ENVIRONMENTAL SCOPING DOCUMENT

PROPOSAL NAME:	Mining Area C - Southern Flank
ASSESSMENT NUMBER:	**2085**
LOCATION:	Approximately 100 kilometres (km) north-west of Newman
LOCAL GOVERNMENT AREA:	Shire of East Pilbara
PROPONENT:	BHP Billiton Iron Ore Pty Ltd
PUBLIC REVIEW PERIOD:	**4 WEEKS**

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;
- identify the required work that needs to be carried out; and
- timing of the environmental review.

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 both of these requirements, the proponent will be required to release the document for a public review period of 4 weeks.

Approved: Chairman Dr Tom Hatton, 19 September 2016

The Environmental Protection Authority is currently in the process of updating its Administrative Procedures. If application of these new procedures to the assessment of this proposal is neither appropriate nor practicable, the Administrative Procedures applying at the time the decision was made on the level of assessment for the proposal will apply to that proposal.

This ESD has been prepared by the EPA in consultation with the proponent, decision-making authorities and interested agencies 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.

2. The proposal

The subject of this ESD is BHP Billiton Iron Ore's proposal to mine a satellite ore body at Southern Flank and development of mine pits and associated infrastructure within the existing approved Multiple Iron Ore Mine Development, Mining Area C – Northern Flank operations (Mining Area C). The regional location of the proposal is shown in Figure 1.

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 envelope encompassing the physical elements of the proposal is delineated in Figure 2.

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.

The proposal is located on Mineral Lease ML281SA and the current land use is for the exploration and extraction of iron ore. The current Ministerial Statement 491 Development Envelope covers an area of 25,814 hectares (ha). An additional 10,218 ha would be added to the Development Envelope. The change, if approved, and the existing approved proposal would result in a new total Development Envelope area of 36,032 ha.

Table 1 Key Proposal Characteristics

Summary of the proposal	
Proposal Title	Mining Area C – Southern Flank
Proponent Name	BHP Billiton Iron Ore Pty Ltd
Short Description	The proposal is to revise the existing Mining Area C operations, approximately 100 km north-west of Newman in the Shire of East Pilbara. The proposal involves the development and operation of an open-cut mine at a satellite ore body named Southern Flank, with construction of an overland conveyor from the Southern Flank ore body to the

	existing operations at the Mining Area C – Northern Flank. The proposal includes exploration activity as well as the construction and operation of associated infrastructure.

Element	Location	Approved Project (MS 491)	Extension Proposal (This assessment)	Revised Proposal
Mine and associated infrastructure	Figure 1	Total clearing of up to 5,385 ha within a development envelope of 25,814 ha	**Additional clearing of 19,850 ha** and an extension to the Mining Area C Development Envelope of 10,218 ha	Clearing of 25,235 ha within the Mining Area C Development Envelope of 36,032 ha
Dewatering	Figure 1	RIWI licence allows for abstraction of up to 15.3 GL/a of groundwater	**Additional abstraction of groundwater is likely (>5 GL/a).** (To be confirmed)	Likely abstraction of >20.3 GL/a of groundwater. (To be confirmed)
Surplus dewater management	Figure 1	Part V approval for Managed Aquifer Recharge of 5.84 GL/annum	**Additional recharge of dewater (>6 GL/a) to aquifers.** (To be confirmed)	Likely recharge of >11.84 GL/a dewater to aquifers. (To be confirmed)

In undertaking this assessment, the EPA will assess the impacts of the Proposed Extension in the context of the Approved Project, considering the cumulative impacts of the entire Revised Proposal where appropriate.

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.

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.

The EPA expects that the proponent will consider all relevant contemporary policy documents, including revisions or updates of the policy documents listed and any new, relevant policy that is published during the development of the PER.

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 of native vegetation, dewatering, potential alteration to surface water flows, potential discharge of excess mine dewater.

Potential impacts and risks	• Direct loss of flora and vegetation from an increase in the current approved clearing from 5,385 ha to 25,235 ha for additional disturbance (19,850 ha) to develop the mine and supporting infrastructure.
	• Indirect impact on flora and vegetation from:
	  ○ groundwater drawdown from the mine has the potential to contribute to a regional drawdown extending into the Weeli Wolli Spring (including Ben's Oasis) Priority Ecological Community (PEC), as well the Coondewanna Flats PEC;
	  ○ introduction and spread of weeds through vehicle movements and earthworks;
	  ○ alteration to surface water flows;
	  ○ mounding and increase in surface water from excess mine dewater discharge;
	  ○ fragmentation of vegetation;
	  ○ altered fire regime; and
	  ○ dust from mining operations and vehicle movements.

Required work	1. Identify and characterise flora and vegetation in accordance with the requirements of Guidance Statement No. 51. The survey should take into account areas that are likely to be directly or indirectly impacted as a result of the proposal. 2. Undertake baseline mapping of weed affected areas in any area likely to be directly or indirectly impacted by the proposal. 3. Provide an analysis of the vegetation and conservation significant flora species present and likely to be present within the development envelope and indirect disturbance areas outside of the development envelope. Include an assessment of the relevance of any vegetation and conservation significant flora species in a local and regional context. 4. Provide a clear set of data that shows the clearing undertaken for the existing approved project to date against the currently approved clearing and proposed clearing for the expanded proposal.

	5. Provide information on the current status and outcomes of the current groundwater and dewatering activities to ensure minimal adverse impacts on groundwater dependent ecology at Weeli Wolli Spring and Coondewanna Flats required by Ministerial Statement 491 Condition 5-1 – Groundwater and groundwater dependent ecology. 6. Provide an analysis of any additional potential impacts from the proposal to the Weeli Wolli Spring and Coondewanna Flats PECs. 7. Provide a detailed description of the cumulative impacts associated with the proposal and nearby proposals (Mining Area C – Northern Flank and Hope Downs), including direct impacts from clearing, and indirect impacts such as groundwater drawdown, altered drainage, changes in water quality, spread of weeds, fragmentation of vegetation, altered fire regime and dust. 8. Provide figures of the proposed clearing and predicted 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. 9. Discuss, and determine significance of, potential direct, indirect (including downstream) and cumulative impacts to flora and vegetation as a result of the proposal at a local and regional level. 10. Demonstrate that all practicable measures have been taken to reduce both the area of the proposed disturbance footprint and the Development Envelope based on progress in the proposal design and understanding of the environmental impacts. 11. Discuss proposed management, monitoring and mitigation methods to be implemented demonstrating that the design of the proposal has addressed the mitigation hierarchy in relation to impacts on flora and vegetation. 12. Discuss management measures, outcomes/objectives sought to ensure residual impacts (direct and indirect) are not greater than predicted. 13. Demonstrate and document in the PER how the EPA's objective for this factor can be met. 14. Complete the EPA Checklist for documents submitted for EIS on terrestrial biodiversity.
Relevant policy	<u>EPA Policies and Guidance</u> EPA. 2000. *Environmental Protection of Native Vegetation in Western Australia*. Position Statement No. 2. Perth, Western Australia. EPA. 2002. *Terrestrial Biological Surveys as an Element of Biodiversity Protection.* Position Statement No. 3. Perth, Western Australia. EPA. 2004. *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia, No. 51*. Guidance for the Assessment of Environmental Factors. Perth, Western Australia. EPA. 2006. *Rehabilitation of Terrestrial Ecosystems*. Guidance for the Assessment of Environmental Factors No. 6. Perth, Western Australia. EPA. 2013. *Environmental and water assessments relating to mining and mining-related activities in the Fortescue Marsh management area. Advice of the Environmental Protection Authority to the Minister for Environment under Section 16(e) of the Environmental Protection Act 1986*. EPA Report 1484. Perth, Western Australia. EPA and Department of Parks and Wildlife. 2015. *Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment*. Perth, Western Australia. EPA Checklist for documents submitted for Environmental Impact Assessment on

	marine and terrestrial biodiversity. <u>Other Policies and Guidance</u> Department of Water. 2013. *Western Australian water in mining guideline*. Water licensing delivery series. Report No.12. Perth, Western Australia.
Terrestrial Fauna	
EPA objective	To maintain representation, diversity, viability and ecological function at the species, population and assemblage level.
Relevant aspects	Clearing of habitat, dewatering, alterations and disruptions to surface water flows and pools, potential discharge of excess mine dewater, vehicle movement and waste disposal.
Potential impacts and risks	• Direct impacts to fauna from increased vehicle strikes, and as a result of construction and operation of the mine. • Direct and indirect loss of fauna and fauna habitat (e.g. caves) from an increase in the currently approved disturbance. • Direct and indirect disturbance resulting in the fragmentation of habitat. • Indirect impacts to fauna may occur as a result of: o altered fire regimes due to clearing of native vegetation; o groundwater drawdown; o altered surface and groundwater regimes; o mounding and increase in surface water from excess mine dewater discharge; o changes to feral animal populations; o introduction or spread of weed species; and o Restriction or removal of access to breeding habitat, foraging/dispersal habitat or water sources.
Required work	15. Provide a desktop review and analysis of all surveys of the proposal area undertaken in accordance with Guidance statements 56 and 20. The review should include: • A justification of how those surveys are relevant and representative of the development envelope and if they were carried out using methods consistent with the EPA Guidance. • 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. 16. Conduct Level 2 terrestrial fauna and SRE invertebrate 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 *Wildlife Conservation Act 1950*. The surveys should include mapping of important, rare or unusual habitat types within areas to be impacted. The surveys should also consider other areas outside the proposed impact footprint to determine whether the most suitable areas have been chosen for location of infrastructure. 17. Conduct additional targeted surveys for conservation significant fauna that are known to or likely to occupy habitats in the project area if demonstrated to be

	required based on the results of the terrestrial fauna and SRE invertebrate surveys. 18. Investigate and provide a description of any potential bat populations and habitat in the proposal area, and potential impacts from the revised proposal. 19. Provide a review of bat populations and habitat in the local and regional area including the existing Mining Area C – Northern Flank. 20. For each relevant conservation significant species, including bat species and short-range endemics within the proposal area, provide: • baseline information on their abundance (including known occurrences), distribution, ecology, and habitat preferences at both the site and regional levels • 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 • maps 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. 21. Consider habitat types that provide important ecological function within the proposal area 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. 22. Assess the extent of direct and indirect disturbance, including percentages of habitat types to be disturbed 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, foraging/feeding/dispersal habitat. Consider whether the remaining habitat has adequate carrying capacity. 23. 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). 24. Provide a detailed description of the potential direct, indirect (including downstream) and cumulative impacts to conservation significant and other species within the proposal area and on a regional scale. 25. 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. 26. Provide figures clearly showing the predicted impacts (both direct and indirect) on conservation significant and other species, including number of individuals, population(s) and amount of habitat. 27. 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 and demonstrating that the design of the proposal has addressed the mitigation hierarchy in relation to impacts on fauna. 28. Discuss management measures, outcomes/objectives sought to ensure residual impacts (direct and indirect) are not greater than predicted.

	29. Demonstrate and document in the PER how the EPA's objective for this factor can be met. 30. Complete the EPA Checklist for documents submitted for EIS on terrestrial biodiversity.
Relevant policy	<u>EPA Policies and Guidance</u> EPA. 2002. *Terrestrial Biological Surveys as an Element of Biodiversity Protection.* EPA Position Statement No. 3. Perth, Western Australia. EPA. 2004. *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia.* Guidance for the Assessment of Environmental Factors, Statement No. 56. Perth, Western Australia. EPA. 2009. *Sampling of Short range endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia*. Guidance for the Assessment of Environmental Factors, Statement No. 20. Perth, Western Australia. EPA and Department of Environment and Conservation (DEC). 2010. *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment*. Technical Guide. Perth, Western Australia. EPA Checklist for documents submitted for Environmental Impact Assessment on marine and terrestrial biodiversity. <u>Other Policies and Guidance</u> Department of Water. 2013. *Western Australian water in mining guideline.* Water licencing delivery series. Report No.12. Perth, Western Australia.
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 mining activities.
Potential impacts and risks	Direct and indirect mortality and loss of habitat through sub-surface disturbance and abstraction of groundwater for dewatering.
Required work	31. Conduct surveys within areas to be impacted and in surrounding areas in accordance with Environmental Assessment Guideline 12 and Guidance Statement 54a. 32. Present the results of the subterranean fauna surveys and discuss the potential for direct, indirect and cumulative impacts to subterranean fauna and habitat including consideration of altered water regimes and water quality (e.g. nutrient flows) as a result of the proposal. 33. Assess any impacts to subterranean fauna in accordance with EAG 12. For species which are likely to be impacted, provide information, including maps on habitat continuity and an appropriate explanation of the likely distribution of species within those habitats. 34. Discuss proposed management, monitoring and mitigation methods to be implemented. 35. Discuss management measures, outcomes/objectives sought to ensure residual impacts (direct and indirect) are not greater than predicted. 36. Demonstrate and document in the PER how the EPA's objective for this factor

	can be met. 37. Complete the EPA Checklist for documents submitted for EIS on terrestrial biodiversity.
Relevant policy	<u>EPA Policies and Guidance</u> EPA. 2007. *Sampling methods and survey considerations for subterranean fauna in Western Australia, No. 54a*. Guidance for the Assessment of Environmental Factors. Perth, Western Australia. EPA. 2013. *Consideration of subterranean fauna in environmental impact assessment in Western Australia.* Environmental Assessment Guideline No. 12. Perth, Western Australia. EPA. 2013. *Environmental and water assessments relating to mining and mining-related activities in the Fortescue Marsh management area. Advice of the Environmental Protection Authority to the Minister for Environment under Section 16(e) of the Environmental Protection Act 1986*. EPA Report 1484. Perth, Western Australia. EPA checklist for documents submitted for EIA on marine and terrestrial biodiversity. <u>Other Policies and Guidance</u> Department of Water. 2013. *Western Australian water in mining guideline.* Water licensing delivery series. Report No.12. Perth, Western Australia.
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	Surface water diversions. Dewatering groundwater for mining activities. Potential discharge of excess mine dewater.
Potential impacts and risks	○ Impacts to natural surface water flows as a result of placement, design and operation of new or expanded mine pits and associated infrastructure. ○ Impacts to surface water resources including PEC Weeli Wolli Spring, Ben's Oasis and Coondeawanna Flats PEC from groundwater drawdown and alterations to surface water flows. ○ Impacts to any groundwater dependent ecosystems and subterranean fauna, as a result of groundwater drawdown and mounding.
Required work	38. Characterise the baseline hydrological and hydrogeological regimes and water quality, both in a local and regional context, including, but not limited to, water levels, water chemistry, stream flows, flood patterns, and water quantity and quality. This is to include a detailed description of the geological framework within the zone to be impacted by groundwater abstraction and any interdependence between surface and groundwater features/bodies. 39. Provide a detailed description of the design and location of the revised proposal with the potential to impact surface water or groundwater. 40. Provide a comparison of the potential impacts associated with this proposal relative to the actual and predicted impacts for the currently approved project. 41. 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. 42. Provide a conceptual mine water balance over the life of the proposal to

	discuss the capacity to reuse surplus mine dewater. 43. Discuss the potential environmental impacts and benefits of identified surplus water management options (i.e. discharge of excess mine dewater, reuse on site, local water supply, aquifer recharge etc.) and discuss the most appropriate water management strategy for the proposal. 44. Model the impact of different flooding scenarios during operations and post-closure on infrastructure and final landforms. 45. Investigate groundwater drawdown due to groundwater abstraction associated with the proposal. 46. Analyse, discuss and assess surface water and groundwater impacts. The analysis should include: • changes in groundwater levels and changes to surface water flows associated with the proposal; • the nature extent and duration of impacts; and • cumulative impacts with other projects and referred proposals, for which relevant information is publicly available. • Impacts on the environmental values of significant receptors but not limited to Weeli Wolli Spring, Ben's Oasis and Coondeawanna Flats. 47. Identify any mine waste water discharges in the site water circuit (balance) and establish possible impacts these may have on the environment. 48. Discuss the proposed management, monitoring (including on adjacent tenure) and mitigation to prevent groundwater and surface water impacts, at local and catchment scale, as a result of implementing the proposal. 49. Demonstrate and document in the PER how the EPA's objective for this factor can be met.
Relevant policy	<u>EPA Policies and Guidance</u> EPA. 2013. *Environmental and water assessments relating to mining and mining-related activities in the Fortescue Marsh management area. Advice of the Environmental Protection Authority to the Minister for Environment under Section 16(e) of the Environmental Protection Act 1986*. EPA Report 1484. Perth, Western Australia. <u>Other Policy and Guidance</u> Barnett et al. 2012. *Australian Groundwater Modelling Guidelines. Waterlines Report*. National Water Commission. Canberra, ACT. Department of Water. 2013. *Western Australian Water in Mining Guideline*. Water licensing delivery report series. Report No. 12. Perth, Western Australia. Department of Water. 2013. *Pilbara Groundwater Allocation Plan. Water resource allocation and planning report series*. Report No 55. Perth, Western Australia.
Inland Waters Environmental Quality	
EPA objective	To maintain the quality of groundwater and surface water, sediment and biota so that the environmental values, both ecological and social, are protected.
Relevant aspects	Construction and operation of proposal including dewatering groundwater for mining activities, discharge of excess water, waste landforms, Storage and use of hazardous materials and hydrocarbons and waste facilities (landfill, wastewater treatment plant). Post closure aspects such as waste landforms and pit lakes will be addressed

	under the Rehabilitation and Decommissioning factor.

Potential impacts and risks	• Contamination of groundwater as a result of:
	  o Groundwater abstraction/dewatering causing oxidation of sulfides potentially present in deposits
	  o Disposal of poor quality effluent from wastewater treatment plant.
	• Reduction in surface water quality as a result of:
	  o Poor containment of potentially contaminated run-off from active mining areas and ore processing facilities.

Required work	50. Characterise the hydrological processes within the Development Envelope and determine what effect the proposal will have on surface water and groundwater quantity and quality. 51. Provide a detailed description of the design and location of the revised proposal with the potential to impact surface water or groundwater quality. 52. Provide a comparison of the potential impacts associated with this proposal relative to the actual and predicted impacts for the currently approved project and discuss the potential cumulative impacts on a regional scale. 53. 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. 54. Analyse, discuss and assess potential surface water and groundwater quality impacts, including changes in groundwater levels and changes to surface water flows associated with the proposal together with cumulative impacts with other projects and referred proposals, for which relevant information is publicly available. 55. Analyse, discuss and assess impacts on the environmental values of significant receptors but not limited to Weeli Wolli Spring, Ben's Oasis and Coondeawanna Flats. 56. Discuss the proposed management, monitoring and mitigation to ensure impacts on inland water quality are not greater than predicted as a result of implementing the proposal. 57. Demonstrate and document in the PER how the EPA's objective for this factor can be met.
Relevant policy	EPA. 2013. *Environmental and water assessments relating to mining and mining-related activities in the Fortescue Marsh management area. Advice of the Environmental Protection Authority to the Minister for Environment under Section 16(e) of the Environmental Protection Act 1986*. EPA Report 1484. Perth, Western Australia. <u>Other Policies and Guidance</u> ANZECC. 2000. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Canberra, ACT. Barnett et al. 2012. *Australian Groundwater Modelling Guidelines. Waterlines Report.* National- Water Commission. Canberra, ACT. DoW. 2013. *Western Australia Water in Mining Guideline. Water licensing delivery report series.* Report No. 12. Perth, Western Australia. Government of WA. 2004. *State Water Quality Management Strategy Document No. 6.* Perth, Western Australia.

Heritage	
EPA objective	To ensure that historical and cultural associations, and natural heritage, are not adversely affected.
Relevant aspects	Clearing and excavation for mining activities. Dewatering groundwater for mining activities. Alteration to hydrological processes.
Potential impacts and risks	• Disturbance of sites of cultural significance. • Prevention or change to access to a site. • Changes to the physical and biological attributes of the environment (e.g. pools, creeks, breakaways, bush tucker and bush medicine) which would impact on sites of heritage significance.
Required work	58. Characterise the heritage and cultural values of proposed disturbance areas and any other areas that may be indirectly impacted to identify sites of significance and their relevance within a wider regional context. 59. Conduct Aboriginal heritage surveys to identify Aboriginal sites of significance and identify concerns in regard to impacts from proposed mining operations. 60. Provide a description of the heritage values within the Development Envelope and provide a figure(s) of the heritage locations and proposed disturbance. 61. Assess the impacts of the proposal on heritage sites and/or cultural associations as a result of implementation of the proposal, including those arising from changes to the environment which may impact on ethnographic and archaeological heritage significance. This assessment will be conducted in accordance with *EPA Guidance Statement 41*. 62. Predict the residual impacts on heritage, for direct, indirect and cumulative impacts after considering avoidance and minimisation measures. 63. Outline the outcomes/objectives, management, monitoring, trigger and contingency actions to ensure impacts to heritage (direct and indirect) are not greater than predicted. 64. Demonstrate and document in the PER how the EPA's objective for this factor can be met.
Relevant policy	<u>EPA Policies and Guidance</u> EPA. 2004. *Assessment of Aboriginal Heritage.* Guidance for the Assessment of Environmental Factors No. 41. Perth, Western Australia. <u>Other Policies and Guidance</u> Department of Aboriginal Affairs and Department of Premier and Cabinet. 2013. *Aboriginal Heritage - Due Diligence Guidelines, Version 3.0.* Perth, Western Australia.
Rehabilitation and Decommissioning (Integrating Factor)	
EPA objective	To ensure that premises are decommissioned and rehabilitated in an ecologically sustainable manner.
Relevant aspects	Clearing of large areas of native vegetation. Creation of pit voids post-closure and final landform design. Disposal of waste.
Potential impacts and risks	• Clearing of large areas requiring rehabilitation. • Potential for pit-voids to become pit lakes and impact water quality and fauna.

	• Unstable landforms due to poor quality waste material could cause legacy issues. • Formation of Acid and/or Metalliferous Drainage (AMD) could impact water quality.
Required work	65. Provide an assessment on the physical and chemical characteristics of waste rock material and in-pit material. 66. Assess potential impacts to groundwater, surface water and soil quality from AMD. 67. Undertake a pit lakes assessment to determine the potential impact to hydrological processes, surface and groundwater quality and fauna. 68. Update current approved *Mining Area C Mine Closure Plan* (BHP Billiton Iron Ore, 2015) to include additional areas consistent with DMP and EPA *Guidelines for Preparing Mine Closure Plans* (2015). The plan is required to develop appropriate completion criteria. 69. Describe the proposed rehabilitation methodology, including but not limited to: • Topsoil management. • Retention or reuse of cleared vegetation material. • Return of species and communities (where feasible) consistent with the pre-existing composition of the affected area • Timeframes for rehabilitation, including sequencing or mining, backfilling and progressive rehabilitation. 70. Demonstrate and document in the PER how the EPA's objective for this factor can be met.
Relevant policy	<u>EPA Policies and Guidance</u> EPA. 2006. *Rehabilitation of Terrestrial Ecosystems.* Guidance Statement No.6. Perth, Western Australia. EPA. 2013 *EPA involvement in mine closure.* Environmental Protection Bulletin No 19. Perth, Western Australia. DMP and EPA. 2015. *Guidelines for Preparing Mine Closure Plans.* Perth, Western Australia. <u>Other Policies and Guidance</u> Department of Industry Tourism and Resources (2007) *Leading Practice Sustainable Development Program for the Mining Industry - Managing Acid and Metalliferous Drainage*. Department of Environment Regulation (DER). 2014. *Assessment and Management of Contaminated Sites.* Perth, Western Australia. DMP. 2013. *Tailings Storage Facilities in Western Australia – Code of Practice.* Perth, Western Australia. DMP. 2015. *Guide to the Preparation of a Design Report for Tailings Storage Facilities (TSFs)*. Perth, Western Australia.
Offsets (Integrating Factor)	
EPA objective	To counterbalance any significant residual environmental impacts and/or uncertainty through the application of offsets.
Relevant	Clearing of approximately 19,850 ha of native vegetation in Category 1 – 4

aspects	according to Technical Guide – *Flora and Vegetation Surveys for Environmental Impact Assessment,* December 2015 (equivalent to 'Good to 'Excellent' condition or better) in the Hamersley IBRA sub-region.
Potential impacts and risks	Reduction in flora and vegetation species density in the Hamersley IBRA sub-region. Potential residual environmental impacts on conservation significant flora, vegetation and fauna populations and habitat.
Required work	71. Describe the residual impacts for the proposal and analyse these impacts to identify and detail any that are significant. 72. Create offsets position following application of the 'mitigation hierarchy'.
Relevant policy	<u>EPA Policies and Guidance</u> EPA. 2014 *Environmental Offsets.* Environmental Protection Bulletin No. 1. Perth, Western Australia. <u>Other Policies and Guidance</u> Government of Western Australia. 2011. *WA Environmental Offsets Policy.* Perth, Western Australia. Government of Western Australia. 2014. *WA Environmental Offsets Guidelines.* Perth, Western Australia.

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 DMA's 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.

- Air quality – including outcomes of consultation with the Department of Environment Regulation in relation managing dust suppression; and
- Amenity - including outcomes of consultation with interested parties and assessment of potential impacts.

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 Stages of Assessment	Agreed Completion Date
EPA approval of ESD	September 2016
Proponent submits first adequate draft PER document	October 2016
Office of the Environmental Protection Authority (OEPA) provides comment on first adequate draft PER document	6 weeks November 2016
Proponent submits adequate revised draft PER document	4 weeks December 2016
EPA authorises release of PER document for public review	2 weeks (+ 2 weeks for Christmas period) January 2016
Proponent releases authorised PER document for public review	1 week February 2017
Public review of PER document	4 weeks March 2017
EPA provides Summary of Submissions	3 weeks March 2017
Proponent provides Response to Submissions	4 weeks

	April 2017
OEPA reviews the Response to Submissions	4 weeks May 2017
OEPA assesses proposal for consideration by EPA	7 weeks July 2017
Preparation and finalisation of EPA assessment report (including two weeks consultation on draft conditions with proponent and key Government agencies)	5 weeks August 2017

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 State Development	*Iron Ore (Mount Goldsworthy) Agreement Act 1964*
Minister for Aboriginal Affairs	*Aboriginal Heritage Act 1972*
Chief Executive Officer - Department of Environment Regulation	Part V of the *Environmental Protection Act 1986*
Shire of East Pilbara	*Building Act 2011 (Building permit)*
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*
State Mining Engineer – Department of Mines and Petroleum	*Mines Safety and Inspection Act 1994*

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.

Figure 1 – Regional location

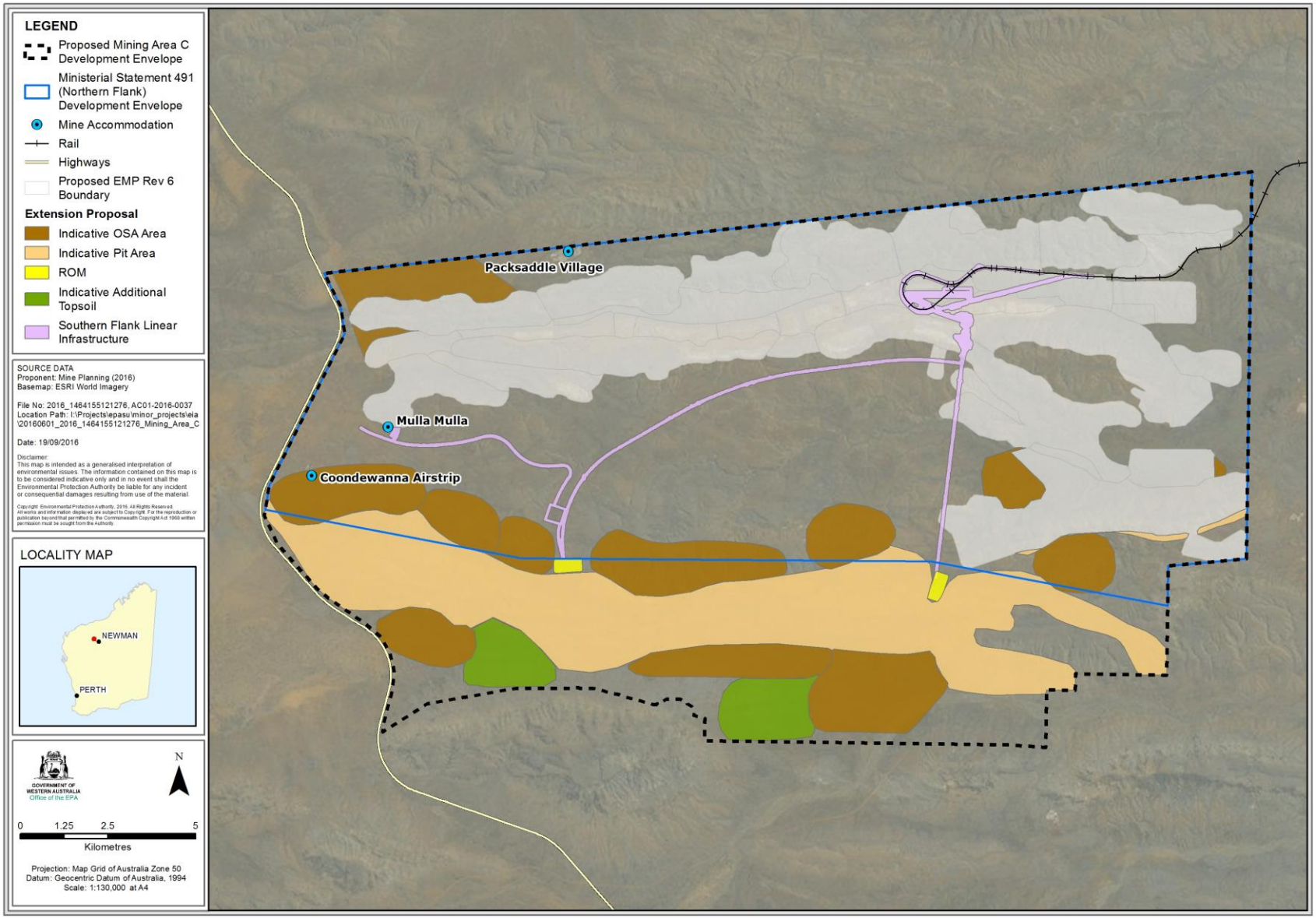

Figure 2 – Development Envelope with Approved Project and Extension Proposal