Report and recommendations of the Environmental Protection Authority

Buckland Project

Iron Ore Holdings Ltd

Report 1496

December 2013

Assessment on Proponent Information
Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
07/01/13	Level of assessment set	
12/02/13	Scoping guideline issued by EPA	5
29/11/2013	Proponent's Final API document received by EPA	41
6/12/13	Provision of EPA Report to Minister	1
9/12/13	Publication of EPA report (3 days after report to Minister)	3 days
23/12/13	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 for the completion of the assessment and provision of a recommendation to the Minister.

Dr Paul Vogel
Chairman

4 December 2013

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Contents

1. Introduction and background

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for Environment on the proposal by Iron Ore Holdings Ltd (IOH) to develop and operate an open pit iron ore mine and associated infrastructure approximately 45 kilometres (km) south-southeast of Pannawonica. The proposal includes below the watertable mine pits, haul roads, temporary waste rock dumps and processing facilities.

IOH referred the proposal to the EPA on 19 November 2012 and the EPA set the level of assessment at Assessment on Proponent Information (API) on 7 January 2013.

The proposal was referred to the Australian Government Department of Sustainability, Environment, Water, Population and Communities (now Department of the Environment) in May 2013. On 19 July 2013, the delegate of the Commonwealth Minister for Environment determined that the proposed action was not a controlled action provided specific measures, identified in the decision, were taken to avoid significant impacts on the Northern Quoll.

IOH made an application to the EPA on the 24 June 2013 under section 43A of the Environmental Protection Act 1986 (EP Act) to change the Buckland Project. In response, the Chairman considered and consented to the proposed changes on the basis that they are unlikely to significantly increase any impact that the proposal may have on the environment. The main change was additional clearing for the haul road.

Further details of the proposal are presented in Section 2 of this report and the consultation undertaken by IOH is briefly discussed in Section 3. Section 4 discusses the key environmental factors and principles for the proposal. The conditions to which the proposal should be subject, if the Minister determines that it may be implemented, are set out in Section 5. Section 6 provides other advice by the EPA.

2. The proposal

Iron Ore Holdings Ltd proposes to develop and operate an iron ore mine approximately 45 kilometres (km) south-southeast of Pannawonica, within the Priority 1 Bungaroo Creek Water Reserve. The proposal also includes the construction of a haul road. The mined ore would be hauled approximately 176 km along the purpose-built haul road to the customer delivery point at Cape Preston East (Figure 1).

Ore would be shipped out through the proponent's Cape Preston Export Facility which was previously assessed by the EPA. The EPA's report for the export facility (Report 1476) recommended approval subject to conditions and the Minister for Environment subsequently issued the environmental approval for the export facility (Ministerial Statement 949).

The expected mine life is 15-20 years and will involve disturbance of up to 2,050 hectares (ha) for the mine area and haul road. The proponent proposes to construct the haul road in two stages. The Stage 1 haul road (approximately 103 km) links the mine to the North West Coastal Highway, which would be used for the first few years of operation. Stage 2 of the haul road (approximately 73 km) links Stage 1 to the customer delivery point for the Cape Preston East Export Facility to service the long-term production rate of eight million tonnes per annum (Mtpa).

The main components of the proposal (Figure 2) are:

- below watertable mine pits and associated flood-protection bunding;
- ore processing facilities;
- dewatering and surplus water disposal systems;
- waste rock dumps;
- waste fines storage facilities;
- an accommodation village and supporting infrastructure; and
- power generation from diesel generators up to eight megawatts (MW).

Iron ore will be mined from three deposits; initially from above the watertable and then proceeding to below the watertable for two of the three deposits. The proposal will require pit dewatering at a rate of up to 4.75 gigalitres per annum (GL/a), of which up to 4.5 GL/a will be surplus water requiring disposal. Mine voids will be backfilled to the pre-mining watertable with overburden and pit waste materials, after which the site will be rehabilitated.

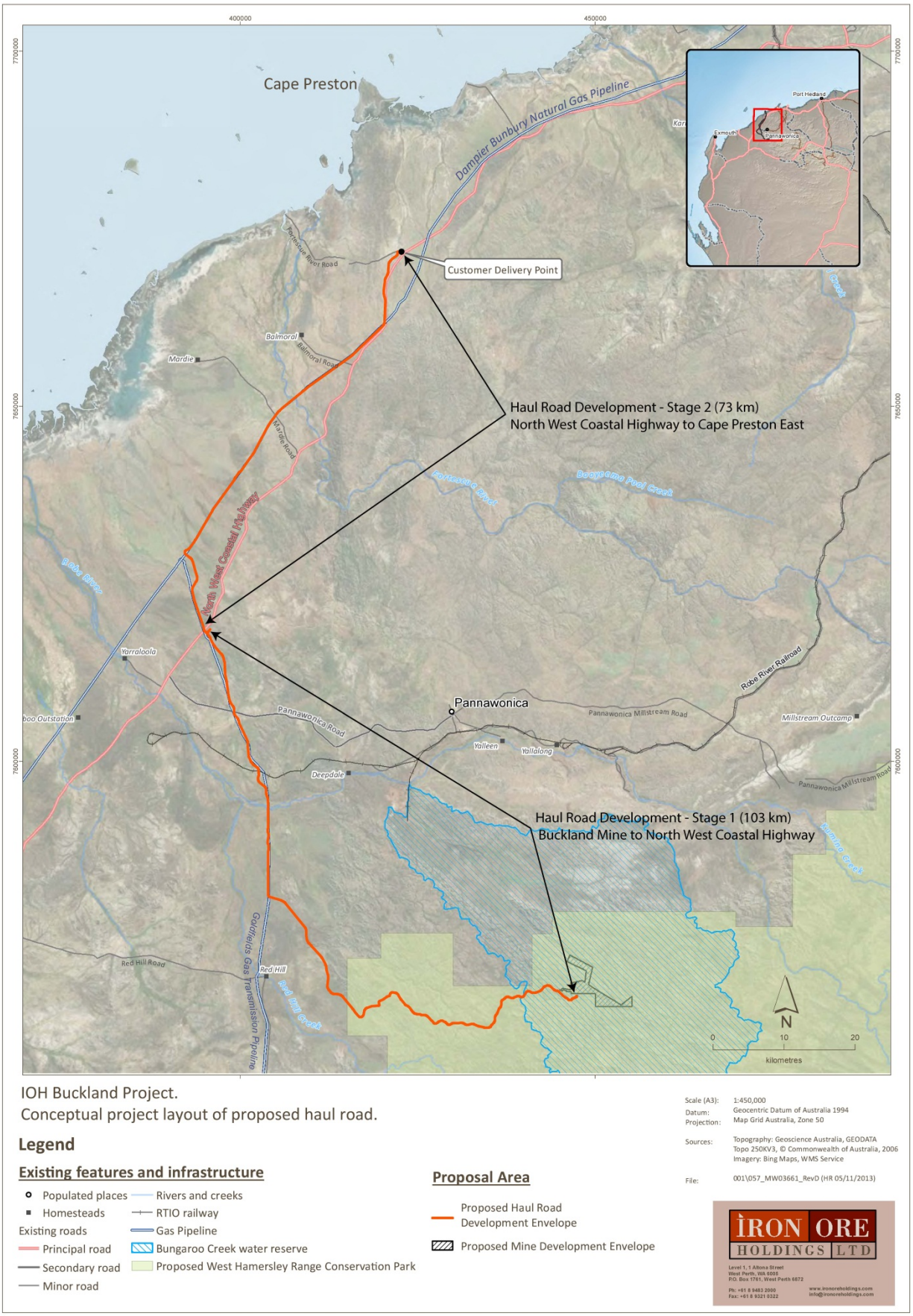

Figure 1: Regional location and haul road development envelope

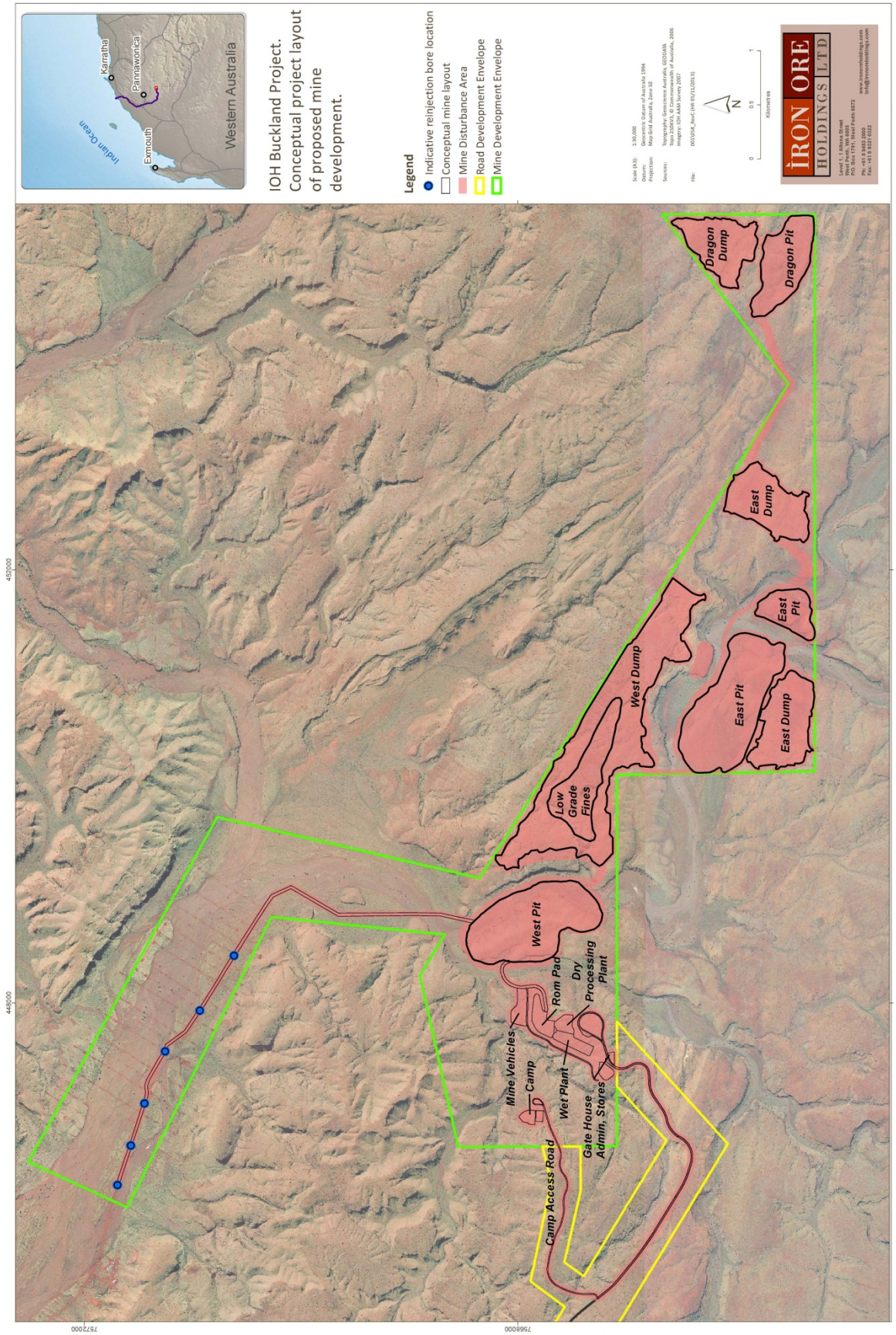

Figure 2: Mine development envelope

The main characteristics of the proposal are summarised in the table below.

Table 1: Summary of key proposal characteristics

Proposal Title	**Buckland Project**
Short Description	The proposal is to develop and operate an iron ore mine, processing facilities and supporting infrastructure, 45 km south-southeast of Pannawonica in the Shire of Ashburton, and a 176 km haul road from the mine site to the customer delivery point near Cape Preston.
Element	**Proposed extent**
Mine pits and infrastructure area	Clearing of not more than 650 ha of vegetation within the mine development envelope of 1,600 ha.
Haul road	Clearing not more than 1,400 ha vegetation within the haul road development envelope of 5,800 ha.
Disposal of surplus dewater	Dewater disposal through water use hierarchy: 1. Use on site; 2. Subsurface reinjection; and 3. Controlled discharge to surface drainage at multiple discharge locations as a contingency measure only. Duration of surface discharge to not exceed three months at any one time
Backfilling of mine pits	Progressive backfilling of mine voids so that the final surface levels are at a higher elevation than the pre-mining groundwater levels

The potential impacts of the proposal are discussed by the proponent in the API document (Strategen, 2013).

3. Consultation

During the preparation of the API document, the proponent has undertaken consultation with government agencies and key stakeholders. The agencies, groups and organisations consulted, along with the comments received and proponent's response, are detailed in the proponent's API document (Strategen, 2013). Table 8 in the proponent's API document summarises the main environmental issues raised by stakeholders and details the actions taken by the proponent to address the issues.

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.

4. Key environmental factors

Section 44 of the EP Act requires the EPA to report to the Minister for Environment on the outcome of its assessment of a proposal. The report must set out:

- 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 include in the report any other advice and recommendations as it sees fit. It is the EPA's opinion that the following key environmental factors relevant to the proposal require evaluation in this report:

(a) Inland Waters Environmental Quality
(b) Hydrological Processes
(c) Flora and Vegetation
(d) Terrestrial Fauna
(e) Offsets (integrating factor)

The above key factors were identified from the EPA's consideration and review of all environmental factors generated from the API document, in conjunction with the proposal characteristics set out in Table 1.

The key environmental factors are discussed in Sections 4.1 – 4.5. The description of each factor shows why it is relevant to the proposal and how it will be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

Appendix 2 describes preliminary key environmental factors identified in the EPA-prepared Scoping Guideline which, at the conclusion of the assessment, were not considered to be key environmental factors warranting discussion and evaluation in the EPA's assessment report.

In assessing the proposal, the EPA notes that IOH has actively sought to avoid, minimise and rectify environmental impacts (particularly potential impacts to the Bungaroo Creek Water Reserve) through the design of the proposal by:

- avoiding the creek lines to minimise potential impacts to the hydrological, ecological and cultural functions of the creeks;
- disposing of surplus dewater on site by reinjection as a first option, with surface discharge to creeks as a contingency option only; and
- progressively backfilling the mine voids and removing the waste rock dumps and wastes fines storage facilities by the end of mining, to prevent permanent pit lakes from forming.

4.1 Inland Water Environmental Quality

The EPA's environmental objective for this factor is *to maintain the quality of groundwater and surface water, sediment and biota so that the environmental values, both ecological and social, are protected.*

The proposal is located in a Priority 1 public drinking water supply area (Bungaroo Creek Water Reserve). The disposal of surplus mine dewater and seepage of leachate from waste facilities has the potential to impact the quality of surface and groundwater downstream of the proposal, specifically, the Bungaroo Creek Water Supply Borefield (BCWSB), located 19 km downstream of the proposal.

The watertable within the mine area is generally about 8–30 m below ground level in a deep bed of alluvium, overlying Channel Iron Deposit. The groundwater in the receiving environment is pH 6-8.6, with Total Dissolved Solids (TDS) 300–400 mg/L and alkalinity 80–100 mg/L (as $CaCO_3$), and naturally contains levels of aluminium, iron and manganese above Australian Drinking Water Guidelines (Strategen, 2013).

Surplus dewater disposal

Surplus dewater will be reinjected using bores screened into the Channel Iron Deposit and lower alluvial aquifers. The main target for the reinjection system is an area within the Bungaroo Creek floodplain, several kilometres downstream of the mine site off-lease, and located to reduce recirculation of water back into the pits. Controlled surface discharge at multiple locations will be used as a contingency if the aquifer reinjection system is temporarily unavailable. The duration of the surface water discharges would not exceed three months on any one occasion, and discharges would be rotated between the multiple outlets to limit any potential impacts (Strategen, 2013).

Water reinjected into the aquifer has the potential to alter the chemistry of the groundwater through oxygenation if the dewater becomes aerated. To mitigate this, the proponent will design the dewatering and reinjection transfer system to avoid oxygenating the groundwater and will put a monitoring system in place to ensure that water reinjected meets the required criteria (Strategen, 2013).

The proponent has committed to develop a Dewatering and Disposal Management Plan and outlines the key measures it will contain (Strategen, 2013). The Department of Water (DoW) has also advised that, to fully assess the suitability of the project in the Priority 1 area of the Bungaroo Public Drinking Water Supply Area, it requires IOH to finalise the relevant plans (including the Dewatering and Disposal Management Plan and Environmental Monitoring Program).

The DoW has advised that water reinjected into aquifers in Bungaroo Creek can be regulated through its water licence conditions; including controlling groundwater mounding to ensure that breakthrough to the surface does not occur. If surplus dewater is required to be discharged to the surface of Bungaroo Creek as a contingency measure, the Department of Environment Regulation has advised that this can be regulated through the Works Approval and Licensing process.

Waste material

The proponent proposes to backfill waste from the East Pit directly into the West Pit (Figure 2); however waste rock dumps (WRD) will be required to store waste from the West and Dragon pits while the mine is in operation.

The proposal will require a temporary waste fines storage facility (WFSF) for the first five to six years of wet processing at the mine for waste fines from the process water treatment plant. The contents of the waste fines storage facility will then be used as backfill for the Bungaroo South (West and East) pits, once the fines have dried sufficiently to enable rehandling. At closure the proponent proposes to backfill all waste material into the pits, to avoid the formation of pit lakes.

The waste material landforms (WRD and WFSF) will be built out of the floodplain on weathered Banded Iron Formation (Dales Gorge), 50–60 m above the water table. Due to the topography and low permeability of the underlying landform, the proponent expects that seepage and/or leachate will be directed towards central collection points at the base of the waste landforms.

The drilling and materials testing program for the proposal has confirmed the presence of sulphide-bearing black shales within the Mount McRae Shale Formation which underlies the Channel Iron Deposit at Bungaroo South. The proponent indicates that the basement of the mine pits will not intersect the black shales, however the formation is known to outcrop 2 km to the north-east so there is the potential for black shales to be exposed in the pit walls.

Testing indicated that the median total sulphur content in waste rock and fines was 0.01%, and 99.6% of samples have total sulphur less than 0.1%. All waste rock samples were classified ‘non-acid forming’ and not expected to produce acid drainage.

There is also the potential for oxidation of the black shales should it be exposed to air due to groundwater drawdown from dewatering. Drawdown will be managed to avoid the McRae Shale which has a very low transmissivity (0.001 m/d) and low specific yield (0.001), particularly when compared to the host Channel Iron Deposit. The drawdown extent is limited by surrounding impermeable rock.

Although IOH concludes that the risk of acid mine drainage (AMD) is very low, it has committed to develop an AMD Management Plan to address how it will identify and manage AMD risk material (Strategen, 2013). Key measures include:

- completing kinetic testing of black shale samples to confirm acid generating potential; and
- where reactive black shales or other sulphide-bearing waste materials are encountered, containing these materials with low porosity material and leaving *in situ* or managing separately for disposal into prepared facilities, either in a waste rock landform or the mine voids.

Static testing indicates that the water quality of leachates from waste fines and waste rock samples are consistent with background water quality and/or drinking water

guidelines. The proponent has outlined the key measures it will undertake to manage waste rock and waste fines which will be included in their AMD Management Plan and WFSF Design and Operating Plan (Strategen, 2013). These include:

- undertaking kinetic testing of waste rock to quantify the acid neutralising capacity;
- diverting stormwater around the WRD catchment and monitor stormwater quality from the WRD catchment;
- maintaining a minimum 50 m separation distance between the WRD and Bungaroo Creek;
- designing the WFSF to prevent overtopping and constructing interception systems to collect seepage;
- preventing stormwater from entering the WFSF; and
- monitoring waste fines and return water from the WFSF and revising the water treatment process if water quality issues are detected.

Particle tracking indicates any contaminant from the mine would take 70 to 80 years to reach the first Bungaroo Creek Water Supply Borefield (BCWSB) production bore. This is consistent with the 30 years predicted by Rio Tinto from its Bungaroo Creek deposit that is located between the proposal area and the BCWSB production bores. The proponent expects that the risk to the BCWSB will be mitigated by the slow rates of groundwater movement, combined with dilution, diffusion and dispersion processes (Strategen, 2013).

The EPA notes that the proponent has committed to develop relevant environmental management plans and has outlined the scope of these plans (Strategen, 2013).

However, the EPA has recommended condition 6 (Appendix 3) to ensure that the proponent undertakes these key measures to characterise potential leachate at the source. This will reduce the risk to the Bungaroo Creek Water Reserve through early detection of potential contaminants and will complement DoW's regulation of the reinjected dewater downstream of the mine.

Summary

Having particular regard to:

a) the proponent minimising surface waste landforms, through backfilling during operations and at closure;

b) the proponent committing to develop and implement relevant management plans; and

c) advice from the DoW that it requires the proponent to finalise the relevant plans to enable the department to fully assess the suitability of the project in the Bungaroo Public Drinking Water Supply Area,

the EPA considers that the proposal can be managed to meet the EPA's objective for Inland Waters Environmental Quality provided that condition 6 (Appendix 3) is imposed requiring the proponent to prepare and implement a Water Quality Monitoring and Management Plan which includes:

- obtaining baseline data of surface and groundwater quality prior to implementing the proposal;
- undertaking kinetic testing of waste material to be backfilled; and
- monitoring drainage from the waste landforms and groundwater in the vicinity.

4.2 Hydrological Processes

The EPA's environmental objective for this factor is *to maintain the hydrological regimes of groundwater and surface water so that existing and potential uses, including ecosystem maintenance, are protected.*

The proposal has the potential to impact the hydrological processes of Bungaroo Creek by altering flow regimes and the quantity of surface and groundwater downstream of the proposal. The Bungaroo Creek Water Supply Borefield (BCWSB) is located 19 km downstream of the proposal. Dewatering will result in groundwater drawdown and could impact the yields of the borefield. Disposal of surplus dewater may affect ecological systems through the mounding of groundwater. Flood protection bunds may alter flow regimes in Bungaroo Creek, such as increasing flood heights upstream.

The EPA notes that the proponent has sacrificed parts of the ore reserve from the mine plan to minimise potential impacts to the hydrological, ecological and cultural functions and values of the creeklines. The proponent has incorporated a minimum 50 m creek channel into the mine design and has avoided a complete diversion of the creek.

Groundwater modelling indicates that dewatering rates up to approximately 4.75 GL/a will be required to ensure dry mining, with the peak inflows encountered during the first five years, after which dewatering volumes will be dictated by recharge (flood) events.

Groundwater dewatering and disposal

Dewatering of the two Bungaroo South (West and East) pits would cause a gradual elongated cone of depression constrained within the Bungaroo Creek Palaeochannel and its tributaries. Abstraction from the proposed Bungaroo Coastal Water Supply Borefield (BCWSB) is expected to be in the order of 10 GL/a, which will result in its own drawdown cone within the palaeochannel (RPS Aquaterra, 2013).

The proponent proposes to dispose of surplus dewater through reinjection and infiltration into the Bungaroo Creek floodplain, to avoid the potential impacts of surface water discharge such as erosion, water-logging and pooling of water. Reinjection will cause localised groundwater mounding but will not result in any surface expression. As a contingency measure only, the proponent will discharge to multiple locations in minor creeklines (Strategen, 2013), to reduce potential impacts. The proponent has committed to surface water discharge only if agreed discharge water quality can be met.

The BCWSB is located sufficiently distant from the proposal (19 km downstream) to limit the potential for drawdown caused by the proposal interfering with well yields in the borefield. Water availability to the BCWSB is not expected to be significantly impacted by the proposal as the drawdown effects from the borefield will dominate the system, and the extent of overlap of the drawdown effects will be mitigated by the reinjection process.

Flood protection bunds

The Bungaroo South deposits are located across Bungaroo Creek and its tributaries. Flood bunds around the mine pits will be constructed within the creek floodplains. Any encroachment of mining into the floodplain will restrict flow (in significant flood events) and cause water levels to rise. Bunding will be designed to withstand a 100-year average recurrence interval (ARI) flow event levels, with a one metre freeboard. The bund height is expected to be 3–6 m with a 30 m crest width to accommodate the haul road. During a 100-year ARI flood, it would be expected that the restricted flood levels would increase up to one metre over natural flood levels (Strategen, 2013).

Summary

Having particular regard to:

a) the proponent avoiding a complete diversion of Bungaroo Creek;

b) the proponent proposing reinjection to avoid the potential impacts of surface discharge and using surface discharge as a contingency measure only; and

c) the proponent developing and implementing the Dewatering and Disposal Environmental Management Plan (Strategen, 2013),

the EPA considers that the proposal can be managed to meet the EPA's objective for Hydrological Processes provided that elements of the proposal are limited to the recommended authorised extent defined in Schedule 1 of the recommended environmental conditions in Appendix 3.

4.3 Flora and Vegetation

The EPA's environmental objective for this factor is *to maintain representation, diversity, viability and ecological function at the species, population and community level.*

The proposal will directly impact flora and vegetation from clearing and may cause indirect impacts from dewatering and surface discharge.

Mine area

The proposal would result in the direct disturbance of 650 ha of native vegetation within the mine development envelope, which is located in the Hamersley Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region.

One hundred and eighty-six plant taxa from 97 genera and 44 families were recorded within the mine development envelope. No Declared Rare Flora (DRF) species under the *Wildlife Conservation Act 1950* (WC Act) or Threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded. Four Priority flora taxa were recorded within the mine development envelope and would be impacted by mining activities:

- *Indigofera sp.* Bungaroo Creek (P3);
- *Sida sp. Barlee Range* (P3);
- *Triodia sp. Robe River* (P3); and
- *Rhynchosia bungarensis* (P4).

All priority species have been recorded at other locations outside the mine development envelope and are not restricted to the mine development envelope.

Nine vegetation units from seven broad floristic formations were identified within the mine development envelope. Vegetation condition ranged from good to excellent. Drainage lines and floodplains were in comparatively poorer condition due to impacts associated with stock grazing and weed invasion. No Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) occur within or adjacent to the mine development envelope (Onshore, 2013a).

More than 30% of the mapped extent of all but one of the vegetation units will be retained (Strategen API document, Figure 3). Vegetation unit 7b would have 80% of the mapped extent disturbed, however this unit is closely affliliated with the wider distributed unit 7a and is determined not to be restricted locally or regionally. No vegetation units are restricted to the mine development envelope and all are considered to be well represented in the Pilbara (Strategen, 2013).

Most of the plants in the mine development envelope are xerophytic species that have no interaction with groundwater. An exception is *Eucalyptus victrix* (Coolibah) which occurs along Bungaroo Creek and was identified as potentially being at moderate risk from groundwater drawdown. However, *Eucalyptus victrix* is not restricted to the mine development envelope and is extensively distributed throughout the Bungaroo Creek system. No tree deaths are expected as a result of groundwater drawdown from the proposal. The proponent has committed to monitor vegetation health, and identify and develop contingency measures as part of its Environmental Monitoring Program and Dewatering and Disposal Management Plan to ensure no significant impacts to *Eucalyptus victrix* (Strategen, 2013).

Haul road

Development of the haul road would result in the direct disturbance of 1,400 ha of native vegetation within the haul road development envelope, which is located mostly in the Hamersley and Roebourne IBRA regions.

No Threatened or DRF flora species pursuant to the WC Act or listed under the EPBC Act were recorded. Three Priority flora taxa were recorded within the haul road development envelope:

- *Indigofera sp*. Bungaroo Creek (P3);
- *Triodia sp*. Robe River (P3); and
- *Rhynchosia bungarensis* (P4).

All priority species are considered to be well represented outside the haul road development envelope (Strategen, 2013).

Twenty-seven vegetation units from eleven broad floristic formations were described in the Stage 1 Bungaroo South to API Rail Head section of the haul road. Twenty four vegetation units from eleven broad floristic formations were described in the Stage 1 API Rail Head to North West Coastal Highway section of the haul road. None of the units is considered to be rare or restricted, or matched the descriptions of TECs or PECs. The proponent has undertaken a desktop assessment only for the Stage 2 North West Coastal Highway to Cape Preston section of the haul road (Onshore 2013b and 2013c). The Stage 2 haul road will be developed later in the project life to service the long-term production rate of 8 Mtpa.

The proponent has committed to developing Construction Environmental Management Plans for the mine and the haul road (Strategen, 2013). The EPA has recommended condition 7 (see Appendix 3) to ensure that the proponent minimises impacts to conservation species and communities for the Stage 2 haul road.

The EPA acknowledges that the proponent has committed to minimise clearing through the development and implementation of the Construction Environmental Management Plan. The EPA has also recommended condition 7 (Appendix 3) to ensure that impacts from the construction and operation of the Stage 2 section of the haul road are minimised. However, it is the EPA's opinion that a significant residual impact relating to the clearing of the portion of up to 2,050 ha of 'good to excellent' condition native vegetation that is located within the Hamersley IBRA subregion remains when considering this proposal in the context of cumulative impacts from other proposals (including approved proposals) in the Pilbara (see Section 4.5 Offsets).

Summary

Having particular regard to:

a) no DRF, threatened species, TECs or PECs being recorded in the surveyed areas for the mine area and haul road;

b) the measures that the proponent has committed to take to avoid, minimise and rectify impacts to flora and vegetation;

c) the likely level of restoration of ecological values and functions that would be achieved through best practice rehabilitation; and

d) the significant residual impact associated with the clearing of the portion of up to 2,050 ha of 'good to excellent' condition native vegetation that is located within the Hamersley IBRA subregion

the EPA considers that the proposal can be managed to meet the EPA's objective for flora and vegetation provided that:

- elements of the proposal are limited to the recommended authorised extent defined in Schedule 1 of the recommended environmental conditions in Appendix 3;
- condition 7 is imposed requiring the proponent to develop and implement a Vegetation Management Plan for the Stage 2 section of the haul road (see Appendix 3); and
- condition 8 is imposed to counterbalance the significant residual impacts of the clearing of the portion of up to 2,050 ha of 'good to excellent' condition native vegetation that is located within the Hamersley IBRA subregion.

4.4 Terrestrial Fauna

The EPA's environmental objective for this factor is *to maintain representation, diversity, viability and ecological function at the species, population and assemblage level.*

The main potential impacts of the proposal on fauna are the direct and indirect clearing of habitat and changes to the creek flow regimes.

Terrestrial fauna surveys were undertaken over the mine area and haul road. These included echolocation surveys for bats and targeted vertebrate fauna surveys.

Mine area

The following conservation significant species were recorded during surveys within the mine development envelope:

- Northern Quoll;
- Pilbara Leaf-nosed Bat; and
- Rainbow Bee-eater.

Creeklines provide high quality habitat for a range of conservation significant fauna. Studies confirmed the presence of Northern Quoll along the creeklines and along the base of the cliffs near the pit boundaries (Figure 3). Based on assessment of the potential impacts of the flood bunds on the flow regime, the proponent has concluded that increased flood heights and widths are unlikely to create significant flood regime changes and only limited and temporary impact on the creek edge habitat is expected to occur (Phoenix, 2012b).

Low-level activity of Pilbara Leaf-nosed Bat in the mine development envelope indicates the species forages in the proposal area; however, results strongly suggest a roost is not present in the proposal area (Phoenix, 2012b).

Single individuals of the Rainbow Bee-eater were sighted on two occasions along Bungaroo Creek in the Bungaroo South area. The steep banks and deposit zones of Bungaroo Creek provide nesting and foraging habitat. They are often associated with creeklines supporting sandy banks in which burrows can be created. This type of habitat is extensive outside the mine development envelope (Phoenix, 2012b).

Five hundred and seventy-six individual specimens from four short range endemic (SRE) target groups were collected from the mine development envelope. No confirmed SREs were recorded. Three taxa considered likely to be SREs and four potential SRE taxa were recovered. All likely and potential SRE taxa recorded have been identified outside the mine area development envelope with the exception of the isopod *Philosciidae* 'pannawonica' although suitable habitat is well represented throughout the creek system (Phoenix, 2012a).

The proponent has committed to implement measures to minimise impacts to fauna, including the Northern Quoll (Strategen, 2013). The key measures include:

- retaining at least 30% of each mapped habitat type;
- where possible, avoiding rocky outcrops and large trees for fauna habitat unless they materially interfere with the ability to safely conduct project activities;
- maintaining habitat connectivity within the Bungaroo Creek system;
- retaining a 50 m minimum buffer along creek embankments;
- retaining a 50 m waste dump buffer along cliff tops for movement of fauna during wet periods; and
- progressive mine pit backfilling and rehabilitation to maximise available fauna habitat.

To address the requirements of the referral decision by the Australian Government Department of the Environment, the proponent must develop a Northern Quoll Management Strategy in consultation with the WA Department of Parks and Wildlife. The strategy is outlined in the API document (Strategen, 2013). Also, the proponent must not remove more than 12.83 ha of Northern Quoll denning habitat within the mine development envelope (Figure 3).

Given the extent of suitable habitat for the Northern Quoll in the mine development envelope, the proponent has also prepared a specific (draft) Northern Quoll Management Plan (Strategen, 2013). The EPA notes that the proponent has applied avoidance and minimisation principles in the design of the mine as outlined above.

Haul road

Surveys within the haul road development envelope recorded the following conservation significant species:

- Bush Stone-curlew;
- Rainbow Bee-eater;
- Northern Quoll;
- Long-tailed Dunnart;

- Pilbara Leaf-nosed Bat; and
- Western Pebble-mound Mouse.

Clearing for linear infrastructure has the potential to fragment habitat. Potential habitat for significant fauna occurs along the proposed haul road corridor, particularly along creeklines and in an area where the Northern Quoll has been recorded. Where possible, the proponent will avoid or minimise disturbance to critical habitat for the Northern Quoll and other significant species. Where this is not possible, the proponent will design the road to include features to reduce impacts to fauna such as fauna underpasses and suitable culverts (Phoenix, 2012c).

Fifty-five individual specimens were recorded from four short rage endemic (SRE) target groups during surveys within the haul road development envelope. A likely SRE species, *Aname* 'MYG271-DNA' was identified through the desktop review as occurring within stony plain habitat. While this species was not recorded during surveys, this habitat comprises 92% of the survey area. Two specimens of an unidentified armadillid slater, *Barrowdillo* sp. Indet. associated with creekline habitat of the Robe River are considered to represent a potential SRE (Phoenix, 2013). These species are widespread and not restricted to the haul road development envelope.

Vertebrate and SRE fauna habitats (including for conservation significant species) in the proposal area (mine and haul road development envelopes) are not considered restricted and are present in adjacent areas. The fauna assemblages in these habitats are also likely to be similar to that found in adjacent areas.

Summary

Having particular regard to:

a) the design of the proposal to avoid, minimise and rectify potential impacts on fauna in the mine area and haul road corridor;

b) the significant residual impact of the loss of habitat for conservation significant fauna species;

c) the proponent's proposed management measures for the Northern Quoll and other conservation significant fauna; and

d) the Australian Government requirements to limit the clearing of Northern Quoll habitat and develop a Northern Quoll Management Strategy to ensure potential impacts to the Northern Quoll are minimised,

the EPA considers that the proposal can be managed to meet the EPA's objective for terrestrial fauna provided that condition 8 (see Appendix 3) is imposed to counterbalance the significant residual impact of the loss of habitat for conservation significant fauna species.

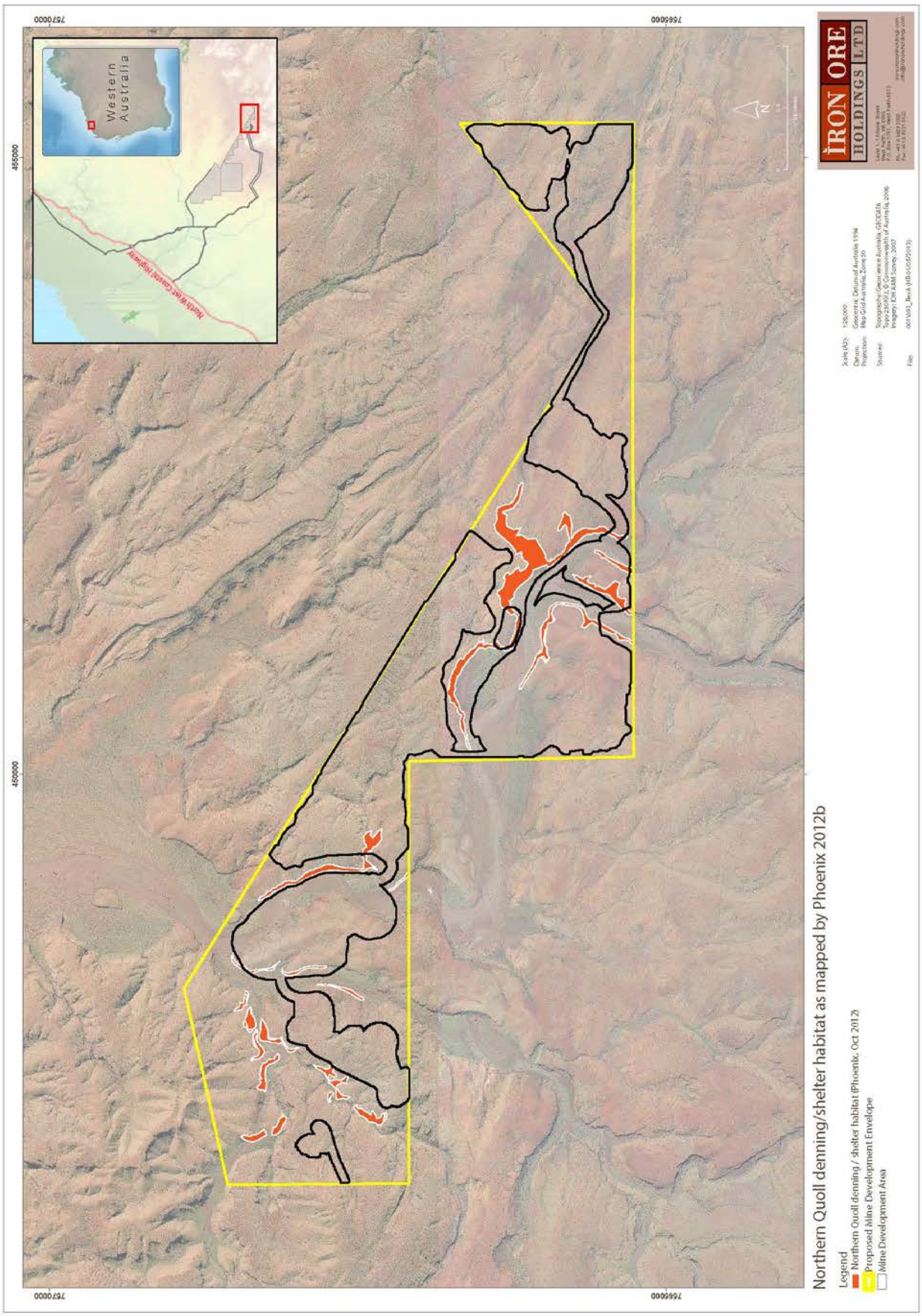

Figure 3: Northern Quoll denning habitat within the mine development envelope

4.5 Offsets (Integrating Factor)

The EPA's environmental objective for this factor is *to counterbalance any significant residual environmental impacts or uncertainty through the application of offsets*.

The proponent has mitigated the impacts of its proposal to significant environmental values through:

- avoiding *Themeda* grassland TEC;
- avoiding and minimising the clearing of vegetation which supports conservation significant species, particularly the Northern Quoll and priority flora, through the placement and alignment of infrastructure;
- minimising the clearing of native vegetation by locating infrastructure on previously cleared areas;
- minimising impacts by maintaining a 50 m buffer along the top of cliff tops and along the creek embankment to facilitate movement of fauna outside the creek corridor during wet periods;
- rehabilitating temporary clearing alongside the haul road during construction; and
- rehabilitating the mine site post-mining.

The EPA has identified a substantial increase in the number of applications for and amount of clearing of native vegetation in the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region. This increase, combined with the predicted future activities requiring clearing in the Pilbara bioregion, as well as other impacts from pastoralism and fires, is likely to have a significant impact on environmental values. As a result, the EPA has determined that a proactive approach to limiting these impacts is required.

The clearing of native vegetation in 'good to excellent condition' in the Hamersley IBRA subregion is considered to be significant when considered in a cumulative context. The clearing of this vegetation also results in the loss of habitat for conservation significant species. Clearing associated with the haul road can be split into two components – permanent clearing for the road and infrastructure and temporary clearing to allow this road to be constructed. Rehabilitation of this temporary clearing will commence progressively and is expected to be substantially commenced within twelve months of completion of the haul road. The temporary nature of the activities and the minimal soil disturbance means the rehabilitation should be highly effective. Therefore, the temporary clearing is not a significant residual impact.

The clearing of native vegetation in 'good to excellent condition' in the Roebourne IBRA subregion is not considered to be significant when considered in a cumulative context. The EPA considers that the cumulative impacts from development in this subregion are not yet of a scale that additional clearing would be considered a significant residual impact and warrant offsets.

The area will be rehabilitated in accordance with a mine closure plan, however, current rehabilitation efforts of Pilbara landscapes post-mining has shown limited success and there will remain a permanent loss of value.

Following the implementation of all mitigation measures, the proposal would have the following significant residual impacts:

- clearing and direct disturbance of the portion of up to 2,050 ha of 'good to excellent' condition native vegetation that is located within the Hamersley IBRA subregion, including the loss of habitat for conservation significant fauna species.

Conservation areas in the Pilbara bioregion total approximately eight per cent of the area, with the remainder mostly Crown Land, covered with mining tenements and pastoral leases. As such, the potential for the traditional approach of land acquisition and management as offsets is limited. The EPA has determined that a possible solution is the establishment of a strategic regional conservation initiative for the Pilbara. The State Government is currently considering whether to establish this conservation initiative or an alternative offset arrangement providing an equivalent outcome.

The strategic regional conservation initiative would pool funding from various offset requirements and then fund on-ground management and other actions to deal with key threatening processes and knowledge gaps across the Pilbara bioregion. One benefit of this is that the actions undertaken will benefit a range of species and ecosystems, including those identified as Matters of National Environmental Significance. Another benefit of this approach is that it limits the tenure issue by foregoing the requirement to acquire land for conservation purposes. Normal government processes to transfer land into the conservation estate can continue to take place outside the environmental impact assessment process.

This proposal is mostly in the Hamersley IBRA subregion, which is fairly well represented (12.6%) within the conservation reserve system, however, this is still below the target of 15%. Consistent with other proposals in this subregion, a contribution to this initiative will be applied at $750 per hectare for all clearing other than the temporary clearing adjacent to the haul road.

Consistent with the approach outlined above, the EPA has recommended condition 8 in the recommended environmental conditions in Appendix 3, which addresses the significant residual impacts of the proposal.

5. Conditions

Section 44 of the EP Act requires the EPA to report to the Minister for Environment on the key environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

5.1 Recommended conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Iron Ore Holdings to develop and operate an open pit iron ore mine and associated infrastructure is approved for implementation. These conditions are presented in Appendix 3. Matters addressed in the conditions include the following:

a) ensuring water quality is protected by obtaining baseline data of surface and groundwater quality prior to implementing the proposal, undertake kinetic testing of waste material to be backfilled and monitor drainage from the waste landforms and groundwater in the vicinity (condition 6);

b) minimising the impacts to flora and vegetation by requiring the proponent to develop and implement a Vegetation Management Plan for the Stage 2 section of the haul road (condition 7); and

c) requiring the proponent to offset significant residual impacts to up to 2,050 ha of native vegetation in 'good to excellent' condition, including loss of habitat for conservation significant fauna species (condition 8).

6. Other advice

Rehabilitation and closure

In its annual report for 2012–2013, the EPA noted that rehabilitation in the Pilbara region is a challenge due to the unique environment and biodiversity. The increasing number of large-scale proposals has led the EPA to review its current approach to assessing and conditioning rehabilitation of mining proposals in the Pilbara (EPA, 2013).

The EPA notes that, for this proposal, the proponent has used the mitigation hierarchy and best-practice principles to reduce the impacts of rehabilitation and closure. The proposal will avoid pit lakes by backfilling to above the pre-mining watertable with waste material. Due to the mine design, the need for waste landforms will be minimised by progressively backfilling pits. This process will also significantly reduce the potential impact of waste landforms on water quality within Bungaroo Creek.

The EPA notes that the Department of Mines and Petroleum (DMP) expects that the mine closure plan will provide further detailed discussion on timeframes for backfilling and safeguards to ensure that the temporary landforms do not become permanent. Consistent with Environmental Protection Bulletin No.19 *EPA involvement in mine closure* and based on the information provided by the proponent and advice received

from the DMP, the EPA considers that the factor of rehabilitation and closure can be effectively regulated by the DMP.

Groundwater dewatering and disposal of surplus dewater

The EPA notes that water reinjected into aquifers in Bungaroo Creek can be regulated by the DoW through its water licence conditions. If the reinjection system is temporarily unavailable, surplus water would be discharged to the surface of Bungaroo Creek from multiple locations. The duration of the surface water discharges would not exceed three months on any one occasion.

Surface water discharge would be regulated by the Department of Environment Regulation (DER) through the Works Approval and Licensing process. The EPA expects that the water quality criteria applied to monitoring of water reinjected to the aquifer or discharged to the surface would be consistent with the *Australian Drinking Water Guidelines 2011* Guideline Values, except for those parameters that show natural exceedences as determined by baseline groundwater and surface water quality surveys undertaken by the proponent.

Therefore, recommended condition 6 only deals with a subset of water quality matters as the DoW and the DER can regulate the other matters as described above. The EPA also expects the proponent to undertake the necessary work to meet the other departments' regulatory requirements, particularly related to baseline monitoring.

7. Conclusions

The EPA has considered the proposal by Iron Ore Holdings to develop and operate an open pit iron ore mine, associated infrastructure and 176 km haul road.

The EPA notes that the proponent has actively sought to avoid, minimise and rectify environmental impacts (particularly potential impacts to the Bungaroo Creek Water Reserve) through the design of the proposal.

As the proposal is located in a Priority 1 public drinking water supply area (Bungaroo Creek Water Reserve), the EPA has recommended a condition to ensure that the proposal would not have a significant impact on water quality.

After having considered the proponent's application and demonstration of avoiding and minimising environmental impacts, and recommending relevant conditions to ensure this occurs, the EPA considers that the proposal would have a significant residual impact in relation to the environmental factors of Vegetation and Flora and Terrestrial Fauna as a result of the clearing and direct disturbance of up to 2,050 ha of native vegetation in 'good to excellent' condition, including the loss of habitat for conservation significant fauna species. The EPA has therefore recommended a condition requiring the proponent to offset significant residual impacts to vegetation and fauna habitat.

The EPA has concluded that the proposal can be managed to meet the EPA's environmental objectives, provided the proposal is implemented consistent with the

conditions and authorised extent of the proposal in the recommended Ministerial Statement (Appendix 3).

8. Recommendations

The EPA submits the following recommendations to the Minister for Environment.

That the Minister:

1. notes that the proposal being assessed is for Iron Ore Holdings to develop and operate an open pit iron ore mine, associated infrastructure and haul road;
2. considers the report on the key environmental factors as set out in Section 4;
3. notes the proponent's application of avoidance and minimisation principles identified in this report;
4. notes that the EPA has concluded that the proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 3;
5. imposes the conditions and procedures recommended in Appendix 3 of this report; and
6. notes the EPA's other advice presented in Section 6 in relation to rehabilitation and closure, and groundwater dewatering and disposal of surplus dewater.

Appendix 1

References

Bennelongia (2013). *Bungaroo South: Subterranean Fauna Assessment – Final Report.* April 2013, prepared for Iron Ore Holdings by Bennelongia Pty Ltd, Jolimont, WA.

EPA (2013), *Environmental Protection Authority 2012-13 Annual Report*, October 2013, Perth, WA.

Onshore Environmental (2013a). *Flora and Vegetation Survey – Buckland and Snake Projects*. January 2013, prepared for Iron Ore Holdings by Onshore Environmental Consultants Pty Ltd, Yallingup, WA.

Onshore Environmental (2013b). *Level 2 Flora and Vegetation Survey – Bungaroo South to API Rail Head*. April 2013, prepared for Iron Ore Holdings by Onshore Environmental Consultants Pty Ltd, Yallingup, WA.

Onshore Environmental (2013c). *Level 2 Flora and Vegetation Survey – API Rail Head to North West Coastal Highway*. September 2013, prepared for Iron Ore Holdings by Onshore Environmental Consultants Pty Ltd, Yallingup, WA.

Phoenix (2012a), *Terrestrial fauna surveys for the Buckland Project*, November 2012, Prepared for Iron Ore Holdings Ltd by Phoenix Environmental Sciences Pty Ltd, Balcatta, WA.

Phoenix (2012b), *Targeted vertebrate fauna surveys for the Buckland Project*, November 2012, Prepared for Iron Ore Holdings Ltd by Phoenix Environmental Sciences Pty Ltd, Balcatta, WA.

Phoenix (2012c), *Terrestrial fauna survey for the Buckland Project haul road*, November 2012, Prepared for Iron Ore Holdings Ltd by Phoenix Environmental Sciences Pty Ltd, Balcatta, WA.

Phoenix (2013), *Level 2 vertebrate fauna survey for the Buckland Project haul road*, June 2013, Prepared for Iron Ore Holdings Ltd by Phoenix Environmental Sciences Pty Ltd, Balcatta, WA.

RPS Aquaterra (2013), *Bungaroo South – numerical modelling of the impacts of mining on the hydrogeology*, June 2013, Prepared for Iron Ore Holdings Ltd by RPS Aquaterra, Subiaco, WA.

Strategen (2013). *Buckland Project – Assessment on Proponent Information – Environmental Review*. November 2013, prepared for Iron Ore Holdings Ltd by Strategen. Subiaco, WA.

Appendix 2

Factors that do not require further evaluation in the EPA report

Preliminary key factors identified in the Scoping Guideline, but not requiring further evaluation in the EPA report

Factor and EPA objective	Activities and potential impacts	Relevant legislation and policy	Assessment, management and mitigation of impacts
Subterranean Fauna			
To maintain representation, diversity, viability and ecological function at the species, population and assemblage level	***Troglofauna*** Excavation of the mine pits may result in the removal of troglofauna habitat (potential loss of fauna through the extraction of material or vibration). The CID and the alluvium in the palaeodrainage channel are well connected downstream and upstream of the mine area and form a single continuous geological unit, which extends well beyond the survey area (Bennelongia 2013). Fifteen species, including ten singletons, are currently known only from the proposed mine pits and one of these may possibly be restricted to the site, based on ranges of similar species. 58% of the species collected at more than one drill hole in the mine pits occurred in at least two pit areas, suggest that the species currently only known from the survey area are unlikely to be restricted to the pits. Suitable habitat includes the Channel Iron Deposit (CID), alluvium and hardcap zone of the Dales Gorge Member BIF.	*Wildlife Conservation Act 1950* *EAG12 Consideration of subterranean fauna in environmental impact assessment in Western Australia*	***Troglofauna*** The proponent has estimated that approximately 42% of the target CID (within the mining tenement) will be removed leaving over 50% of potential CID habitat intact. The proponent considers that suitable geology for troglofauna is likely to have good connectivity. Based on the range of similar species and connectivity of habitat beyond the proposed mine pits, the proponent expects that the 15 species known only from within the mine pit footprint are not likely to be restricted. Species only found in the proposed mine pits have been identified in both pit areas further indicating good connectivity in habitat within the survey area and that these species are not restricted. One of the 15 species (*Draculoides* sp. B41) is possibly restricted to eastern mine pit. However, given the absence of obvious topographic barriers, this species is unlikely to have a range restricted to the proposed mine pits and its range would probably extend south of the easternmost pit. The distribution of the other 14 species has been assessed, based on records of similar species, or owing to the location of the record in relation to the proposed pit outline, as being unlikely to be restricted to the proposed mine pits (Table 7.1 of Bennelongia 2013). Consistent with EAG12, the proponent has demonstrated that habitat is likely to be connected/continuous beyond the survey area.

Factor and EPA objective	Activities and potential impacts	Relevant legislation and policy	Assessment, management and mitigation of impacts
	Stygofauna Drawdown as a result of dewatering the pits will cause the loss of stygofauna habitat. Nine species are currently known only from within the survey area with an additional three only indentified to family or genus level and considered restricted to the survey area. Based on existing information on the distributions of Pilbara stygofauna, it is unlikely that these 12 stygofauna species are actually restricted to the survey area. However, a review of the ranges of taxonomically similar species suggested it is possible that five of the 12 species have ranges not much larger than the survey area. Habitat characterisation showed that the CID/alluvial aquifer in palaeochannels of the Robe and Bungaroo catchments, which occurs both upstream and downstream of the proposal, potentially provide considerable habitat connectivity for stygofauna beyond the proposal and would reduce the likelihood of any species being restricted to the survey area (Bennelongia 2013).		***Stygofauna*** Approximately 24% of the below-watertable ore deposit will be accessed leaving over 75% of stygofauna habitat within the survey area that will not be drawndown. The proponent considers that the CID/alluvial aquifer potentially provides extensive habitat connectivity beyond the proposal both upstream and downstream of the survey area. The wide distribution and high porosity of the CID reduces the likelihood of any species being restricted within the survey area. Based on information in the API document and technical studies, the potential impacts to subterranean fauna are not likely to be significant.
Rehabilitation and closure – integrating factor			
To ensure that premises are closed, decommissioned and rehabilitated in an ecologically sustainable manner, consistent with agreed outcomes and land uses, and without unacceptable liability to the State	Potential impacts of the proposal at closure (particularly on the Bungaroo Creek Water Reserve) include: • Formation of pit lakes which could have adverse impacts on groundwater • Poorly designed waste landforms could leach acid and contaminants into groundwater • Pit bunds will affect the natural hydrological regime of the Bungaroo Creek system and may be unstable.	*Mining Act 1978* DMP/EPA *Guidelines for Preparing Mine Closure Plans*	At the scoping stage, Rehabilitation and Closure was not included as a preliminary key factor as the proponent committed to: • Backfill pits to surface levels above pre-mining groundwater levels to prevent the formation of pit lakes. The proponent has also committed to: • Return all above-ground waste to the pits and stabilise and rehabilitate the area, to minimise the potential for leaching

Factor and EPA objective	Activities and potential impacts	Relevant legislation and policy	Assessment, management and mitigation of impacts
			• Recontour and lower the bunds to form a more stable structure Based on information in the API document and technical studies, the potential impacts from rehabilitation and closure are not likely to be significant and can be regulated by DMP through the Mine Closure Plan.

Appendix 3

Identified Decision-making Authorities
and
Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of the *Environmental Protection Act 1986* (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 for this consultation:

Decision making authority	Approval
1. Minister for Water	*Rights in Water and Irrigation Act 1914* Water extraction licence Water reinjection licence
2. Minister for Environment	*Wildlife Conservation Act 1950* Taking of protected flora and fauna
3. Minister for Aboriginal Affairs	*Aboriginal Heritage Act 1972* s18 approval
4. Minister for State Development	*State Agreement Acts*
5. Minister for Mines	*Mining Act 1978* Grant of mining lease and general lease for haul road
6. Director General, Department of Environment Regulation	*Environmental Protection Act 1986* Works Approval and licence
7. Director General, Department of Mines and Petroleum	<u>Dangerous Goods</u> *Dangerous Goods Safety Act 2004*; Storage and handling of hazardous materials **Chief Dangerous Goods Officer** <u>Mine Safety</u> *Mines Safety and Inspection Act 1994* **District Inspector, Resources Safety Branch**
8. Director Environment Division, Department of Mines and Petroleum	*Mining Act 1978* Approval of mining proposal

Note: In this instance, agreement is only required with DMAs 1 - 5 since these DMAs are Ministers.

Statement No. XXX

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(PURSUANT TO THE PROVISIONS OF THE
ENVIRONMENTAL PROTECTION ACT 1986)

BUCKLAND PROJECT

Proposal: To develop and operate an iron ore mine, processing facilities and supporting infrastructure, 45 km south-south-east of Pannawonica in the Shire of Ashburton, and a 176 km haul road from the mine site to the customer delivery point near Cape Preston, as documented in Schedule 1 of this statement.

Proponent: IRON ORE HOLDINGS LTD
Australian Company Number 107 492 517

Proponent Address: Level 1
1 Altona Street
WEST PERTH WA 6005

Assessment Number: 1957

Report of the Environmental Protection Authority Number: 1499

This Statement authorises the implementation of the Proposal described and documented in Columns 1 and 2 of Table 2 of Schedule 1. The implementation of the Proposal is subject to the following implementation conditions and procedures and Schedule 2 details definitions of terms and phrases used in the implementation conditions and procedures.

1 Proposal Implementation

1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Column 3 of Table 2 in Schedule 1, unless amendments to the proposal and the authorised extent of the Proposal has 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 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 Time Limit for Proposal Implementation

3-1 The proponent shall not commence implementation of the proposal after the expiration of 5 years from the date of this statement, and any commencement, within this 5 year period, must be substantial.

3-2 Any commencement of implementation of the proposal, within 5 years from the date of this statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of 5 years from the date of this statement.

4 Compliance Reporting

4-1 The proponent shall prepare and maintain a compliance assessment plan to the satisfaction of the CEO.

4-2 The proponent shall submit to the CEO the compliance assessment plan required by condition 4-1 at least six months prior to the first compliance assessment report required by condition 4-6, or prior to implementation, whichever is sooner.

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.

4-3 The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by condition 4-1 and shall make those reports available when requested by the CEO.

4-5 The proponent shall advise the CEO of any potential non-compliance within seven days of that non-compliance being known.

4-6 The proponent shall submit to the CEO the first compliance assessment report 15 months from the date of issue of this Statement addressing the 12 month period from the date of issue of this Statement and then annually from the date of submission of the first compliance assessment report.

The compliance assessment report shall:

(1) be endorsed by the proponent's General Manager or a person delegated to sign on the General Manager'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 4-1.

5 Public Availability of Data

5-1 Subject to condition 5-2, 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.

5-2 If any data referred to in condition 5-1 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 this data publically available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publically available.

6 Inland Waters Environmental Quality

6-1 The proponent shall ensure that mining operations do not change the quality of surface and groundwater downstream of the mine development envelope so as to cause water quality parameters to exceed the Australian Drinking Water Guidelines 2011 Guideline Values, except for those parameters that show natural exceedences as identified in condition 6-2(2), through the implementation of conditions 6-2 to 6-7.

6-2 Prior to construction, the proponent shall prepare a Water Quality Monitoring and Management Plan, in consultation with the Department of Water, to the requirements of the CEO. The Water Quality Monitoring and Management Plan shall:

(1) when implemented, substantiate whether condition 6-1 is being met;

(2) include, where surface water is sufficient to gather water quality data, the results of baseline groundwater quality and surface water quality representative of seasonal variation;

(3) include a geochemical report of kinetic testing results of representative material to be backfilled, within two years of the commencement of mining;

(4) include a description of procedures for monitoring drainage from the waste fines storage facility and waste rock landforms, and groundwater in the vicinity of the waste material landforms and downstream of all potential sources of contamination, that includes:

a. monitoring and sampling methodology in accordance with the Australian Drinking Water Guidelines 2011 and ANZECC Guidelines;

b. monitoring sites;

c. frequency of monitoring;

d. water quality criteria; and

e. provision for volume and flow measurement of run-off and seepage.

(5) identify water quality criteria to trigger implementation of management and/or contingency measures to ensure condition 6.1 is met; and

(6) identify management and/or contingency measures to be implemented in the event that criteria identified required by condition 6-2(5) have been exceeded.

6-3 The proponent shall implement the approved Water Monitoring and Management Plan required by condition 6-2 and continue implementation until otherwise agreed by the CEO.

6-4 In the event that monitoring required by condition 6-2 indicates water quality criteria required by condition 6-2(5) have been exceeded the proponent shall:

(1) investigate to determine the likely cause(s) of the water criteria required by condition 6-2(5) being exceeded;

(2) if the exceedence is likely to be the result of activities undertaken in implementing the proposal, implement management and/or contingency measures required by condition 6-2(6) and continue implementation until criteria required by condition 6-2(5) are being met, or until otherwise agreed by the CEO; and

(3) provide a report that describes the investigation required by condition 6-4(1) and measures required by condition 6-4(2) to the CEO within 21 days of identification that criteria required by condition 6-2(5) has been exceeded.

6-5 The proponent may review and revise the Water Quality Monitoring and Management Plan to the requirements of the CEO.

6-6 The proponent shall review and revise the Water Quality Monitoring and Management Plan as and when directed by the CEO.

6-7 The proponent shall implement the approved revisions of the Water Quality Monitoring and Management Plan required by conditions 6-5 and 6-6.

7 Flora and Vegetation

7-1 The proponent shall ensure that the elements of Stage 2 of the haul road described in Table 2 of Schedule 1 and delineated in Figure 2, are located to minimise the adverse impacts from construction on Threatened Ecological Communities, Priority Ecological Communities, threatened flora species, declared rare flora and priority flora species through the implementation of conditions 7-2 to 7-5.

7-2 Prior to commencement of any ground disturbing activities within Stage 2 of the haul road development envelope, unless agreed by the CEO, the proponent shall prepare a Vegetation Management Plan which is to be approved by the CEO.

7-3 The Vegetation Management Plan required by condition 7-2 shall:

(1) demonstrate the haul road will be located to minimise direct and indirect impacts on Threatened Ecological Communities, Priority Ecological Communities, threatened flora species, declared rare flora and priority flora species; and

(2) include spatially accurate, rectified and geographically referenced maps showing the location of the terrestrial infrastructure.

7-4 The proponent shall implement the approved Vegetation Management Plan required by condition 7-2.

7-5 Revisions to the Vegetation Management Plan may be approved by the CEO.

8 Residual Impacts and Risk Management Measures

8-1 In view of the significant residual impacts and risks as a result of implementation of the proposal, the proponent shall contribute funds for the clearing of 'good to excellent' condition native vegetation, including the loss of habitat for conservation significant species in the Hamersley IBRA subregion, and calculated pursuant to condition 8-2. 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.

8-2 The proponent's contribution to the initiative identified in condition 8-1 shall be paid biennially, the first payment due on 31 May in the second year following the commencement of ground disturbance. The amount of funding will be made on the following basis and in accordance with the approved Impact Reconciliation Procedure required by condition 8-3:

(1) $750 AUD (excluding GST) per hectare of 'good to excellent' condition native vegetation cleared within the mine development envelope delineated in Figure 1 within the Hamersley IBRA subregion; and

(2) $750 AUD (excluding GST) per hectare of 'good to excellent' condition native vegetation cleared for "haul road and related infrastructure"

within the haul road development envelope delineated in Figure 2 within the Hamersley IBRA subregion.

8-3 Prior to ground-disturbing activities, the proponent shall prepare an Impact Reconciliation Procedure to the satisfaction of the CEO.

8-4 The Impact Reconciliation Procedure required pursuant to condition 8-3 shall:

(1) include a methodology to identify clearing of 'good to excellent' condition native vegetation in the Pilbara bioregion;

(2) include a methodology for calculating the amount of clearing undertaken during each biennial time period;

(3) include a methodology for calculating the amount of temporary vegetation clearing for the haul road and related infrastructure that has commenced rehabilitation within twelve months of final commissioning of the haul road;

(4) state the biennial time period commences on the 1 March prior to commencing ground disturbance and the due date for submitting the results of the Procedure for approval of the CEO as 31 March following the end of the first biennial period; and

(5) identify that any areas cleared within the haul road development envelope (Figure 2) in the Pilbara bioregion that have not commenced rehabilitation within 12 months of final commissioning of the haul road are to be considered part of the "haul road and related infrastructure" and must be included in the area subject to condition 8-2.

8-5 The real value of contributions described in condition 8-2 will be maintained through indexation to the Perth Consumer Price Index (CPI), with the first adjustment to be applied to the first contribution.

Schedule 1

Table 1: Summary of the Proposal

Proposal Title	Buckland Project
Short Description	The proposal is to develop and operate an iron ore mine, processing facilities and supporting infrastructure, 45 km south-southeast of Pannawonica in the Shire of Ashburton, and a 176 km haul road from the mine site to the customer delivery point near Cape Preston.

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

Column 1	Column 2	Column 3
Element	**Location**	**Authorised Extent**
Mine pits and infrastructure area	Figure 1	Clearing of not more than 650 ha of vegetation within the 1,600 ha mine development envelope.
Haul road	Figure 2 Stage 1: mine area to North West Coastal Highway Stage 2: North West Coastal Highway to Customer Delivery Point	Clearing not more than 1,400 ha vegetation within a 5,800 ha haul road development envelope
Disposal of surplus dewater	Figure 1	Dewater disposal through the water use hierarchy: 1. Use on site; 2. Subsurface reinjection; and 3. Controlled discharge to surface drainage at multiple discharge locations as a contingency measure only. Duration of surface discharge is not to exceed three months at any one time.
Backfilling of mine pits	Figure 1	Progressive backfilling of mine voids so that the final surface levels are at a higher elevation than the pre-mining groundwater levels.

Table 3: Abbreviations

Abbreviation	Term
ha	hectares
km	kilometres

Abbreviation	Term
GST	Goods and Services Tax

Figures (attached)

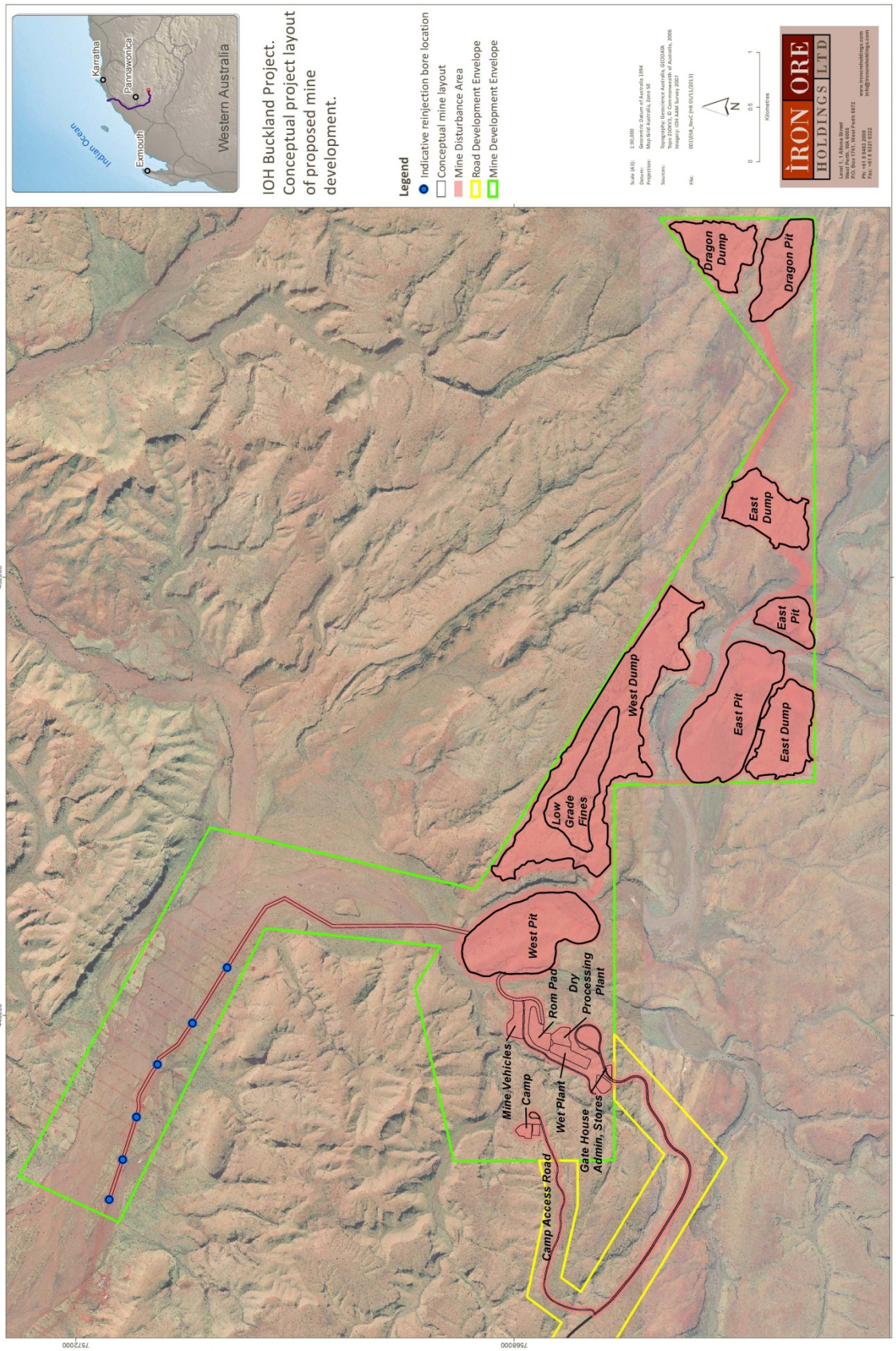

Figure 1: Development envelope for mine area

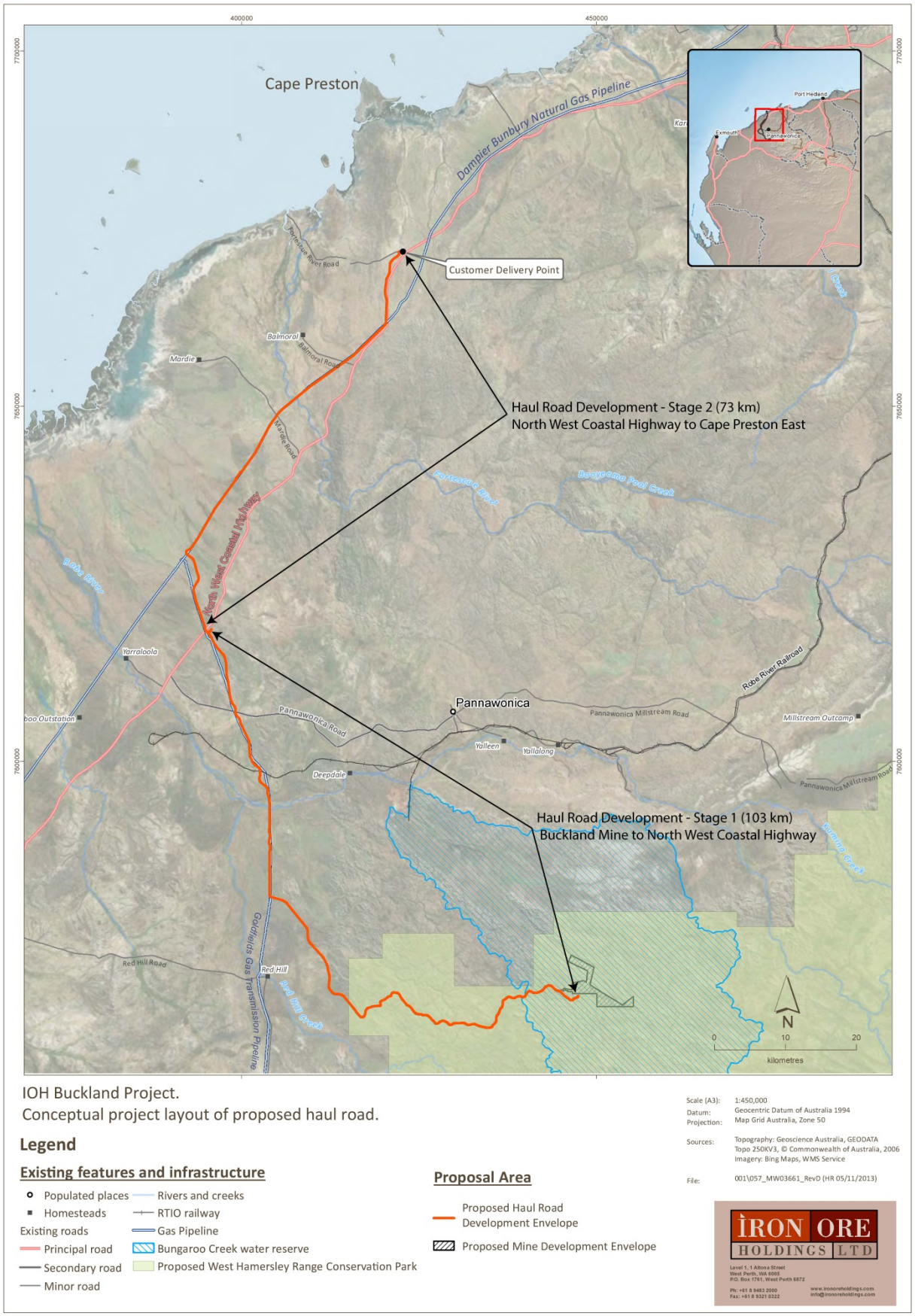

Figure 2: Development envelope for haul road

Schedule 2

Term or Phrase	Definition
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986*, or his delegate.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986*
ANZECC Guidelines	Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand 2000, Australian Water Quality Guidelines for Fresh and Marine Waters
Australian Drinking Water Guidelines 2011	National Water Quality Management Strategy, *Australian Drinking Water Guidelines 2011* (and its updates). Prepared by the National Health and Medical Research Council, January 2011.
IBRA	Interim Biogeographic Regionalisation for Australia

Schedule 3

BUCKLAND IRON ORE PROJECT

Coordinates that define the Development Envelopes

Coordinates defining the Development Envelopes as shown in Figure 1 and 2 of the Ministerial statement are held by the Office of the EPA, dated 6 November 2013.

Notes

The following notes are provided for information and do not form a part of the implementation conditions of the Statement:

- The proponent for the time being nominated by the Minister for Environment under section 38(6) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal unless and until that nomination has been revoked and another person is nominated.
- If the person nominated by the Minister, ceases to have responsibility for the proposal, that person is required to provide written notice to the Environmental Protection Authority of its intention to relinquish responsibility for the proposal and the name of the person to whom responsibility for the proposal will pass or has passed. The Minister for Environment may revoke a nomination made under section 38(6) of the *Environmental Protection Act 1986* and nominate another person.
- To initiate a change of proponent, the nominated proponent and proposed proponent are required to complete and submit *Post Assessment Form 1 – Application to Change Nominated Proponent*.
- The General Manager of the Office of the Environmental Protection Authority was the Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986* at the time the Statement was signed by the Minister for Environment.