



Report and recommendations of the Environmental Protection Authority



Iron Valley Below Water Table Project

BC Pilbara Iron Ore Pty Ltd

Report 1585

October 2016

Assessment on Proponent Information Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
20/06/16	Level of assessment set	
5/07/16	Scoping Guideline issued by EPA	2
21/07/16	Proponent's final Environmental Review (API) document received by EPA	2
15/09/16	EPA meeting	7
12/10/16	EPA report provided to the Minister for Environment	4
17/10/16	Publication of EPA report (3 working days after report provided to the Minister)	3 days
31/10/16	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the project and are usually agreed with the Proponent soon after the level of assessment is determined.

In this case, the Environmental Protection Authority met its timeline objective in the completion of the assessment and provision of a report to the Minister.



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Chairman

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1. References
2. Summary of Identification of Key Environmental Factors and Principles
3. Relevant EPA Policies and Guidance and identified matters
4. Review of existing Ministerial Statement
5. Identified Decision-Making Authorities and Recommended Environmental Conditions
6. Proponent's Environmental Review Document

1 Introduction and background

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the outcomes of its environmental impact assessment of the proposed change by BC Pilbara Iron Ore Pty Ltd (Proponent) to the Iron Valley Above Water Table Project (Approved Project).

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires that the EPA prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

- what the EPA considers to be the key environmental factors identified in the course of the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented, and if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The aims of environmental impact assessment and the principles of environmental impact assessment considered by the EPA in its assessment of this proposal are set out in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2012*.

The Proponent referred the proposal to the EPA on 14 March 2016. On 20 June 2016 the EPA set the level of assessment at Assessment on Proponent Information – Category A (API – A). The Scoping Guideline for the proposal was issued on 5 July 2016. The Proponent has submitted an Environmental Review (API) Document and supporting documents (including technical studies). These documents describes the proposal, outcomes of consultation, environmental studies undertaken, and the proponent's assessment of impacts on environmental factors and application of the mitigation hierarchy to manage those impacts (Appendix 6).

This report provides the EPA advice and recommendations in accordance with section 44 of the EP Act.

2 The proposal

2.1 Proposal summary

The Proponent proposes changes (referred to in this Report as the Proposal) to the Approved Project located approximately 90 km north-west of Newman, in the Pilbara region (Figure 1).

The Proposal is located within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region and is located within the Fortescue and Hamersley IBRA subregions.

The Approved Project (authorised by Ministerial Statement 933, 1 February 2013) is an above the water table open cut mine and associated infrastructure, located on mining tenement M470/1439.

The Proposal, the subject of this report, is constituted by the following additional activities and changes to the Approved Project:

- extending the area and depth of existing mine pits to facilitate mining operations below the water table;
- developing a new mine pit with mining operations extending below the water table;
- dewatering of the underlying aquifer to facilitate mining operations below the water table via the use of up to 19 bores;
- disposing of surplus mine pit dewater into Weeli Wolli Creek via three on-site dewater discharge locations (DDL1, DDL4, and DDL5);
- increasing the number and size of waste rock landforms (WRLs);
- placing waste rock material as backfill into mined out pits as they become available;
- incorporating multiple encapsulated tailings storage facility (TSF) cells within the WRLs;
- constructing and operating a new beneficiation plant;
- constructing and operating a new surplus mine pit dewater discharge pipeline; and
- constructing and operating a new 18 megawatt (MW) gas turbine power supply.

The Development Envelope for this Proposal covers an area of 1,177 hectares (ha) and is shown in Figure 2. The Development Envelope of the Approved Project covers an area of 1,094 ha.

This Proposal, if approved, and the existing Approved Project (Ministerial Statement 933) would result in the following total likely impacts:

- total clearing of up to 988 ha of native vegetation within the proposed Development Envelope of 1,177 ha (additional clearing of up to 314 ha);

- abstraction of groundwater for mine pit dewatering of up to 23 gegalitres per annum (GL/a) (additional dewatering of up to 22.28 GL/a); and
- discharge of surplus mine pit dewater into Weeli Wolli Creek of up to 17 GL/a (additional discharge of up to 15 GL/a).

The main characteristics of the Revised Proposal (i.e. the amalgamation of the Approved Project and the Proposal referred to in this report) are summarised in Tables 1 and 2 consistent with Environmental Assessment Guideline No. 1 – *Defining the Key Characteristics of a Proposal Environmental Protection Act 1986*. A detailed description of the Proposal in relation to the Approved Project is provided in the Proponent’s Environmental Review (API) Document (AECOM Australia Pty Ltd, 2016) which is attached as Appendix 6.

In undertaking this assessment, the EPA has assessed the impacts of this Proposal in the context of the Approved Project, considering the cumulative impacts of the entire Revised Proposal where appropriate.

Table 1: Summary of the Revised Proposal

Proposal Title	Iron Valley Iron Ore Project
Proponent name	BC Pilbara Iron Ore Pty Ltd
Short Description	<p>The proposal is to undertake mining and associated activities at Iron Valley located approximately 90 km north-west of Newman in the Pilbara region of Western Australia.</p> <p>The proposal involves open cut mining below the water table and includes groundwater abstraction and discharge of surplus dewater, the development of an additional mine pit and associated infrastructure, a beneficiation plant, a gas turbine power supply, and water management infrastructure for groundwater abstraction and discharge of surplus dewater. The proposal also includes an increase in the area and depth of existing mine pits and the size and number of waste rock landforms, and the integration of tailings storage facility cells into the waste rock landforms.</p>

Table 2: Revised proposal elements for the Iron Valley Iron Ore Project

Element	Location	Approved Project Extent (MS 933)	Proposal (This assessment)	Revised Proposal
Mine and associated infrastructure	Figure 2	Total clearing of up to 674 ha.	Additional clearing of up to 314 ha.	Clearing of no more than 988 ha within the 1,177 ha Development Envelope.
Dewatering	Figure 2	Up to 720 ML/a from 2 bores via existing licence permitting abstraction of groundwater for dust suppression,	Additional abstraction of up to 22.28 GL/a of groundwater.	Abstraction of up to 23 GL/a of groundwater.

Element	Location	Approved Project Extent (MS 933)	Proposal (This assessment)	Revised Proposal
		drilling operations, potable water and road construction (GWL175109).		
Surplus dewater management	Figure 2 and Figure 3	Disposal of up to 2 GL of groundwater during a period of 12 months from 1 July 2016 to 30 June 2017, to multiple bores and/or sumps to a creekline within the Project Area.	Discharge of up to 15 GL/a of surplus dewater into Weeli Wolli Creek via three separate discharge locations (DDL1, DDL4, and DDL5).	Discharge of up to 17 GL/a of surplus dewater into Weeli Wolli Creek via three separate dewater discharge locations (DDL1, DDL4, and DDL5).
Backfilling of mine pits	Figure 2	Excavation to remain above the water table. An unsaturated zone of at least 3 m to be maintained in the mine pits.	All mine pits except Pit C and Pit N will be backfilled to above the water table to prevent the formation of pit lakes. Pit lakes will form in Pit C and Pit N.	All mine pits except Pit C and Pit N will be backfilled to above the water table to prevent the formation of pit lakes. Pit lakes will form in Pit C and Pit N.

The potential impacts of the Proposal on the environment identified by the Proponent and their proposed management of these impacts are summarised in Section 5 of the Environmental Review (API) Document (Appendix 6, AECOM Australia Pty Ltd, 2016).

In assessing this Proposal, the EPA notes that the Proponent has sought to avoid, minimise, and rehabilitate environmental impacts associated with the proposal by:

- placing waste rock material as backfill into some of the mined out pits in order to avoid the formation of pit lakes;
- establishing an exclusion zone around the minor watercourse between Waste Rock Landform 2 and Waste Rock Landform 3 so that surface water flow from this watercourse into Weeli Wolli Creek is not impeded;
- undertaking ongoing monitoring and management of groundwater drawdown and surplus dewater discharge; and
- progressively rehabilitating available disturbed areas.

Since referring the Proposal to the EPA, the Proponent made some modifications to the proposal by increasing the area of the Development Envelope from 1,094 ha to 1,177 ha to facilitate the construction and operation of a surplus dewater discharge pipeline connecting the northern boundary of the mine site area with surplus dewater discharge location DDL5. The EPA considered this change in the context of section 43A of the EP Act and

determined that the change is unlikely to significantly increase the impact that the Proposal may have on the environment.

2.2 Regional context

The Proposal is located within the south-eastern portion of the Pilbara Bioregion and falls within the Fortescue and Hamersley IBRA subregions. The Proposal is also located within Management Zone 2b – Poonda Plain in the Fortescue Marsh management area. Land use in the area surrounding the proposed Development Envelope mainly consists of mining and pastoral activities.

In the Environmental Review Document the Proponent addressed the cumulative impacts of this Proposal and other mining operations in the vicinity with the potential to impact the same receptors. The Proponent determined that surplus mine dewater is currently being discharged into Weeli Wolli Creek upstream of the proposed Development Envelope from the BHP Billiton Iron Ore Pty Ltd Marillana Creek (Yandi) Life of Mine Proposal, the Hamersley Iron – Yandi Pty Limited Yandicoogina Iron Ore Project, and Rio Tinto's Hope Downs 1 Iron Ore Mine. The Proponent also considered the additional surplus mine dewater that would be discharged from the recently assessed Yandicoogina Iron Ore Project – Pocket and Billiard South deposits proposal.

The potential impacts from surplus mine dewater discharge relate to riparian and groundwater dependent vegetation, terrestrial and aquatic fauna habitat, groundwater and surface water quantity and quality, and the hydrological regime within Weeli Wolli Creek.

The EPA notes that the predicted cumulative impacts of the combined surplus mine dewater discharges from the Proposal and the other above mentioned sources will result in a surface flow (wetting front) in Weeli Wolli Creek extending approximately 10 km downstream from the northern boundary of the Proposal (that is, about 21 km south of Fortescue Marsh).

2.3 Consultation

During the preparation of the Environmental Review (API) Document, the Proponent consulted with government agencies and key stakeholders. The agencies and stakeholders consulted, the issues raised and Proponent's response are detailed in Table 5 (pages 11 - 22) of the Proponent's Environmental Review (API) document (see Appendix 6 AECOM Australia Pty Ltd, 2016).

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders on the proposed development.

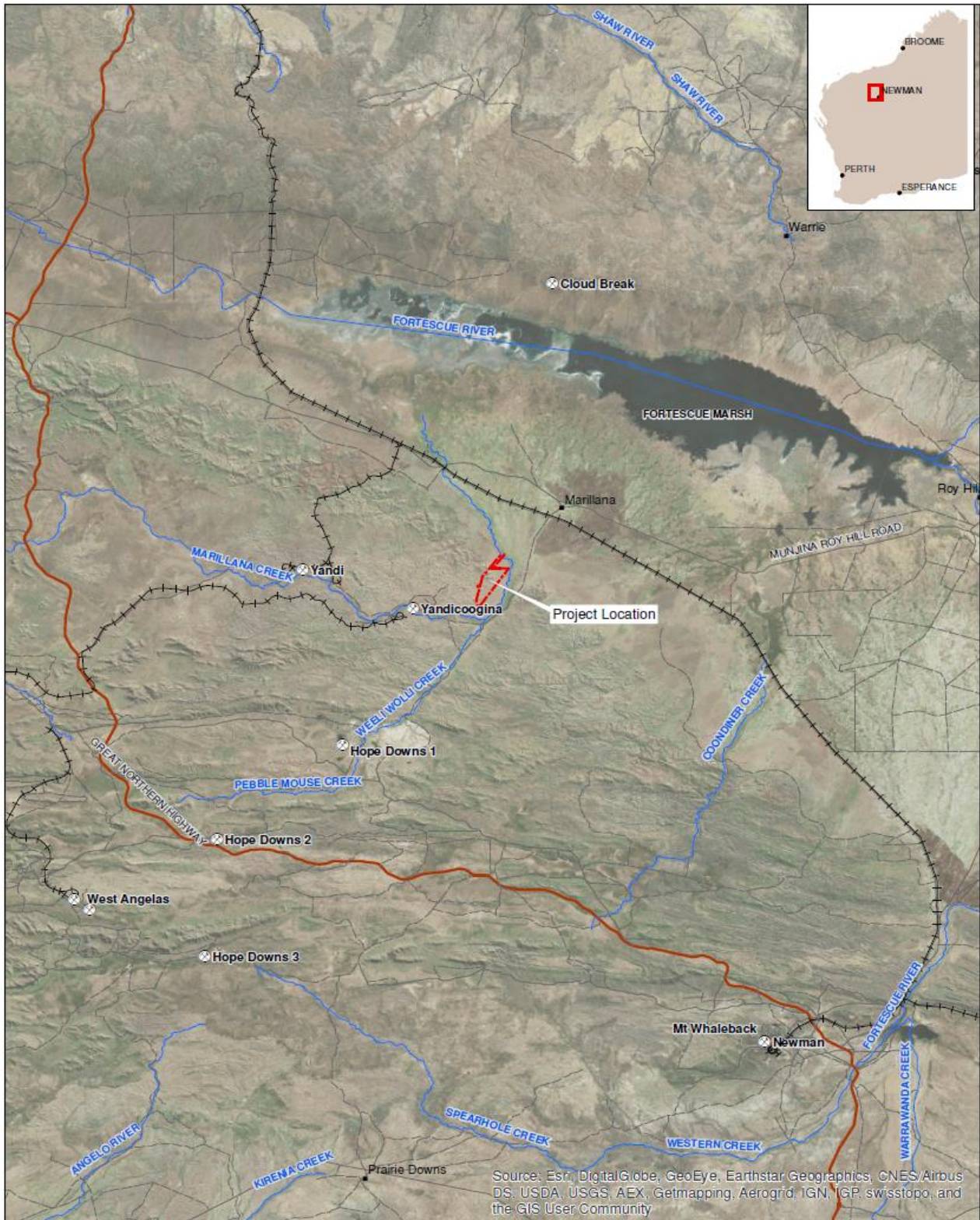
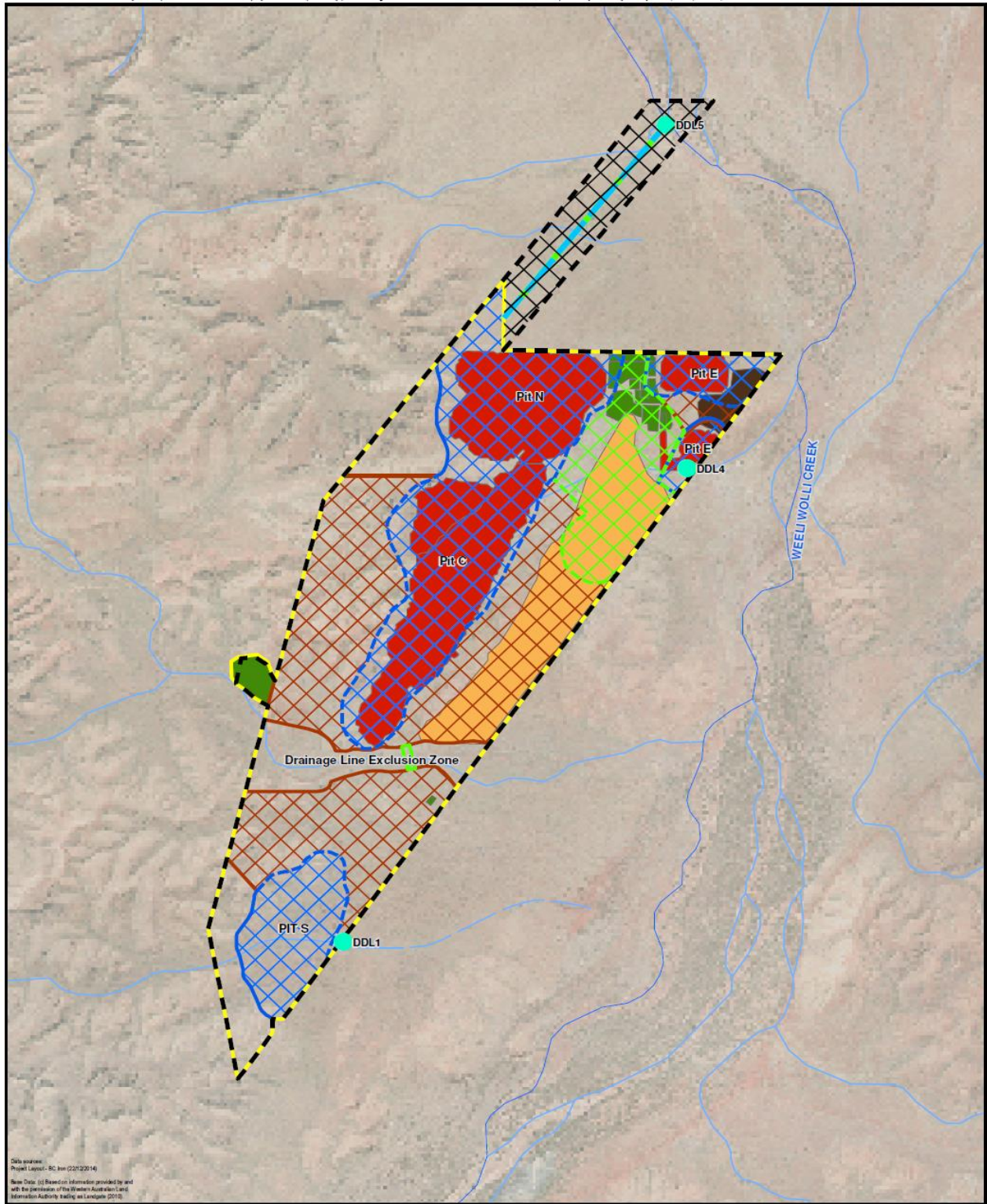


Figure 1: Regional Location



<p>PROJECT ID 60451502 CREATED BY RNM APPROVED BY CT LAST MODIFIED 17 AUG 2016</p>	 <p>www.aecom.com</p>	<p>LEGEND</p> <ul style="list-style-type: none"> Major Watercourse Minor Watercourse Approved AWT (EPA, 2012) Infrastructure Areas Pit Areas Topsoil Storage Waste Rock Landform Approved AWT Project Area 	<p>Proposed BWT</p> <ul style="list-style-type: none"> Additional Indicative Waste Rock Landform Additional Indicative Pits Additional Indicative Infrastructure Areas Additional indicative area within the Development Envelope Proposed BWT Development Envelope Boundary On Site Discharge Point Indicative Pipeline 	<p>Proposed General Arrangement</p> <p>BC IRON</p> <p>ASSESSMENT ON PROPONENT INFORMATION IRON VALLEY PROJECT – BELOW WATER TABLE MINING.</p>
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Figure 2: Revised Proposal Development Envelope and Indicative Proposal Footprint

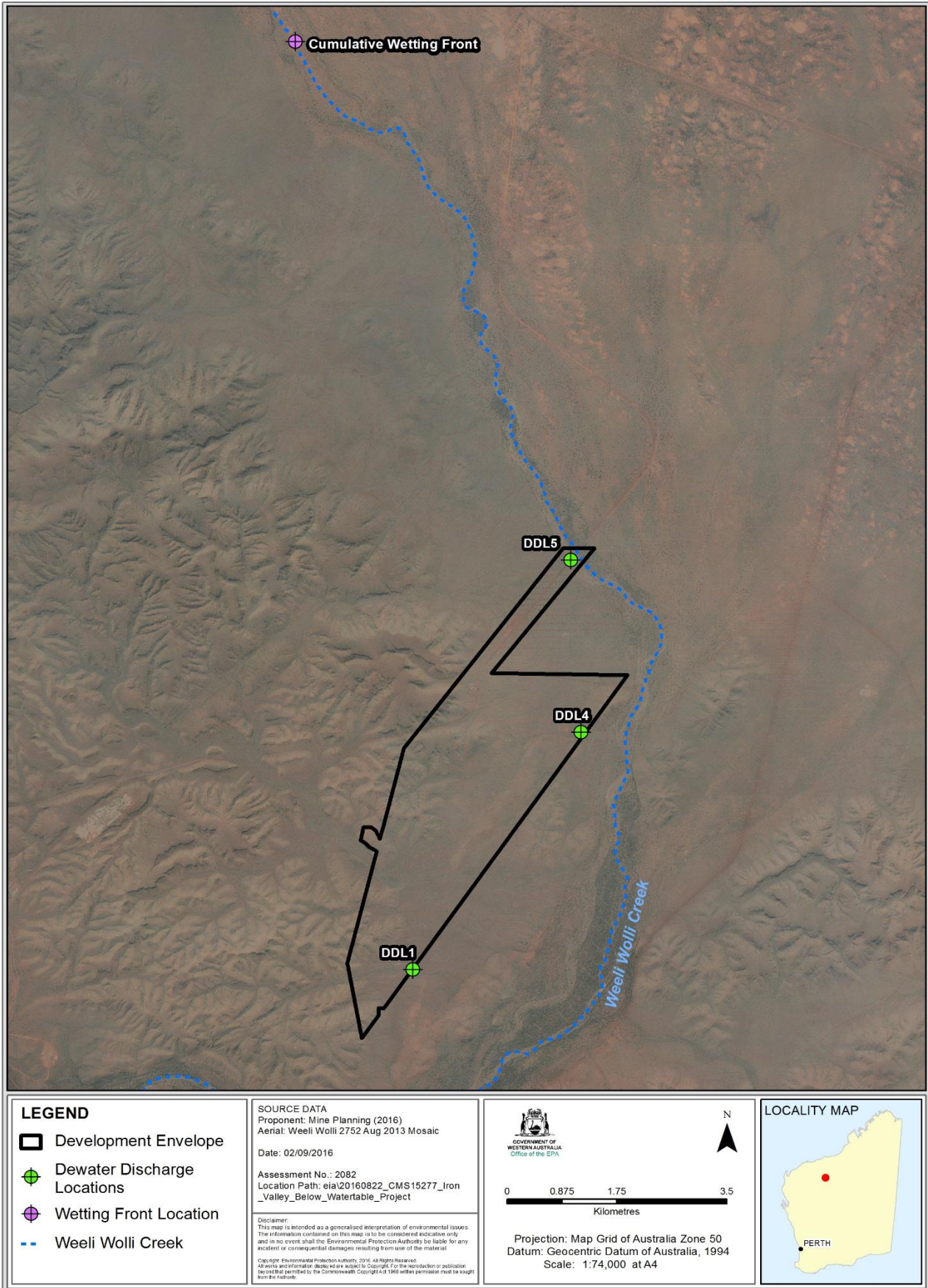


Figure 3: Dewater Discharge Locations and Wetting Front Extent

3 Key environmental factors

In undertaking its assessment of this Proposal and preparing this report and recommendations, the EPA has had regard for the object and principles contained in s4A of the EP Act to the extent relevant to the particular matter being considered. Appendix 2 provides a summary of the principles and how the EPA considered these principles in its assessment.

Having regard to:

- the Proponent's referral information and Final Environmental Review (API) Document;
- public comments on referral information;
- consultation undertaken by the Proponent and presented in the referral information and the Final Environmental Review (API) Document;
- Environmental Assessment Guideline No. 8 – *Environmental Principles, Factors and Objectives* (EPA, 2015a); and
- Environmental Assessment Guideline No. 9 – *Application of a Significance Framework in the Environmental Impact Assessment Process* (EPA, 2015b),

the EPA identified the following key environmental factors during the course of its assessment:

1. **Flora and Vegetation** – direct impacts from the additional clearing of 314 ha of flora and vegetation and indirect impacts to riparian and groundwater dependent vegetation from changes to the hydrological regime from mine site dewatering and the discharge of surplus dewater into Weeli Wollie Creek;
2. **Hydrological Processes and Inland Waters Environmental Quality** – changes to the hydrogeology and water quality of the aquifer in the area, and the hydrological regime and the water quality of Weeli Wollie Creek from mine site dewatering, the discharge of surplus dewater, and run-off and/or seepage from waste material landforms and other disturbed areas.

The EPA also identified the following integrating factors during its assessment:

3. **Rehabilitation and Decommissioning** – potential impacts from pit lakes that will form after the cessation of mining and dewatering activities.
4. **Offsets** – to counterbalance the significant residual impacts to native vegetation in 'Good to Excellent' condition.

Other environmental factors relevant to the Proposal which the EPA determined not to be key environmental factors are discussed in the Proponent's Environmental Referral (API) Document (Appendix 6, AECOM Australia Pty Ltd, 2016).

Appendix 2 contains the environmental factors identified through the course of the assessment and the EPA's evaluation of whether an environmental factor is a key environmental factor for the Proposal.

The EPA's assessment of the Proposal's impacts on the key environmental factors, integrating factors, and a discussion of the application of relevant policy and guidance, is detailed in Table 3, consistent with *Environmental Assessment Guideline for Preparation of an API – Category A Environmental Review Document* (EAG 14) (EPA, 2015c). This table outlines the EPA's conclusions as to whether or not the Proposal can be managed to meet the EPA's objective for a particular factor and, if so, the recommended conditions and procedures that should apply if the Proposal is implemented.

In assessing this Proposal, the EPA has also considered relevant published EPA policies and guidelines. Appendix 3 lists the relevant policies and guidance documents for each of the key environmental factors and integrating factors for this assessment and identifies the relevant matters discussed in, and principles derived from, each policy and guidance document.

The EPA notes that there were no changes to EPA policy and guidance since the Proposal was referred in March 2016. The EPA considered current policy and guidance in its assessment.

The EPA notes that other published policies and guidelines were considered.

Table 3: Assessment of Key Environmental Factors

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p>3.1 Flora and Vegetation</p> <p><i>To maintain representation, diversity, viability and ecological function at the species, population and community level.</i></p>				
<p><u>Context</u></p> <p>The Proposal falls within the Fortescue and Hamersley IBRA subregions. In its advice <i>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</i>, the EPA raised concerns that this area is under pressure as a result of cumulative development impacts (EPA, 2014a).</p> <p>The Proposal is also located within Management Zone 2b – Poonda Plain in the Fortescue Marsh management area - which is of medium conservation significance.</p> <p>The proposed change includes the clearing of an additional 314 ha of vegetation in ‘Good to Excellent’ condition.</p>	<p>An additional 314 ha of native vegetation will be cleared.</p> <p>Dewatering of the mine pits with surplus dewater being discharged into Weeli Wolli Creek.</p>	<p>In line with Position Statement No. 3, the Proponent has demonstrated the application of the mitigation hierarchy in the Proposal design.</p> <p><u>Avoid</u></p> <p>An exclusion zone will be established and maintained on either side of a drainage line located in the southern portion of the Development Envelope between Pit C and Pit S (see Figure 2).</p> <p><u>Minimise</u></p> <p>The disturbance footprint has been adjusted to minimise the clearing of vegetation by modifying the mine plan to include</p>	<p>The extent of clearing authorised in the implementation of the Proposal would be no more than 314 ha (see Schedule 1 of the Recommended Environmental Conditions in Appendix 5).</p> <p>Condition 5 recommends that the Proponent prepare, submit and implement a management plan to minimise impacts to riparian and groundwater dependent vegetation.</p> <p>The current mine closure plan (MCP) for the Approved Project has been approved by the DMP in</p>	<p>Having particular regard to the:</p> <ul style="list-style-type: none"> • relevant EPA policy and guidance relating to flora and vegetation; • absence of conservation significant flora species, TECs, and PECs in the areas surveyed; • impacts to the vegetation associations in the Fortescue and Hamersley IBRA subregions; • Proponent’s mitigation measures; and • the EPA’s assessment that the significant residual impact resulting from the of the clearing of up to 314 ha of ‘Good to Excellent’ condition native vegetation in the

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p><u>Policy and guidance</u></p> <p>The EPA policy and guidance applicable to Flora and Vegetation for this assessment and relevant matters discussed in the policy and guidance are outlined in Appendix 3. The EPA considers that the following policy and guidance is relevant to its assessment of the proposal in relation to this factor:</p> <ul style="list-style-type: none"> • Guidance Statement No. 51 – <i>Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in WA</i> (EPA, 2004); • Position Statement No. 2 – <i>Environmental Protection of Native Vegetation in WA</i> (EPA, 2000); • Position Statement No. 3 – <i>Terrestrial Biological Surveys as an Element of Biodiversity Protection</i> (EPA, 2002); and • <i>Environmental and water assessments relating to mining and mining-related activities in the Fortescue Marsh management area: Advice of the Environmental Protection</i> 		<p>the backfilling of mine pits and the integration of the tailing storage facilities into the waste rock landforms.</p> <p><u>Rehabilitate</u></p> <p>Progressive rehabilitation would be undertaken. Rehabilitation and seed propagation trials will be undertaken. The seed list will be modified if necessary following the rehabilitation trials. Additional topsoil will be generated by rock mulching if it is required.</p> <p><u>Offset</u></p> <p>The EPA has determined, consistent with its approach for impact assessment in the Pilbara, that clearing of native vegetation within the Fortescue and Hamersley IBRA subregions requires an offset to counterbalance the</p>	<p>accordance with the <i>Mining Act 1978</i> and will be updated to include the relevant additional features of the Revised Proposal (i.e. this Proposal and the Approved Project).</p> <p>An offset condition (Condition 7) has been recommended which requires the Proponent to provide an offset to counterbalance the significant residual impact of the additional clearing of up to 314 ha of 'Good to Excellent' native vegetation within the Hamersley and Fortescue IBRA subregions.</p>	<p>Fortescue and Hamersley IBRA subregions, is acceptable and can be offset,</p> <p>the EPA considers that the Proposal can be managed to meet the EPA's objective for Flora and Vegetation provided there is:</p> <ul style="list-style-type: none"> • restriction of clearing within the Development Envelope (Schedule 1 of Recommended Environmental Conditions in Appendix 5); • continued implementation of the measures to minimise impacts to riparian and groundwater dependent vegetation through the preparation, submission and implementation of an environmental management plan, (Condition 5); and

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p><i>Authority to the Minister of the Environment under Section 16(e) of the Environmental Protection Act 1986 (EPA 2013b).</i></p> <p>The Proponent has carried out flora and vegetation surveys in accordance with Guidance Statement No. 51 and Position Statement No. 3. The Proposal is also consistent with the relevant matters in Position Statement No. 2 and the Proponent has given appropriate consideration to the relevant strategies for Fortescue Marsh Management Zone 2b in the Section 16(e) advice in (EPA 2013b).</p> <p><u>Key (Survey) Findings</u></p> <p>No Threatened Ecological Communities (TECs), Priority Ecological Communities (PECs), or conservation significant species were recorded within the Development Envelope.</p> <p><u>Impacts</u></p> <ul style="list-style-type: none"> • Direct impacts from the additional clearing of 314 ha of 		<p>significant residual impact of the clearing of native vegetation in 'Good to Excellent' condition. (See Section 3.5 Offsets).</p>		<ul style="list-style-type: none"> • an offset being applied to counterbalance the significant residual impact of the clearing of up to 314 ha of 'Good to Excellent' condition vegetation (condition 7).

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p>flora and vegetation within the Development Envelope.</p> <ul style="list-style-type: none"> This includes 224.1 ha (0.025%) of the Fortescue IBRA subregion and 89.6 ha (0.004%) of the Hamersley IBRA subregion. Groundwater drawdown due to dewatering and groundwater mounding and the extension of the permanent wetting front in Weeli Woolli Creek due to the discharge of surplus dewater have the potential to impact on riparian and groundwater dependent vegetation within Weeli Woolli Creek. 				

3.2 Hydrological Processes and Inland Waters Environmental Quality

To maintain the hydrological regimes of groundwater and surface water so that existing and potential uses, including ecosystem maintenance, are protected.

To maintain the quality of groundwater and surface water, sediment and biota so that the environmental values, both ecological and social, are protected.

<p><u>Context</u></p> <p>The Proposal is located adjacent to Weeli Woolli Creek and within Management Zone 2b – Poonda Plain in the Fortescue Marsh management area.</p>	<p>Up to 23 GL/a of groundwater will be abstracted for mine pit dewatering.</p>	<p><u>Avoid</u></p> <p>An exclusion zone will be established and maintained on either side of a drainage line located in the southern portion of</p>	<p>The Department of Water (DoW) regulates groundwater abstraction under the <i>Rights in Water and Irrigation Act 1914</i>.</p>	<p>Having particular regard to the:</p> <ul style="list-style-type: none"> results obtained from the dewater disposal assessment, groundwater modelling,
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Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p>Water is currently being discharged into Weeli Wolli Creek upstream of the Development Envelope from the BHP Billiton Iron Ore Pty Ltd Marillana Creek (Yandi) Life of Mine Proposal, the Hamersley Iron – Yandi Pty Limited Yandicoogina Iron Ore Project, and Rio Tinto’s Hope Downs 1 Iron Ore Mine.</p> <p>The amount of water being discharged into Weeli Wolli Creek upstream of the Development Envelope will increase further as a result of the Hamersley Iron – Yandi Pty Limited Yandicoogina Iron Ore Project – Pocket and Billiard South deposits proposal.</p> <p><u>Policy and guidance</u></p> <p>The EPA policy and guidance applicable to Hydrological Processes and Inland Waters Environmental Quality and relevant matters discussed in the policy and guidance are outlined in Appendix 3. The EPA considers that the following policy and guidance is relevant to its</p>	<p>Up to 17 GL/a of surplus mine dewater will be discharged into Weeli Wolli Creek via three on-site discharge points (DDL1, DDL4, and DDL5).</p> <p>Run-off and/or seepage from waste rock landforms and integrated tailings storage facilities, and other disturbed areas has the potential to impact on water quality in Weeli Wolli Creek.</p> <p>Groundwater drawdown, groundwater mounding, and the extension of the permanent wetting front in</p>	<p>the Development Envelope between Pit C and Pit S (see Figure 2).</p> <p><u>Minimise</u></p> <p>Some of the surplus mine dewater will be used for dust suppression, drilling operations, potable water, and road construction.</p>	<p>The Proponent would need to apply for an amendment to the existing licence to enable an increase in groundwater abstraction.</p> <p>The Department of Environment Regulation (DER) regulates the discharge of surplus dewater under Part V of the <i>Environmental Protection Act 1986</i>. The Proponent would need to apply for an amendment to the existing licence to enable an increase in surplus dewater discharge.</p> <p>The construction and operation of the tailings storage facilities integrated into the waste rock landforms will be administered by the DER via a Works</p>	<p>surface water and groundwater quality studies, and the geochemical assessment of the waste rock; and</p> <ul style="list-style-type: none"> mitigation measures that will be employed by the Proponent to avoid and minimise environmental impacts, <p>the EPA considers that the Proposal can be managed to meet the EPA’s objective for Hydrological Processes and Inland Waters Environmental Quality provided there is continued implementation of the measures to minimise impacts to groundwater levels, groundwater and surface water quality, and the hydrological regime within Weeli Wolli Creek, through the preparation, submission and implementation of an environmental management plan (Condition 5).</p>

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p>assessment of the proposal in relation to this factor:</p> <ul style="list-style-type: none"> <i>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 of the Environment under Section 16(e) of the Environmental Protection Act 1986 (EPA 2013b).</i> <p>The Proponent has given appropriate consideration to the relevant strategies for Fortescue Marsh Management Zone 2b in the Section 16(e) advice in (EPA 2013b).</p> <p><u>Key Study Findings</u></p> <p>The results obtained from a dewater disposal assessment indicate that the discharge of surplus dewater via three on-site discharge locations (DDL1, DDL4, and DDL5) will result in some localised groundwater mounding. Groundwater mounding is also likely to occur on the eastern side of the Development Envelope</p>	<p>Weeli Woolli Creek due to the discharge of surplus dewater have the potential to impact on riparian and groundwater dependent vegetation within Weeli Wolli Creek.</p>		<p>Approval under Part V of the <i>Environmental Protection Act 1986</i>.</p> <p>Condition 5 requires the Proponent to prepare, submit and implement a management plan to minimise the impacts on:</p> <ul style="list-style-type: none"> The environmental values of Weeli Wolli Creek, aboriginal heritage values linked to the physical and/or biological surroundings of Weeli Wolli Creek, the health or cover of riparian and groundwater dependent vegetation. 	

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p>as a result of predicted water seepage from the encapsulated TSFs into zones of lower permeable geology.</p> <p>Groundwater modelling predicts that dewatering will lower groundwater levels around the mine site and in parts of Weeli Wolli Creek. However, there are areas where the disposal of surplus dewater into Weeli Wolli Creek will result in groundwater levels in the creek rising to above ground level. This will be influenced by the additional cumulative flow from existing upstream mining operations.</p> <p>The discharge of surplus dewater from the Proposal when combined with the discharge from existing upstream mining operations and the Hamersley Iron – Yandi Pty Limited Yandicoogina Iron Ore Project – Pocket and Billiard South deposits proposal is expected to generate a surface flow in Weeli Wolli Creek (i.e. a wetting front) approximately 10 km downstream from on-site surplus dewater discharge location</p>				

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p>DDL5. This location is approximately 21 km from the Fortescue Marsh.</p> <p>The quality of the surplus mine dewater ranges from approximately 500 to 700 mg/L TDS with metal concentrations below the relevant (ANZECC & ARMCANZ 2004) freshwater quality guideline criteria for 95% species protection.</p> <p>The results obtained from a geochemical assessment of the waste rock indicate that it is non-acid forming (NAF) and is therefore not expected to be a source of acid mine drainage or metalliferous drainage.</p> <p><u>Impacts</u></p> <p>Riparian and groundwater dependent vegetation within the Weeli Wolli Creek could potentially be impacted by groundwater drawdown due to dewatering and the discharge of surplus dewater into the creek.</p> <p>All mine pits except Pit C and Pit N will be backfilled to above the water table to prevent the formation of pit lakes. Pit lakes will form in Pit C and</p>				

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
Pit N following cessation of mining and dewatering activities. The Proponent believes that these two pit lakes will be through-flow lakes.				
<p>3.3 Rehabilitation and Decommissioning (Integrating Factor)</p> <p><i>To ensure that premises are decommissioned and rehabilitated in an ecologically sustainable manner.</i></p>				
<p><u>Context</u></p> <p>The Proposal is subject to the <i>Mining Act 1978</i>.</p> <p><u>Policy and Guidance</u></p> <p>The EPA policy and guidance applicable to Rehabilitation and Decommissioning for this assessment and relevant matters discussed in the policy and guidance are outlined in Appendix 3. The EPA considers that the following policy and guidance is relevant to its assessment of the Proposal in relation to this factor:</p> <ul style="list-style-type: none"> • <i>Guidelines for preparing Mine Closure Plans</i> (DMP & EPA, 2015); and 	<p>Alteration of landforms and surface water flows due to the development of mine pits and waste rock landforms with integrated tailings storage facilities, and other associated mine infrastructure.</p> <p>Pit lakes will form in Pit C and Pit N due to the recovery of groundwater levels following the cessation of dewatering.</p>	<p><u>Avoid</u></p> <ul style="list-style-type: none"> • the tailings storage facility cells will be designed to prevent failure and will be encapsulated within the waste rock landforms; and • an exclusion zone will be established and maintained on either side of a drainage line located in the southern portion of the Development Envelope between Pit C and Pit S and the adjacent waste rock landforms and encapsulated tailings 	<p>Due to the proximity of the pit lakes to Weeli Wolli Creek, Condition 6 has been recommended requiring the Proponent to prepare and implement a Mine Closure Plan and to review and revise this plan every three years during operations. This is consistent with the current <i>Guidelines for preparing mine closure plans</i>.</p> <p>The Mine Closure Plan will:</p> <ul style="list-style-type: none"> • define which pit voids will be backfilled and will 	<p>Having particular regard to the:</p> <ul style="list-style-type: none"> • relevant EPA policy and guidance pertaining to Rehabilitation and Decommissioning; • mitigation measures proposed by the Proponent to avoid and minimise environmental impacts; • up to 314 ha of additional disturbed native vegetation requiring rehabilitation; • the low risk of acid mine drainage or metalliferous drainage based on the outcomes of the geochemical assessment; and

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<ul style="list-style-type: none"> Environmental Protection Bulletin No. 19 – <i>EPA involvement in mine closure</i> (EPA, 2015d). <p>As certain aspects of the mine closure pose a high environmental risk the EPA considers that rehabilitation and decommissioning should be assessed for the Proposal, consistent with Environmental Protection Bulletin No. 19 – <i>EPA involvement in Mine Closure</i> (EPA, 2015d).</p> <p><u>Key Study Findings</u></p> <p>The results obtained from a geochemical assessment of the waste rock indicate that it is non-acid forming (NAF) and is therefore not expected to be a source of acid mine drainage or metalliferous drainage.</p> <p>Pit lakes will form in Pit C and Pit N following cessation of mining and dewatering activities. The Proponent anticipates that these two pit lakes will be through-flow lakes. The water levels in the pit lakes are predicted to be approximately 5 m above the base of the pit floors in a</p>		<p>storage facilities (see Figure 2).</p> <p><u>Minimise</u></p> <ul style="list-style-type: none"> the mine pits and waste rock landforms will be designed to reduce the risk of failure; access to the site will be minimised by the removal of access roads, signage, and the construction of safety bunds; and all mine pits except Pit C and Pit N will be backfilled to above the water table to prevent the formation of pits lakes. <p><u>Rehabilitate</u></p> <p>Progressive rehabilitation would be undertaken. Rehabilitation and seed propagation trials will be undertaken. The seed list will be modified if</p>	<p>refine the conceptual and analytical models for the proposed pit lakes to demonstrate that the pit lakes will not have detrimental impacts on groundwater and/or surface water systems; and</p> <ul style="list-style-type: none"> include a monitoring framework for the monitoring of groundwater levels and groundwater quality to demonstrate that the cessation of groundwater dewatering and discharge for the Proposal would not have a detrimental impact on the groundwater aquifers and surface water flows in Weeli Wolli Creek. 	<ul style="list-style-type: none"> the formation of pit lakes in Pit C and Pit N after mine closure, <p>the EPA considers that the Proposal can be managed to meet the EPA’s objective for Rehabilitation and Decommissioning subject to condition 6 requiring the Proponent to develop and implement a Mine Closure Plan and review the Mine Closure Plan every three years consistent with the <i>Guidelines for Preparing Mine Closure Plans</i>.</p>

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p>worst case drought scenario. The pit lakes are not expected to dry up or become groundwater sinks, and the Proponent expects that they will continue to function as through-flow lakes.</p> <p>The predicted loss of water (i.e. the annual through-flow volume) from the pit lakes into the aquifer below Weeli Wolli Creek is predicted to be approximately 0.657 GL/a, which represents about 5.45% of the total predicted groundwater outflow from the catchment. The salinity of the water in the pit lakes is predicted to increase to around 2,100 mg/L TDS over a period of 100 years and stabilise at this level following the cessation of mining.</p> <p>The pit lakes are not likely to receive flood water during flood events in Weeli Wolli Creek as they are located outside the flood plain of Weeli Wolli Creek.</p> <p><u>Impacts</u></p> <p>Groundwater outflow from the pit lakes has the potential to impact on</p>		<p>necessary following the rehabilitation trials. Additional topsoil will be generated by rock mulching if it is required.</p>		

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p>the water quality in the aquifer below Weeli Wolli Creek.</p> <p>Run-off and seepage from the waste rock landforms and integrated tailings storage facilities have the potential to impact on groundwater and surface water quality.</p>				
<p>3.4 Offsets (Integrating Factor)</p> <p><i>To counterbalance any significant residual environmental impacts or uncertainty through the application of offsets.</i></p>				
<p><u>Context</u></p> <p>In its advice on the cumulative impacts in the Pilbara (EPA 2014a), the EPA raises its concern that without intervention, the increasing cumulative impacts of development and land use in the Pilbara region will significantly impact on biodiversity and environmental values.</p> <p>The EPA considers that the clearing of native vegetation and impacts on other associated environmental values in the Pilbara IBRA bioregion is significant where the cumulative impact may reach critical levels if not managed.</p>	<p>Clearing of native vegetation in 'Good to Excellent' condition.</p>	<p>Consistent with the relevant offset policies and guidance, the Proponent has addressed the mitigation hierarchy by identifying measures to avoid, minimise and rehabilitate environmental impacts. Mitigation measures are assessed under the relevant environmental factor (see Flora and Vegetation).</p> <p>Given the cumulative impact of clearing in the Fortescue and Hamersley IBRA subregions, the EPA</p>	<p>Condition 7 has been recommended requiring the Proponent to provide an offset for the additional clearing of 314 ha plus the 674 ha of clearing approved under Ministerial Statement 933 (total of 988 ha).</p>	<p>Conservation areas in the Pilbara bioregion total approximately 8% of the area, with the remainder mostly Crown Land, covered with mining tenements and pastoral leases. As such, the potential for traditional land acquisition and management offsets are limited.</p> <p>The <i>WA Offsets policy</i> states that Environmental Offsets will be focussed on longer term strategic outcomes (Principle 6). Strategic approaches, such</p>

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p>The Proposal is located within the Fortescue and Hamersley IBRA subregions. Only 0.5% of the Fortescue IBRA subregion and 13% of the Hamersley IBRA subregion are currently reserved for conservation.</p> <p><u>Policy and guidance</u></p> <p>The EPA policy and guidance applicable to Offsets for this assessment and the relevant matters discussed in the policy and guidance are outlined in Appendix 3. The EPA considers that the following policy and guidance is relevant to its assessment of the Proposal in relation to this factor:</p> <ul style="list-style-type: none"> • WA Environmental Offsets Policy (Government of Western Australia, 2011); • <i>WA Environmental Offsets Guidelines</i> (Government of Western Australia, 2014); and • Environmental Protection Bulletin No. 1 – <i>Environmental Offsets</i> (EPA, 2014b). 		<p>considers that the loss of up to 314 ha of native vegetation in ‘Good to Excellent’ condition constitutes a significant residual impact, after taking into account the Proponent’s proposed measures to avoid, minimise and rehabilitate impacts and the proposed conditions.</p> <p>Consistent with the Residual Impact Significance Model in the <i>WA Environmental Offsets Guidelines</i>, where the cumulative impact may reach critical levels if not managed, the clearing of native vegetation in ‘Good to Excellent’ condition within the Fortescue and Hamersley IBRA subregions requires an offset to counterbalance the significant residual impact of the clearing.</p>		<p>as the use of a fund, can provide a coordination mechanism to implement offsets across a range of land tenures (Government of Western Australia 2014).</p> <p>In its advice on the cumulative impacts in the Pilbara (EPA 2014a), the EPA proposed the establishment of a strategic conservation initiative for the Pilbara as a mechanism to pool offset funds to achieve biodiversity conservation outcomes.</p> <p>The EPA has stated that the type of environmental offsets in the Pilbara that contribute to a strategic conservation initiative will ensure a consistent and transparent approach and contribute to longer term strategic outcomes (as outlined in the <i>WA Environmental Offsets Guidelines</i>), with contributions based on an</p>

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<p>As stated in Environmental Protection Bulletin No. 1, if a Proponent is seeking a change to, or an expansion of, a proposal under an existing approval/s, these changes would be subject to the current offsets practice. Therefore, consistent with this, the EPA is only assessing whether offsets are appropriate for the Proposal.</p> <p><u>Impacts</u></p> <p>Following the implementation of all mitigation measures, the Proposal would have a significant residual impact from the clearing of up to an additional 314 ha of 'Good to Excellent' condition native vegetation.</p>				<p>assessment of the significance of environmental impacts.</p> <p>The EPA is of the view that there should be a clear target outcome for each offset project supported by the offset funds with a clear link between the outcomes and the significant residual impacts of the individual proposal. Funds should be used for landscape scale on-ground actions in the Pilbara IBRA region and indirect actions (such as research) that will directly contribute to biodiversity conservation outcomes in the region.</p> <p>Project funding for offsets should not be used to provide substitute funding for existing government programs or company obligations.</p> <p>Commensurate with other decisions within the</p>

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
				<p>Fortescue and Hamersley IBRA subregions, the EPA recommends that an offset of \$1,500 per hectare of 'Good to Excellent' condition vegetation cleared in the Fortescue IBRA subregion and \$750 per hectare of 'Good to Excellent' condition vegetation cleared in the Hamersley IBRA subregion should apply in the form of a contribution to a Pilbara strategic conservation initiative to implement landscape-scale actions to protect biodiversity in the Pilbara.</p> <p>Having particular regard to:</p> <ul style="list-style-type: none"> • relevant EPA policy and guidance pertaining to Offsets; and • the loss of up to 314 ha of native vegetation, <p>the EPA considers that the Proposal can be managed to meet the EPA's objectives for Flora and</p>

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
				Vegetation and Offsets provided that a condition is imposed to counterbalance the significant residual impact of the clearing of up to 314 ha of native vegetation in 'Good to Excellent' condition (Condition 7).

4 Conclusion and recommended conditions

The EPA has concluded that the Proposal (the changes to the Approved Project) can be managed to meet the EPA's objectives and therefore recommends that the Proposal may be implemented.

As part of its assessment the EPA has considered the potential cumulative impacts on Weeli Wolli Creek and the Fortescue Marsh, most significantly the impacts of the discharge of water to Weeli Wolli Creek and the potential long term impacts of pit lakes.

Section 45B of the EP Act provides that if a proposal is revised (i.e. the amalgamation of the existing Approved Project and this Proposal once approved) after implementation conditions have been agreed, each of those implementation conditions (in this case, implementation conditions in Ministerial Statement 933) continue to apply to the Revised Proposal, subject to revised conditions or procedures being applied to the Revised Proposal.

In its assessment of this Proposal, the EPA has also reviewed the implementation conditions for the Approved Project and recommends revised implementation conditions be imposed to the Revised Proposal (i.e. the amalgamation of the existing Approved Project and this Proposal), if the Minister decides that it may be implemented. Appendix 4 sets out the EPA's review of the Ministerial Statement for the Approved Project and Appendix 5 sets out the EPA's recommended environmental conditions for the Revised Proposal.

These conditions include the following:

- preparation of an Outcome-based Environmental Management Plan/s (condition 5) to minimise the long term impacts to:
 - the environmental values of Weeli Wolli Creek;
 - the aboriginal heritage values linked to the physical and/or biological surroundings of Weeli Wolli Creek; and
 - the health or cover of riparian and groundwater dependent vegetation;
- preparation and implementation of a Mine Closure Plan (condition 6); and
- a requirement for the Proponent to contribute additional funds to a government established conservation offset fund to counterbalance the significant residual impact of the loss of up to 988 ha of "Good to Excellent" condition native vegetation in (condition 7).

5 Recommendations

That the Minister for Environment notes:

1. that the Proposal being assessed is the changes to the Approved Project in the Iron Valley area;
2. the key environmental factors identified by the EPA in the course of its assessment set out in Section 3; and
3. that the EPA has concluded that the Proposal may be implemented to meet the EPA's objectives, provided the implementation of the Revised Proposal (i.e. the amalgamation of the existing Approved Project and this Proposal) is carried out in accordance with the recommended revised conditions and procedures set out in Appendix 5 and summarised in Section 4.

Appendix 1

References

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Appendix 2

Summary of Identification of Key Environmental Factors and Principles

Summary of identification of key environmental factors

Environmental Factors	Proposal Characteristics	Evaluation of whether a factor is a key environmental factor
LAND		
Flora and vegetation	<p>Direct impacts from the additional clearing of 314 ha of flora and vegetation and indirect impacts to riparian and groundwater dependent vegetation from changes to the hydrological regime from mine site dewatering and the discharge of surplus dewater into Weeli Wolli Creek.</p> <p>Groundwater drawdown due to dewatering and groundwater mounding and the extension of the permanent wetting front in Weeli Woolli Creek due to the discharge of surplus dewater have the potential to impact on riparian and groundwater dependent vegetation.</p> <p>A flora and vegetation survey undertaken in 2012 for the Iron Valley Above Water Table Project concluded that there were no Threatened Ecological Communities (TECs), Priority Ecological Communities (PECs), or conservation significant species present within the survey area.</p>	<p>Flora and Vegetation was identified as a preliminary environmental factor in the decision to assess the Proposal.</p> <p>Having regard to the scale of vegetation clearing that will be undertaken and the potential for riparian and groundwater dependent vegetation to be impacted, the EPA identified Flora and Vegetation as a key environmental factor at the conclusion of its assessment.</p>
Subterranean Fauna	<p>Direct impacts from the excavation of mine pits and dewatering and indirect impacts from changes to the hydrological regime from mine site dewatering and the discharge of surplus dewater into Weeli Wolli Creek.</p> <p>Twenty of the 22 stygofauna species and 9 of the 11 troglofauna species that were recorded during the Level 2 troglofauna and stygofauna surveys that were conducted in 2009 and 2011 are known to occur outside the boundary of the Development Envelope.</p> <p>The 2 remaining stygofauna species and 2 remaining troglofauna species that were only recorded within the Development Envelope are expected to be found in</p>	<p>Subterranean Fauna was identified as a preliminary environmental factor in the decision to assess the Proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> • the results of the surveys carried out in accordance with Guidance Statement No. 54a – <i>Subterranean Fauna Surveys for Environmental Impact Assessment in WA</i> (EPA, 2007); • the fact that 20 of the 22 stygofauna species and 9 of the 11 troglofauna species that were recorded during the surveys are known to occur outside the boundary of the Development Envelope;

Environmental Factors	Proposal Characteristics	Evaluation of whether a factor is a key environmental factor
	<p>surrounding areas due to the availability of suitable contiguous habitat beyond the Development Envelope boundary based on the consideration of surrogates.</p>	<ul style="list-style-type: none"> • the 2 remaining stygofauna species and 2 remaining troglofauna species that were only recorded within the Development Envelope being expected to be found in surrounding areas due to availability of suitable contiguous habitat beyond the Development Envelope boundary based on the consideration of surrogates; and • Environmental Assessment Guideline 9 - <i>Application of a Significance Framework in the Environmental Impact Assessment Process</i> (EPA, 2015b), <p>the EPA considers that it is unlikely that the Proposal would have a significant impact on subterranean fauna and the Proposal can meet the objectives for this factor. Accordingly, the EPA did not identify Subterranean Fauna as a key environmental factor at the conclusion of its assessment.</p>
Terrestrial Fauna	<p>Direct impacts from the clearing 314 ha of terrestrial fauna habitat, and indirect impacts from changes to the hydrological regime from the discharge of surplus dewater into Weeli Wolli Creek.</p> <p>A desk top fauna study identified the potential for 21 conservation significant fauna species to occur in the Development Envelope. Fauna field surveys were undertaken in 2011 for the Iron Valley Above Water Table Project and were subsequently updated to take account of the Iron Valley Below Water Table Project.</p> <p>The following four conservation significant fauna species were recorded during the fauna field surveys:</p> <ul style="list-style-type: none"> - Rainbow Bee-eater (listed as a Migratory bird under the <i>Wildlife Conservation Act 1950</i>; 	<p>Terrestrial Fauna was identified as a preliminary environmental factor in the decision to assess the Proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> • the results of the surveys carried out in accordance with Guidance Statement No. 56 – <i>Sampling Methods and Survey Considerations for Subterranean Fauna in Western Australia</i> (EPA, 2004b); • the availability of suitable habitat for conservation significant fauna species beyond the Development Envelope boundary; • the conservation significant micro-invertebrate and macro-invertebrate taxa found in Weeli Wolli Creek

Environmental Factors	Proposal Characteristics	Evaluation of whether a factor is a key environmental factor
	<ul style="list-style-type: none"> - Australian Bustard (listed as a Priority 4 species under the <i>Wildlife Conservation Act 1950</i>); - Western Pebble Mound Mouse (listed as a Priority 4 species under the <i>Wildlife Conservation Act 1950</i>); and - Rufous Crowned Emu Wren (not listed but considered to be locally significant). <p>The above mentioned species are unlikely to be significantly impacted by the clearing of 314 ha of vegetation for the proposal given that suitable habitat is found extensively beyond the Development Envelope boundary.</p> <p>Two additional species listed under the <i>Wildlife Conservation Act 1950</i> (i.e. the Northern Quoll and the Pilbara Olive Python) were included and discussed in the Iron Valley Above Water Table Project assessment, but not recorded during the 2011 surveys. The Northern Quoll was not recorded in repeated surveys in the region and has only been found very infrequently in the general area. The Pilbara Olive Python is likely to be resident in the proposal area. Although suitable habitat for both the Olive Python and the Northern Quoll will be removed as part of the Iron Valley Below Water Table Project, suitable habitat for both species is found outside the Development Envelope boundary.</p> <p>An aquatic fauna survey found a number of conservation significant stygobitic, SRE hyporheic, and Pilbara endemic micro-invertebrate and macro-invertebrate taxa present in Weeli Wolli Creek. These taxa have local and/or regional distributions outside of the Development Envelope. During the survey a potentially new cladoceran species <i>cf. Anthalona</i> sp (water flea) was recorded. Given that this</p>	<p>having local and/or regional distributions beyond the boundary of the Development Envelope;</p> <ul style="list-style-type: none"> • the potentially new cladoceran species <i>cf. Anthalona</i> sp (water flea) not being significantly impacted by the Proposal; and • Environmental Assessment Guideline 9 - <i>Application of a Significance Framework in the Environmental Impact Assessment Process</i> (EPA, 2015b), <p>the EPA considers that it is unlikely that the Proposal would have a significant impact on terrestrial fauna and the Proposal can meet the objectives for this factor. Accordingly, the EPA did not identify Terrestrial Fauna as a key environmental factor at the conclusion of its assessment.</p> <p>For the Revised Proposal (this Proposal and the Approved Project), the EPA noted that:</p> <ul style="list-style-type: none"> • Condition 8 of Ministerial Statement 933 contains conditions relating to short range endemic fauna; • the Proponent submitted a report to the Office of the EPA (OEPA) in September 2015 in order to satisfy the requirements of these conditions; • in October 2015 the OEPA advised the Proponent that it had satisfied the requirements of these conditions; and • Condition 8 has no on-going management requirements.

Environmental Factors	Proposal Characteristics	Evaluation of whether a factor is a key environmental factor
	<p>species was recorded from three locations in the main channel of the Weeli Wolli Creek, including sites of varying quality of habitat, inundation and macro-invertebrate biodiversity, this species may have a broad habitat preference. Therefore, it is unlikely to be significantly impacted by the proposal.</p>	<p>Accordingly, a condition relating to short range endemic fauna has not been included in the proposed new recommended Ministerial Statement.</p>
WATER		
<p>Hydrological Processes and Inland Waters Environmental Quality</p>	<p>The proposal will result in changes to the hydrogeology and water quality of the aquifer in the area, and the hydrological regime and the water quality of Weeli Wolli Creek from mine site dewatering, the discharge of surplus dewater, and run-off and/or seepage from waste rock landforms and integrated tailings storage facilities, and other disturbed areas.</p>	<p>Hydrological Processes and Inland Waters Environmental Quality was identified as a preliminary environmental factor in the decision to assess the Proposal.</p> <p>Having regard to the scale of groundwater abstraction for dewatering and the discharge of surplus dewater into Weeli Wolli Creek, the EPA identified Hydrological Processes and Inland Waters Environmental Quality as a key environmental factor at the conclusion of its assessment.</p> <p>Condition 9 of Ministerial Statement 933 refers to the management of surface water. The EPA has proposed that a condition relating to Hydrological Processes and Inland Waters Environmental Quality is retained (see condition 7) as Hydrological Processes and Inland Waters Environmental Quality are key environmental factors for the Revised Proposal (i.e. this Proposal and the Approved Project).</p>
PEOPLE		
<p>Heritage</p>	<p>The proposal will result in the impact to three aboriginal heritage sites within the Development Envelope from the construction of mine pits and associated infrastructure, and mine site operations.</p>	<p>Heritage was identified as a preliminary environmental factor in the decision to assess the Proposal.</p> <p>Surplus dewater discharge and its cessation at mine closure has the potential to impact on the aboriginal</p>

Environmental Factors	Proposal Characteristics	Evaluation of whether a factor is a key environmental factor
	<p>Permission to disturb the three aboriginal heritage sites (rock shelters) will be sought by the Proponent via an application under Section 18 of the <i>Aboriginal Heritage Act 1972</i>.</p> <p>The Proponent has an existing Land Access Deed with the Nyiyaparli people and consults with them on a six-monthly basis.</p> <p>The Proponent has advised that the Nyiyaparli people have not raised any concerns in regard to the impact of the proposal on the three aboriginal heritage sites (rock shelters) located within the Development Envelope.</p> <p>The Proponent's Environmental Review Document indicates that Weeli Wolli Creek has significant heritage value to the Nyiyaparli people.</p>	<p>heritage values of Weeli Wolli Creek due to the impacts on the physical and/or biological surroundings of the creek. Proposed condition 5 relating to the management of groundwater and surface water also includes a requirement that the implementation of the Proposal does not cause long term impacts to the aboriginal heritage values linked to the physical and/or biological surroundings of Weeli Wolli Creek.</p> <p>Having regard to Guidance Statement No. 41 – <i>Assessment of aboriginal heritage</i> (EPA 2004) and EAG 9 – <i>Application of a Significance Framework in the Environmental Impact Assessment Process</i> (EPA 2015b) and given that:</p> <ul style="list-style-type: none"> • the Proponent has an existing Land Access Deed with the Nyiyaparli people and has undertaken consultation with them on a six-monthly basis; • the Nyiyaparli people have not raised any concerns in regard to the impact of the proposal on the three aboriginal heritage sites within the Development Envelope; and • condition 5 includes a requirement that the implementation of the Proposal does not cause long term impacts to the aboriginal heritage values linked to the physical and/or biological surroundings of Weeli Wolli Creek, <p>the EPA considers that it is unlikely that the Proposal would have a significant impact on heritage and the Proposal can meet the objectives for this factor. Accordingly, the EPA did not identify Heritage as a key environmental factor at the conclusion of its assessment.</p>

Environmental Factors	Proposal Characteristics	Evaluation of whether a factor is a key environmental factor
		<p>The EPA notes that the Proponent will seek permission to disturb the three aboriginal heritage sites located within the Development Envelope via an application under Section 18 of the <i>Aboriginal Heritage Act 1972</i>.</p> <p>The EPA also notes that the Proponent has an existing Land Access Deed with the Nyiyaparli people</p>
INTEGRATING FACTORS		
<p>Rehabilitation and Decommissioning</p>	<p>The proposal will result in the excavation of mine pits, the construction of WRLs and multiple integrated TSF cells within the WRLs, and other related mining infrastructure. Rehabilitation and decommissioning of the proposal area will be required following the cessation of mining operations.</p> <p>A mine closure plan for the Iron Valley AWT Project has been submitted to and subsequently approved by the Department of Mines and Petroleum (DMP). This plan will be updated to include the relevant additional features of the Iron Valley BWT Project. This will include the risks to closure due to the incorporation of TSF cells within the WRLs, changes to surface water management requirements due to the changes in site layout, and rehabilitation. The Environmental Review document indicates that the current mine closure plan will meet the requirements of the <i>OEPA/DMP Guidelines for Preparing Mine Closure Plans (2015)</i>.</p> <p>All mine pits except Pit C and Pit N will be backfilled to above the water table to prevent the formation of pit lakes. Pit lakes will form in Pit C and Pit N following cessation of mining and dewatering activities. These two pit lakes will</p>	<p>Rehabilitation and Decommissioning was identified as a preliminary integrating factor in the decision to assess the Proposal.</p> <p>The EPA notes that the current mine closure plan for the approved proposal has been approved by the DMP and that it will be updated to include the relevant additional features of the Revised Proposal (i.e. this Proposal and the Approved Project).</p> <p>The EPA also notes that all mine pits except Pit C and Pit N will be backfilled to above the water table to prevent the formation of pit lakes, and that the pit lakes that will form in Pit C and Pit N will be through-flow lakes in which water flow is maintained and water is refreshed.</p> <p>Consistent with the <i>Guidelines for Preparing Mine Closure Plans (May 2015)</i> and Environmental Protection Bulletin No. 19 – <i>EPA Involvement in Mine Closure</i>, the EPA will assess Rehabilitation and Decommissioning for proposals that are subject to the <i>Mining Act 1978</i> if a certain aspect of mine closure (in this case the formation of 2 pit lakes in proximity to Weeli Wolli Creek) poses a high environmental risk.</p>

Environmental Factors	Proposal Characteristics	Evaluation of whether a factor is a key environmental factor
	be through-flow lakes in which water flow is maintained and water is refreshed.	Accordingly, the EPA identified Rehabilitation and Decommissioning as a key integrating factor at the conclusion of its assessment.
Offsets	The proposal will require the clearing of an additional 314 ha of vegetation in 'Good to Excellent' condition. The Proponent will be required to provide an offset to account for the significant residual impact from the clearing of this vegetation.	<p>Offsets was identified as a preliminary integrating factor in the decision to assess the proposal.</p> <p>Consistent with the <i>WA Environmental Offsets Guidelines</i> (Government of Western Australia, 2014) and the <i>WA Environmental Offsets Policy</i> (Government of Western Australia, 2011), the EPA considers that the clearing of 'Good to Excellent' condition vegetation in the Pilbara region is a significant residual environmental impact which requires an offset to counterbalance the impacts which may reach critical levels cumulatively if not managed.</p> <p>Having regard to the significant residual impact from the clearing of native vegetation, the EPA identified Offsets as a key integrating factor at the conclusion of its assessment.</p>

Summary of identification of principles

Principle	Consideration
Environmental principles of the EP Act	
<p>1. The precautionary principle</p> <p><i>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by –</i></p> <p><i>a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i></p> <p><i>b) an assessment of the risk-weighted consequences of various options.</i></p>	<p>In considering this principle, the EPA notes that Flora and Vegetation and Hydrological Processes and Inland Waters Environmental Quality could be significantly impacted by this Proposal. The assessment of these impacts is provided in this report.</p> <p>Investigations on the biological and physical environment undertaken by the Proponent have provided sufficient certainty to assess risks and identify measures to avoid or minimise impacts. The EPA has recommended conditions to ensure relevant measures are undertaken by the Proponent.</p> <p>From its assessment of this Proposal, the EPA has concluded that there is not a threat of serious or irreversible harm.</p>
<p>2. The principle of intergenerational equity</p> <p><i>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</i></p>	<p>In considering this principle, the EPA notes that the Proponent has taken measures to avoid, minimise, rehabilitate (and offset) impacts in accordance with the mitigation hierarchy in the <i>WA Environmental offsets guidelines</i> (Government of Western Australia, 2014). In assessing this proposal the EPA has recommended adaptive management mechanisms (through conditions requiring environmental management plans) be implemented to maintain ecological processes. The EPA has also recommended an offset for the cumulative loss of native vegetation in 'Good to Excellent' condition.</p> <p>From its assessment of this Proposal, the EPA has concluded that the health, diversity and productivity of the environment can be maintained and enhanced for the benefit of future generations.</p>
<p>3. The principle of the conservation of biological diversity and ecological integrity</p> <p><i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i></p>	<p>In considering this principle, the EPA notes that the Proposal would result in impacts to vegetation, particularly riparian and groundwater dependent vegetation, which also provides habitat for conservation significant terrestrial fauna species. In assessing the proposal the EPA has considered these impacts and has taken into account measures proposed by the Proponent to minimise impacts to the affected species. The EPA has concluded that the proposal would not compromise the biological diversity or ecological integrity within the Fortescue and</p>

Principle	Consideration
	<p>Hamersley IBRA subregions and Zone 2b – Poonda Plain in the Fortescue Marsh management area.</p> <p>Through this assessment, the EPA has demonstrated that the conservation of biological diversity and ecological integrity was a fundamental consideration.</p>
<p>4. Principles relating to improved valuation, pricing and incentive mechanisms</p> <p>(1) <i>Environmental factors should be included in the valuation of assets and services.</i></p> <p>(2) <i>The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</i></p> <p>(3) <i>The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.</i></p> <p>(4) <i>Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimize costs to develop their own solution and responses to environmental problems.</i></p>	<p>In considering this principle, the EPA notes that the Proponent would bear the cost relating to waste and pollution, including avoidance and containment. The Proponent would also be responsible for the costs relating to rehabilitation and decommissioning, and offsets for significant residual impacts.</p> <p>The EPA has demonstrated due regard to this principle during the assessment of this proposal.</p>
<p>5. The principle of waste minimisation</p> <p><i>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</i></p>	<p>In considering this principle, the EPA notes that the proposal would generate waste rock and tailings and other liquid and solid wastes. The EPA also notes that waste material from the Proposal is proposed to be used to backfill some of the mine pits. The Proponent would be expected to address the waste hierarchy and minimise the generation of unavoidable wastes.</p> <p>Liquid and solid waste created as a result of implementation of the Proposal would be disposed of in according to relevant regulations and legislation. The EPA notes that the discharge of liquid and solid wastes can be adequately regulated by the</p>

Principle	Consideration
	<p>DER via appropriate Works Approval and Licence conditions under Part V of the <i>Environmental Protection Act 1986</i>.</p> <p>The EPA has demonstrated due regard to this principle during the assessment of this Proposal.</p>
<p>Environmental principles of the EPA</p>	
<p>1. Best practice</p> <p><i>When designing proposals and implementing environmental mitigation and management actions, the contemporary best practice measures available at the time of implementation should be applied.</i></p>	<p>In considering this principle, the EPA notes that the Proponent has designed the Proposal to use waste material to backfill some of the mine pits, which is preferred by the EPA, and has proposed mitigation measures to manage the potential impacts and risks. These reflect measures already in place for the existing operations of the approved Proposal.</p> <p>The EPA has demonstrated due regard to this principle during the assessment of this Proposal.</p>
<p>2. Continuous Improvement</p> <p><i>The implementation of environmental practices should aim for continuous improvement in environmental performance.</i></p>	<p>In considering this principle, the EPA notes that the Proponent operates under a management system which sets out a framework of adaptive management.</p> <p>The EPA has recommended conditions requiring the development of environmental management plans. As outlined in Environmental Assessment Guideline 17 – <i>Preparation of management plans under Part IV of the Environmental Protection Act 1986</i> (EPA, 2015e), the EPA encourages adaptive management and continual improvement through environmental management plans.</p> <p>The EPA has demonstrated due regard to this principle during the assessment of this Proposal.</p>

Appendix 3

Relevant EPA Policies and Guidance and identified matters

The EPA reviewed its policies and guidance documents for each environmental factor to determine their relevance to the assessment of the proposal. The EPA has outlined the relevant matters discussed in each policy and guidance document for the key environmental factors below.

1. Flora and vegetation

The EPA considers that the following policy and guidance is relevant to its assessment of the proposal in relation to this factor:

- Guidance Statement No. 51 – *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in WA* (EPA, 2004a);
- Position Statement No. 2 – *Environmental protection of native vegetation in Western Australia* (EPA 2000);
- Position Statement No. 3 – *Terrestrial biological surveys as an element of biodiversity protection* (EPA 2002); and
- *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 of the Environment under Section 16(e) of the Environmental Protection Act 1986* (EPA 2013b).

The EPA notes that the *Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment* was released in December 2015. This document was released after flora and vegetation surveys were undertaken for the proposal. Therefore, the EPA did not consider this document for the assessment.

Guidance Statement No. 51 – Terrestrial flora and vegetation surveys for environmental impact assessment in WA

Relevant matters discussed in Guidance Statement No. 51 for this assessment include the following objectives:

1. Surveys are planned and designed appropriately.
2. The analysis, interpretation and reporting is of a suitable quality and consistent methodology to enable the EPA to judge the impacts of proposals on flora and vegetation.
3. The environment, in particular significant flora and vegetation biodiversity is identified and protected.

Position Statement No. 2 – Environmental protection of native vegetation in Western Australia

Relevant matters discussed in Position Statement No. 2 for this assessment include the following, in relation to the EPA's consideration of biological diversity in assessing a proposal:

1. A comparison of development scenarios, or options, to evaluate protection of biodiversity at the species and ecosystem levels, and demonstration that all reasonable steps have been taken to avoid disturbing native vegetation.

2. No known species of plant or animal is caused to become extinct as a consequence of the development and the risks to threatened species are considered to be acceptable.
3. No association or community of indigenous plants or animals ceases to exist as a result of the project.
4. There would be an expectation that a proposal would demonstrate that the vegetation removal would not compromise any vegetation type by taking it below the “threshold level” of 30% of the pre-clearing extent of the vegetation type.
5. There is a comprehensive, adequate and secure representation of scarce endangered habitats within the project area and/or in areas which are biologically comparable to the project area, protected in secure reserves.
6. The on-site and off-site impacts of the project are identified and the proponent demonstrates that these impacts can be managed.

Position Statement No. 3 – Terrestrial biological surveys as an element of biodiversity protection

Relevant matters discussed in Position Statement No. 3 for this assessment include the following:

1. The EPA expects proponents to demonstrate in their proposals that all reasonable measures have been undertaken to avoid impacts on biodiversity. Where some impact on biodiversity cannot be avoided, it is for the proponent to demonstrate that the impact will not result in unacceptable loss.
2. The EPA expects proponents to ensure that terrestrial biological surveys provide sufficient information to address both biodiversity conservation and ecological function values within the context of the type of proposal being considered and the relevant EPA objectives for protection of the environment.
3. The EPA requires that the quality of information and scope of field surveys meets the standards, requirements and protocols as determined and published by the EPA.
4. In the absence of information that could provide the EPA with assurance that biodiversity will be protected, the EPA will adopt the precautionary principle.

Position Statement No. 3 refers to definitions, principles and objectives in the first national biodiversity strategy *National Strategy for the Conservation of Australia's Biological Diversity* (Commonwealth of Australia, 1996). The EPA notes that the most recent version of the strategy, *Australia's Biodiversity Conservation Strategy 2010 – 2030* (Commonwealth of Australia, 2010), refers to a shortened definition of biological diversity and contains different principles. The 2010 Strategy also notes that a review of the 1996 Strategy found it difficult to objectively measure performance against the qualitative objectives in the 1996 Strategy and that there have been shifts in environmental management approaches regarding biodiversity conservation. Therefore, the EPA has not considered the matters relating to the 1996 Strategy to be relevant for this assessment.

Section 16(e) – Environmental and water assessments relating to mining and mining-related activities in the Fortescue Marsh management area (EPA 2013b)

Relevant matters discussed in the above Section 16(e) advice for this assessment include the following:

1. Proponents of new projects, expansions or upgrades should address the relevant strategies to avoid impacts and achieve the relevant objectives for each management zone where their operations have the potential to impact the values of the Fortescue Marsh.

2. Hydrological Processes and Inland Waters Environmental Quality

The EPA considers that the following policy and guidance is relevant to its assessment of the proposal in relation to this factor:

- *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 of the Environment under Section 16(e) of the Environmental Protection Act 1986 (EPA 2013b).*

Section 16(e) – Environmental and water assessments relating to mining and mining-related activities in the Fortescue Marsh management area (EPA 2013b)

The relevant matter discussed in the Section 16(e) advice on Fortescue Marsh for this assessment is:

1. Proponents of new projects, expansions or upgrades should address the relevant strategies to avoid impacts and achieve the relevant objectives for each management zone where their operations have the potential to impact the values of the Fortescue Marsh.

3. Rehabilitation and Decommissioning

The EPA considers that the following policy and guidance is relevant to its assessment of the proposal in relation to this factor:

- Environmental Protection Bulletin No. 19 – *EPA involvement in mine closure* (EPA, 2015c); and
- Guidelines for preparing mine closure plans (DMP & EPA, 2015).

The EPA notes that Guidance Statement No. 6 – *Rehabilitation of Terrestrial Ecosystems* was prepared in 2006 to guide the preparation of documentation for the environmental impact assessment process of EPA and to help produce management plans to rehabilitate vegetation. The more recent Guidelines for preparing mine closure plans (2011 and revised 2015) also guides the preparation of Environmental Impact Assessment documentation and mine closure plans (which include the rehabilitation of vegetation) for mining proposals. The EPA considers that, for mining proposals, the more recent Guidelines for preparing mine closure plans is more relevant to its assessment than Guidance Statement No. 6.

Environmental Protection Bulletin No. 19 – EPA involvement in mine closure

Relevant matters discussed in Environmental Protection Bulletin No. 19 for this assessment include the following:

1. The EPA will assess and regulate all mining projects that are not subject to the *Mining Act 1978*.
2. In the context of mine closure and rehabilitation, the EPA is likely to consider an impact or risk significant when a certain aspect of mine closure poses a high environmental risk.
3. Where Rehabilitation and Decommissioning is seen as a key integrating factor, the EPA will assess mine closure. A condition will be recommended to require a Mine Closure Plan to be prepared in accordance with the guidelines.

Guidelines for preparing mine closure plans

Relevant matters discussed in the *Guidelines for preparing mine closure plans* for this assessment include the following:

1. Mine closure planning should be an integral part of mine development and operations planning and it is a progressive process.
2. The EPA requires that Mine Closure Plans be prepared in accordance with the guidelines.
3. Where the EPA concludes that Rehabilitation and Decommissioning is a Key Integrating Factor in its EPA report on the proposal, the EPA will recommend a condition requiring a Mine Closure Plan to be prepared that is consistent with these guidelines.

4. Offsets

The EPA considers that the policy and guidance relevant for offsets for this assessment are:

- *WA Environmental Offsets Policy* (Government of Western Australia, 2011);
- *WA Environmental Offsets Guidelines* (Government of Western Australia, 2014); and
- Environmental Protection Bulletin No. 1 – *Environmental Offsets* (EPA, 2014b).

WA Environmental Offsets Policy – Government of Western Australia

The relevant considerations for the Offsets Policy are the six principles in the Offsets Policy:

1. Environmental offsets will only be considered after avoidance and mitigation options have been pursued.
2. Environmental offsets are not appropriate for all projects (circumstances).
3. Environmental offsets will be cost-effective, as well as relevant and proportionate to the significance of the environmental value being impacted.
4. Environmental offsets will be based on sound environmental information and knowledge.

5. Environmental offsets will be applied within a framework of adaptive management.
6. Environmental offsets will be focussed on longer term strategic outcomes.

WA Environmental Offset Guidelines – Government of Western Australia

The WA Environmental Offsets Guidelines complement the Offsets Policy by clarifying the determination and application of environmental offsets in Western Australia, with reference to the offsets principles in the Offsets Policy.

In addition to guidance on the application of the principles contained within the offsets policy, the relevant considerations in the offsets guidelines for this assessment are:

1. Environmental offsets will only be applied where the residual impacts of a project are determined to be significant, after avoidance, minimisation and rehabilitation have been pursued.
2. Proponents must apply the mitigation hierarchy (avoid, minimise, rehabilitate and offset) to reduce the potential impacts of a proposal on the environment.
3. The Residual Impact Significance model outlines how significance is determined and when an offset is likely to be required, or may be required, in relation to the relevant EPA environmental factors.
4. In determining the significance of an impact (and the requirement for an offset) it is important to consider the impacts in a regional context. Where cumulative impacts are considered to be already significant and these are published, impacts will normally be considered as requiring an offset.
5. Strategic approaches to offsets, such as a fund, provide a coordination mechanism to implement offsets across a range of land use tenures and can achieve better environmental outcomes by considering offsets at a landscape scale.

Environmental Protection Bulletin No. 1 – Environmental Offsets

The relevant considerations in Environmental Protection Bulletin No. 1 for this assessment are:

1. The EPA adopts the *WA Offsets Policy* and *WA Environmental Offsets Guidelines* for application through the environmental impact assessment process.
2. Where the EPA is of the view that a significant residual impact remains after avoidance, minimisation and rehabilitation efforts, the EPA will ensure that any offsets are recommended as conditions of approval in the EPA's report to the Minister for Environment, as well as including details on the rationale for the offset.
3. As part of an Environmental Review Document, proponents must include a section discussing how it has applied the mitigation hierarchy to its proposal. Offsets should be addressed in a separate section of the document, after the assessment of environmental factors.
4. If a proponent is seeking a change to, or an expansion of, a proposal under an existing approval, these changes will be subject to the current offsets practice.

Consideration will be given to any offsets that were a requirement of the existing proposal.

Appendix 4

Review of existing Ministerial Statement

Proposed Implementation Agreement (Ministerial Statement)

The EPA recommends that the Revised Proposal may be implemented and further recommends that the implementation of the Revised Proposal be subject to the Implementation Agreement (Ministerial Statement) set out in Appendix 5. See Section 4 of this report regarding the recommended conditions.

The recommended Ministerial Statement has been developed in accordance with Environmental Assessment Guideline No. 11 – *Recommending Environmental Conditions* (EPA, 2015e) and Environmental Assessment Guideline No. 17 – *Preparation of management plans under Part IV of the Environmental Protection Act 1986* (EPA, 2015f), and includes a review of the implementation conditions in Ministerial Statement 933: Iron Valley Above Water Table Project, Shire of East Pilbara; issued on 1 February 2013.

The EPA considers that the measures in the conditions in Ministerial Statement 933 are effective in managing potential significant impacts on the environment and has not recommended any material changes in the recommended conditions for the revised proposal.

The conditions, and the location and authorised extent of physical and operational elements in Schedule 1 (Appendix 5) are for the Revised Proposal (i.e. the entire Iron Valley Iron Ore Project that includes the Approved Project and this Proposal).

The main changes between the proposed new Ministerial Statement (Appendix 5) and the existing Ministerial Statement 933 relate to:

- removal of clauses relating to standard reporting and data availability in individual conditions as these duplicate clauses in the standard Compliance Reporting and Public Availability of Data conditions;
- updating conditions to reflect contemporary conditions and the requirements of Environmental Assessment Guidelines 11 and 17;
- removing the stand alone condition on groundwater dependent ecosystem management and incorporating groundwater dependent ecosystem management into the condition on riparian and groundwater dependent vegetation management;
- removing the stand alone condition on weed management and incorporating weed management into the condition on riparian and groundwater dependent vegetation management;
- removing the stand alone condition on short range endemic fauna management as the Proponent has satisfied the requirements of this condition; and
- removing the stand alone condition on surface water management and incorporating surface water management into the condition regarding the management of groundwater and surface water quality and the hydrological regime within Weeli Wolli Creek.

Recommended environmental conditions

The EPA notes the following:

- Condition 6 of Ministerial Statement 933 relates to groundwater dependent ecosystems. The EPA considers that the impacts on groundwater dependent ecosystems can be adequately managed as part of the Environmental Management Plan for riparian and groundwater dependent vegetation management (condition 5 in Appendix 5).
- Condition 7 of Ministerial Statement 933 relates to weeds. The EPA has removed the weed condition and has incorporated weed management into riparian and groundwater dependent vegetation management. The EPA noted in Report 1448 (EPA, 2012) that the major concern of the impacts from weeds is the on creekline vegetation of Marillana and Weeli Wolli creeks. The EPA considers that weeds can be adequately managed as part of the outcome-based Condition Environmental Management Plan for riparian and groundwater dependent vegetation (condition 5 in Appendix 5).
- Condition 8 of Ministerial Statement 933 contains conditions relating to short range endemic fauna. The Proponent submitted a report to the Office of the EPA (OEPA) on 23 September 2015 in order to satisfy the requirements of these conditions. On 1 October 2015 the OEPA advised the Proponent that it had satisfied the requirements of these conditions. Accordingly, a condition relating to short range endemic fauna has not been included in the proposed new recommended Ministerial Statement.
- Condition 9 of Ministerial Statement 933 refers to the management of surface water. The EPA has removed the surface water management condition and incorporated surface water management into the management of groundwater and surface water quality and the hydrological regime within Weeli Wolli Creek. The EPA considers that surface water can be adequately managed as part of the outcome-based Condition Environmental Management Plan for groundwater and surface water quality and the hydrological regime within Weeli Wolli Creek (condition 5 in Appendix 5).
- The EPA has recommended a condition (Condition 6 in Appendix 5) requiring the preparation of a Mine Closure Plan in accordance with the *Guidelines for Preparing Mine Closure Plans* (DMP & EPA 2015) as this guideline contains detailed requirements. The EPA has also included a specific clause to address the impacts from the cessation of groundwater dewatering and discharge and pit lakes on groundwater and/or surface water systems.
- Condition 10 of Ministerial Statement 933 requires a contribution to a strategic regional conservation fund to offset the significant residual impacts of the Approved Project. The EPA has applied a contemporary offset (Condition 7 in Appendix 5), which includes both the clearing originally approved under Ministerial Statement 933 and the additional clearing for this Proposal, applying the approach of a per hectare rate for the clearing of native vegetation in 'Good to Excellent' condition.

Recommended Proposal details (Schedule 1)

The Revised Proposal details contained in Schedule 1 have been amended to include an updated description that reflects the EPA's contemporary approach to project descriptions detailed in Environmental assessment guideline No. 1 – *Defining the Key Characteristics of a Proposal* (Appendix 5, Table 2).

The changes include:

- refining the title and key proposal characteristics (Table 1) to reflect the Revised Proposal and removing reference to above water table mining in the title;
- revising the authorised extent of clearing to a total of 988 ha (314 ha for this Proposal and 674 ha for the Approved Project in Ministerial Statement 933);
- adding the authorised extent of groundwater abstraction and surplus dewater discharge into Weeli Wolli Creek to Table 2;
- including reference to the three separate on-site surplus dewater discharge locations in Table 2;
- adding that no clearing for the development of mine pits, waste rock landforms, and associated infrastructure is to be undertaken within the Drainage Line Exclusion Zone to Table 2;
- amendments to the Abbreviations and definitions in Table 3 including the removal of those that are no longer relevant to the recommended conditions; and
- updating the maps in the figures.

Appendix 5

Identified Decision-making Authorities and Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities, and if possible, agree on whether or not the Proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified:

Decision-making Authority	Approval
1. Minister for Environment	<i>Wildlife Conservation Act 1950</i> – Taking native flora and fauna
2. Minister for Water	<i>Rights in Water and Irrigation Act 1914</i> – Water extraction licence
3. Minister for Mines and Petroleum	<i>Mining Act 1978</i>
4. Minister for Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i> – Section 18 clearances
5. Executive Director; Environment, Department of Mines and Petroleum	<i>Mining Act 1978</i> • <i>Mining Proposal</i>
6. Chief Dangerous Goods Officer, Department of Mines and Petroleum	<i>Dangerous Goods Safety Act 2004</i>
7. State Mining Engineer, Department of Mines and Petroleum	<i>Mines Safety and Inspection Act 1994</i>
8. Chief Executive Officer, Department of Environment Regulation	<i>Environmental Protection Act 1986</i> : • Works Approval and Licence • Clearing of native vegetation

Note: In this instance, consultation and agreement is only required with DMAs 1 to 4 since these DMA are Ministers.

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(*Environmental Protection Act 1986*)

REVISED IRON VALLEY IRON ORE PROJECT

Proposal: The proposal is a revision of the Iron Valley Iron Ore Project, the subject of Ministerial Statement 933 dated 1 February 2013.

Proponent: BC Pilbara Iron Ore Pty Ltd
Australian Company Number: 107 492 517

Proponent Address: Level 1, 15 Rheola Street
West Perth WA 6005

Assessment Number: 2082

Report of the Environmental Protection Authority: 1585

Previous Assessment Number: 1905

Previous Report of the Environmental Protection Authority: 1463

Previous Statement Number: 933

Pursuant to section 45, read with section 45B of the *Environmental Protection Act 1986*, it has been agreed that:

1. the Proposal described and documented in Schedule 1 may be implemented;
2. the implementation of the Proposal, is subject to the following revised implementation conditions; and
3. from the date of this Statement each of the implementation conditions in Statement 933 no longer apply in relation to the Proposal.

1 Proposal Implementation

1-1 When implementing the Proposal, the Proponent shall not exceed the authorised extent of the Proposal as defined in Table 2 in Schedule 1, unless amendments to the Proposal and the authorised extent of the Proposal have been approved under the EP Act.

2 Contact Details

2-1 The Proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty eight (28) days of such change. Where the Proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

3 Compliance Reporting

- 3-1 The Proponent shall prepare, submit and maintain a Compliance Assessment Plan to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 3-6, or prior to implementation, whichever is sooner.
- 3-2 The Compliance Assessment Plan shall indicate:
- (1) the frequency of compliance reporting;
 - (2) the approach and timing of compliance assessments;
 - (3) the retention of compliance assessments;
 - (4) the method of reporting of potential non-compliances and corrective actions taken;
 - (5) the table of contents of Compliance Assessment Reports; and
 - (6) public availability of Compliance Assessment Reports.
- 3-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 3-2 the Proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 3-1.
- 3-4 The Proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 3-1 and shall make those reports available when requested by the CEO.
- 3-5 The Proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.
- 3-6 The Proponent shall submit to the CEO the first Compliance Assessment Report by 1 May each year addressing compliance in the previous calendar year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 May 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months.

The Compliance Assessment Report shall:

- (1) be endorsed by the Proponent's CEO or a person delegated to sign on the CEO's behalf;
- (2) include a statement as to whether the Proponent has complied with the conditions;
- (3) identify all potential non-compliances and describe corrective and preventative actions taken;
- (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and
- (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 3-1.

4 Public Availability of Data

4-1 Subject to condition 4-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the Proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)) relevant to the assessment of this proposal and implementation of this Statement.

4-2 If any data referred to in condition 4-1 contains particulars of:

- (1) a secret formula or process; or
- (2) confidential commercially sensitive information;

the Proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the Proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

5 Hydrological Processes, Inland Waters Environmental Quality, and Flora and Vegetation – dewatering, discharge of surplus dewater, riparian and groundwater dependent vegetation

5-1 Within 3 months of issue of this Statement or as otherwise agreed in writing by the CEO, the Proponent shall prepare and submit a Condition Environmental Management Plan/s to the satisfaction of the CEO. These plan/s shall demonstrate that the following **environmental outcomes** will be met:

- (1) groundwater abstraction and/or surplus dewater discharge from the implementation of the Proposal does not cause long term impacts to the environmental values of Weeli Wolli Creek.
- (2) groundwater abstraction and/or surplus dewater discharge from the implementation of the Proposal does not cause long term impacts on the aboriginal heritage values linked to the physical and/or biological surroundings of Weeli Wolli Creek.
- (3) groundwater abstraction and/or surplus dewater discharge from the implementation of the Proposal does not cause long term impacts on the health or cover of riparian and groundwater dependent vegetation within the Drainage Line Exclusion Zone and outside the approved Development Envelope as shown in Figure 1.

5-2 The Condition Environmental Management Plan/s shall:

- (1) specify the **environmental outcomes** to be achieved, as specified in condition 5-1;
- (2) specify **trigger criteria** that must provide an early warning that the threshold criteria identified in condition 5-2(3) may not be met;
- (3) specify **threshold criteria** to demonstrate compliance with the environmental outcomes specified in condition 5-1. Exceedance of the threshold criteria represents non-compliance with these conditions;

- (4) specify **monitoring** to determine if trigger criteria and threshold criteria are exceeded;
 - (5) specify **trigger level actions** to be implemented in the event that trigger criteria have been exceeded;
 - (6) specify **threshold contingency actions** to be implemented in the event that threshold criteria are exceeded;
 - (7) provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that condition 5-1 has been met over the reporting period in the Compliance Assessment Report required by condition 3-6.
- 5-3 The plan/s required by condition 5-1 shall include provisions required by condition 5-2 to address impacts on riparian and groundwater dependent vegetation including from, but not limited to: changes to groundwater levels and groundwater quality; changes to surface water flows (including the location of the wetting front as depicted in Figure 2 as a trigger criterion) and surface water quality; and weeds.
- 5-4 After receiving notice in writing from the CEO that the Condition Environmental Management Plan/s satisfy the requirements of condition 5-2 the Proponent shall:
- (1) implement the provisions of the Condition Environmental Management Plan/s; and
 - (2) continue to implement the Condition Environmental Management Plan/s until the CEO has confirmed by notice in writing that the Proponent has demonstrated the outcomes specified in condition 5-1 have been met.
- 5-5 In the event that monitoring indicates exceedance of threshold criteria specified in the Condition Environmental Management Plan/s, the Proponent shall:
- (1) report the exceedance in writing to the CEO within 7 days of the exceedance being identified;
 - (2) implement the threshold contingency actions specified in the Condition Environmental Management Plan/s within 24 hours and continue implementation of those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the threshold criteria are being met and the implementation of the threshold contingency actions is no longer required;
 - (3) investigate to determine the cause of the threshold criteria being exceeded;
 - (4) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded; and
 - (5) provide a report to the CEO within 21 days of the exceedance being reported as required by condition 5-5(1). The report shall include:
 - (a) details of threshold contingency actions implemented;

- (b) the effectiveness of the threshold contingency actions implemented, against the threshold criteria;
- (c) the findings of the investigations required by condition 5-5(3) and 5-5(4);
- (d) measures to prevent the threshold criteria being exceeded in the future;
- (e) measures to prevent, control or abate the environmental harm which may have occurred; and
- (f) justification of the threshold remaining, or being adjusted based on better understanding, demonstrating that outcomes would continue to be met.

5-6 The Proponent:

- (1) may review and revise the Condition Environmental Management Plan/s, or
- (2) shall review and revise the Condition Environmental Management Plan/s as and when directed by the CEO.

5-7 The Proponent shall implement the latest revision of the Condition Environmental Management Plan/s, which the CEO has confirmed by notice in writing, satisfies the requirements of conditions 5-2 and 5-3.

6 Rehabilitation and Decommissioning

6-1 The Proponent shall manage the implementation of the Proposal to meet the following **environmental objective**:

- (1) ensure that the Proposal is rehabilitated and decommissioned in an ecologically sustainable manner.

6-2 Within twelve months of the issue of this Statement or as otherwise agreed in writing from the CEO, the Proponent shall prepare and submit a Mine Closure Plan in accordance with the *Guidelines for Preparing Mine Closure Plans*, May 2015 (or any subsequent revisions of the guidelines), to the requirements of the CEO, on advice of the Department of Mines and Petroleum and the Department of Water.

6-3 The plan shall include a monitoring framework for the monitoring of groundwater levels and groundwater quality to demonstrate that the cessation of groundwater dewatering and discharge for the Proposal would not have a detrimental impact on the groundwater aquifers and surface water flows in Weeli Wolli Creek, to demonstrate that the objectives in condition 5-1 would be met.

6-4 The plan shall define which pit voids will be backfilled and refine the conceptual and analytical models for the proposed pit lakes to demonstrate that the pit lakes will not have detrimental impacts on groundwater and/or surface water systems, at intervals not exceeding those specified in condition 6-5.

- 6-5 The Proponent shall review and revise the Mine Closure Plan required by condition 6-2 at intervals not exceeding three years, or as otherwise specified by the CEO, and submit the plan to the CEO at the agreed interval.
- 6-6 The Proponent shall implement the latest revision of the Mine Closure Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 6-2.

7 Offsets

- 7-1 In view of the significant residual impacts and risks as a result of the implementation of the Proposal (including impacts from the previously approved proposal under Ministerial Statement 933), the Proponent shall contribute funds for the clearing of 'Good to Excellent' condition native vegetation in the Hamersley and Fortescue IBRA subregions calculated pursuant to condition 7-2. This funding shall be provided to a government-established conservation offset fund or an alternative offset arrangement providing an equivalent outcome as determined by the Minister.
- 7-2 The Proponent's contribution to the initiative identified in condition 7-1 shall be paid biennially, the first payment due within twelve months following the issue of this statement, or as otherwise agreed in writing by the CEO. The amount of funding would be made on the following basis and in accordance with the approved Impact Reconciliation Procedure required by condition 7-3:
- (1) \$750 AUD (excluding GST) per hectare of 'Good to Excellent' condition native vegetation cleared within the Development Envelope (delineated in Figure 1 and defined by the geographic coordinates in Schedule 2) within the Hamersley IBRA subregion;
 - (2) \$1500 AUD (excluding GST) per hectare of 'Good to Excellent' condition native vegetation cleared within the Development Envelope (delineated in Figure 1 and defined by the geographic coordinates in Schedule 2) within the Fortescue IBRA subregion.
- 7-3 Within six months of the date of this Statement, the Proponent shall prepare an Impact Reconciliation Procedure to the satisfaction of the CEO.
- 7-4 The Impact Reconciliation Procedure required pursuant to condition 7-3 shall:
- (1) include a methodology to identify clearing of 'Good to Excellent' condition native vegetation in the Hamersley and Fortescue IBRA subregions;
 - (2) require the Proponent to submit spatial data identifying areas of 'Good to Excellent' condition native vegetation that has been cleared;
 - (3) include a methodology for calculating the amount of clearing undertaken during each biennial time period;
 - (4) state dates for the commencement of the biennial time period and for the submission of results of the Impact Reconciliation Procedure, to the satisfaction of the CEO; and
 - (5) state that the first reconciliation period commences on 1 February 2013 and concludes on the date of this statement, and then biennially from this date.

- 7-5 The Proponent shall implement the Impact Reconciliation Procedure required by condition 7-3.
- 7-6 The real value of contributions described in condition 7-2 will be maintained through indexation to the Perth Consumer Price Index (CPI), with the first adjustment to be applied to the first contribution, based on the publication date of the previously approved proposal under Ministerial Statement 933.

Table 1: Summary of the Revised Proposal

Proposal Title	Revised Iron Valley Iron Ore Project
Short Description	<p>The proposal is to undertake mining and associated activities at Iron Valley located approximately 90 km north-west of Newman in the Pilbara region of Western Australia.</p> <p>The proposal involves open cut mining below the water table and includes groundwater abstraction and discharge of surplus dewater, the development of an additional mine pit and associated infrastructure, a beneficiation plant, a gas turbine power supply, and water management infrastructure for groundwater abstraction and discharge of surplus dewater. The proposal also includes an increase in the area and depth of existing mine pits and the size and number of waste rock landforms, and the integration of tailings storage facility cells into the waste rock landforms.</p>

Table 2: Location and authorised extent of physical and operational elements

Column 1	Column 2	Column 3
Element	Location	Authorised Extent
Mine and associated infrastructure	Figure 1 and Figure 2	Clearing of no more than 988 ha within the 1,177 ha Development Envelope. No clearing and/or development of mine pits, waste rock landforms, and associated infrastructure is to be undertaken within the Drainage Line Exclusion Zone.
Groundwater dewatering	Figure 1	Abstraction of up to 23 GL/a of groundwater.
Surplus dewater management	Figure 1 and Figure 2	Discharge of up to 17 GL/a of surplus dewater into Weeli Wolli Creek via three separate on-site dewater discharge locations (DDL1, DDL4, and DDL5).
Backfilling of mine pits	Figure 1	All mine pits except Pit C and Pit N will be backfilled to above the water table to prevent the formation of pit lakes. Pit lakes will form in Pit C and Pit N.

Table 3: Abbreviations and definitions

Acronym or Abbreviation	Definition or Term
AUD	Australian dollar.
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or his delegate.

Department of Mines and Petroleum	Department of Mines and Petroleum or the Department of the Public Service of the State through which the <i>Mining Act 1978</i> is administered.
Department of Water	Department of Water or the Department of the Public Service of the State through which the <i>Rights in Water and Irrigation Act 1914</i> is administered.
EP Act	<i>Environmental Protection Act 1986</i> .
OEPA	Office of the Environmental Protection Authority.
GL/a	Gigalitres per annum.
'Good to Excellent' condition native vegetation	As defined in <i>Technical Guide - Flora and Vegetation Surveys for Environmental Impact Assessment</i> (EPA, 2015) or any subsequent revisions of this guide.
GST	Goods and Services Tax.
ha	Hectare.
Wetting front extent	The extent of the surface expression of water from the discharge of surplus mine pit dewater under natural no-flow conditions.

Figures (attached)

Figure 1: Revised Proposal Development Envelope and Drainage Line Exclusion Zone

Figure 2: Dewater Discharge Locations and Wetting Front Extent

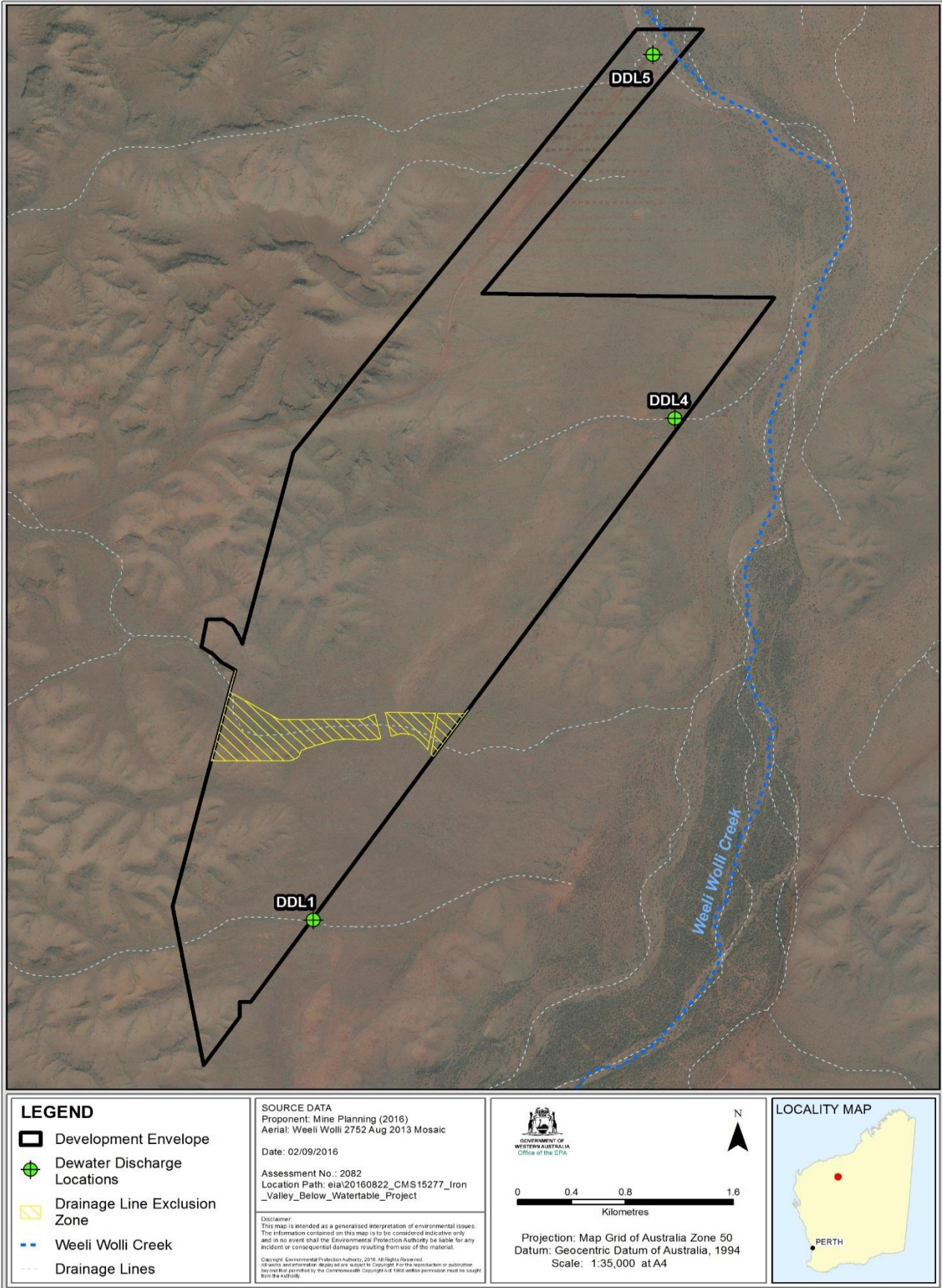


Figure 1: Revised Proposal Development Envelope and Drainage Line Exclusion Zone

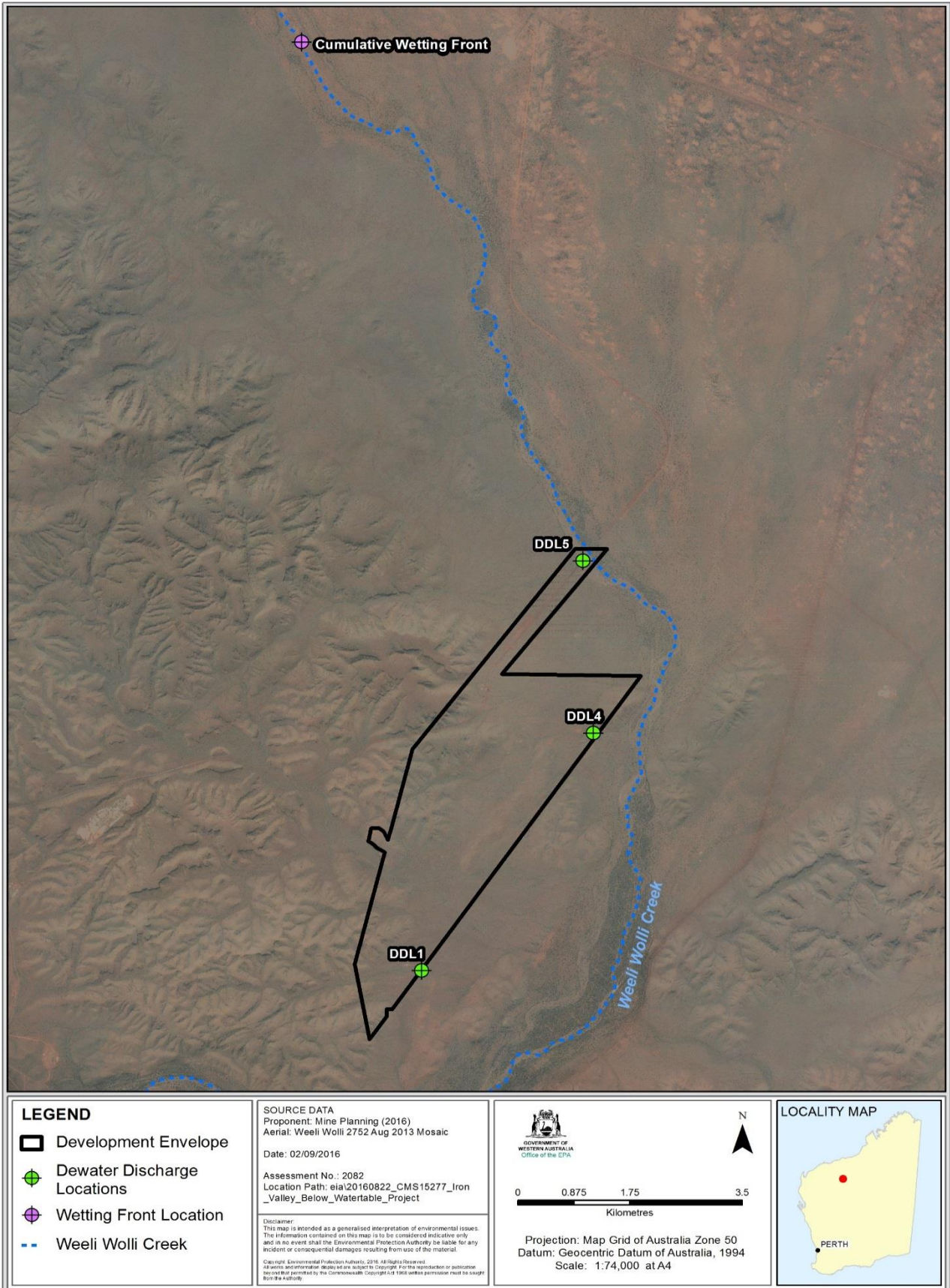


Figure 2: Dewater Discharge Locations and Wetting Front Extent

Geographic spatial data coordinates

Coordinates defining the following are held by the Office of the Environmental Protection Authority:

- Revised Proposal Development Envelope, Document Reference Number 2016-1471488886673, dated 18 August 2016.
- Drainage Line Exclusion Zone, Dewater Discharge Locations, and Wetting Front Extent, Document Reference Number 2016-1469067349964, dated 21 July 2016.

Appendix 6

Proponent's Environmental Review (API) Document

Provided on CD in hardcopies of this report and on the EPA's website at
www.epa.wa.gov.au