ENVIRONMENTAL SCOPING DOCUMENT

PROPOSAL NAME:	**Solomon Iron Ore Project Expansion**
ASSESSMENT NUMBER:	**2019**
LOCATION:	**Approximately 60 kilometres (km) north of Tom Price**
LOCAL GOVERNMENT AREA:	**Shire of Ashburton and Shire of East Pilbara**
PROPONENT:	**Fortescue Metals Group Limited**
PUBLIC REVIEW PERIOD:	**6 Weeks**
EPBC REFERENCE NO.:	**2014/7275**

1. Introduction

The above proposal is being assessed by the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986* (EP Act) at the level of Public Environmental Review (PER). This Environmental Scoping Document (ESD) sets out the requirements for the environmental review of the proposal. The purpose of an ESD is to:

- provide proposal-specific guidelines to direct the proponent on the preliminary key environmental factors or issues that are to be addressed during the environmental review and preparation of the environmental review report; and
- identify the required work that needs to be carried out.

The proponent must conduct the environmental review in accordance with this ESD and then report to the EPA in an environmental review report (PER document). As well as the proposal-specific requirements for the environmental review identified in this ESD, the PER document must also address the generic information requirements listed in section 10.2.4 of the EPA's *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2012* (Administrative Procedures).

When the EPA is satisfied that the PER document adequately addresses these requirements, the proponent will be required to release the document for a public review period of 6 weeks.

This ESD has been prepared by the EPA in consultation with the proponent, decision-making authorities consistent with EPA Environmental Assessment Guideline (EAG) 10 – *Scoping a proposal*. ESDs prepared by the EPA are not

subject to public review. The ESD will be available on the EPA website (www.epa.wa.gov.au) upon endorsement and must be appended to the PER document

Assessment under Bilateral Agreement

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 under the Bilateral Agreement between the Commonwealth of Australia and the State of Western Australia made under section 45 of that Act. The relevant matters of national environmental significance (MNES) for this proposal are:

- listed threatened species and communities (SECTIONS 18 & 18A).

This ESD is inclusive of work required to be carried out and reported on in the PER document in relation to MNES. The PER document should contain a separate section identifying MNES that occur or have the potential to occur within the project area, discussing how any potential impacts on MNES have been avoided and mitigated and discussing any proposed offsets to address significant residual impacts on MNES using the Department of Sustainability, Environment, Water, Populations and Communities' *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy (2012).

2. The proposal

The subject of this ESD is the Solomon Iron Ore Project Expansion. The proposal is located approximately 60 km north of Tom Price. The regional location of the proposal is shown in Figure 1.

The revised proposal is to increase the disturbance area at the existing Solomon Mine project by up to 12,482 hectares (ha) in addition to the currently approved disturbance of 6,313 ha, of which 1,133 must be rehabilitated (Ministerial Statement 862) (total proposed disturbance of up to 18,795 ha). A comparison between the currently approved and proposed development envelopes is shown in Figure 2. The increased disturbance would allow for the expansion of existing mine pits and associated infrastructure, and the addition of a new mining area known as Castle Valley within the development envelope. An additional bore field to the northeast of the mine would also be constructed, as well as borrow pits within the existing rail corridor. The proposal would increase the life of the mine from 20 years to 35 years and is due to an increase in resources discovered. A conceptual mine layout showing both the currently approved and proposed clearing areas is shown in Figure 3.

The key characteristics of the proposal are set out in Table 1, in accordance with EAG 1 – *Defining the key characteristics of a proposal*. The development envelopes encompassing the physical elements of the proposal are delineated in Figure 4. A spatial dataset defining the elements of the proposal as set out in the Key Proposal Characteristics Table should be submitted with the Environmental Review document in accordance with EAG1.

It should be noted that the key proposal characteristics may change as a result of implementation of the mitigation hierarchy by the proponent on account of the findings of studies and investigations conducted as part of the environmental review.

Figure 1 – Regional Location of proposal

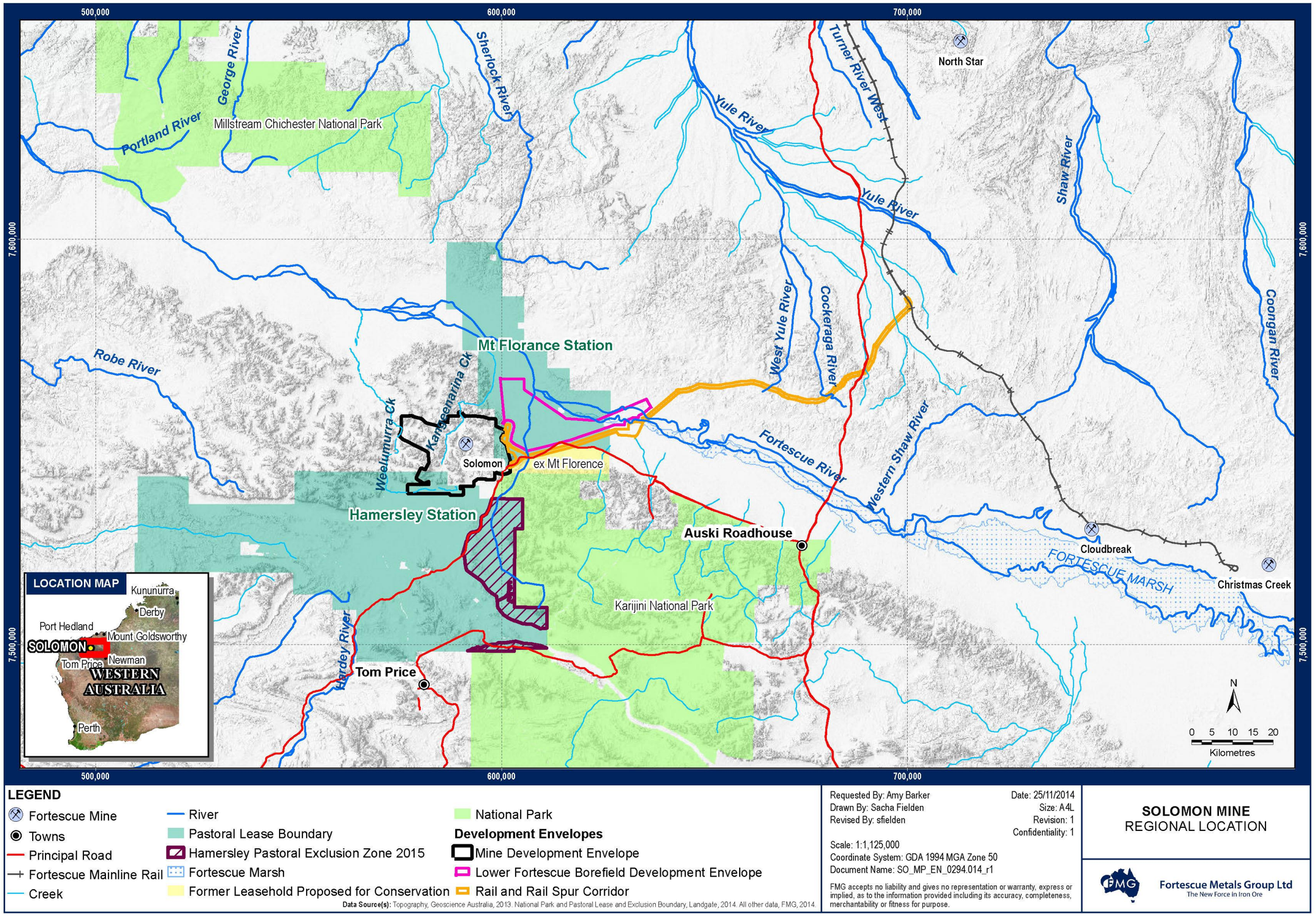

Figure 2 – Comparison of Currently approved and Proposed Development Envelopes (Mine)

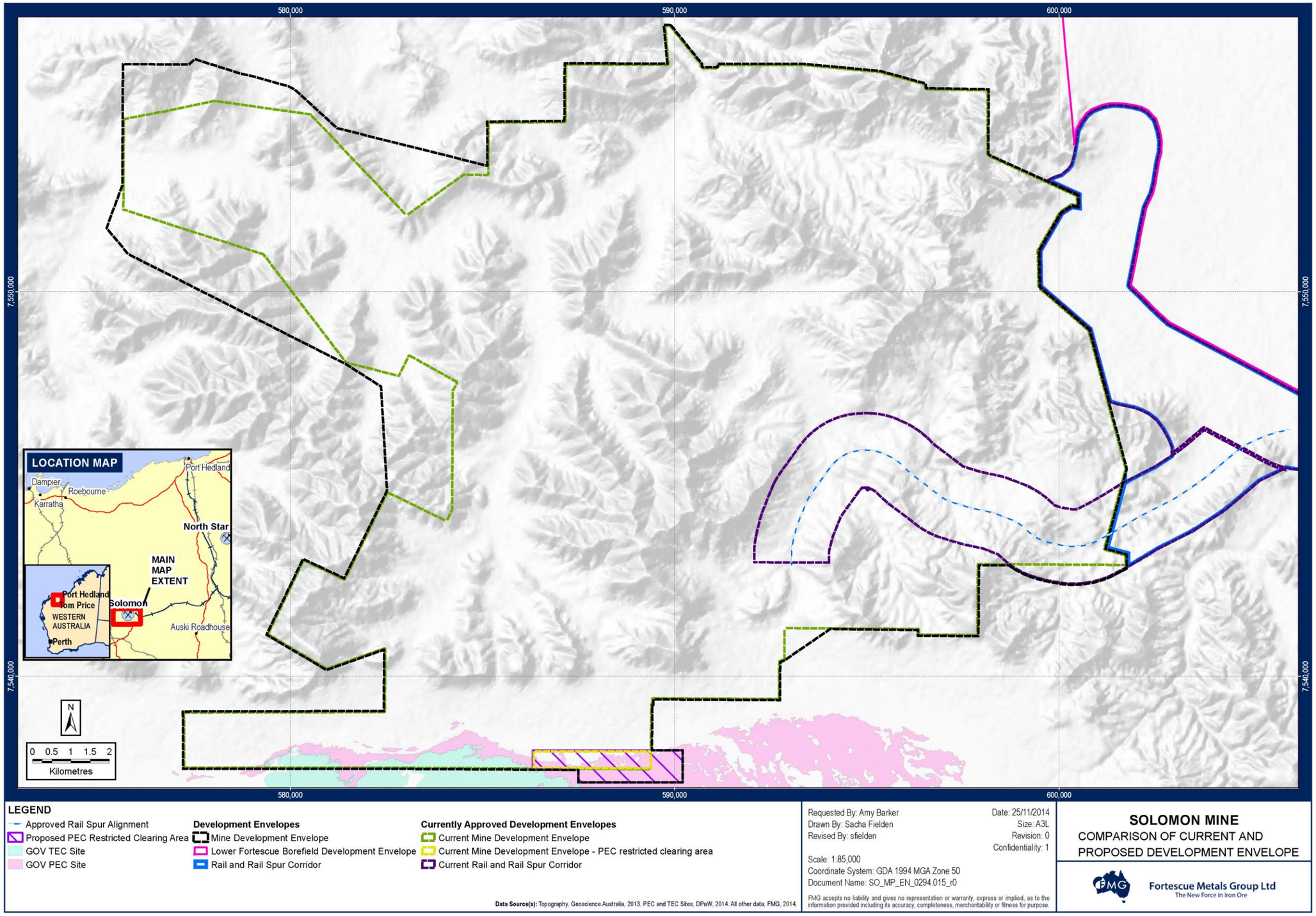

Figure 3 – Conceptual Mine Layout

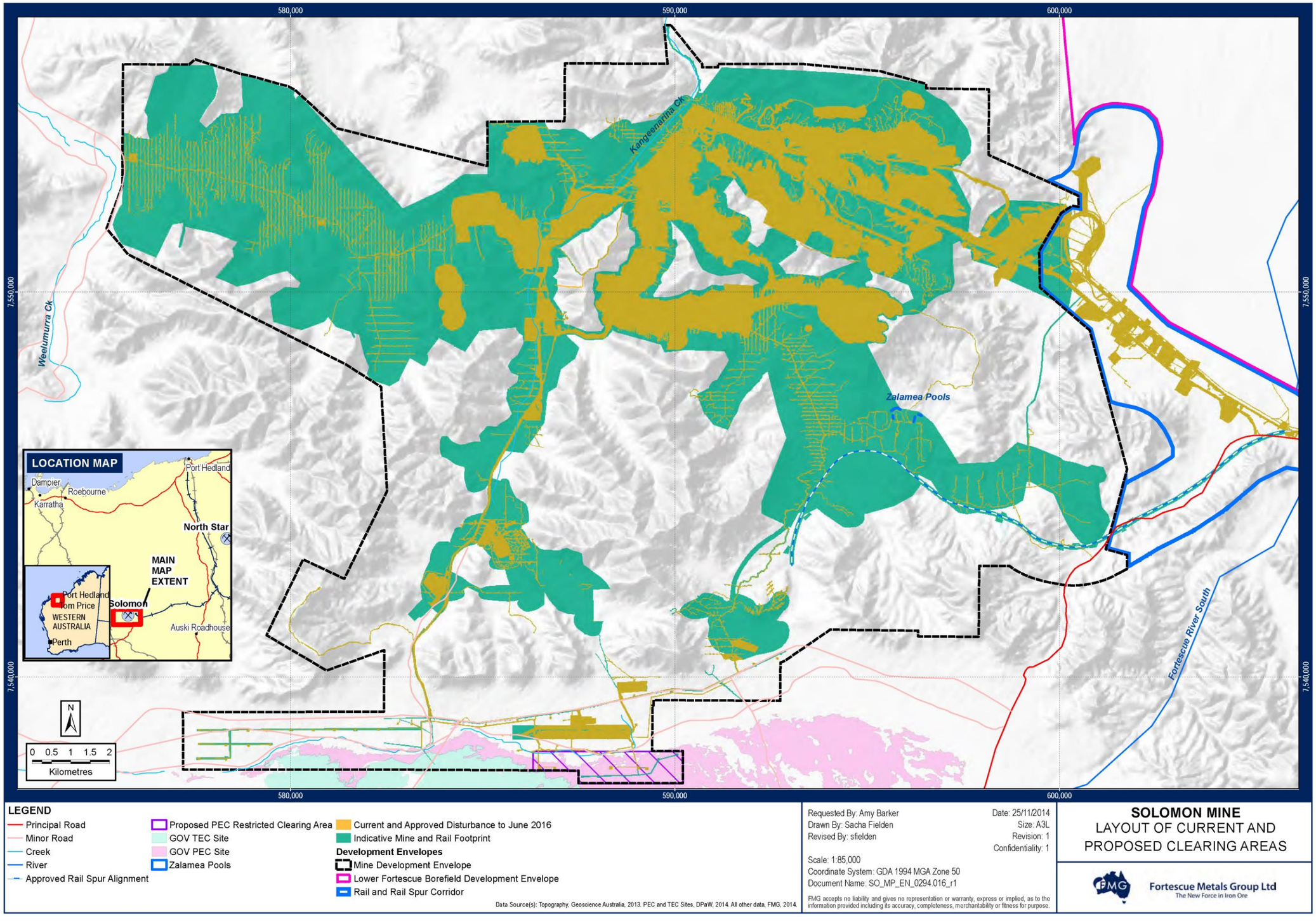

Figure 4 – Proposed Development Envelope Overview

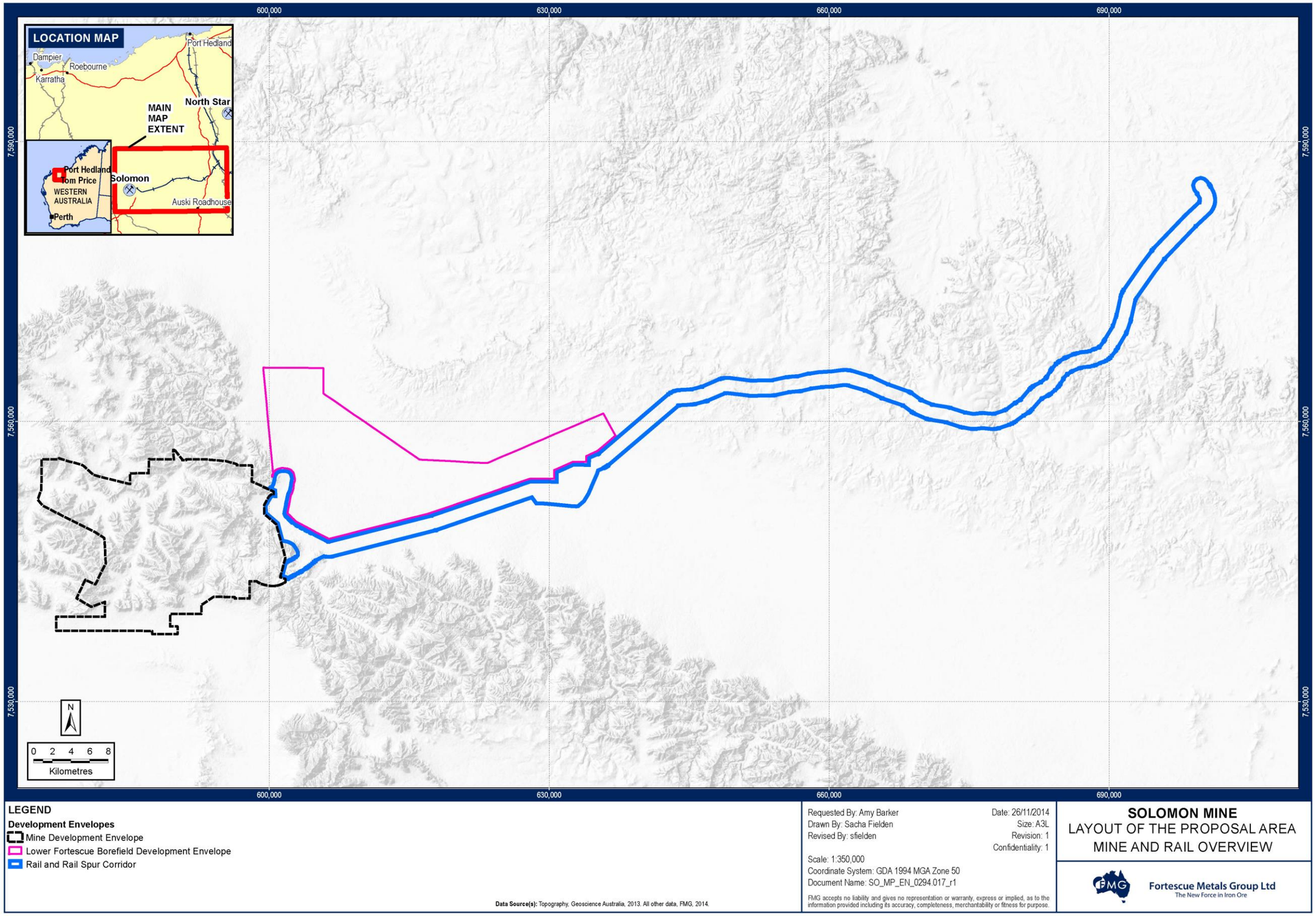

Table 1 – Key Characteristics Table

Summary of the proposal			
Proposal Title	Solomon Iron Ore Project Expansion		
Proponent Name	Fortescue Metals Group Limited		
Short Description	Revision of the operating Solomon Iron Ore Project, located approximately 60 km north of Tom Price in the Central Pilbara. The revised proposal includes: • Increase in the area of mine pits at the Firetail, Kings, Queens, Zion and Trinity Deposits at the existing Solomon Iron Ore Mine; • Addition of the Castle Valley mining area; • Increase in disturbance for mine infrastructure including but not limited to access roads, overland conveyors, stockpile areas, tailings storage and waste dumps; • Addition of a bore field to the northeast of the mining area; and expansion of the southern borefield; • Increase in the approved disturbance area within the rail corridor for borrow pits to facilitate rail maintenance.		
Physical Elements			
Element	**Location**	**Existing Authorised Extent** **(Ministerial Statement 862)**	**Proposed Extent**
Mine pits and associated infrastructure, including southern borefield and associated infrastructure	Figure 3	Up to 4416 ha within the 31333 ha Project Development Envelope 1, including not more than 5 ha disturbance of the PEC 'Brockman Iron Cracking Clay Communities' within the 153 ha Project Development Envelope 2.	Clearing no more than 16,066 hectares within the 33,814 hectare Mine Development Envelope. (11,650 hectares increase in clearing)
Rail infrastructure and borrow pits	Figure 4	Not more than 1897 ha total disturbance within the 29257 ha (combined) Rail and rail spur Corridor. Of the total disturbance area for the railway, not more than 764 ha is to be permanent disturbance and all other disturbed areas (1133 ha) are to be rehabilitated.	Clearing no more than 2,387 hectares within a 27,040 hectare Rail and rail spur Corridor Development Envelope (490 hectares increase)
Lower Fortescue	Figure 4	-	Clearing no more than 342 hectares within the 29,300

borefield and associated infrastructure			hectares Lower Fortescue Borefield Development Envelope.
Operational Elements			
Element	**Location**	**Existing Authorised Extent** **(Ministerial Statement 862)**	**Proposed Extent**
Water Supply	Figure 4	-	Up to 10 gigalitres per annum from the northeast bore field within the Lower Fortescue Borefield Development Envelope. Up to 14 gigalitres per annum from the southern borefield within the Mine Development envelope
Dewatering		Up to 25 Gigalitres per annum	Up to 25 Gigalitres per annum
Dewater disposal		Processing and operational water supply requirements; Managed aquifer recharge.	TBA
Waste rock disposal		Firetail - up to 128 Mt disposed in external waste dumps and remainder to in-pit backfilling Kings – up to 245 Mt disposed to external waste dumps and remainder to in-pit backfilling.	Up to 3,260 million tonnes to be disposed to in-pit backfilling or waste dumps. (Limit of external waste dumps to be determined during assessment process)
Backfilling of mine pits		Pits backfilled to an extent that precludes the formation of pit lakes.	Pits backfilled to an extent that precludes the formation of pit lakes.

3. Preliminary key environmental factors and scope of work

The key proposal characteristics in Table 1 have informed the identification of the preliminary key environmental factors for the proposal, in accordance with EAG 8 – *Environmental factors and objectives*. The preliminary key environmental factors for this proposal and the EPA's objective for each of those factors are identified in Table 2.

To provide context to the preliminary key environmental factors, Table 2 also identifies the aspects of the proposal that cause the factors to be key factors, and the potential impacts and risks likely to be relevant to the assessment. All of this in turn has informed the work required to be conducted in the environmental review. Where the work required as part of this ESD results in spatially defined information (such as habitat or predicted impact maps) this spatial data is to be provided to the EPA with the submission of the PER.

Finally, Table 2 identifies the policy documents that establish how the EPA expects the environmental factors to be addressed in the environmental review and the PER document that follows. Impacts associated with proposals are to be considered at a local and regional scale, including evaluation of cumulative impacts, and provide details of proposed management/mitigation measures. This includes whether environmental offsets are required by application of the mitigation hierarchy, consistent with the WA Environmental Offsets Guidelines.

In developing the PER document, in addition to considering direct and indirect impacts to the proposal area, FMGL should also consider direct and indirect impacts to the following conservation significant areas:

- Karijini National Park, managed by the Department of Parks and Wildlife;
- Former Mt Florance pastoral lease (proposed addition to the National Park); managed by the Department of Parks and Wildlife for conservation; and
- The part of the Hamersley Station Pastoral Lease that is proposed for excision in 2015.

Table 2 Preliminary key environmental factors and required work

Flora and Vegetation	
EPA objective	To maintain representation, diversity, viability and ecological function at the species, population and community level.
Relevant aspects	Clearing, dewatering, alterations to surface water flows, vehicle movements and rehabilitation activities.
Potential Impacts	• Direct impacts from the increase in clearing of up 12,482 ha of native vegetation, including: o Loss of flora and 'good to excellent' condition vegetation from clearing for the mine and supporting infrastructure. o Clearing of a portion of the Priority Ecological Community (PEC) Brockman Iron Cracking Clay.

	○ Clearing of riparian vegetation associated with creek lines and the Zalamea pools. • Indirect impacts on groundwater dependant vegetation due to groundwater drawdown as a result of dewatering pits and abstraction for water supply. • Indirect impacts to vegetation dependant on surface water due to alterations and disruptions to surface water flows. • Spread and Introduction of weeds through vehicle movements and earthworks.
Work required	1. Provide a clear set of data that shows the clearing undertaken for the existing project to date; against the currently approved clearing and proposed clearing for the expanded proposal. 2. Demonstrate how current clearing practices have met the requirements of Ministerial Statement 862 and application of the mitigation hierarchy, including: - Condition 6 - Priority Species and Significant Vegetation – Mine Site - Condition 7 - Priority Species – Rail Corridor - Condition 8 - Weeds - Condition 9 – Rehabilitation - Condition 10 – Surface Water (vegetation elements) 3. Provide an analysis of the potential impacts to the Priority Ecological Community (PEC) Brockman Iron Cracking Clay. 4. Provide a detailed description of the cumulative impacts associated with the proposal, including direct impacts from clearing, and indirect impacts such as groundwater drawdown, altered drainage, changes in water quality and fragmentation of vegetation. 5. Provide figures showing the extent of clearing and indirect impact to vegetation and conservation significant flora species, including but not limited to threatened and/or priority ecological communities, declared rare flora, priority flora and new flora species. 6. Consolidate vegetation and flora reports incorporating information from all relevant previous and new studies, particularly the following priority species: - *Gompholobium karijini;* - *Aristida jerichoensis* variety *subspinulifera;* - *Paspalidium retiglume;* - *Lepidium (catapycnon); and* - *Goodenia nuda*. 7. Carry out Level 2 flora and vegetation surveys in areas not previously surveyed to Level 2 requirements and that are likely to be directly or indirectly disturbed as a result of the proposal. Surveys are to be undertaken in accordance with Guidance Statement 51, and, where available, species-specific survey guidelines for relevant species listed under the EPBC Act (obtained from the Australian Government's Species Profile and Threats Database at http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl). Details of the scope, timing (survey season/s) and methodology for surveys used must be provided. Follow up targeted surveys may be required based on the results of the baseline survey for conservation significant flora and vegetation. 8. Analyse the extent of clearing and indirect impacts to assist in the determination of the significance of impacts at the local and regional scale, including impacts on: - vegetation units; - threatened and priority ecological communities; - threatened and priority flora; - species identified as significant consistent with Guidance Statement 51;

	- vegetation units identified as significant consistent with Guidance Statement 51; and - groundwater dependent vegetation, including vegetation units associated with Kangeenarina Creek, Weelamurra Creek and Zalamea Pools. 9. Undertake baseline mapping of weed affected areas in any area likely to be directly or indirectly impacted by the proposal. 10. Discuss proposed management, monitoring and mitigation methods to be implemented. 11. Demonstrate that all practicable measures have been taken to reduce both the disturbance area and the area of the Mine Development Envelope based on progress in the proposal design and understanding of the environmental impacts. 12. Demonstrate that the mitigation hierarchy of avoid, minimise, mitigate has been applied effectively during the mine planning and design stages of the project.
Relevant policy/guidelines/legislation	• Position Statement 2 *Environmental Protection of Native Vegetation in Western Australia*. • Position Statement 3 *Terrestrial Biological Surveys as an Element of Biodiversity Protection*. • Guidance Statement No. 51 *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* June 2004. • EPA (2014) *Cumulative environmental impacts of development in the Pilbara region. Advice of the Environmental Protection Authority to the Minister for Environment under Section 16(e) of the Environmental Protection Act 1986*. • Species-specific survey guidelines for relevant species listed under the EPBC Act (obtained from the Australian Government's Species Profile and Threats Database at http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl). • Checklist for documents submitted for EIA on marine and terrestrial biodiversity.
Terrestrial fauna	
EPA objective	To maintain representation, diversity, viability and ecological function at the species, population and assemblage level.
Relevant aspects	Clearing, dewatering, alterations and disruptions to surface water flows and pools, vehicle movement.
Potential impacts	• Habitat removal and fragmentation due to vegetation clearing. • Restriction or removal of access to breeding habitat, foraging habitat or water sources. • Indirect impacts may occur through altered fire regimes, groundwater drawdown, altered water regimes, increases in vehicle strikes, changes to feral animal populations, and introduction or spread of weed species.
Work required	1. Provide information on the fauna required by Ministerial Statement 862 Condition 12 – Vertebrate Fauna. 2. Conduct desktop study of information available, including consolidation of data collected from existing Solomon Iron Ore Project to provide a comprehensive listing

of vertebrate fauna and Short Range Endemic (SRE) invertebrate fauna known or likely to occur in the habitats present, and identification of conservation significant fauna species likely to occur in the area. Consideration should be given to species listed under both the WA Wildlife Conservation Act 1950 and the EPBC Act, and species listed by DPaW as Priority Fauna, including:

- Northern Quoll;
- Pilbara Leaf-nosed Bat;
- Night Parrot;
- Greater Bilby;
- Pilbara Olive Python; and
- Mulgara.

3. For each relevant conservation significant species, provide baseline information on their abundance (including known occurrences), distribution, ecology, and habitat preferences at both the local and regional levels.

4. Provide a detailed description of the potential direct, indirect (including downstream) and cumulative impacts to conservation significant species as a result of dewatering, alterations and disruptions to surface water flows and pools, groundwater drawdown and changes in water quality.

5. Conduct a Level 1 reconnaissance vertebrate and SRE invertebrate fauna habitat survey and mapping of habitats for any areas not yet surveyed and likely to be disrupted by the proposal. Surveys should include mapping of important, rare or unusual habitat types within areas to be impacted, in accordance with Guidance Statements 56 and 20. This should also consider other areas outside the proposed impact footprint to determine whether the most suitable areas have been chosen for location of infrastructure.

6. Consider habitat types that provide important ecological function e.g. riparian vegetation, protected area buffer zones, refugia, important habitat corridors, wetlands, areas of conservation significance or geological features which may support unique ecosystems. Analyse the extent of clearing, including percentages of habitat types to be cleared or otherwise impacted, to assist in determination of significance of impacts. Information, including maps, must also differentiate habitat on the basis of use e.g. breeding habitat, migration pathways, feeding habitat. Consider whether the remaining habitat has adequate carrying capacity.

7. Investigate and provide a description of any potential bat populations in the mine area, including what, if any, impact to Pilbara leaf nosed bat populations has occurred as a result of existing operations, and potential impacts from the revised proposal.

8. Conduct Level 2 fauna surveys in areas not previously surveyed that are likely to be directly or indirectly impacted as a result of the proposal. Surveys are to be undertaken in accordance with Guidance Statements 20 and 56 and, where available, species-specific survey guidelines for relevant species listed under the EPBC Act. Additional targeted surveys for conservation significant fauna that are known to or likely to occupy habitats in the project area may be required based on the results of the survey.

9. For each relevant conservation significant species, including bat species and short-range endemics, provide:

   - information on the conservation value of each habitat type from a local and regional perspective, including the percentage representation of each habitat type on site in relation to its local and regional extent;

	- if a population of a conservation significant species is present on the site, its size and the importance of that population from a local and regional perspective and potential percentage loss of the conservation significant species locally due to loss of habitat; and - mapping illustrating the known recorded locations of conservation significant species and short-range endemic invertebrates in relation to the proposed disturbance and areas to be impacted. 10. Discuss known existing threats to the species, whether or not attributable to the proposed action, with reference to relevant impacts from the proposed action (including taking into consideration any relevant guidelines, policies, plans and statutory provisions). 11. Discuss potential direct/indirect (including downstream) and cumulative impacts to fauna as a result of the proposal, and provide quantitative data on impacts of the proposal to species of conservation significance. 12. Where vegetation to be cleared provides habitat for EPBC listed species, provide an assessment of habitat quality in terms of site condition and context and species stocking rate, as described in the EPBC Act Offsets Assessment Guide. 13. For all conservation significant species that are not likely to be impacted by the proposed action, but for which suitable habitat is present and could be impacted by the proposed action, include detailed information to demonstrate that an impact on the species will not or is unlikely to occur. 14. Discuss proposed management, monitoring and mitigation methods to be implemented including an assessment of the effectiveness of the methods, any statutory or policy basis for the methods.
Relevant policy/guidelines/legislation	• Guidance Statement No. 20 *Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia*. • Guidance Statement No. 56 *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* June 2004. • Position Statement 3 *Terrestrial Biological Surveys as an Element of Biodiversity Protection*. • Technical Guide – *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* September 2010. • Department of Water (2009) *Pilbara Water in Mining Guideline* Report No.34. • EPA (2014) *Cumulative environmental impacts of development in the Pilbara region. Advice of the Environmental Protection Authority to the Minister for Environment under Section 16(e) of the Environmental Protection Act 1986*. • Species-specific recovery plans, survey guidelines and threat abatement plans for relevant species listed under the EPBC Act (obtained from the Australian Government's Species Profile and Threats Database at http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl). • Checklist for documents submitted for EIA on marine and terrestrial biodiversity.

Subterranean Fauna	
EPA objective	To maintain representation, diversity, viability and ecological function at the species, population and assemblage level.
Relevant aspects	Excavation for mining activities. Abstraction of groundwater for water supply. Dewatering groundwater for mining activities.
Potential impacts	• Direct mortality and loss of habitat through sub-surface disturbance and abstraction of groundwater.
Work required	1. Conduct comprehensive Level 2 surveys within areas to be impacted and in surrounding areas in accordance with Guidance Statement 54a. 2. Present the consolidated results of the subterranean fauna surveys, including all surveys conducted during and subsequent to the original approval (including surveys and habitat predictions for troglofauna required by Ministerial Statement 862 Condition 13. 3. Discuss the potential for direct and indirect impacts to subterranean fauna including consideration of altered water regimes and nutrient flows. 4. Illustrate habitat connectivity through mapping of the extent of subterranean fauna habitat including the known distributions of species identified. 5. Discuss proposed management, monitoring and mitigation methods to be implemented.
Relevant policy/guidelines/legislation	• Environmental Assessment Guideline 12 *Consideration of subterranean fauna in environmental impact assessment in Western Australia* June 2013. • Guidance Statement No. 54a *Sampling methods and survey considerations for subterranean fauna in Western Australia* July 2007. • Department of Water (2009) Pilbara Water in Mining Guideline Report No.34 • EPA (2014) *Cumulative environmental impacts of development in the Pilbara region. Advice of the Environmental Protection Authority to the Minister for Environment under Section 16(e) of the Environmental Protection Act 1986*. • Checklist for documents submitted for EIA on marine and terrestrial biodiversity.
Hydrological Processes	
EPA objective	To maintain the hydrological regimes of groundwater and surface water so that existing and potential uses, including ecosystem maintenance, are protected.
Relevant aspects	Abstraction of groundwater for water supply. Dewatering groundwater for mining activities. Alteration and disruption of surface water flows for drainage management, excavation of areas containing creeklines, and pools.
Potential impacts	• Impacts to natural surface water flows as a result of placement, design and operation of new or expanded mine pits and associated infrastructure. • Loss of surface water resources through the removal of the Zalamea pools and other pools in the project area

	• Impacts to any groundwater dependent ecosystems, pools and stygofauna, as a result of additional groundwater drawdown from the proposed borefield.
Work required	1. Provide a detailed description of the design and location of the revised proposal with the potential to impact surface water or groundwater. 2. Provide a comparison of the potential impacts associated with this proposal relative to the actual and predicted impacts for the currently approved project. Ensure that the predicted impacts associated with the currently approved proposal are updated based on the results of monitoring conducted subsequent to the initial approval. 3. Carry out and provide details of a survey of all pools in the project area, along with a description of the ecological values of each pool and expected impacts related to both the current proposal and the cumulative proposal. Particular detail should be provided regarding the ecological values of any pool to be removed by the proposal. The methodology of this survey should be presented to and agreed with the OEPA prior to carrying out the survey. 4. Provide an update of the conceptual model of the surface and groundwater systems incorporating the results of monitoring conducted subsequent to the initial approval, including the extent of connectivity between surface and ground water systems. 5. Determine the following in consultation with the Department of Water: • the scope and timing of pump tests and surveys to determine geological cross sections; and • the scope and timing of each stage of the modelling. The modelling should be consistent with Australian Government National Water Commission's *Australian Groundwater Modelling Guidelines (2012).* 6. Commission a peer review of the surface water and groundwater models for the mine area. The peer review should be carried out by a suitably qualified and experienced person or organisation unconnected with the previous work conducted on the proposal. The scope of the peer review should be agreed with the OEPA prior to finalisation. 7. Discuss effectiveness of current groundwater and surface water management actions as required and in addition to that required by Ministerial Statement 862, including: - Condition 10 – Surface Water - Condition 11 – Groundwater Provide a comparison of actual operation versus what was predicted during previous assessments, including a discussion of accuracy. Also detail any problems with how the management system has operated and what management and contingency measures have been taken where it is not operating as expected. 8. Investigate groundwater drawdown due to ground water abstraction associated with the proposal. Analyse and discuss any impacts to groundwater levels and flows. 9. Discuss the proposed management, monitoring and mitigation to prevent groundwater and surface water impacts as a result of implementing the proposal.

Relevant policy/guidelines/legislation	• *Rights in Water and Irrigation Act (1914*). • Australian Government National Water Commission *Australian Groundwater Modelling Guidelines (2012)* • Department of Water (2009) *Pilbara Water in Mining Guideline*. Report No 34. • Department of Water (2013*) Western Australian Water in Mining Guideline*. Water licensing delivery report series. Report No. 12. • Department of Water (2013) *Pilbara Groundwater Allocation Plan*. Water resource allocation and planning report series. Report No 55, October 2013. • EPA (2014) *Cumulative environmental impacts of development in the Pilbara region. Advice of the Environmental Protection Authority to the Minister for Environment under Section 16(e) of the Environmental Protection Act 1986*.
Inland Waters Environmental Quality	
EPA objective	To maintain the quality of groundwater and surface water, sediment and/or biota so that the environmental values, both ecological and social, are protected.
Relevant aspects	Temporary or permanent disposal of waste material in waste dumps or pits, storage and use of hazardous materials and hydrocarbons.
Potential impacts	• Surface drainage systems in the catchment may be contaminated by leachate and run off from surface waste dumps and stock piles, and infrastructure areas. • Without appropriate management of waste dumps containing at-risk material (material with potential for acid or metalliferous drainage), there is the potential for contamination of surface water and groundwater.
Work required	1. Undertake a comprehensive review of surface water and groundwater quality collected from the existing mining operation at the site, and any additional area to be disturbed by the proposal. Identify any adverse changes caused by the mining operation and outline avoidance, minimisation and management methods to be used to prevent further impacts. 2. Discuss results required by Ministerial Statement 862 Condition 14 for the approved project, including a. geochemical and geophysical characterisation of materials, including tailings, in particular the potential for acid drainage, metalliferous drainage b. Results from static and kinetic testing for materials with potential to cause acid and/or metalliferous drainage 3. Complete waste characterisation studies of waste rock and other materials and carry out an acid and metalliferous drainage risk assessment for the proposed expansion. 4. Provide a description of the design, location and extent of discharges of any elements of the proposal with the potential to impact surface water or groundwater quality. 5. Confirm whether or not pit lakes may form and provide details of potential backfill options. If pit lakes may form, provide an assessment of the long term

	contamination of any pit lakes remaining after mining and the potential impact on groundwater and surface water quality. 6. Discuss proposed management, monitoring and mitigation methods to be implemented during construction, operation and following closure to ensure that the EPA's objective for this factor is met.
Relevant policy/guidelines/legislation	• ANZECC and ARMCANZ (2000) *Implementation Framework for Western Australia for the Australian and New Zealand Guidelines for Fresh and Marine Water Quality and Water Quality Monitoring and Reporting*. • Government of WA (2004) *State Water Quality Management Strategy* Document No. 6. • Department of Water (2009) *Pilbara Water in Mining Guideline*. Report No 34.
Rehabilitation and Mine Closure (Integrating factor)	
EPA objective	To ensure that premises can be closed, decommissioned and rehabilitated in an ecologically sustainable manner, consistent with agreed outcomes and land uses, and without unacceptable liability to the State.
Relevant aspects	Excavation and earthworks resulting in changed landforms, disposal of waste material and clearing of large areas requiring rehabilitation.
Potential impacts	*Environmental Protection Bulletin 19 (EPA involvement in mine closure)* identifies that mine closure and rehabilitation may be regulated by both the Department of Mines and Petroleum (DMP) and the EPA in the event that the mining proposal "*identifies a high risk element of mine closure that could cause irreparable damage to the environment or require many years of corrective actions to repair the harm."* • The proposal includes extensive clearing requiring rehabilitation. • The proposal would result in a highly modified landscape, with particular regard to surface water and groundwater hydrology. Changes to surface water flows or surface water quality may result in permanent changes at closure, resulting in the loss of ecological values of a number of permanent and semi-permanent pools and drainage lines. • The proposal includes backfilling of all mine pits. In the event that suitable overburden or waste material is not available for backfilling, pit voids may form post closure. • Should there be poor rehabilitation and mine closure planning and management practices there could be a number of undesirable impacts to the receiving environment, such as: - unauthorised vegetation disturbance; - depletion of topsoil resources; - compacted soil layers with poor infiltration rates; - the introduction of weeds to rehabilitated areas; - landscape modification, altered hydrology and other ecosystem impacts; - unstable landforms and adverse dust impacts; - poor return of native vegetation and flora species; and - contamination.

Work required	1. Provide waste characterisation work including static and kinetic test results and water quality monitoring results for drainage from existing waste storage facilities to enable a thorough 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 is not 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. 2. Provide the physical and chemical characteristics of the waste materials and proposed locations and geotechnical design detail (including slope stability) for waste landforms, Identify proposed management and monitoring for the waste landforms. Describe contingencies to make landforms secure and non-polluting in the event of unexpected or temporary closure. 3. Provide the latest approved Mine Closure Plan required by Ministerial Statement 862. 4. Provide a framework for a revised Mine Closure Plan which includes all aspects of the current revised proposal consistent with the Department of Mines and Petroleum (DMP) and EPA *Guidelines for Preparing Mine Closure Plans* (2011) or its revisions. A conclusive discussion on backfill options (including 'worst case scenario') is also required. 5. Discuss proposed management, monitoring and mitigation methods to be implemented including post-mining land use and areas to be rehabilitated, including the requirements of Ministerial statement 862: - Condition 14 – Mine Plan and Conceptual Closure Strategy - Condition 15 - Final Closure and Decommissioning Plan.
Relevant policy/guidance documents	• DMP and EPA (2011) *Guidelines for Preparing Mine Closure Plans* (or any revisions – currently being revised) • EPA (2006) *Guidance Statement No 6: Rehabilitation of Terrestrial Ecosystems*. • EPA (2014) *Cumulative environmental impacts of development in the Pilbara region. Advice of the Environmental Protection Authority to the Minister for Environment under Section 16(e) of the Environmental Protection Act 1986*.
Offsets (Integrating factor)	
EPA objective	To counterbalance any significant residual environmental impacts and/or uncertainty through the application of offsets.
Relevant aspects	Clearing, excavation for mining activities, abstraction of groundwater, dewatering, alterations and disruptions to surface water flows and pools, and rehabilitation activities.
Potential impacts	Impacts that may be potentially significant (in accordance with the WA Environmental Offsets Guidelines) related to the preliminary key environmental factors identified, including, but not limited to: • Direct and indirect loss of conservation significant species (flora and fauna) and habitat; • Direct and indirect loss (including clearing and loss through dewatering, abstraction or alteration of water regimes) of 'good to excellent' condition native vegetation; • Direct and indirect loss of Brockman Iron Cracking Clay PEC;

	• Direct and indirect loss of riparian vegetation; • Direct and indirect impacts to, or resulting from impacts to, Zalamaea pools; • Direct and indirect impacts to groundwater dependent ecosystems; • Direct and indirect loss of subterranean fauna and habitat; • Direct and indirect impacts to proposed conservation reserve; and • Effectiveness of rehabilitation. Further potential significant residual impacts may be identified throughout the assessment process.
Work required	1. Identify and quantify (where possible) all residual impacts, relevant mitigation actions and determine whether these are likely to be significant. 2. Identify residual impacts with regard to MNES and assess the significance of the impacts. 3. If significant residual impacts are identified develop a draft program of environmental offsets that adheres to the relevant policy/guidance documents listed below. 4. Include the completed WA Environmental Offsets Template and any offsets required and proposed in the PER.
Relevant policy/guidelines/legislation	• EPA (2014) *Environmental Protection Bulletin No 1 – Environmental Offsets – Biodiversity*. • Govt of WA (2011) *WA Environmental Offsets Policy*. • Govt of WA (2014) *WA Environmental Offsets Guidelines*. • WA Environmental Offsets Template. • Department of Sustainability, Environment, Water, Populations and Communities (2012) Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy.

4. Stakeholder consultation

The EPA expects that the proponent will consult with stakeholders who are interested in, or affected by, the proposal. This includes decision-making authorities (DMAs), other relevant State government departments and local government authorities, environmental non-government organisations and the local community.

The proponent must document the stakeholder consultation undertaken and the outcomes, including any adjustments to the proposal and any future plans for consultation. This is to be addressed in a specific section of the PER document and, in addition, key outcomes of consultation are to be reported against the preliminary key environmental factors as relevant.

It is expected that as a part of the consultation with DMAs there will be discussion around each agency's specific regulatory approvals, and a demonstration that other factors can be managed by another regulatory body.

5. Other factors or matters

During assessment of proposals, other factors or matters will be identified as relevant to the proposal, but not of significance to warrant further assessment by the EPA, or impacts can be regulated by other statutory processes to meet the EPA's objectives.

These factors do not require further work as part of the environmental review, or detailed discussion and evaluation in the PER document, although they must be included in the PER document in a summarised, tabular format noting that the PER document will be subject to public review.

In some circumstances other factors, while not being considered as preliminary key environmental factors, may require greater emphasis in the PER document. This may be due to high public interest or at the request of another stakeholder, so that the potential impacts and management measures associated with the other factor are sufficiently articulated for the public review. For this assessment, the following other factors need to be concisely described and discussed in the PER document:

- Air Quality, including the potential for asbestiform materials to be encountered and proposed management measures if asbestiform materials are encountered;
- Amenity, including any potential impacts to users of the nearby Karijini National Park; and
- Heritage, including:
  - a description of heritage surveys carried out to date for the existing operations;
  - surveys proposed for the expanded operations; and
  - a description of heritage site management measures implemented in relation to the current operations with an analysis of the success of these measures.

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 PER document, and if so, to what extent.

6. Agreed assessment timeline

Table 3 sets out the timeline for the assessment of the proposal agreed between the EPA and the proponent. Proponents are expected to meet the agreed timeline, and in doing so, provide adequate, quality information to inform the assessment.

Table 3 Assessment Timeline

Key Stage of Proposal	Agreed Milestone
EPA approval of ESD Document	December 2014
Proponent submits first adequate draft of PER Document	Early April 2015
OEPA provides comment on first draft PER Document	6 weeks Mid May 2015
Proponent submits adequate revised draft PER Document	4 weeks Mid June 2015
EPA authorises release of PER Document	2 weeks End June 2015
Proponent releases approved PER Document	1 Week Early July 2015
Public Review of PER Document	6 weeks Mid August 2015
EPA provides Summary of Submissions	3 Weeks Mid September 2015
Proponent provides adequate Response to Public Submissions	4 Weeks Mid October 2015
OEPA reviews Response to Submissions	4 weeks Mid November 2015
OEPA assesses proposal for consideration by EPA	7 weeks Early January 2016
Preparation and finalisation of EPA Report (including 2 weeks consultation on draft conditions with proponent and key Government agencies)	5 weeks Mid March 2016

If any stage in the agreed timeline is not met or inadequate information is submitted by the proponent, the timing for the completion of subsequent stages of the process will be revised. Equally, where the EPA is unable to meet an agreed completion date in the timeline, the proponent will be advised and the timeline revised.

The proponent should refer to EPA's EAG 6 – *Timelines for environmental assessment of proposals* for information regarding the responsibilities of proponents and the EPA for achieving timely and effective assessment of proposals.

7. Decision-making authorities

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

Table 4 Decision-making authorities

Decision Making Authority	Relevant Legislation
Minister for Environment	*Wildlife Conservation Act 1950*
Minister for Water	*Rights in Water and Irrigation Act 1914*
Minister for Aboriginal Affairs	*Aboriginal Heritage Act 1972*
Minister for Mines and Petroleum	*Mining Act 1978*
Minister for Lands	*Land Administration Act 1997*
Director General, Department of Environment Regulation	Part V of the *Environmental Protection Act 1986*
Director General, Department of Mines and Petroleum	*Environmental Protection Regulations 1987*
Director, Environment Division, Department of Mines and Petroleum	*Mining Act 1978*
Chief Dangerous Goods Officer, Department of Mines and Petroleum	*Dangerous Goods Safety Act 2004 and relevant regulations*
District Inspector, Department of Mines and Petroleum	*Mines Safety and Inspection Act 1994*
Mining Registrar, Department of Mines and Petroleum	*Mining Act 1978*
Shire of East Pilbara	*Town Planning and Development Act 2005*
Shire of Ashburton	*Town Planning and Development Act 2005*

8. Parallel processing

The EP Act constrains DMAs from making any decision that could have the effect of causing or allowing the proposal to be implemented. However, the proponent is encouraged to pursue other approvals in parallel with the EPA's assessment noting that the constraint only relates to making an approval decision.

9. PER document

When the EPA is satisfied with the standard of the PER document (refer to section 4.4 of EAG 6) it will provide written authorisation for the release of the document for

public review. The proponent must not release the PER document for public review until this authorisation is provided.

The proponent is responsible for advertising the release and availability of the PER document in accordance with instructions that will be issued to the proponent by the EPA. The EPA must be consulted on the timing and details for advertising.