainability, Environment, Water, Population and Communities 2011).</td>
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<tr>
<td>- Survey Guidelines for Australia’s Threatened Birds. EPBC Act survey guidelines 6.2 (Department of the Environment, Water, Heritage and the Arts 2010)</td>
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<tr>
<td>- Interim guideline for preliminary surveys of night parrot (Pezoporus occidentalis) in Western Australia (Department of Parks and Wildlife 2017)</td>
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<tr>
<td>- Conservation Advice: Macrodecta gigas (Threatened Species Scientific Committee [TSSC] 2016)</td>
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<tr>
<td>- Conservation Advice: Rhinonicteris aurantia (Pilbara form) (TSSC 2016)</td>
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<tr>
<td>- Conservation Advice: Liasis olivaceus barroni (Olive Python – Pilbara form) (TSSC 2008)</td>
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<tr>
<td>- Conservation Advice: Pezoporus occidentalis (TSSC 2016)</td>
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**Environmental Scoping Document**

**Eliwana Iron Ore Mine Project**

- **Threat Abatement Plan for predation by the European Red Fox** (Department of the Environment, Water, Heritage and the Arts 2008)
- **Threat Abatement Plan for predation by Feral Cats** (Commonwealth of Australia 2015)
- **Threat Abatement Plan for the biological effects, including lethal toxic ingestion, caused by cane toads** (Department of Sustainability, Environment, Water, Populations and Communities [DSEWPaC] 2011)
- **Threat Abatement Plan to reduce the impacts on northern Australia’s biodiversity by the five listed grasses** (DSEWPaC 2012)
- **Threat Abatement Plan to reduce the impacts on northern Australia’s biodiversity by the five listed grasses** (DSEWPaC 2012)
- **Threat abatement plan for competition and land degradation by rabbits** (Department of the Environment and Energy 2016)

63. **EPBC Act Referral guideline for the endangered northern quoll;** EPBC Act Policy Statement (Department of the Environment 2016)

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**Social Surroundings**

<table>
<thead>
<tr>
<th>EPA objective</th>
<th>To protect social surroundings from significant harm.</th>
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</table>
| Relevant activities | • clearing and excavation for mining activities  
                    • abstraction of groundwater  
                    • discharge of excess water  
                    • alteration to hydrological processes. |
| Potential impacts and risks | • Disturbance of Aboriginal heritage places.  
                              • Prevention or change to access to an Aboriginal heritage place.  
                              • Changes to the attributes of the environment which may impact on Aboriginal heritage places. |
| Required work | 64. Characterise the heritage of proposed disturbance areas and any other areas that may be indirectly impacted to identify Aboriginal heritage places and their relevance within a wider regional context.  
                65. Conduct surveys to identify Aboriginal heritage places.  
                66. Undertake consultation to identify concerns in regard to impacts from proposed mining operations on Aboriginal heritage places.  
                67. Provide a description of the known heritage values within the Mine Development Envelope and provide a figure(s) of the native title determination areas, heritage locations and proposed disturbance. |
68. Provide a description of nearby conservation areas including National Parks and DBCA-managed areas and provide a figure(s) of these areas in relation to the proposed disturbance.

69. Assess the impacts of the Proposal on Aboriginal heritage places as a result of implementation of the Proposal, including those arising from changes to the environment.

70. Discuss management measures, outcomes/objectives sought to ensure residual impacts (direct and indirect) are not greater than predicted.

71. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to social surroundings.

72. Demonstrate and document in the ERD how the EPA's objective for this factor can be met.

Relevant policy and guidance

**EPA Policy and Guidance**

- Environmental Factor Guideline: Social Surrounds (EPA 2016)
- Instructions on how to prepare an Environmental Review Document (EPA 2016)

**Other policy and guidance**

- Department of Aboriginal Affairs and Department of Premier and Cabinet, 2013, Due Diligence Guidelines, Version 3.0. Perth, Western Australia.

### Air Quality

**EPA objective**

To maintain air quality and minimise emissions so that environmental values are protected.

**Relevant activities**

- operation of vehicles, plant, equipment and processing infrastructure
- power generation
- excavation of mining voids.

**Potential impacts and risks**

- Generation of greenhouse gases through power generation and combustion of fossil fuels.
- Exposure of asbestiform materials

**Required work**

73. Describe the environmental setting of the proposal in relation to proximity to sensitive receptors.

74. Describe the scale and nature of power generation/combustion activities associated with the Proposal.

75. Characterisation of greenhouse gas emission sources from the Proposal.

76. Estimation of expected Scope 1 (direct) and Scope 2 (energy indirect) greenhouse gas emissions in accordance with the National Greenhouse and Energy Reporting Act 2007 (NGER Act).
77. Analysis of greenhouse gas intensity (i.e. quantity of CO₂-e generated per tonne of product produced).
78. Estimation of expected pollutants (such as oxides of nitrogen, particulates and VOCs) resulting from the Proposal.
79. Assess the mineralogy for likelihood of asbestiform minerals occurring.
80. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to air quality (greenhouse gases).
81. Review and revise the existing, approved Fortescue Greenhouse Gas Emissions and Energy Reporting Management Plan (100-PR-GH-0001) to incorporate the Proposal.
82. Demonstrate and document in the ERD how the EPA's objective for this factor can be met.

Relevant policy and guidance

**EPA Policy and Guidance**
- Environmental Factor Guideline: Air Quality (EPA 2016)
- Instructions on how to prepare an Environmental Review Document (EPA 2016)

**Other policy and guidance**

4. Other environmental factors or matters
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 will 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 will 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 and Commonwealth government agencies and local government authorities, the local community and environmental non-government organisations.

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
- 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>
<thead>
<tr>
<th>Decision-making Authority</th>
<th>Relevant legislation</th>
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</thead>
<tbody>
<tr>
<td>1. Department of the Environment and Energy (Commonwealth)</td>
<td>Environment Protection and Biodiversity Conservation Act 1999 - Listed threatened species and communities (s18 and 18A)</td>
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<td>3. Minister for Water</td>
<td>Rights In Water and Irrigation Act 1914</td>
</tr>
<tr>
<td>5. Minister for Aboriginal Affairs</td>
<td>Aboriginal Heritage Act 1972</td>
</tr>
</tbody>
</table>
| 6. Director General, Department of Water and Environmental Regulation | Environmental Protection Act 1986 –
- Part V Works Approval Licence.
Environmental Protection (Clearing of Native Vegetation Regulations 2004)
- Clearing Permit |
Dangerous Goods licence and approvals |
| 10. Chief Executive Officer, Shire of Ashburton | Building Act 2011 –
- Building permit for worker accommodation. |
Figure 1 – Regional location
Figure 2 – Development envelope