Oakajee Rail Development

Oakajee Port and Rail Pty Ltd

Report and recommendations of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia

Report 1388
March 2011

Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
20/11/2009	Level of Assessment set	
5/7/2010	Final ESD approved	32
2/8/2010	Proponent Document Released for Public Review	4
30/8/2010	Public Review Period Closed	4
18/1/2011	Final Proponent response to PER issues raised and issues raised by the EPA	21
14/3/2011	Publication of the EPA report	8
28/3/2011	Close of appeals period	2

STATEMENT ON TIMELINES

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 did meet its agreed timeline objective of 10 weeks for the completion of the assessment and provision of a recommendation to the Minister.

Dr Paul Vogel
Chairman
14/3/2011

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Summary and recommendations

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for Environment on the proposal to construct and operate a 570 kilometre railway and associated rail infrastructure from the North West Coastal Highway at Oakajee to the Jack Hills mining operations located 500 kilometres to the north east by Oakajee Port and Rail Pty Ltd (OPR).

Section 44 of the *Environmental Protection Act 1986* (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.

The EPA is also required to have regard for the principles set out in section 4A of the *Environmental Protection Act 1986.*

Key environmental factors and principles

The EPA decided that the following key environmental factors relevant to the proposal required detailed evaluation in the report:

(a) Vegetation and flora;

(b) Fauna and fauna habitat;

(c) Conservation managed lands;

(d) Surface water hydrology; and

(e) Noise.

There were a number of other factors which were relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation.

The following principles were considered by the EPA in relation to the proposal:

(a) The precautionary principle;

(b) The principle of the conservation of biological diversity and ecological integrity; and

(c) The principle of intergenerational equity.

Conclusion

The EPA has considered the proposal by OPR to construct and operate a 570 kilometre railway and associated rail infrastructure from the North West Coastal Highway at Oakajee to the Jack Hills mining operations located 500 kilometres to the north east by OPR.

Vegetation and flora

The direct threats and impacts to vegetation and flora from the proposal relate to the removal of 6008 hectares (ha) of native vegetation. Up to 5900ha and 108ha are proposed to be removed from the pastoral and agricultural areas respectively. Of this total area at least 500 ha will be rehabilitated following the completion of construction.

Since the release of the PER in its response to public submissions, OPR has reduced the extent of clearing of restricted vegetation associations in the agricultural area. This has been achieved by a reduction in width of the construction corridor through areas supporting native vegetation and through the identification of a preferred alignment in certain sections. In addition, all supporting infrastructure such as borrow pits, accommodation camps and turkeys nests within the agricultural area will be located to avoid native vegetation. As a result OPR has achieved a 57 ha reduction in the clearing of vegetation associations for which there is less than 30% of their original extent remaining in the region. Overall, OPR has committed to limiting the loss of native vegetation within the agricultural area to a maximum 108ha.

The proposal also commits to the avoidance of all Threatened and Priority Ecological Communities (TECs and PECs), in addition to the commitment for ensuring a 50 metre buffer between ground disturbance and all TECs and PECs.

The proposal also carries the potential for vegetation to be indirectly impacted by factors such as:

- introduction and spread of weeds; and
- alterations to surface water hydrology.

To address the indirect impacts of the proposal on native vegetation the EPA has recommended condition 7 which ensures the railway is designed, constructed and operated such that indirect impacts do not cause the loss of significant flora and vegetation (including Mulga communities) beyond 50 metres either side of the rail centreline. Condition 8 has also been recommended and prescribes specific actions to protect vegetation and flora from the introduction and spread of weeds.

Construction and operation of the proposal will avoid adverse impacts to all Declared Rare, and Priority 1 and 2 flora species within the entire proposal area (agricultural and pastoral area). There remains some residual loss to species of Priority 3 and Priority 4 flora species. This impact has been well understood and can be managed to ensure the impacts to these species are not considered locally or regionally significant.

With regard to direct impacts to vegetation and flora OEPA has recommended conditions 6 that requires the avoidance of all identified rare flora, TECs and PECs by a minimum of 50 metres, and all Priority 1 and 2 flora species by 20 metres. Condition 5 also requires OPR to submit final rail alignments and locations of supporting infrastructure with maps prior to construction to confirm the project's impacts on biodiversity conservation assets are no greater than committed to in the PER and OPR's response to submissions.

Fauna and fauna habitat

The most significant threats to fauna are the direct loss of habitat through clearing of native vegetation for construction of the rail corridor and supporting infrastructure, and the threat of habitat and population fragmentation caused by the linear nature of the rail structure.

OPR has surveyed and identified numerous occurrences of populations and potential rocky skink habitat throughout the study area for the Western Spiny-tailed Skink. This species is Specially Protected (Schedule 1) under the *Wildlife Conservation Act 1950* (WC Act) and is at risk of being impacted by the proposal. All construction activities, including any clearing and disturbance, will avoid all rocky skink habitat by a minimum 50 metre buffer with the exception of two locations, whereby ground disturbance will not occur within 20 metres. Given that the rail dissects a large section of contiguous habitat OPR will install underpasses every 100m where rocky skink habitat occurs within 100m of the rail alignment in an effort to assist with population dispersal between habitat and reduce population fragmentation. The EPA has recommended Condition 9 which ensures there is no loss or disturbance to areas identified as rocky skink habitat within the proposed SAC.

The Malleefowl is Specially Protected (Schedule 1) under the WC Act. However, the EPA notes that although there will be a loss of potential Malleefowl habitat from vegetation clearing required for the construction of the rail, this impact is considered largely unavoidable within the constraints of the proposed SAC as the area covered by vegetation units considered potential Malleefowl habitat encompasses a large quantity of the width of the proposed SAC. The EPA also notes that there will be no impact to a significant portion of this potential habitat and that there will be no impact to any Malleefowl mounds identified. The EPA has recommended condition 9 which requires that prior to undertaking any clearing or ground disturbing activities all construction areas shall be inspected by a suitably qualified zoologist for the presence of Malleefowl mounds. The condition also prescribes that there will be no ground disturbance or unauthorised access within 50 metres of any Malleefowl mounds identified prior to construction or ground disturbing activities.

Carnaby's Black Cockatoos have been found to feed on particular vegetation types within the region, and within the study area. The main threat to the species as a result of the proposal is the loss of feeding habitat. Further habitat assessments were conducted following the public review period of the

PER and OPR has identified the potential loss of Carnaby's foraging habitat as 23.4ha. No breeding or roosting habitat has been identified in the proposed SAC.

Considering no breeding or roosting habitat has been identified within the proposed SAC, and the representation of feeding habitat beyond the proposal footprint, implementation of the proposal is not considered to have a significant impact on Carnaby's Black Cockatoo.

Vegetation within the Weld Range Gap claypan considered potential habitat for the Slender-billed Thornbill is described as being 3500ha in area, within which 30.6ha are proposed to be impacted. The impact of habitat fragmentation on the species potentially caused by the linear structure of the rail corridor is minimised due to the existence and proximity of Beringarra Cue Road adjacent. The EPA does not consider the proposal to represent a significant impact to the Slender-billed Thornbill.

Conservation managed lands

The EPA considers that the direct residual impacts to the proposed Woolgorong and Twin Peaks conservation parks and existing Crown Reserve 16200 as summarised above to be unavoidable. However, construction and ongoing indirect impacts from the operation of the rail corridor will need to be carefully managed in consultation with DEC, as the land managers.

For the sections of the proposal that intersect within or near to the proposed Woolgorong, Twin Peaks and Narloo Conservation Parks, the DEC has recommended a management plan be prepared and implemented by OPR to address ongoing impacts and land management issues that have a bearing on the management of the proposed conservation parks. In view of this the EPA is recommending conditions 11-1 and 11-2 which requires OPR to prepare and implement a Conservation Lands Management Plan in consultation with the DEC. This Plan shall aim to protect the conservation values of the proposed Woolgorong, Twin Peaks and Narloo Conservation Parks for sections of the proposal which intersect or run adjacent to these parks..

Proposed offset package

OPR has proposed an offset strategy which aims to mitigate the residual impacts of the rail development on environmental values such as:

- loss of vulnerable vegetation associations in the agricultural area;
- the loss of habitat for Carnaby's Black Cockatoo, Malleefowl and the Slender-billed Thornbill;
- fragmentation of contiguous Western Spiny-tailed Skink habitat; and
- direct and residual impacts to proposed Woolgorong and Twin Peaks conservation parks and existing Crown Reserve 16200.

OPR proposes to implement four offset projects. It is intended that these project would largely involve targeting the:

- acquisition of land within the Moresby Range/Chapman Valley area including remnant habitat for Carnaby's Black Cockatoo;
- acquisition of at least 950 ha of land within the pastoral area which contains suitable habitat for the Western Spiny-tailed Skink and Malleefowl; and
- rehabilitation program of land acquired for conservation to increase habitat for Carnaby's Black Cockatoo.

The EPA has concluded that the actions proposed in the offset strategy are suitable in addressing the residual impacts of the proposal on biodiversity conservation assets and that this approach will provide long term environmental benefits through the protection and management of high quality remnant native vegetation in the region. The EPA has therefore recommended the proposed offset strategy be included in the recommended conditions with condition 15-1.

Surface water hydrology

The construction of the rail line and associated infrastructure has the potential to interrupt sheet flow and impact Mulga communities, and other sheet flow dependent vegetation (SFDV) beyond the proposed construction footprint.

The most significant threats of the proposal on SFDV are considered to be:

- Water ponding upslope of the infrastructure;
- Reduced sheet flow (water starving) down slope of the infrastructure;
- Concentrated water flow through diversion infrastructure, with potential to cause erosion and subsequent deposition; and
- Channel formation.

OPR proposes to minimise impacts to Mulgas and other SFDV by the use of engineering controls (environmental culverts along the rail line) to minimise changes to surface water flows and restore sheet flow downstream of the railway line. OPR has also prepared a plan to monitor changes in surface water flows and the health of the SFDV, with a particular emphasis on Mulga communities. The monitoring plan is designed to provide information on the effectiveness of the proposed rail and engineering designs to manage surface water flows. The objective of this program is to demonstrate that all indirect impacts of the proposal are contained to 50m either side of the railway centreline.

The EPA has recommended Condition 7 which ensures the railway is designed, constructed and operated such that surface water diversion, erosion and sedimentation do not cause the loss of significant flora and vegetation including Mulga communities beyond 50m either side of the railway centreline.

The construction of the rail will involve the design and construction of river and creek crossings (involving nine bridges which are unavoidable within the constraints of the proposed SAC) which have the potential to impact the hydrology of watercourse ecosystems and riparian vegetation, some of which have been identified as important ecological corridors for localised fauna

movements. The installation of culverts and bridges will assist with ensuring that downstream surface water flow is maintained. Bridges are proposed to be perpendicular to the watercourse to minimise impacts to riparian vegetation, and culverts are aligned in the same direction as the drainage lines, reducing the potential for stream diversions. Additionally a prescriptive rehabilitation program will be developed to reinstate riparian areas disturbed during construction which will not be required during operation.

Noise

Noise from trains is generated along the entire railway line from the Jack Hills iron ore mine to North West Costal Highway. In terms of the sources of noise emission, train movements generate noise with intrusive noise characteristics resulting from braking, the train locomotive itself, wagons, rails and horns at rail crossings. Variations and curves in the track can also lead to high levels of high frequency noise referred to as 'wheel squeal'.

Based on its preferred railway centreline, OPR's noise modelling has identified six receptors (three of which are owned by LandCorp in the Oakajee Industrial Estate buffer) above the *Limit* criteria at night, and 11 receptors (four of which are owned by LandCorp) above the *Target* criteria. OPR has advised that dwellings owned by LandCorp in the Oakajee Industrial Estate buffer will cease to be occupied once the proposal is implemented and hence these dwellings will not receive noise mitigation treatments.

Nevertheless, OPR is committed to minimising the noise emissions from the proposal and will investigate the viability of additional muffling of locomotives should the proposal be approved for implementation. OPR will inform the DEC of the progress of muffling investigations at appropriate intervals until an outcome is determined.

In view of the above, the EPA is recommending conditions (recommended condition 10) which provide for:

- noise emission from the proposal to meet the noise criteria at affected dwellings consistent with the criteria discussed above;
- a consultation and noise mitigation procedure to be finalised and implemented, consistent with OPR's three staged process;
- noise monitoring to be undertaken following the implementation of treatment to verify the noise criteria have been met and that the noise treatments are effective.

It is considered that imposing conditions on OPR in this manner recognises that it may not be practicable to control noise exposure with noise barriers along the alignment and would also obviate the need to recommend stringent noise limits on the locomotives (at source).

The EPA has therefore concluded that it is likely that the EPA's objectives would be achieved provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4 and summarised in Section 4.

Recommendations

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

1. That the Minister notes that the proposal being assessed is for construction and operation of the Oakajee Rail Development as described in Section 2 of this Report;
2. That the Minister considers the report on the key environmental factors and principles as set out in Section 3;
3. That the Minister notes the EPA has concluded that it is likely that the EPA's objectives would be achieved, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4 and summarised in Section 4; and
4. That the Minister imposes the conditions and procedures recommended in Appendix 4 of this report.

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 OPR to construct and operate a 570 kilometre railway and associated rail infrastructure from the North West Coastal Highway at Oakajee to the Jack Hills mining operations located 500 kilometres to the north east, is approved for implementation.

These conditions are presented in Appendix 4. Matters addressed in the conditions include the following:

a) Final rail alignment – that the final rail alignment and associated infrastructure be located within the Rail corridor as delineated by specified co-ordinates. Each section of the final rail alignment will need to be submitted prior to construction and include maps of locations of key conservation assets to demonstrate impacts are no greater than committed to by OPR. The width of the corridor will be required to be a maximum of 100 metres where the rail traverses vegetated areas in freehold lands (the agricultural area), existing and proposed conservation reserves and conservation significant fauna habitats (Condition 5);

b) Direct impacts to vegetation and flora – that no clearing, ground disturbance or unauthorised access occur within 50 metres of TECs, PECs and DRF, and 20 metres of Priority 1 and 2 flora (Condition 6);

c) Indirect impacts to vegetation – that construction and operation of the railway ensure that surface water diversion, erosion and sedimentation do not cause the loss of or adverse impacts to significant vegetation beyond 50 metres either side of the railway centreline (Condition 7);

d) Weed management – ensure that no new species of weeds shall be introduced to the proposal area as a result of the proposal (Condition 8);

e) Fauna habitat – ensure there is no ground disturbance within 50 metres of Western Spiny-tailed Skink habitat or Malleefowl mounds with all construction areas to be inspected prior to disturbance (Condition 9);

f) Trapped fauna – that all open trenches associated with construction be inspected and cleared twice daily by a qualified fauna rescue personnel (Condition 10);

g) Conservation lands – that a Conservation Lands Management Plan (CLMP) be developed in consultation with DEC prior to ground disturbance to areas adjacent or traversing lands of proposed conservation parks. CLMP shall address fire prevention, feral animals, weeds, access, flora, vegetation and fauna (Condition 11);

h) Noise – ensure that implementation of the proposal does not cause noise emissions from the operation of the rail to exceed specific criteria at dwellings impacted or potentially impacted by the rail. The condition requires the development of a noise mitigation and consultation program, informing and consulting with potentially affected residents and provide noise amelioration measures where required (Condition 12); and

i) Offsite mitigation – to mitigate for the proposal's impacts to native vegetation, fauna habitat and proposed conservation parks, OPR shall implement the actions described in its *OPR Rail Development State Offsets Strategy* (Eco Logical, 2011), through to the purchase of land parcels for conservation and funding for research projects into threatened fauna (Condition 15).

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1. Introduction and background

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the key environmental factors for the proposal by Oakajee Port and Rail (OPR), to construct and operate a heavy haulage railway from the North West Coastal Highway (NWCH) at Oakajee to the Jack Hills mining operations located 500 kilometres to the north east, including spur lines to Weld Range and Mullewa.

This proposal is a component of the State Government's larger Oakajee Mid West Development Project which proposes to establish an integrated port, rail and industrial estate to support the development of the resource sector in the Midwest.

On 20 March 2009, the State Government and OPR signed the Oakajee Rail State Development Agreement (SDA) which appointed OPR on an exclusive basis as the infrastructure provider for the port and open access rail line servicing the northern Mid West iron ore mines. Under the SDA, OPR will construct, finance, own and operate private-use port infrastructure, as well as associated material handling equipment and rail infrastructure.

The underpinnings of the development include the following major infrastructure projects:

- the Oakajee Deepwater Port, a multi user, deep water port, capable of accommodating at least one cape class bulk carrier for the transport of iron ore and capacity for at least one berth to accommodate smaller vessels. The Oakajee Deepwater Port was approved under the *Environmental Protection Act 1986* in February 1998 subject to environmental conditions (Ministerial Statement 469) and the EPA has approved some changes to the proposal;
- a heavy haulage railway development to the mineral deposits of mid west (this proposal);
- a terrestrial port development project which includes integrated world-class iron-ore receiving, handling and exporting facility linked to the approved deepwater port. This proposal is also subject to EPA assessment; and
- a strategic industrial estate which will accommodate future industry.

On 16 October 2009, OPR submitted two referrals to the EPA for the Oakajee land-based component of the port (the terrestrial port development) and the Oakajee rail development. The EPA made a decision to assess both proposals at the level of Public Environmental Review (PER) with a 4 week review period due to potential impacts to a number of significant environmental factors such as vegetation and flora, fauna habitat, conservation lands, marine environment and air quality.

OPR developed an Environmental Scoping Document which identified the environmental issues related to Oakajee Rail proposal, studies and surveys that would be required and potential management actions that would need to be developed to mitigate potential environmental impacts. The EPA approved the scoping document on 5 July 2010.

The PER document was released for public review from 2 August to 31 August 2010. The EPA received a total of 14 submissions which were provided to the proponent on 20 September 2010. On 22 December 2010 the EPA determined that the proponent's Response to Submissions document, which addresses the issues raised in the submissions, was acceptable.

In addition to a referral to the EPA, the OPR referred the proposal to the Commonwealth Department of Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) under the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act). The DSEWPC subsequently decided that the proposal is an action, which was likely to have a significant impact on a matter of National Environmental Significance, and therefore requires approval of the Commonwealth Environment Minister. The DSEWPC subsequently determined that the proposal can be assessed through the PER assessment process under the WA *Environmental Protection Act 1986* which is accredited under the Bilateral Agreement between the State and Federal Government. Following the EPA's assessment, the Commonwealth Environment Minister will still be required to make a decision regarding the action.

Further details of the proposal are presented in Section 2 of this report. Section 3 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 4. Section 5 presents the EPA's Recommendations.

Appendix 5 contains a summary of submissions and the proponent's response to submissions and is included as a matter of information only and does not form part of the EPA's report and recommendations. Issues arising from this process, and which have been taken into account by the EPA, appear in the report itself.

2. The Proposal

As mentioned above, the Oakajee Rail Development is a component of the larger Oakajee Port and Rail Development, which includes a deepwater port facility at Oakajee approved with the release of Ministerial Statement 469, and the Oakajee Terrestrial Port Development which is the subject of a separate PER assessment process for which OPR is the nominated proponent.

The proposed heavy haulage railway and the associated facilities covered in this proposal include 570 kilometres (km) of railway and associated rail infrastructure extending in a north-easterly direction from the North West Coastal Highway (NWCH) approximately 1.5km south of Olsen Road at Oakajee, approximately

24km north of Geraldton, to the Jack Hills mining operations located approximately 500km to the northeast. In addition there will be a 20km link to the existing WestNet rail to Mullewa, known as the Mullewa Spur approximately 90km from the Oakajee Port, and a 10 to 15km link to the Weld Range iron ore deposit known as the Weld Range Spur at approximately 410km from the Oakajee port as shown in Figures 1a, b and c.

It is noted that in 2007 the route of the corridor was reconfigured to allow for a 70 km radio quiet zone around the proposed Square Kilometre Array Murchison Radio-Astronomy Observatory.

The railway line must be located within a proposed Special Act Corridor (SAC), which largely coincides with OPR's environmental study area. For the purpose of this development the proposed SAC is a 4km and 3.2km wide corridor where the development intersects pastoral and freehold land, respectively. The development will typically require a 100 metre wide construction corridor within which associated infrastructure such as laydown areas, some borrow pits, optic fibre cable, water infrastructure, and construction access tracks will be located. Following completion of construction, a 50-80 metre (m) wide operational corridor will be required.

OPR has identified a preferred alignment within the proposed SAC, as shown in the PER, and has undertaken its environmental assessment based on this preferred alignment in the context of the environmental constraints of the proposed SAC. The preferred alignment has yet to be submitted to Government for consideration and approval and hence this alignment may undergo modifications prior to it being approved by the State Government. Heritage and engineering constraints may also require further modifications and refinements to be made to the alignment prior to the commencement of construction.

The proposal will include watercourse and drainage channel crossings, with an estimated nine bridges in addition to two vehicular bridges providing grade separation of train and vehicular traffic for the NWCH and Chapman Valley Road.

The proposal will require supporting infrastructure to be located outside of the 100 metre construction corridor, but inside the proposed SAC. Supporting infrastructure includes borrow pits, accommodation camps, vehicle access tracks, and temporary construction areas including lay down areas, turkey's nests, communications towers and construction roads.

Operation of the rail will involve up to 18 train movements a day (highest movements in the western portion of the rail from Oakajee to the Mullewa spur) utilising trains of up to 2.2km in length with two standard gauge locomotives.

The proposal area extends over 500km north east from Oakajee to Jack Hills and the environmental features within the proposed SAC vary considerably. Development of the Oakajee Rail will require up to 7008 (ha) hectares of ground disturbance including the clearing of up to 6008ha of native vegetation within the proposed SAC.

The proposal will intersect Crown Reserve 16200 and proposed conservation parks in the former Woolgorong and Twin Peaks pastoral leases, removing 2.5, 175 and 290 ha respectively.

OPR has recently modified the proposal which now requires a deviation of the North West Coastal Highway. It is understood this would require further planning approval to create a new road reserve and will result in the overall clearing footprint increased by 8 ha within the agricultural area (or freehold area) and is shown in Figure 2. This additional 8 ha has been surveyed and assessed by OPR and is included in the final loss calculations for this proposal.

The main characteristics of the proposal are summarised in Table 1 below. A detailed description of the proposal is provided in Section 3 of the PER (OPR, August 2010).

Table 1: Summary of Key Proposal Characteristics

Element	**Description**
Construction period	Approximately 36 months.
Throughput	45 Million tonnes per annum of iron ore.
Railway length	Approximately 570 kilometres. Includes: • 530 kilometre main line from North West Coastal Highway to Jack Hills including rail loop; • 15 kilometre Weld Range spur line including rail loop; and • 20 kilometre Mullewa spur line.
Total railway operation disturbance width	No more than 80 metres.
Total disturbance area (construction)	No more than 7008 hectares.
Total disturbance area (operation)	No more than 5600 hectares.
Total native vegetation to be cleared in: • agricultural area; and • pastoral area.	 No more than 108 hectares. No more than 5900 hectares.
Construction elements	• access roads; • borrow pits; • turkeys nests; • ballast stockpiles at a construction depot; • approximately 200 groundwater construction bores, 3.5 gigalitres of water for construction over three years; • up to 6 accommodation camps; • communication towers; • rail welding depot; • sleeper plant; • lay down areas; and • up to three ballast quarries, outside the Special Act Corridor.

Element	Description
Supporting facilities and infrastructure	Up to 2 accommodation camps; communication towers; workshops and lay down areas. Optic fibre cable and water pipeline. Road/rail crossings, rail sidings and bridges over water courses.
North West Coastal Highway Deviation	Realignment of the North West Coastal Highway for 3.5 kilometres and Chapman Valley Roads and inclusion of bridges for grade separation of train and vehicular traffic.
Train Operations	Up to 18 train movements per day with two standard gauge locomotives.
Crown Reserve 16200	Up to 2.5 hectares to be cleared.
Proposed Woolgorong Conservation Park	Up to 175 hectares to be cleared.
Proposed Twin Peaks Conservation Park	Up to 290 hectares to be cleared.

The potential impacts of the proposal initially predicted by the proponent in the PER document (August 2010) and their proposed management are summarised in Table ES 2 in the Executive Summary of the proponent's document.

3. Key environmental factors and principles

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for Environment on the key environmental factors relevant to the proposal and the conditions and procedures, if any, to which the proposal should be subject. In addition, the EPA may make recommendations as it sees fit.

The identification process for the key factors selected for detailed evaluation in this report is summarised in Appendix 3. The reader is referred to Appendix 3 for the evaluation of factors not discussed below. A number of these factors, such as visual amenity, are relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation.

It is the EPA's opinion that the following key environmental factors for the proposal require detailed evaluation in this report:

(a) Vegetation and flora;

(b) Fauna and fauna habitat; and

(c) Conservation managed lands;

(d) Surface water hydrology; and

(e) Noise.

The above key factors were identified from the EPA's consideration and review of all environmental factors generated from the PER document and the submissions received, in conjunction with the proposal characteristics.

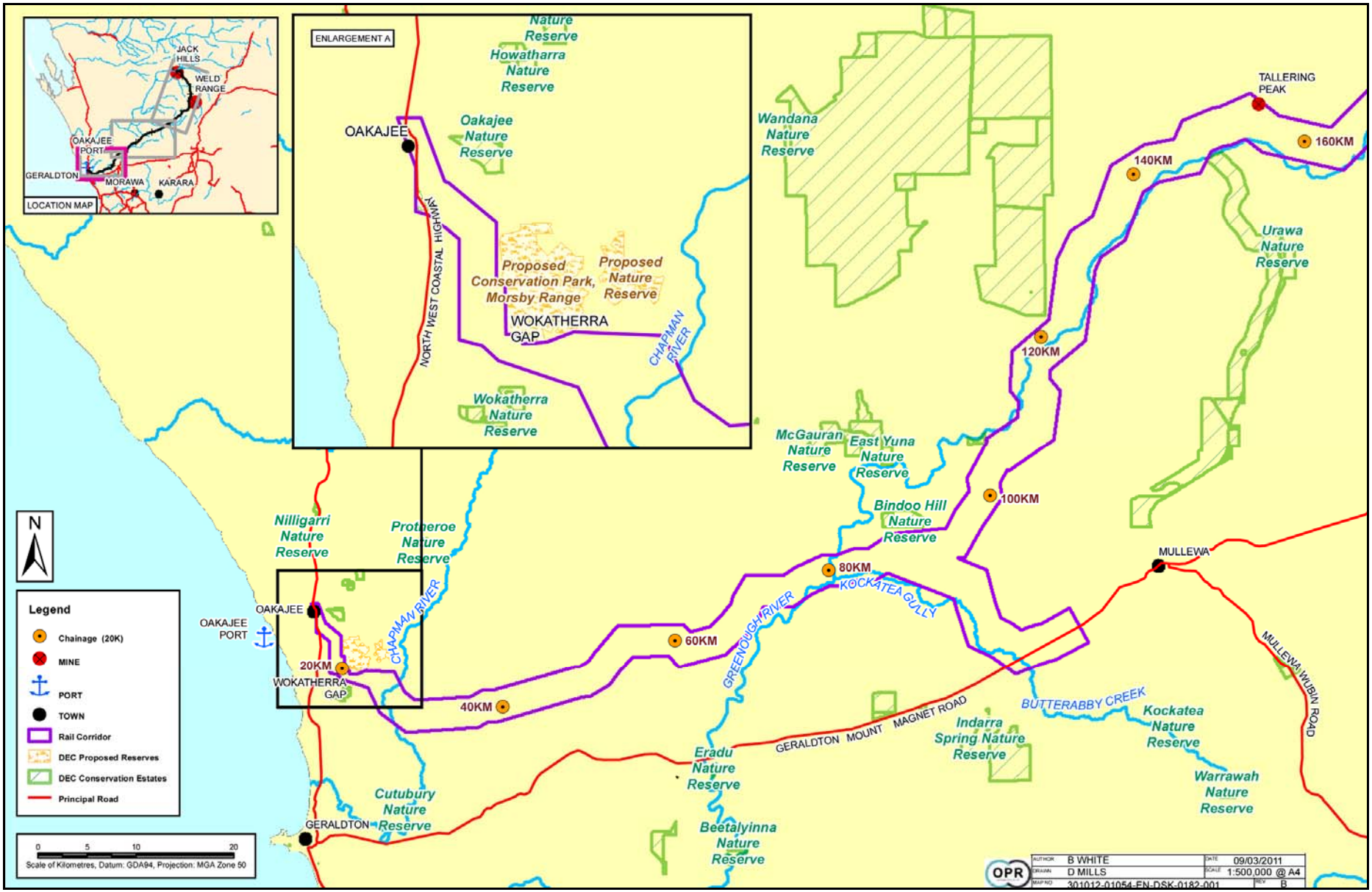

Figure 1a: Location of proposal showing Rail Corridor

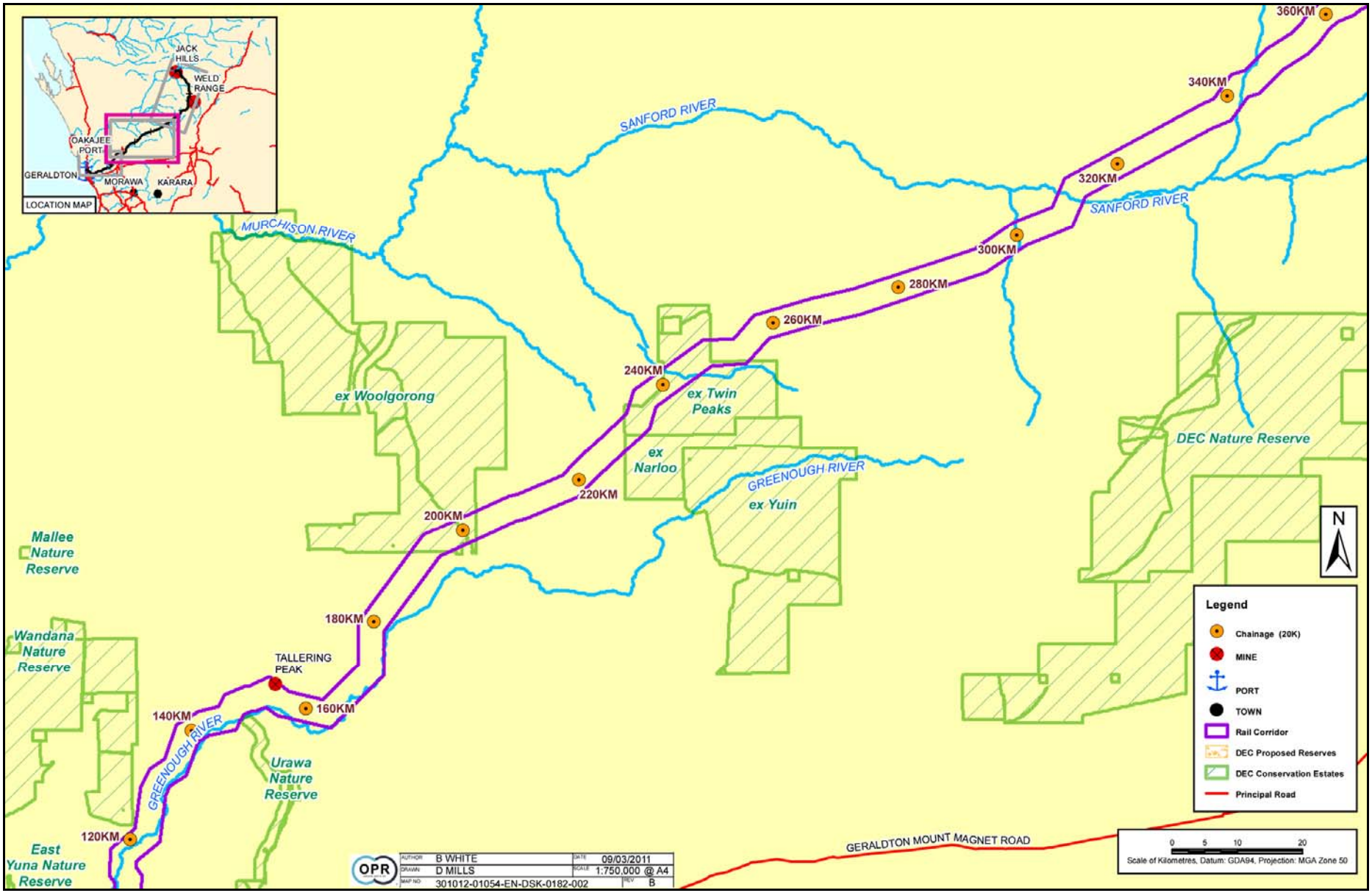

Figure 1b: Location of proposal showing Rail Corridor

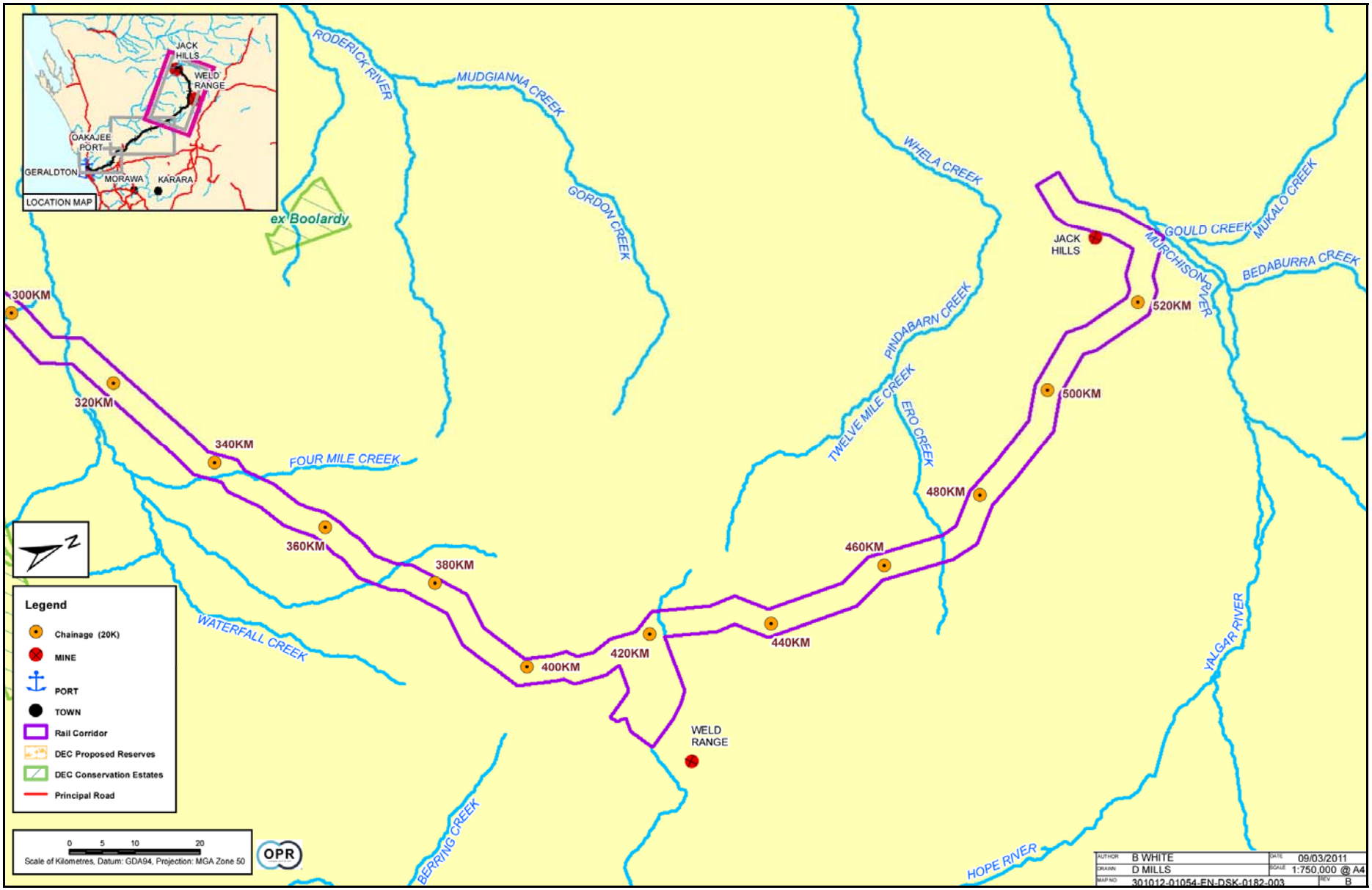

Figure 1c: Location of proposal showing Rail Corridor

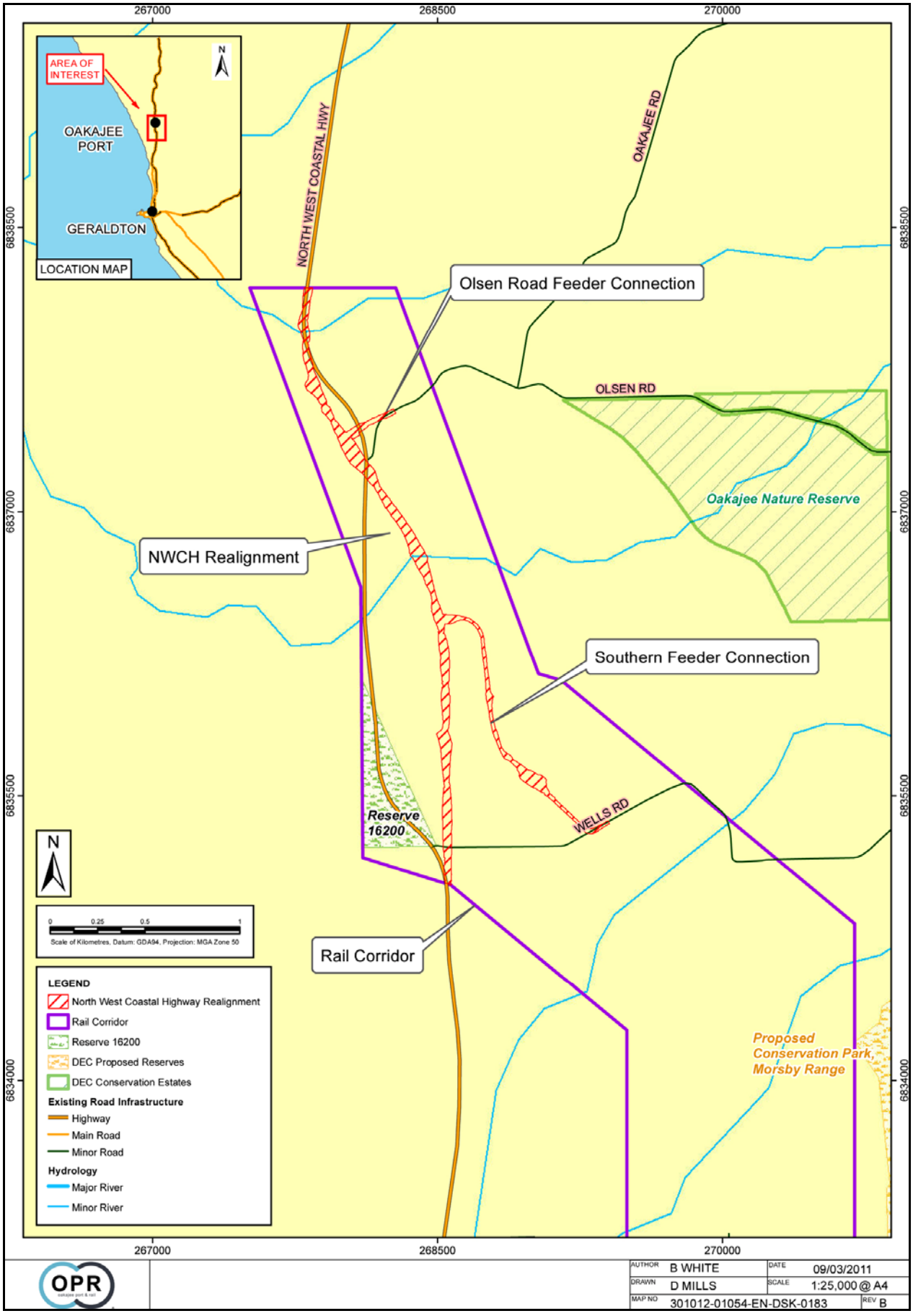

Figure 2: Location of North West Coastal Highway Deviation

Details on the key environmental factors and their assessment are contained in Sections 3.1 - 3.5. 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.

The following principles were considered by the EPA in relation to the proposal:

(a) The precautionary principle;

(b) The principle of the conservation of biological diversity and ecological integrity; and

(c) The principle of intergenerational equity.

3.1 Vegetation and flora

Description

The direct threats and impacts to vegetation and flora from the proposal relate to the removal of 6008ha of native vegetation. In total, 5900ha and 108ha are proposed to be removed from the pastoral and agricultural areas respectively.

Vegetation and flora surveys were conducted during the period of April 2009 until March 2010, involving six survey periods over two phases (quadrat and transect based surveys). The study area of the surveys comprises a 4km (through pastoral land) and 3.2km (through agricultural land) wide corridor. The corridor extends approximately 530km from the western boundary of Reserve 16200 near North West Coastal Highway to the Jack Hills mine in the north-east, and includes a 21 km spur to connect to the existing WestNet (Mullewa) mine and a 10-15 km spur to the Weld Range mine.

The study area crosses three IBRA bioregions, the Geraldton Sandplains, Murchison and Yalgoo bioregions. The Geraldton Sandplains bioregion occurs within the agricultural area, while the Murchison area is well known for the dominance of mulga woodlands (OPR, 2010a). Before the field surveys were commenced, searches of various government databases were undertaken to determine vegetation communities and flora species of conservation significance previously recorded in or around the study area.

Vegetation

Database searches found that no federally or state listed Threatened Ecological Communities (TEC) have been found to occur in the study area. Four Priority Ecological Communities (PEC) were identified through database searches and were recorded in the study area, these are described in Table 2 below:

Table 2: Priority Ecological Communities recorded in the study area

PEC Community	Description	Priority
Jack Hills Vegetation Complexes	Banded Ironstone Formation. No description available.	Priority 1
Moresby Range Vegetation Association	Plant assemblages of the Moresby Range system; includes the *Melaleuca megacephala* and *Hakea pycnoneura* thicket on stony slopes, *Verticordia dominated* low heath and *Allocasuarina campestris* and *Melaleuca uncinata* thicket on superficial laterite, on Moresby Range.	Priority 1
Tallering Peak Vegetation Complexes	Tallering Peak in the northwest is a massif of banded ironstone and jaspilite, with outcropping masses or rock along the spine. Vegetation is sparse and includes shrubs of only 1.2 m of *Acacia quadrimarginea*, *Acacia ?coolgardiensis*, *Eremophila leucophylla*, *Thryptomene johnsonii*, a small Baeckea sp. or *Thryptomene* sp. and *Ptilotus obovatus*.	Priority 1
Weld Range Vegetation Complexes	Banded Ironstone Formation. No description available.	Priority 1

Approximately 25% of the Oakajee Rail development traverses through the agricultural area described in the EPA's Position Statement No. 2, *Environmental Protection of Native Vegetation in Western Australia* (Position Statement 2) and will potentially remove 108ha of native vegetation from the area.

Position Statement 2 considers the "threshold level" below which species loss appears to accelerate exponentially at an ecosystem level is at a level of 30% of the pre-clearing extent of the vegetation type. A level of 10% or less of the original extent is regarded as being endangered. Using Beard vegetation mapping it was identified that within the study area there are twelve Beard vegetation associations with less than 30% of their pre-European extent remaining, all of which occur in the agricultural area of land. Of these vegetation associations six are proposed to be impacted by the proposal, with the predicted impact estimated at:
:

- Beard Association 353 (e6Mr eaSi) – 11.5ha (< 10% pre-European extent remaining, i.e. Endangered);
- 435 (a33Sc) – 3.64 ha (< 30% but > 10% pre-European extent remaining, i.e. Vulnerable);
- 35 (e6Mr a19Si) – 10.35 ha (Vulnerable);
- 675 (mhSc) – 12.88 ha (Vulnerable);
- 408 (x2SZc) – 1.1 ha (Vulnerable);
- 380 (x3SZc) – 18.8 ha (Vulnerable); and,
- 372 (x3SZc/acSc) – 7.4 ha (Vulnerable).

Table 3 below describes the extent of the above Beard vegetation associations in WA and Geraldton Sandplains IBRA region:

Table 3: Extent of vulnerable/endangered Beard Associations remaining

Beard Association	North West Coastal Hwy Impact (ha)	Total Proposed Impact (ha)	% Remaining IBRA Region	% Remaining WA
35	4.65	10.35	17%	11%
675	2.6	12.88	27%	21%
353	0	11.5	8%	8%
372	0	7.4	11%	39%
380	0	18.8	10%	61%
408	0	1.1	13%	46%

Mulga vegetation communities

The name Mulga denotes a vegetation type that is dominated by species such as *Acacia aneura* and its close relatives. The majority of the study area lies within the Murchison bioregion, mulga vegetation are widespread throughout the Murchison bioregion. Mulga communities are described as repositories of significant productivity and biodiversity and are considered resource hotspots because of their ability to capture retain and cycle precious sediments, nutrients and water (DEC, 2009). Mulga communities are considered to be dependent on surface water flow and susceptible to alterations in surface water hydrology. Impacts to vegetation caused by alterations to surface water hydrology as a result of the proposal are further discussed in section 3.4 of this report.

Flora

A total of 1015 flora taxa were recorded in the study area as a result of survey work undertaken. Database searches identified ten flora species listed under the EPBC Act as potentially occurring in the study area, with two of these species recorded during field surveys (*Caladenia hoffmanii* (Endangered) and *Eucalyptus blaxellii* (Vulnerable)). Twelve species of Declared Rare Flora (DRF) were identified by database searches as potentially occurring in the study area with one (*C. hoffmanii*) recorded during OPR's field surveys. DRF species *Drummondita ericoides* (also listed under the EPBC Act as Endangered) and *Philotheca wonganensis* have been previously recorded in the study area according to DEC records. From the 123 Priority flora considered to potentially occur in the study area fifty seven were recorded (ten Priority 1; seven Priority 2; thirty one Priority 3; and nine Priority 4) during field surveys conducted on behalf of OPR (including EPBC Act listed *Eucalyptus blaxellii* which is a Priority 4 flora species according to DEC).

Submissions

Key issues raised in submissions focused on:

- concerns that vegetation fragmentation and loss of high quality vegetation within the agricultural area would be a significant issue;
- concern that rehabilitation and revegetation works proposed should include locally endemic and drought resistant species;

- monitoring of closure and rehabilitation to meet criteria agreed with by DEC, particularly for areas adjacent significant flora populations and DEC managed lands;
- concerns regarding weed control and hygiene for construction and ongoing maintenance activities;
- erosion and sedimentation caused by alterations to surface water flows causing impacts to vegetation;
- delineation of a direct and indirect footprint for impacts to flora and vegetation;
- the requirement for monitoring of vegetation health and condition program in regard to indirect impacts to vegetation;

Assessment

The EPA's environmental objectives for this factor are to:

- maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through avoidance or management of adverse impacts and the improvement of knowledge; and
- to protect the environmental values of areas identified as having significant environmental attributes.

From the vegetation associations and communities identified through OPR surveys, none is considered to be restricted to the study area. The EPA notes that through OPR's surveying of the study area and subsequent modifications to the proposed construction corridor there has been a reduction in impacts to restricted vegetation associations within the agricultural area since the release of the PER and response to submissions. A comparison of the impacts to restricted vegetation communities and associations within the agricultural area of the proposal described before release of the PER and during response to submissions are summarised in Table 4 below. The EPA has noted that a key design component of the proposal which minimises the loss to vegetation is the avoidance of impacts to all Threatened and Priority Ecological Communities (TECs and PECs) through the entire construction corridor. OPR have also made a commitment to maintain a 50 metre buffer between all ground disturbance and all TECs and PECs.

Table 4: Reductions in impacts to restricted vegetation in the agricultural area

	Impacts to Threatened and Priority Ecological Communities	**Loss of Vegetation association < 10% pre-European extent remaining - Endangered**	**Loss of Vegetation association < 30% but > 10% pre-European extent remaining - Vulnerable**
Impact described prior to PER	0	**20.3** hectares of association 353 (e6MreaSi)	**94.6** hectare loss to 6 vegetation associations in this category
Impact described in response to submissions	0	**11.5** hectares of association 353 (e6MreaSi)	**54.2** hectares loss to 6 vegetation associations in this category

Position Statement 2 does not support any further reduction in native vegetation through the agricultural area of Western Australia for agricultural purposes. However the EPA notes that this proposal is a major public infrastructure project and the EPA is satisfied that OPR has demonstrated it has minimised clearing within the agricultural area and demonstrated consideration for Position Statement 2. All supporting infrastructure located within the agricultural area has been located to avoid all native vegetation, and OPR has committed to limiting the loss of native vegetation within the agricultural area to a maximum 108ha.

The EPA notes that OPR has also made reductions to previously predicted impacts to conservation rare and priority flora species that occur within the agricultural and pastoral areas of the proposal. There is a commitment in place to avoid the direct loss to all declared rare, undescribed and Priority 1 and 2 flora species within the entire construction corridor (agricultural and pastoral). There remains however, some residual loss to fourteen species of Priority 3 and one species of Priority 4 flora. This impact is well understood and quantified (displayed in table 5 below) to ensure the impacts to these species are not considered locally or regionally significant.

Table 5: Impacts of proposal on Priority Flora

Conservation Status	Taxa	No. plants to be impacted	Total loss of individual plants	% impact to taxa
Priority 3	*Thryptomene sp. Wandana (M.E. Trudgen MET 22016)*	20	747	2.7
Priority 3	*Acacia speckii*	3	1338	0.2
Priority 3	*Dodonaea amplisemina*	1	1121	0.1
Priority 3	*Eremophila muelleriana*	22	593	3.7
Priority 3	*Euphorbia sarcostemmoides*	2	?	?
Priority 3	*Gastrolobium rotundifolium*	1	387	0.3
Priority 3	*Grevillea stenostachya*	18	654	2.8
Priority 3	*Grevillea triloba*	788	15130	5.2
Priority 3	*Hemigenia tysonii*	101	7579	1.3
Priority 3	*Hemigenia virescens*	51	2573	2
Priority 3	*Petrophile pauciflora*	3	429	0.7
Priority 3	*Prostanthera petrophila*	39	1606	2.4
Priority 3	*Ptilotus beardii*	269	3798	7.1
Priority 3	*Thryptomene sp. Moresby Range (A.S. George 14873)*	10	1834	0.5
Priority 4	*Verticordia penicillaris*	128	5337	2.4

The EPA has recommended condition 6 that prescribes the avoidance of all declared rare and undescribed flora, TECs and PECs by a minimum of 50 metres, and all Priority 1 and 2 flora species by a minimum of 20 metres. OPR is also required to submit final rail alignments and locations of supporting infrastructure prior to construction confirming compliance with the above requirement.

The EPA has considered OPR's commitment to ensure indirect impacts from the proposal will be restricted to within the proposed 100 metre construction corridor. OPR has developed a draft vegetation monitoring program which includes triggers and actions regarding changes in:

- percentage of weed cover;
- density of sheet flow dependant vegetation;
- occurrence of erosion and sedimentation; and
- species richness or diversity.

To address the indirect impacts of the proposal on vegetation and flora, including important sheetflow dependant vegetation of the Murchison region, the EPA has recommended condition 7. Condition 7 ensures the railway is designed, constructed and operated such that indirect impacts do not cause the loss of significant flora and vegetation including Mulga communities beyond 50 metres either side of the rail centreline during operations.

The EPA has also recommended condition 8 which prescribes specific actions to protect vegetation and flora from the introduction and spread of weeds and requires OPR to undertake weed management to ensure that no new species of weeds are introduced into the proposal area as a result of implementation of the proposal.

With regard to the residual impacts of the proposal after the above mitigation measures have been implemented, such as the loss of restricted vegetation associations and Priority flora described above, the EPA has considered OPR's offset strategy which aims to mitigate these residual impacts on environmental values. As part of its offsets strategy OPR has proposed to implement four offsite mitigation projects involving the acquisition of land to include:

- a minimum 23 ha of vegetation representative of Beard association 353 (of which 11.5 ha is being impacted by the proposal) within the agricultural area;
- a minimum 101.2 ha of two or more of the vulnerable vegetation associations affected by the proposal within the agricultural area, at least including Beard associations 372 and 380 which are presently only just above the 10% threshold from being Endangered; and
- land within the pastoral area which contains known populations of Priority 3 flora affected by the proposal.

The EPA notes that this approach will provide long term net environmental benefits. The EPA has acknowledged the offset strategy as part of the proposal, and has recommended condition 15 which requires the proposed offset strategy to be implemented.

Summary

Having particular regard to the modifications to the proposal which have reduced impacts on vulnerable vegetation associations, Priority flora and PECs, and the EPA's recommended conditions which include:

- a requirement for the implementation of the proponent's offset document, *OPR Rail Development State Offset Strategy* prior to operation of the proposal;
- a requirement that there be no impacts to declared rare and undescribed flora species, Priority 1 and Priority 2 flora species and all TEC and PECs;
- an upper limit on the number of Priority 3 and Priority 4 flora species that may be impacted by the proposal; and
- an upper limit on the area of vegetation that may be impacted directly by the proposal in the agricultural (108ha) and pastoral (5900ha) land areas;
- a condition requiring a monitoring of vegetation health program which ensures that indirect impacts to significant vegetation will be maintained within the agreed rail construction corridor.

it is the EPA's determination that the proposal can be managed to meet the EPA's environmental objectives for this factor provided that the EPA's recommended conditions are imposed by the Minister for Environment.

3.2 Fauna habitat

Description

Potential threats to fauna include the direct loss of habitat through clearing of native vegetation for construction of the rail corridor and supporting infrastructure, and the fragmentation of populations and habitat caused by the linear nature of the rail structure.

Based on results of the desktop studies and Literature Reviews undertaken by OPR 33 conservation significant species were found to have the potential to occur in the Oakajee Rail study area. This comprised five EPBC Act listed Migratory birds and ten other bird species, five reptile and one mammal species of conservation significance.

Field surveys identified three main fauna habitats in the agricultural land area (eucalypt woodland; eucalypt male; & heath) and six within the pastoral land area (mulga woodland; river and halophyte vegetation; mixed wattle scrub; sandy or stony plain; granite outctrops; & rocky ranges and hillslopes).

Surveys identified four species considered to be of conservation significance to occur within the study area:

- *Egernia stokesii badia* – black form of the Western Spiny-tailed Skink – Endangered under *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act); Schedule 1 of *Wildlife Conservation Act 1950* (WC Act);
- *Falco peregrines* – Peregrine Falcon – WC Act Schedule 4;
- *Cyclodomorphus branchialis* – Gilled Slender Blue-Tongue – WC Act Schedule 1;
- *Lerista yuna* – Yuna Broad-striped Lerista – WC Act Schedule 4

Suitable nesting habitat for the Peregrine Falcon was found in ranges and rocky breakaways of the study area and a large portion of the study area is considered

suitable hunting ground. Peregrine Falcons have frequently been recorded in the surrounding area (Ecologia 2010e).

OPR has surveyed and identified numerous occurrences of populations of the Western Spiny-tailed Skink and potential rocky skink habitat throughout the study area. Areas of rocky skink habitat are considered to be granite boulder piles in stony hills and fractured granite outcrops containing deep horizontal rocky crevices, suitable for habitation by the species (Ecologia, 2010e). Areas of "broader" habitat were also described by OPR and were derived by looking at aerial maps and outlining the extent of outcropping beyond what was surveyed on the ground and determined to be rocky skink habitat.

Five species considered to be conservation significant were considered likely to occur in the study area:

- *Leipoa ocellata* – Malleefowl – vulnerable under EPBC Act; Schedule 1 of WC Act;
- *Calyptorhynchus latirostris* – Carnaby's Black Cockatoo - Endangered under EPBC Act; Schedule 1 of WC Act;
- *Acanthiza iredalei iredalei* – Slender-billed Thornbill – Vulnerable under the EPBC Act;
- *Morelia spilota imbricate* – Western Carpet Python – WC Act Schedule 4; and
- *Lophochroa leadbeateri* – Major Mitchell's Cockatoo – WC Act Schedule 4

The Malleefowl is found in semi-arid to arid shrublands and low woodlands, especially those dominated by mallee and/or acacias. It is considered that Malleefowl chicks are capable of dispersing widely and that while Malleefowl occur in a wide range of habitat types, habitat critical to the survival of the species is known only in broad terms (Benshemesh, 2000). Surveys of the study area have identified two vegetation types considered to be preferred habitat types of the Malleefowl within the study area, described by OPR as '*Acacia ramulosa* var. *linophylla* and *Acacia ramulosa* var. open tall shrubland' (Yy1) and '*Acacia eremaea* sparse tall shrubland, over mixed Chenopod spp. Low shrubland' (Yf5). The study area contains 4922ha of Yy1 and 8049ha of Yf5, indicating that there is 13971ha of potential Mallefowl habitat within the study area.

Carnaby's Black Cockatoos have been found to feed on particular vegetation types within the region, and within the study area. The main threat to the species as a result of the proposal is the loss of feeding habitat. Further habitat assessments were conducted following the public review period of the PER and OPR has identified the potential loss of Carnaby's foraging habitat as 23.4ha.

Five vegetation types within the proposed SAC were considered to provide potentially suitable habitat for Slender-billed Thornbills. The areas identified as potential habitat to be impacted by construction and ground disturbance were subject to further detailed survey. Results of this study have identified one area of habitat that will be impacted by the proposal. The area forms part of the Weld Range Gap claypan with the total area of impact being estimated to be 30.6ha.

Submissions
Concerns raised in submissions focused on:

- that potential fencing of the rail may impact fauna movement and migration and the need to ensure strategies developed in consultation with DEC for reducing entrapment are utilised in areas where the rail is to be fenced;
- the need for conservation offset measures to mitigate the loss of threatened species habitat through loss of vegetation;
- clarification of proposed impacts to Malleefowl mounds;
- adequacy of quantification of impacts to Malleefowl habitat;
- impacts of the construction corridor on populations of the Western Spiny-tailed Skink and its areas of habitat; and
- adequacy of quantification and qualification of Carnaby's Black Cockatoo; Slender-billed Thornbill habitat proposed to be impacted.

Assessment

The EPA's environmental objectives for this factor are to:

- protect Specially Protected (Threatened) and Priority Fauna and their habitats, consistent with the provisions of the *Wildlife Conservation Act 1950*; and
- maintain the abundance, species diversity, geographic distribution and productivity of fauna at species and ecosystem levels through appropriate research including sampling, identification and documentation.

The EPA notes the linear nature of the proposal and the percentage of loss of habitat for the Yuna Broad-blazed slider has been quantified by OPR at less than 0.5%. The EPA therefore considers that regional populations of this species will not be significantly impacted by the proposal.

The proposal traverses through two areas which have been described by OPR as "broader" Western Spiny-tailed Skink habitat, resulting in the loss of up to 180ha of this type of "broader" habitat. There will be no loss however, to rocky skink habitat which as mentioned above consists of rockpiles where populations have been identified by OPR. The EPA notes that impact in this particular area of "broader" habitat is unavoidable within the constraints of the proposed SAC as it encompasses almost the entire width of the corridor. The EPA also notes that the preferred alignment has been designed to avoid any rocky skink habitat, including but not limited to those found to contain individuals of the species. OPR has committed to all construction activities, including any clearing and disturbance, avoiding all rocky skink habitat, by a minimum 50 metre buffer with the exception of two locations, displayed in Figures 3 and 4, whereby ground disturbance will not occur within 20 metres.

Notwithstanding the above, the rail dissects a large section of contiguous "broader" habitat, which has the potential to fragment dispersal and populations of the skink. The EPA notes that OPR has committed to installing underpasses every 100m where rocky skink habitats occur within 100m of the rail alignment.

This management measure may assist with dispersal of the skink between areas of granite outcrops.

The EPA has recommended condition 9 which requires that prior to ground disturbance all construction areas are to be inspected by a suitably qualified zoologist for the presence of skink habitat. The condition also requires that all construction and operation activities avoid rocky skink habitat by a minimum of 50 metres and thus ensures there is no loss or disturbance to areas identified as rocky skink habitat within the proposed SAC.

An assessment of potential habitat within the study area indicated that of the 13971ha of potential Malleefowl habitat (consisting of vegetation units Yy1 and Yf5) that occur within the proposed SAC a total of 267ha is proposed to be impacted by the construction corridor. The EPA notes that although there will be a loss of potential Malleefowl habitat from vegetation clearing required for the construction corridor, this impact is considered largely unavoidable within the constraints of the proposed SAC as the area covered by these vegetation units encompasses a large quantity of the width of the proposed SAC. The EPA also notes that there will be no impact to a large portion of this potential habitat and that there will be no impact to any Malleefowl mounds identified.

The EPA has recommended condition 9 which requires that prior to undertaking any clearing or ground disturbing activities all construction areas shall be inspected by a suitably qualified zoologist for the presence of *Leipoa ocellata* (Malleefowl) mounds. The condition also prescribes that there will be no ground disturbance or unauthorised access within 50 metres of any Malleefowl mounds identified prior to construction or ground disturbing activities.

The EPA notes the reduction of construction widths (from 200 to 100m) in the agricultural land area has greatly reduced the extent of disturbance of vegetation originally identified in the agricultural area as representing potential Carnaby's Black Cockatoo habitat. No breeding or roosting habitat for Carnaby's Black Cockatoo has been identified in the proposed SAC. Additionally, habitat considered suitable for feeding and foraging by OPR occurs beyond the proposal footprint. The EPA also notes that OPR is proposing to mitigate the loss of foraging habitat through its offset strategy to mitigate the residual impacts of the rail development on environmental values such as the loss of habitat for Carnaby's Black Cockatoo. The strategy includes the acquisition of land parcels which are proposed to include vegetation suitable for foraging by Carnaby's Black Cockatoo. The strategy also includes funding for a research project aimed at gaining a better understanding of the food resource base for Carnaby's Black Cockatoo in the Geraldton Hills subregion of the Geraldton Sandplains bioregion. The EPA has considered the quantity of habitat to be impacted, the representation of this habitat beyond the proposal area and the proposed offsite mitigation measures for the residual impacts of the proposal on this species. The EPA has determined that implementation of the proposal will not have a significant impact on Carnaby's Black Cockatoo.

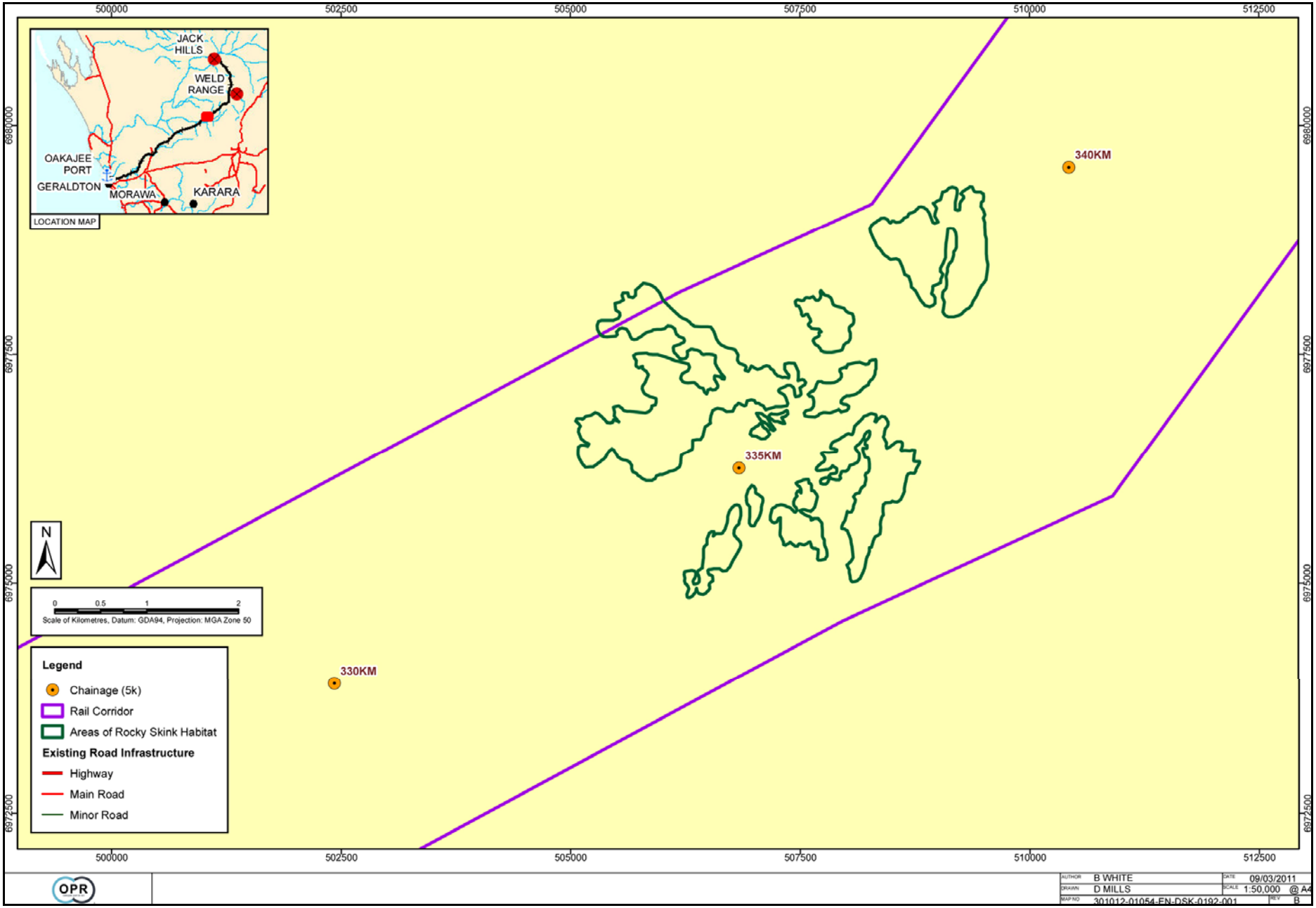

Figure 3: Rocky Skink Habitat – Area A

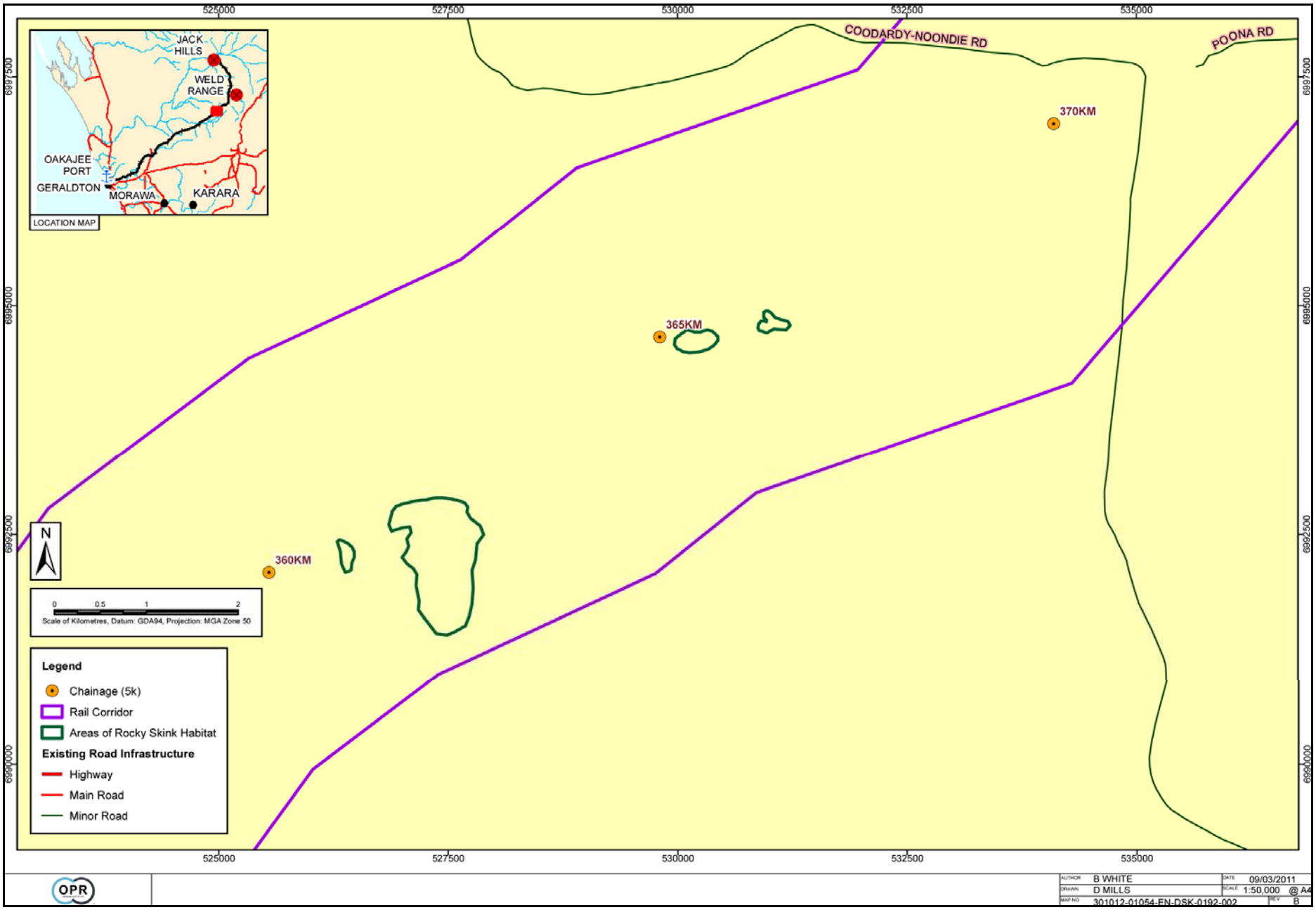

Figure 4: Rocky Skink Habitat – Area B

The EPA notes that although the project is proposed to directly impact 30.6ha of Slender-billed Thornbill habitat, the impact to this area of land is difficult to avoid due to the existing topography of the area coupled with the constraints of the proposed SAC. Impacts will be confined to the 100 metre construction corridor and it is equally important to note that the corridor has been aligned to be predominantly parallel to an existing road (Beringarra Cue Road) that already cuts through this area of claypan. Vegetation considered potential habitat for the species within the Weld Range Gap claypan is described as being 3500ha in area, within which 30.6ha are proposed to be impacted. Additionally the EPA notes that the impact of fragmentation caused by the linear structure of the rail corridor is minimised due to the existence and proximity of Beringarra Cue Road adjacent. Therefore the EPA does not consider the proposal to represent a significant impact to the Slender-billed Thornbill at either the local or regional scale.

The EPA considers that OPR has proposed an offset strategy that mitigates the residual impacts of the rail development on environmental values such as the loss of habitat for Carnaby's Black Cockatoo, Western Spiny-tailed Skink, Malleefowl and the Slender-billed Thornbill. Proposed offset measures include:

- acquisition of land within the Moresby Range/Chapman Valley area including remnant habitat for Carnaby's Black Cockatoo;
- acquisition of at least 950ha of land within the pastoral area which contains suitable habitat for the Western Spiny-tailed Skink and Malleefowl;
- rehabilitation program of land acquired for conservation to increase habitat for Carnaby's Black Cockatoo; and
- contributions to relevant research and recovery plan programs for the Carnaby's Black Cockatoo and Western Spiny-tailed Skink.

The EPA is satisfied that this approach provides long term net environmental benefits and has recommended its implementation with condition 15 of the recommended conditions.

The EPA has also considered impacts to fauna caused by open trenches associated with construction. To ensure this impact is adequately managed the EPA has recommended condition 10 which requires that trenches are cleared of trapped fauna by fauna-rescue personnel at least twice daily.

The EPA has considered the potential impacts to conservation significant fauna within the proposal area through the loss of vegetation considered to be potential habitat. There will be a loss of habitat for Carnaby's Black Cockatoo, Slender-billed Thornbill, Malleefowl and the Yuna Broad-blazed Slider through implementation of the proposal. However, the EPA considers that the residual impacts to these species and their habitat to be unavoidable within the constraints of the proposed SAC, and notes OPR's efforts to minimise these impacts. The EPA does not deem impacts to conservation significant fauna caused by the proposal to be significant due to the representation of applicable habitats beyond the proposal footprint. The EPA is satisfied that the residual impacts to the above species have been adequately mitigated through OPR's proposed offset strategy.

Impacts to the Western Spiny-tailed Skink habitat have been largely avoided, and the fragmentation of populations of the species at two locations along the rail corridor is considered to be unavoidable within the constraints of the proposed SAC. The EPA notes OPR have proposed to use culverts every 100min areas adjacent to skink habitat to assist with dispersal and reduce fragmentation.

Conditions proposed by the EPA will ensure that impacts to fauna and fauna habitat will be kept to within the proposed construction corridor. Construction is required to avoid all Malleefowl mounds and skink habitat by 50 metres, while the remaining direct loss of vegetation comprising fauna habitat has been mitigated by OPR's proposed offset strategy. Indirect impacts to potential fauna habitat is expected to be managed through the EPA's recommended condition 7 (discussed in further detail in section 3.4 below), which requires OPR to construct and operate the railway to ensure that indirect impacts to vegetation from surface water diversion, erosion and sedimentation do not cause the loss of vegetation beyond the proposal footprint.

The EPA is satisfied that OPR has demonstrated avoidance where possible and reduced impacts of the proposal on fauna and fauna habitat, and that through implementation of the proposed offsets strategy, residual impacts can be adequately mitigated. The EPA concludes that through the imposition of recommended conditions which require implementation of OPR's proposed offset strategy and which address direct impacts to fauna habitat and fauna entering the construction area and indirect impacts to fauna habitat, the proposal can be implemented to meet the EPA's objectives for this factor.

Summary

Having particular regard to the:

a) reduction of construction widths through the agricultural land area reducing the extent of disturbance to vegetation identified as representing potential Carnaby's Black Cockatoo habitat;
b) proximity of the construction corridor to Berringarra Cue Road when impacting the claypan area identified as Slender-billed Thornbill habitat;
c) proposed use of culverts through areas within 100m of Western Spiny-tailed Skink habitat to assist with dispersal and reduce population fragmentation; and
d) representation of Malleefowl, Yuna Broad-blazed Slider and Slender-billed Thornbill habitat beyond the proposal footprint both within and beyond the proposed SAC.
e) it is the EPA's determination that the proposal can be managed to meet the EPA's environmental objectives for this factor provided that the EPA's recommended conditions are imposed by the Minister for Environment.

it is the EPA's determination that the proposal can be managed to meet the EPA's environmental objectives for this factor provided that the EPA's recommended conditions are imposed requiring the proponent to:

- implement the offset measures relevant to the impacts on the proposed conservation reserves as set out in OPR's *Rail Development Offset Strategy* (January 2011), and as specified in recommended condition 15-1
- avoid any impacts to Maleefowl mounds or Western Spiny-tailed Skink habitat within 50m (this is reduced to 20m in two specified locations along the corridor as specified in condition 9;
- ensure that trenches are searched and cleared of trapped fauna by fauna-rescue personnel at least twice daily as specified in condition 10;
- implement a monitoring of vegetation health program which ensures that indirect impacts to significant vegetation will be maintained within the agreed rail operation corridor as specified in condition 7.

3.3 Conservation reserves

Description

The proposed SAC intersects four current or proposed conservation reserves. Woolgorong, Twin Peaks and Narloo are former pastoral leases which are now managed by DEC and proposed for reservation as Conservation Parks under the *Conservation and Land Management Act 1984*.

The proposal also intersects Crown Reserve 16200 at the western end of the proposed SAC which abuts the North West Coastal Highway. The reserve is vested in the Minister for Water for the purposes of water supply and conservation of flora and fauna. Although not a conservation reserve, this reserve was identified as a significant area in the GRFVS as it recorded vegetation in excellent condition, priority flora species and a high diversity of plant communities.

Table 6 below summarises the potential impacts of the proposal to the proposed and existing conservation reserves, as set out in the PER.

Table 6: Potential impacts on proposed and existing conservation reserves

Reserve	Reserve Purpose	Management Body	Potential impact	Area potentially impacted (ha)
16200	Water supply and conservation of flora and fauna	Minister for Water	The Proposal will require the Rail Corridor to pass through this reserve. The width of the Rail Corridor will be minimised through this area, as it will through all areas of native vegetation in the freehold area. No borrow areas will be located within this reserve.	Up to approximately 2.5 ha out of a total of 17.1 ha (up to 14.6%)
Woolgorong ex-pastoral station	Unoccupied Crown Land proposed for conservation purposes	DEC	The Proposal fully intersects these proposed reserves and therefore will require the Rail Corridor to pass through. Some borrow areas will need to be located within the proposed reserve due to large transport distances to the edge of the reserves.	Up to approximately 260 ha out of a total of 116,350 ha (up to 0.2%)
Twin Peaks ex-pastoral station				Up to approximately 350 ha out of a total of 27,250 ha (up to 1.3%)
Narloo ex-pastoral station			This proposed reserve boundary corner intersects with the Proposal Area. The Proposal may pass through this proposed reserve; although it will be avoided if practicable. Borrow areas will not be located within the proposed reserve.	Up to approximately 31 ha out of a total of 14,750 (up to 0.2%) but expected to be fully avoided (based on current Rail Corridor alignment).

Following the release of the PER, the direct impacts to the proposed Woolgorong and Twin Peaks Conservation Parks have been reduced to 175 and 290 ha respectively. OPR has also confirmed that the rail corridor will avoid the north western corner of the proposed Narloo Conservation Park and hence this reserve will not be impacted by the proposal. The impacts to Reserve 16200 will remain as 2.5 ha as OPR has advised that this impact is considered to be unavoidable. No borrow pits will be constructed within Crown Reserve 16200.

Additionally, through the Wokatherra gap, the proposed rail corridor will avoid the proposed Moresby Range Conservation Park and the Wokatherra Nature Reserve to the south.

Based on OPR's surveyed area, there will be no loss of declared rare, undescribed, Priority 1 or 2 flora species and no impacts to Threatened or Priority Ecological Communities within proposed or existing conservation estates. Additionally there will be no impacts to Western Spiny-tailed Skink within proposed or existing conservation estates.

OPR has committed to ensuring that the width of the construction corridor through these areas is no greater than 100 metres and confining indirect impacts caused by alterations to surface water hydrology to within the entire 100 metre wide rail construction corridor. The assessment and management of this factor is further discussed below in Section 3.4.

Submissions

The main points raised in submissions focused on:

- the avoidance of proposed and existing reserves through the Wokatherra Gap;
- the need to formalise management arrangements for ongoing and indirect impacts from the proposal on the proposed conservation parks; and
- the regional significance of flora and vegetation on Crown Reserve 16200.

The summary of, and detailed response, to issues raised in submissions is provided in electronic format (compact disk) in Appendix 5.

Assessment

The EPA's environmental objective for this factor is to ensure the conservation values, purpose and usage of existing and proposed conservation reserves and national parks are not compromised.

The EPA notes that OPR has reduced the extent of direct and indirect impacts to existing and proposed conservation reserves since the proposal was first referred to the EPA for assessment. In some locations impacts have been avoided through the identification or shifting of OPR's preferred rail alignment and corridor.

The EPA considers that the direct residual impacts to the proposed Woolgorong and Twin Peaks conservation parks and existing Crown Reserve 16200 as summarised above to be unavoidable. However, construction and ongoing indirect impacts from the operation of the rail corridor will need to be carefully managed in consultation with the DEC, as the land managers.

For the sections of the proposal that intersect with or near to the proposed Woolgorong, Twin Peaks and Narloo Conservation Parks, the DEC has recommended a management plan be prepared and implemented by OPR to address ongoing impacts and land management issues that have a bearing on the management of the proposed conservation parks. Matters to be addressed in the management plan include:

Feral animals - No feral animals are encouraged to enter or remain on the corridor through feeding, access to artificial water bodies or inadequate waste disposal practices.

Fire prevention and response - The proponent shall take all reasonable precautions against causing an outbreak of fire on the proposed SAC.

Borrow pits - Borrow pits and accommodation camps should not be established on DEC managed lands.

If borrow pits are established on DEC managed lands, specific borrow pit procedures should be developed to minimise any adverse environmental impacts, and to manage for potential longer term impacts. Potential issues include but are not limited to weeds, pathogens, flora, fauna, drainage, dust, erosion and rehabilitation.

Access - The proponent shall make access to the corridor land available to DEC personnel for management and access to the adjacent land managed by the DEC and accepts the legitimate right of DEC to undertake normal land management activities (including prescribed burning, feral animal control, wildfire suppression and road maintenance) on the adjacent DEC managed land.

Weeds and hygiene - No new species of weeds (environmental weeds) are introduced, no existing weed species (environmental weeds) are spread, no new plant pathogens are introduced and no existing plant pathogen are spread into or within the Corridor Land as a result of the proposal.

In view of the DEC's advice and OPR's response to this issue in its response to submissions (Appendix 5), the EPA is recommending conditions 11-1 and 11-2 which requires OPR to prepare and implement a Conservation Lands Management Plan in consultation with DEC. This Plan shall aim to protect the conservation values of the proposed Woolgorong, Twin Peaks and Narloo Conservation Parks for sections of the proposal which intersect or run adjacent to these parks and address the environmental issues set out above.

In addition to managing the ongoing residual impacts of the proposal, OPR has developed an environmental offsets strategy to mitigate the impacts of the proposal. As mentioned in section 3.1, the OPR's offsets strategy includes a number of direct and contributing offset projects (4 in total) aimed at addressing the residual impacts of the proposal on biodiversity conservation assets. OPR's Offset Proposal 3 (set out in Section 6 of the OPR Rail Development Offsets Strategy in Appendix 5 of this Report) is relevant to this factor.

This particular offset project aims to mitigate the direct impacts to the proposed Woolgorong and Twin Peaks Conservation Parks (465 ha in total) by acquiring a land parcel with similar or higher conservation value for addition to the conservation reserve system. OPR has committed to identify an area of land of at least 950 ha, which would be at least double in size to the area being impacted by the proposal.

With respect to indentifying a suitable land(s) to satisfy this objective, the EPA has noted and supports the DEC's advice on this particular offset project that OPR should target and focus on river and drainage systems, lakes and wetland chains that are poorly represented. While this does not necessarily provide for a 'like for like' offset outcome for the vegetation systems impacted by the proposal, the conservation value of these areas is considered to be relatively high and at least equivalent in value to those impacted by the rail. The DEC recommends that providing for acquisition of a similar area within the Yalgoo and/or Murchison bioregions taking into account poorly represented land systems would provide a better conservation outcome.

Once suitable lands have been identified in consultation with DEC and acquired, OPR has committed to undertaking works to address any existing threatening processes such as feral animals, grazing pressures, uncontrolled access and weed infestations, prior to handover to DEC for inclusion in the conservation estate. It will be important that this early management of acquired land by OPR does not result in significant land management liabilities for the DEC at or following transfer.

The EPA considers that OPR has adequately demonstrated that it has mitigated the impacts of the proposal on proposed and existing conservation reserves. Based on the DEC's advice, the EPA also considers that OPR's proposed offset measures for the residual impacts are appropriate and have been appropriately packaged in the context of the guidance provided in EPA Guidance Statement No. 19 – Environmental Offsets – Biodiversity (EPA, 2008).

The EPA has therefore recommended conditions which reflect OPR's commitments for mitigation. The objectives in relation to OPR's commitment to implement Offset Proposal 3, as set out in the OPR Rail Development Offset Strategy (January 2011) have been incorporated in EPA recommended condition 15-1.

Summary

Having particular regard to the:

a) residual impacts of the proposal on Crown Reserve 16000 and the proposed Woolgorong and Twin Peaks Conservation Parks, which have been demonstrated to be unavoidable;

b) the commitments made by OPR to manage the ongoing direct and indirect impacts during the operations phase; and

c) the environmental offset strategy proposed by OPR which includes measures to mitigate the residual impacts of the proposal on the proposed Conservation Parks,

it is the EPA's opinion that it is likely that the EPA's environmental objective for this factor can be achieved provided conditions are imposed requiring the proponent to:

- develop and implement a Conservation Lands Management Plan in consultation with DEC as set out in recommended conditions 11-1 and 11-2; and
- implement the offset measures relevant to the impacts on the proposed conservation reserves as set out in OPR's Rail Development Offset Strategy (January 2011), and as specified in recommended condition 15-1.

3.4 Surface water hydrology

Description

The major rivers and watercourses that are intercepted by the proposal include the Greenough and Murchison Rivers. In addition to these rivers there are numerous other tributaries and smaller creek systems within the landscape. The proposal area does not contain any wetlands of significance.

The risks to rivers and watercourses crossed by the rail can potentially include flow constriction or alteration, loss of riparian vegetation, sedimentation and the effects of backwaters and scouring due to poorly designed bridges and culverts. OPR has advised that nine bridges will be required which have the potential to impact the hydrology of watercourse ecosystems and riparian vegetation, some of which have been identified as important ecological corridors for localised fauna movements. The installation of culverts and bridges will assist with ensuring that downstream surface water flow is maintained. Bridges and culverts will need to be designed to ensure that stress on the surrounding vegetation from flooding or drainage shadow effects is minimised and that scour and erosion is reduced.

The health of Mulga associations in the project area is partly dependent on surface water flows, much of which is described as sheet flow. The construction of the rail and associated infrastructure also has the potential to interrupt sheet flow and impact Mulga communities, and potentially other sheet flow dependent vegetation downstream of the proposal.

The most significant threats of the proposal on Mulga associations are considered to be:

- water ponding upslope of the infrastructure;
- reduced sheet flow (water starving) down slope of the infrastructure;
- concentrated water flow through diversion infrastructure, with potential to cause erosion and subsequent deposition; and
- channel formation.

Submissions

The main points raised in submissions focused on:

- the need for firm commitments relating to the management of drainage;
- the risk of surface water ponding upstream of the railway due to inadequate drainage structures; and
- the extent of any drainage shadow on mulga associations will need to be determined and delineated.

The summary of, and detailed response, to issues raised in submissions is provided in electronic format (compact disk) in Appendix 5.

Assessment

The area considered for assessment of this factor is the proposed rail corridor, especially down slope of the railway formation, where it passes through watercourses (major rivers and creeks) and areas which experience sheet flow.

The EPA's environmental objectives for this factor are:

- to maintain the integrity, functions and environmental values of watercourses; and
- to maintain the quality and quantity of surface flow so that existing and potential uses, including ecosystem maintenance, are protected.

Sheet flow dependent vegetation

The construction and operation of the proposal has the potential to modify surface drainage patterns with consequent impacts on sheet flow dependent vegetation. This is an issue that will require attention for areas that support mulga communities and where sheet flows predominate on flat areas. Stands of mulga associations are common throughout the northern sectors of OPR's study area in the pastoral zone.

A critical issue is the distribution of water after it has passed through the railway formation. The extent of any impacts will depend on the engineering strategies which enable surface flows to pass under the rail line (eg. culverts) and measures to re-distribute flows downstream of the railway. The desired objective is to minimise the extent of any drainage shadow and for sheet flow to be restored as close to the railway as possible.

To minimise impacts OPR has, where possible, located the preferred alignment to avoid sheet flow dependent areas. In some cases, OPR's preferred alignment has been located on gently sloping ground where the drainage features are

more incised and predictable. Where it intersects these areas, OPR proposes to minimise impacts to Mulgas and other sheet flow dependent ecosystems primarily through the use of engineering controls (environmental culverts) along the rail line to minimise changes to surface water flows and restore sheet flow downstream of the railway formation. OPR's objective is to ensure that any sheet flow shadow effects are contained to within its 100 metre construction corridor. Outside this 100 metre corridor OPR, expects sheet flow to be re-established. As this construction corridor would have been previously cleared for construction, OPR predicts that there will be no additional impacts expected, except that it may impact on some rehabilitated vegetation in the construction corridor.

OPR's drainage management measures will include the installation of a combination of environmental culverts, interceptor banks, spoon drains and spreader mechanisms, as shown conceptually in Figure 2 of the OPR's Response to Public Submissions (Appendix 5). Based on information from other similar projects, OPR expects that culvert spacing at 50 metre intervals may be required in some locations.

OPR has advised that the exact spacing and size of culverts will be determined after further detailed assessments to identify locations of mulga associations and the characteristics and slope of each area along the alignment. Monitoring of surface water and contingency measures to ensure drainage structures and facilities are performing effectively are set out in OPR's preliminary Surface Water Management Plan (SWMP), which was included in the PER. This Plan would need to be further developed once the above investigations have been completed and the railway alignment is determined.

OPR has also prepared a monitoring plan (*Oakajee Mid-west Rail Vegetation Monitoring Program,* Ecological, November 2010) to monitor changes in surface water flows and the health of the sheet flow dependent vegetation, with a particular emphasis on Mulga communities. The monitoring plan is designed to provide information on the effectiveness of the proposed rail and engineering designs to manage surface water flows. It aims to provide an integrated approach using multi-temporal remote sensing analysis with supporting ground surveys and assessments to provide vegetation condition information across the areas considered to be potentially impacted by alterations to sheet flow. This will be used to detect any changes in vegetation condition and health which may require a management response. The objective of this monitoring plan is to demonstrate that all indirect impacts of the proposal are contained within the proposed 100 metre construction corridor as committed to by OPR. This plan is considered to be preliminary at this stage as it has yet to revised based on DEC's early advice to OPR and has not been informed by field assessments with the DEC which are scheduled to occur in the first half of 2011. This plan will need to be revised and finalised prior to construction.

The EPA considers that:

- minimising effects from the interruption of sheet flow remains a key issue for this proposal and will require further detailed investigations by OPR;

- following the determination of the final rail alignment and prior to construction OPR should work closely with the DEC on:
    - identifying areas along the proposed rail that support significant stands of mulga and other vegetation that depend on sheet flow and that will require specific drainage management;
    - the placement and sizing of culverts, and surface water distribution systems along the alignment and its set-up within the construction corridor. This is particularly important for sections of the proposal that passes through the DEC managed former pastoral leases Woolgorong, Twin Peaks and Narloo (all proposed for reservation as conservation parks); and
- the OPR's monitoring program for triggering management responses is based on plot based surveys of vegetation condition and health and is reviewed by DEC prior to its implementation.

Consistent with OPR's commitment, the EPA has recommended Condition 7-1 which ensures the railway is designed, constructed and operated such that surface water diversion and other indirect impacts from erosion and sedimentation do not cause the loss of significant flora and vegetation, including Mulga communities, 50 metres on each side of the railway formation. This condition does not specify the precise engineering measures to be implemented to achieve this outcome, as this is a matter for OPR to determine in conjunction with DEC based on the further investigations set out above.

Condition 7-2 would require OPR to demonstrate the above objective is met by monitoring vegetation health and condition at impact monitoring sites directly outside the 100 metre construction corridor and comparing survey results with monitoring from reference sites and pre-determined trigger levels. This will need to be done in response to relocatable plot-based surveys. The locations of impacts monitoring sites will need to be identified in consultation with DEC.

In the event the vegetation health and condition trigger levels are exceeded, recommended condition 7-3 requires OPR to implement contingency responses to ameliorate indirect impacts. Some potential contingency responses have already been identified by OPR in the preliminary SWMP and include measures such as monitoring, maintenance and repair of drainage structures under the railway embankment.

Water course crossings

As mentioned above, the design and construction of river and creek crossings have the potential to impact the hydrology of watercourses and riparian areas which have been identified as important fauna refuge and habitat.

Strategies to address the risk of the proposal impacting on rivers and riparian habitats include designing bridges such that they are perpendicular to watercourses and ensuring culverts are aligned with the direction of drainage lines. OPR will need to undertake further site-specific investigations with respect to water flows, gradients, stream bed and riparian vegetation at the detailed

design phase. This would need to be combined with hydrological modelling to determine the most appropriate culvert/bridge design and management to minimise flow constriction, risk of scour and backwaters.

The above technical information would be required as part of OPR's application to interfere with the beds and banks of watercourses (for the Greenough Rivers and tributaries) pursuant to the *Rights in Water and Irrigation Act,* which is administered by the Department of Water. In addition to addressing the interruption of surface water flows, OPR should also examine opportunities to minimise the 'footprint' and disturbance to riverbeds and riparian vegetation at watercourse crossings as part of this application process.

Where the proposal passes through the Wokatherra Gap, the EPA considers that indirect impacts to water courses and springs will need to be carefully managed to ensure that pre-development water flows are maintained.

All waterway crossings will be required to be implemented in accordance with conditions identified through the proponent's application to interfere with the beds and banks of watercourses pursuant to the *Rights in Water and Irrigation Act 1914*, which is administered by the Department of Water. Compliance with these requirements would ensure hydrology of riparian vegetation is not significantly impacted. Additionally a rehabilitation program should be developed and implemented to reinstate riparian areas disturbed during construction which will not be required during operation.

The EPA is satisfied that the Bed and Banks assessment process under the *RIWI Act* provides the most appropriate process for OPR to submit the necessary technical information at the design and construction phase and for the DoW to determine, based on its assessment of OPR's information, whether to issue bed and banks permits with conditions. Based on the assessment process and controls available under the RIWI Act, the EPA is not recommending any conditions with respect to the management of river and creek crossings.

Summary

Having particular regard to:

- OPR's commitment to confining the areas of drainage shadow caused by the rail to within the boundary of the construction footprint, which would be 50 metres each side of the railway line. This will be achieved by implementing a range of drainage management measures including the installation of environmental culverts;
- the further work that is OPR will be undertaking in consultation with the DEC to identify the precise areas along the alignment that will require specific drainage measures to restore sheet flow; and
- the risks to river and creeks, and riparian habitats at crossings can be managed through the general process of flow investigations, modelling and subsequent bridge and crossing design and ongoing monitoring and

management. This is can be readily addressed through the DoW's Bed and Banks assessment process under the RIWI Act;

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objectives for this factor provided conditions are imposed requiring the proponent to:

- design, construct and operate the railway such that surface water diversion and other indirect impacts from erosion and sedimentation do not cause the loss of significant flora and vegetation, including Mulga communities, 50 metres on each side of the railway formation (Condition 7-1); and
- implement the offset measures relevant to the impacts on the proposed conservation reserves as set out in OPR's Rail Development Offset Strategy (January 2011), and as specified in recommended condition 15-1.

3.5 Noise emissions

Description

Noise from trains is generated along the entire railway line from the Jack Hills iron ore mine to the OIE. In terms of the noise sources, train movements generate noise with intrusive noise characteristics resulting from braking, the train locomotive itself, wagons, rails and horns at rail crossings. Variations and curves in the track can also lead to high levels of high frequency noise referred to as 'wheel squeal'.

At full capacity, OPR expects that the proposal would result in 18 train movements per day with two standard gauge locomotives and approximately two kilometres of rolling stock.

OPR has identified sensitive receivers within the study area that are likely to be exposed to noise from the proposal. Most of the receivers are clustered in the western end of the proposal as there is a higher density of dwellings in the Chapman Valley area. A smaller number of dwellings were identified in the pastoral area. These dwellings currently experience relatively low background noise levels consistent with a rural setting.

Submissions

Submission on this factor focused on:

- concerns that some properties have not been adequately considered in the noise modelling presented in the PER, nor under typical wind conditions;
- concerns that noise emissions from trains will impact on the amenity of dwellings in a quiet rural environment;
- the potential for using the quieter Q Class locomotives to minimise noise impacts; and

- the need for land use planning measures to ensure that future land use changes do not cause noise sensitive development in rail noise affected areas.

The summary of, and detailed response, to issues raised in submissions is provided in electronic format (compact disk) in Appendix 5.

Assessment

The EPA's environmental objective for this factor is to protect the amenity of nearby residences from noise impacts from rail movements as a result of the transport of iron ore to the Oakajee Port. Noise emissions from road and rail transport are exempt from the provisions of the *Environmental Protection (Noise) Regulations 1997*. OPR is therefore required to evaluate the noise emissions from rail operations against the noise targets and limits in the Western Australian Planning Commission's State Planning Policy 5.5 *Road and Rail Transport Noise and Freight Considerations in Land Use Planning* (SPP 5.4) and also the EPA's Preliminary *Draft Guidance Statement No. 14 – Road and Rail Transport Noise,* Version 3 (EPA, 2000), as committed to in the approved environmental scoping document.

Assessment of noise

The external noise exposure criteria (L_{Aeq}) for noise sensitive land uses as defined in the SPP are:

	Noise Target	Noise Limit
Day time (6 am – 10 pm)	55 dB	60 dB
Night time (10pm-6am)	50 dB	55dB

Based on its preferred railway centreline, OPR's noise modelling has identified six receptors (three of which are owned by LandCorp in the Oakajee Industrial Estate buffer) above the *Limit* criteria at night, and 11 receptors (four of which are owned by LandCorp) above the *Target* criteria. OPR has advised that dwellings owned by LandCorp in the Oakajee Industrial Estate buffer will cease to be occupied once the proposal is implemented and hence these dwellings will not receive noise mitigation treatments.

In addition to the SPP, OPR has also assessed the noise modelling results against the noise limits in the EPA's *Preliminary Draft Guidance Statement No 14*. The results show that a further 37 receiver locations (not all of which are necessarily dwellings and three of which are owned by LandCorp), are predicted to fall within the *Preliminary Draft Guidance Statement No. 14* "N2" rating. This is a group that may experience noise in the 46-50 dBL_{Aeq} range that is not covered by the SPP. Although this noise level is below the SPP 5.4 *Target* criteria, it indicates trains may be readily audible, and given the relatively low background noise levels measured in the affected area, train noise is likely to be highly emergent above ambient noise. The World Health Organisation (WHO) Night Noise Guidelines for Europe (WHO, 2009), describes the health impacts of night noise levels in the range 40 to 55dB as follows: "Adverse health effects are observed among the exposed population. Many people have to adapt their

lives to cope with the noise at night. Vulnerable groups are more severely affected."

Thus the group of residences identified above that are likely to be in the range 46-50dB would fall in the middle of the 40-55dB range. If residents in this group were to leave bedroom windows open, it is likely that indoor noise levels would exceed the 35dB noise criterion that the EPA has adopted previously (and as also used in the SPP 5.4) for new residential proposals near major roads and railways.

In view of the above, the OEPA and DEC have sought further information from OPR on two key matters. The first is in relation to the noise from the locomotives. The DEC has advised that locomotive noise levels are a key source of noise for the proposal and that noise emissions from the locomotives are likely to be 5dB(A) higher than those of the 'Q' Class locomotives which currently represent 'best practice'. The DEC has advised that minimising locomotive noise levels is important in reducing the 'noise footprint' of the rail operations, especially as there are likely to be considerable numbers of residences where noise may be noticeable and potentially significant.

The second is in relation to the consultation process and mitigation measures that would apply for those residences that would be impacted, particularly for residences where noise may be noticeable but are in compliance with the SPP *Target* criteria.

OPR's noise commitments

Further discussions were held between the OEPA, DEC and OPR during the response to submissions stage. As a consequence, OPR has made commitments with respect to a staged landholder consultation process and a noise mitigation package. OPR's outline of the three-staged process was developed in consultation with DEC and is provided in Attachment 1 of its response to submissions document (Appendix 5). In summary, the process provides for the identification of potentially affected dwellings according to the following exposure groups and corresponding treatment packages described in the SPP:

- Group 1 – >55dB$L_{Aeq\ night}$, - Package B from SPP Guidelines plus screening of outdoor area plus offer of purchase or relocation where rail infrastructure seriously impacts property residence and farming operation
- Group 2 – 51-55dB$L_{Aeq\ night}$, - Package A from SPP Guidelines plus screening of outdoor area
- Group 3 – 46-50dB$L_{Aeq\ night}$, - Package A from SPP Guidelines for bedrooms only. Note this is the Group that is not currently covered by SPP.

The desired outcome of the OPR's commitment is that dwellings that are potentially affected by the rail operation receive noise mitigation treatment by OPR to achieve the following criteria:

- a level of 35dB(A) in a bedroom, when determined as an L_{Aeq} value over the period 10pm on any day to 6am on the following day ('$\mathbf{L_{Aeq,\ night}}$');

- a level of 40dB(A) in an indoor living area, when determined as an L_{Aeq} value over the period 6am to 10pm on any day ('**$L_{Aeq, day}$**'); and
- an $L_{Aeq, day}$ level of 55dB(A) in at least one outdoor living area associated with a residence.

SPP5.4 requires reasonable and practicable measures to be implemented. For this proposal, the EPA has recognised that it may not be practicable to control noise with noise barriers, and hence OPR has agreed that acoustic treatment to achieve these indoor noise levels, which are consistent with section 5.3.1 of the SPP, is a practicable measure.

In relation to the issue of noise from the locomotives, OPR has advised that Q Class locomotives were investigated early in the process as potentially being used for the OPR Proposal. However, this was discounted in favour of the larger Pilbara style locomotives due to the following reasons:

- an additional Q Class locomotive (three instead of two) would be needed to tow the loads proposed;
- a significant increase (>50%) of train movements would be required; and
- overall efficiency would be greatly reduced (fuel use, labour hours, maintenance costs etc).

While Q class locomotives have been identified as quieter than the Pilbara style locomotives, OPR has advised that the cumulative impacts of the addition of another locomotive and the increase in train movements are expected to increase environmental noise emissions. Nevertheless, OPR is committed to minimising the noise emissions from the proposal and will investigate the viability of additional muffling of locomotives should the proposal be approved for implementation. OPR will inform the DEC of the progress of muffling investigations at appropriate intervals until an outcome is determined.

In view of the above, the EPA is recommending conditions (recommended condition 10) which provide for:

- noise emission from the proposal to meet the noise criteria at affected dwellings consistent with the criteria discussed above;
- a consultation and noise mitigation procedure to be finalised and implemented, consistent with OPR's three staged process identified in Attachment 2;
- noise monitoring to be undertaken following the implementation of treatment to verify the noise criteria have been met and that the noise treatments are effective.

It is considered that imposing conditions on the proponent in this manner recognises that it may not be practicable to control noise exposure with noise barriers along the alignment and would also obviate the need to recommend stringent noise limits on the locomotives (at source).

Controlling and influencing the location and standard of future noise-sensitive development near the proposal to avoid conflict between ongoing/increasing train movements and the amenity of surrounding areas will be an important part of any ongoing noise mitigation measure. To prevent noise impacts from occurring in the future, the EPA recommends that land use planning controls are initiated and implemented by the local governments to ensure future noise sensitive developments that are proposed to be located in proximity to the proposal are carefully considered in the context of WAPC's SPP 5.4.

Summary

The EPA considers the key environmental factor of noise has been adequately addressed and the EPA's objective for this factor can be achieved provided that conditions are imposed requiring the proponent to:

- meet the noise criteria at affected dwellings consistent with the noise criteria discussed above;
- finalise a consultation and noise mitigation procedure in consultation with DEC consistent with OPR's three staged process identified in Attachment 1 of its response to public submissions document (Attachment 5); and
- undertake noise monitoring following the implementation of noise treatment measures to verify the noise criteria have been met and that the noise treatments are effective.

Recommended conditions which achieve the above measures are set out in condition 12 of Appendix 4.

3.6 Environmental principles

In preparing this report and recommendations, the EPA has had regard for the object and principles contained in s4A of the *Environmental Protection Act (1986).* Appendix 3 contains a summary of the EPA's consideration of the principles.

4. Conditions

Section 44 of the *Environmental Protection Act 1986* 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.

4.1 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 OPR to construct and operate the Oakajee Rail development as described in Section 2 of this report is approved for implementation.

These conditions are presented in Appendix 4. Matters addressed in the conditions include the following:

a) Final rail alignment – that the final rail alignment and associated infrastructure be located within the Rail corridor as delineated by specified co-ordinates. Each section of the final rail alignment will need to be submitted prior to construction and include maps of locations of key conservation assets to demonstrate impacts are no greater than committed to by OPR. The width of the corridor will be required to be a maximum of 100 metres where the rail traverses vegetated areas in freehold lands (the agricultural area), existing and proposed conservation reserves and conservation significant fauna habitats (Condition 5);

b) Direct impacts to vegetation and flora – that no clearing, ground disturbance or unauthorised access occur within 50 metres of TECs, PECs and DRF, and 20 metres of Priority 1 and 2 flora (Condition 6);

c) Indirect impacts to vegetation – that construction and operation of the railway ensure that surface water diversion, erosion and sedimentation do not cause the loss of or adverse impacts to significant vegetation beyond 50 metres either side of the railway centreline (Condition 7);

d) Weed management – ensure that no new species of weeds shall be introduced to the proposal area as a result of the proposal (Condition 8);

e) Fauna habitat – ensure there is no ground disturbance within 50 metres of Western Spiny-tailed Skink habitat or Malleefowl mounds with all construction areas to be inspected prior to disturbance (Condition 9);

f) Trapped fauna – that all open trenches associated with construction be inspected and cleared twice daily by a qualified fauna rescue personnel (Condition 10);

g) Conservation lands – that a Conservation Lands Management Plan (CLMP) be developed in consultation with DEC prior to ground disturbance to areas adjacent or traversing lands of proposed conservation parks. CLMP shall address fire prevention, feral animals, weeds, access, flora, vegetation and fauna (Condition 11);

h) Noise – ensure that implementation of the proposal does not cause noise emissions from the operation of the rail to exceed specific criteria at dwellings impacted or potentially impacted by the rail. The condition requires the development of a noise mitigation and consultation program, informing and consulting with potentially affected residents and provide noise amelioration measures where required (Condition 12); and

i) Offsite mitigation – to mitigate for the proposal's impacts to native vegetation, fauna habitat and proposed conservation parks, OPR shall implement the actions described in its *OPR Rail Development State Offsets Strategy* (Eco Logical, 2011), through to the purchase of land parcels for conservation and funding for research projects into threatened fauna (Condition 15).

It should be noted that other regulatory mechanisms relevant to the proposal are:

- Part V of the *Environmental Protection Act 1986* – various Works Approvals and operating licenses would be required for construction and operation of the proposal;
- *Environmental Protection (Noise) Regulations 1997*; and
- *Rights in Water and Irrigation Act 1914*; and
- *Planning and Development Act 2005* – for North West Coastal Highway Deviation.

4.2 Consultation

In developing these conditions, the EPA consulted with the proponent, the DEC, the Department of State Development and Public Transport Authority in respect of matters of fact and matters of technical or implementation significance. Minor changes, which did not change the intent or scope, were made to conditions 5 and 15.

Appendix 1

List of submitters

Organisations:

Public Transport Authority
CSIRO
Commonwealth Department of Environment Water Heritage & the Arts
Main Roads WA
Shire of Chapman Valley
Department of Indigenous Affairs
Department of Water
Department of Health
Department of Planning
Department of Environment and Conservation

Individuals:

Asmussen Family Trust
Public submission

Appendix 2

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Oakajee Port and Rail Pty Ltd (OPR) (July 2010a), *OPR Rail Development: Public Environmental Review*

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Western Australian Planning Commission (2009) *State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning*,. Government of WA, Perth WA.

Appendix 3

Summary of identification of key environmental factors and principles

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
BIOPHYSICAL			
Vegetation and Flora	Loss of 6008ha of vegetation, potential impacts to declared rare and priority flora, Threatened and Priority Ecological Communities.	Submissions from the Shire of Chapman Valley raised concern over vegetation fragmentation and loss of high quality vegetation. Public and Government submissions raised concern over the following issues: • The potential impacts of erosion and sedimentation on vegetation. • The success of the proposed revegetation. The DEC raised submission raised concern over the following issues: • The outcomes of quality and security of closure and rehabilitation are not assured. • Development of criteria that needs to be undertaken and achieved to the satisfaction of the DEC. • Areas adjacent to significant flora populations should be protected. • Areas that will be subject to indirect impacts should be identified, and a flora health and vegetation condition monitoring program applied. • It is important that the impacts proposed by the development, are made clear and confined, as closes as possible, to the identified total disturbance footprint.	**The EPA considers that Vegetation and Flora is a key environmental factor. This is further discussed in Section 3.1 of this report.**
Fauna Habitat	Loss of Fauna Habitat through clearing of native vegetation for construction of the rail corridor and supporting infrastructure.	Submissions from the public and Government Agencies in relation to fencing expressed concern that it is unclear as to whether the proponent intends to fence sections or the entire length of the rail corridor or how fauna issues associated with such a barrier are to be managed. It is requested the proponent provide clear indication of areas along the rail corridor that are intended to be fenced – this will benefit maintenance, crossing and assigned responsibility. DEC submissions highlighted: • That while fencing the corridor may reduce mortality of	**The EPA considers that Fauna Habitat is a key environmental factor. This is further discussed in Section 3.2 of this report.**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
		some fauna, it may also pose a significant hazard and barrier to natural fauna movement and migration – which will require appropriate assessment and management. • It is suggested that if it is intended to install fencing along the rail corridor that liaison with DEC to determine the most effective strategy for managing fauna barriers and entrapment is required. The DSEWPC submission raised concerns over Fauna Habitat and particularly the impacts on Threatened Species. The following issues were raised: • The rationale behind why the specific vegetation units were or were not considered to contain significant species needs to be included. • Information on the area and quality of the Carnaby's Black Cockatoo habitat proposed to be cleared should be provided. The total amount of Slender-billed Thornbill habitat proposed to be cleared needs to be clearly stated. • The amount and type of all threatened species habitat proposed to be cleared for the entire project should be clearly stated.	
Conservation Estate	Impacts to Crown Reserve 16200 and proposed Woolgorong and Twin Peaks conservation parks.	DEC submission is concerned with the management of direct and indirect impacts on the conservation values of the proposed Woolgorong, Twin Peaks and Narloo conservation parks should be formalised with the preparation and implementation of a Conservation Management Plan.	**The EPA considers that Conservation Estate is a key environmental factor. This is further discussed in Section 3.3 of this report.**
Sheetflow Dependent Vegetation	Alterations to drainage patterns causing indirect impacts to sheetflow dependent vegetation.	The Shire of Chapman Valley submission raised concern over the following issues: • Concern that there are no firm commitments relating to the management of drainage structures in the PER. • Concern about the risk of secondary salinisation associated with ponding caused by inadequate drainage structures & sheet management strategies. • Road drainage intended to function as a floodway may create alterations to erosion and sedimentation patterns. • Concern that although surface water dependant vegetation is listed for monitoring to ensure the engineering design works, there is no commitment for	**The EPA considers that Surface Water Hydrology – Sheetflow Dependent Vegetation is a key environmental factor. This is further discussed in Section 3.4 of this report.**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
		remedial management action specified should vegetation be impacted. The DEC submission raises the following issues: • Concern that the proponent has not adequately delineated areas that will be subject to indirect impacts. • Suggests that a condition be applied to the proponent that ensures impacts on significant flora and vegetation communities are limited to an agreed direct & indirect disturbance footprint. • The condition particularly needs to address the potential impacts on vegetation and significant flora as a result of altered sheet flow. • It is important that the impacts proposed by the development, if approved, are made clear and confined, as close as possible, to the identified total disturbance footprint. This is particularly relevant to areas of mulga woodland subject to potential changes in surface sheet flow as a result of the proposal.	
Watercourses and Water Quality Protection	Proposal requires the design and construction of river and creek crossings (involving nine bridges).	Public and Government agency submissions are concerned with: • The water requirements for the construction and maintenance of access roads. The Department of Health submission raised concern that the proponent will need to address compliance with *Australian Drinking Water Guideline 2004* and establish a Drinking Water Quality Management Plan for each private water supply on site.	**The EPA considers that Surface Water Hydrology – Watercourses is a key environmental factor. This is further discussed in Section 3.4 of this report.**
POLLUTION			
Noise – Construction Noise – Operation	Increase in ambient noise levels on sensitive receptors.	Public submissions are concerned that their properties have not been adequately considered in the noise modeling. DEC submissions are concerned with the following issues: • Exposure to noise levels above *Limit* criteria in SPP2.4 to surrounding residences. • Actions that will be taken to identify locations where noise may be noticeable although in compliance with the Target criteria, and what consultation will be undertaken regarding potential noise impacts. • What process is it intended that best practice rolling stock	Construction Noise will be managed under the *Environmental Protection (Noise) Authority Regulations 1997*, which will require submission of a Noise Management Plan to the Department of Environment and Conservation and the relevant local government authorities

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
		noise emissions will be achieved and demonstrated? • Potential impacts to residential receivers located in the vicinity of level crossings and bridge structures. • Future land use measures proposed to ensure that future land use changes do not cause noise-sensitive development in rail-noise-affected areas. • Will impact piling methods be required for bridge construction works, and if so what noise impacts are likely to result and how will these be managed? Public and Government Agency submissions are concerned with the impact of noise on the existing ambience experienced in the area. The Shire of Chapman Valley submission is concerned with: • The impact that 24 hour workforce and operations of the rail will have on residents. • Vibration issues associated with pile driving for river crossings.	prior to consideration. OPR have committed to prepare a noise management plan for all aspects of construction. The plan will outline how noise will be reduced through design and management. In view of the above and the controls available under the Noise Regulations the EPA has determined the impacts of Construction Noise do not require further consideration in the EPA's report. **The EPA considers that Operational Noise from trains is a key environmental factor. This is further discussed in Section 3.5 of this report.**
Waste Management	The construction and operation of the proposal will generate wastes.	The Shire of Chapman Valley is concerned with: • The proposed use of Shire landfill sites for waste disposal. • Lack of recognition of the cumulative impacts or management of hydrocarbon loss along the line.	Application of industry best practice preventative controls such as risk assessment and the application of storage and handling standards, incident reporting and remedial capacity are expected to reduce contamination risks to the environment to a level that is insignificant. Current legislative controls are expected to ensure that waste and hazardous materials are managed to avoid significant impacts to the environment. **In view of the above, the EPA**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
			considers that Waste Management Procedures do not require further consideration in the EPA's report.
SOCIAL SURROUNDINGS			
Visual Amenity	The proposal involves construction of 530km of railway and associated rail infrastructure.	The Department of Planning submission is concerned with the following: • What is the definition of a 'visual amenity management plan'? • Have viewpoints been specified for the visual amenity modeling? • Mitigation measures should be clarified. The DEC submission is concerned with the following issues: • Impacts to the visual amenity and scenic values of the proposed Moresby Range Conservation Park caused by the rail corridor. • Management plan should address the application of suitable design techniques to the rail formation design and detailed alignment to minimize impacts on visual amenity.	No viewscape impacts on major settlements, townships or communities. Impacts to public viewscapes around the Moresby Range (Wokatherra Gap) and Chapman Valley will be mitigated via the use of measures that include rehabilitation screening. In the context of the current agricultural setting and landscape, and areas identified for future development this is not considered to be a significant impact. However, design techniques will be required to minimise impacts. Visual Impacts during construction will be short term. **In view of the above, the EPA considers that Visual Amenity does not require further evaluation in the EPA's report.**
OTHER			
Safety and Risk	The proposal involves possible risk to public safely largely from road/rail interactions and from storage and transport of hazardous goods such as diesel.	Public and Government Agency submissions are concerned with the following issues: • Necessary approvals should be obtained for any road modifications and measures to protect road/rail interface issues and minimize community risk. • Potential for increased road safety hazards during harvest	Risks to the public from rail/road interactions are expected to be managed to as low as reasonably achievable by using grade separation at major crossings and industry

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
		time. • Impacts to private property and public recreation areas access by the rail corridor. • Potential for compensation to account for loss of access, income and depreciation of assets caused by the project.	standard safety warning systems at other crossings. **In view of the above, the EPA considers that Safety and Risk does not require further evaluation in the EPA's report.**

PRINCIPLES		
Principle	**Relevant Yes/No**	**If yes, Consideration**
1. The precautionary principle *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 –* *(a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and* *(b) an assessment of the risk-weighted consequences of various options.*		
	Yes	In considering this principle, the EPA has been aware that there is degree of uncertainty around the likely impacts of a number of factors considered in this assessment. Where the level of uncertainty is moderate to high the EPA has taken a precautionary approach to its assessment and applied stringent conditions. This approach has applied in particular to: - noise impacts on residents above limit criteria; and - loss of vegetation beyond the proposal footprint due to alterations in surface water hydrology.
2. The principle of intergenerational equity *The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.*		
	Yes	In considering this principle the EPA notes: - offsets involving land acquisition for conservation in perpetuity; - limiting impacts to threatened flora and fauna to

PRINCIPLES		
Principle	**Relevant Yes/No**	**If yes, Consideration**
		ensure environmental values are not diminished as a result of the proposal; and - rehabilitation of any disturbed land not required for ongoing operational use will be undertaken.
3. The principle of the conservation of biological diversity and ecological integrity *Conservation of biological diversity and ecological integrity should be a fundamental consideration.*		
	Yes	In considering this principle the EPA notes: - the ecological values of the proposal area are considered relevant and are discussed in the body of the report under the factors of vegetation and flora and fauna and fauna habitat; - the proponent will minimise the proposal footprint as far as possible; and - offsets involving land acquisition for conservation in perpetuity.
4. Principles relating to improved valuation, pricing and incentive mechanisms *(1) Environmental factors should be included in the valuation of assets and services.* *(2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.* *(3) 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.* *(4) 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 maximize benefits and/or minimize costs to develop their own solution and responses to environmental problems.*		
	No	
5. The principle of waste minimisation *All reasonable and practicable measures should be taken to minimize the generation of waste and its discharge into the environment.*		
	No	

Appendix 4

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
Minister for Lands	*Land Administration Act 1997*
Minister for Indigenous Affairs	*Aboriginal Heritage Act 1972*
Minister for Planning	*Planning and Development Act 2005*
Minister for Transport	*Railway Enabling Act*
Public Transport Authority	*Public Works Act 1902*
Minister for Water	*Rights in Water and Irrigation Act 1914* and clearing in Crown Reserve 16200
Department of Environment and Conservation	Works Approval and Licence *Environmental Protection Act 1986*

RECOMMENDED ENVIRONMENTAL CONDITIONS

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

OAKAJEE RAIL DEVELOPMENT
CITY OF GERALDTON-GREENOUGH, SHIRE OF CHAPMAN VALLEY, SHIRE OF MULLEWA, SHIRE OF YALGOO, SHIRE OF CUE, SHIRE OF MEEKATHARRA, SHIRE OF MURCHISON

Proposal: The proposal is to construct and operate 570 kilometres of railway and associated rail infrastructure extending in a north-easterly direction from the western boundary of Reserve 16200 at Oakajee approximately 24 kilometres north of Geraldton, to the Jack Hills mining operations located approximately 500 kilometres to the northeast. Included in the proposal are two spur lines to the Westnet (Mullewa) line and Weld Range. The proposal also involves the construction of and operations of supporting infrastructure and facilities as described in Schedule 1. The proposal includes the clearing of up to 6008 hectares of native vegetation.

The proposal is further documented in schedule 1 of this statement.

Proponent: Oakajee Port and Rail Pty Ltd

Proponent Address: Level 3, 33 Richardson Street, WEST PERTH WA, 6005

Assessment Number: 1818

Report of the Environmental Protection Authority: Report 1388

The proposal referred to in the above report of the Environmental Protection Authority may be implemented. The implementation of that proposal is subject to the following conditions and procedures:

1 Proposal Implementation

1-1 The proponent shall implement the proposal as documented and described in schedule 1 of this statement subject to the conditions and procedures of this statement.

2 Proponent Nomination and Contact Details

2-1 The proponent for the time being nominated by the Minister for Environment under sections 38(6) or 38(7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal.

2-2 The proponent shall notify the Chief Executive Officer of the Office of the Environmental Protection Authority of any change of the name and address of the proponent for the serving of notices or other correspondence within 30 days of such change.

3 Time Limit of Authorisation

3-1 The authorisation to implement the proposal provided for in this statement shall lapse and be void five years after the date of this statement if the proposal to which this statement relates is not substantially commenced.

3-2 The proponent shall provide the Chief Executive Officer of the Office of the Environmental Protection Authority with written evidence which demonstrates that the proposal has substantially commenced on or before the expiration of five 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 Chief Executive Officer of the Office of the Environmental Protection Authority.

4-2 The proponent shall submit to the Chief Executive Officer of the Office of the Environmental Protection Authority the compliance assessment plan required by condition 4-1 at least six months prior to the first compliance 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 Chief Executive Officer of the Office of the Environmental Protection Authority.

4-5 The proponent shall advise the Chief Executive Officer of the Office of the Environmental Protection Authority of any potential non-compliance within seven days of that non-compliance being known.

4-6 The proponent shall submit to the Chief Executive Officer of the Office of the Environmental Protection Authority the first compliance assessment report fifteen months from the date of issue of this Statement addressing the twelve 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 Chief Executive or a person delegated to sign on the Chief Executive 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 Final Rail Alignment

5-1 The proponent shall ensure that the final rail alignment and associated infrastructure described in Table 1 of schedule 1, except for the ballast quarries and the Northwest Coastal Highway deviation, are located and constructed within the Rail Corridor delineated by the co-ordinates listed in Table 2 of schedule 2.

5-2 Prior to the construction of a particular section of the railway centreline, ballast quarries or Northwest Coastal Highway deviation, the proponent shall submit to the Chief Executive Officer of the Office of the Environmental Protection Authority plans of the final alignment of that section of the railway centreline to demonstrate the requirements of condition 5-1 will be met.

5-3 The plans of the final alignment, ballast quarries or Northwest Coastal highway deviation shall include maps that show the locations of:

a) significant native vegetation;
b) lands managed for conservation;
c) populations of declared rare and priority flora;
d) significant fauna habitats;
e) accommodation camps, ballast quarries, rail welding depots, rail yard and construction depot as set out in table 1 of schedule 1; and
f) the sections of the alignment where the width of the construction corridor shall be no greater than 100 metres in order to meet the requirements of condition 5-5,

and demonstrate that the impacts to a), b), c) and d) are no greater than the residual impacts summarised in Table 5, Section E of the *OPR Rail Development Offset Strategy, January 2011.*

5-4 The railway may be divided into no more than 11 sections (including spur lines and rail loops) for the purposes of condition 5-2.

5-5 The proponent shall ensure that the width of the construction corridor for the construction of the railway shall be less than 100 metres where the railway traverses:

- on freehold lands that support remnant native vegetation;
- proposed conservation reserves in the pastoral area; and
- conservation significant fauna habitats including Mallefowl, Western Spiny-tailed Skink and Slender-billed Thornbill habitats.

6 Protection of significant flora and ecological communities

6-1 The proponent shall ensure that no clearing, ground disturbance, or unauthorised access is to occur within:

1. 50 metres of all Declared Rare Flora;
2. 50 metres of all Threatened or Priority Ecological Communities; and
3. 20 metres of all priority 1 and 2 flora.

6-2 In order to meet the requirements of condition 6-1, prior to ground-disturbing activities for the construction of the railway and all associated infrastructure, the proponent shall:

1. in consultation with the Department of Environment and Conservation identify a list of potential Declared Rare Flora, Priority species of flora, and Threatened and Priority Ecological Communities in the proposal area; and
2. employ a suitably qualified botanist to survey and inspect the planned construction and disturbance areas and flag the species and communities identified in 1. above.

Note: Suitably qualified botanists would have 5 years relevant field survey experience to the satisfaction of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

6-3 Where the proponent is unable to achieve the separation distances required by condition 6-1 based on the survey required by condition 6-2, application may be made for a site specific waiver of condition 6-1 to the Chief Executive Officer of the Environmental Protection Authority on advice of the Department of Environment and Conservation.

6-4 All records of survey work are to be submitted to the Chief Executive Officer of the Office of the Environmental Protection Authority and Department of Environment and Conservation prior to commencement of ground disturbing activities. Records of survey work may be submitted with the final rail alignment plans required by conditions 5-2 and 5-3.

6-5 The proponent shall ensure that records of survey work required by condition 6-2 are to be made publicly available in a manner approved by the Chief Executive Officer of the Office of the Environmental Protection Authority.

7 Indirect impacts to significant vegetation

7-1 The proponent shall construct and operate the railway to ensure that indirect impacts from surface water diversion, erosion and sedimentation do not cause the loss of, or adverse impacts to, significant vegetation (including mulga vegetation communities), beyond 50 metres of either side of the railway formation.

Note: “significant vegetation” to be as per definition described in Environmental Protection Authority Guidance Statement No. 51 *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*.

7-2 To verify the requirements of condition 7-1 have been met the proponent shall:

1. monitor vegetation condition and health at:
    a. Impact monitoring sites - at locations which include significant vegetation, including Mulga vegetation communities, beyond 50 metres on either side of the railway line as referred to in condition 7-1, and which are likely to be indirectly affected by the operation of the proposal; and
    b. Reference monitoring sites – at locations outside the construction disturbance area, which are similar to the impact monitoring sites with respect to significant vegetation and which does not have the potential to be affected by the operation of the proposal.

Impact and reference monitoring sites shall be located in consultation with the Department of Environment and Conservation.

2. use permanent relocatable quadrats for repeat measures of vegetation health and condition;

3. undertake baseline surveys of vegetation condition and health at the impact and reference monitoring sites;

4. establish trigger levels for vegetation condition and health at impact monitoring sites for management actions in consultation with the Department of Environment and Conservation;

5. monitor surface water flows, erosion and sedimentation at or in the vicinity of the impact monitoring sites.

The monitoring is to be carried out according to a method and schedule determined to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority prior to the commencement of construction, and is to be carried out until such time as the Chief Executive Officer of the Office of the Environmental Protection Authority determines on advice from the Department of Environment and Conservation that monitoring may cease.

7-3 In the event that monitoring required by condition 7-2 indicates an exceedance of trigger levels determined by condition 7-2 (4) as a result of the implementation of the proposal:

1. the proponent shall report such findings to Chief Executive Officer of the Office of the Environmental Protection Authority within 21 days of the exceedance being identified;

2. the proponent shall provide evidence which allows determination of the cause of the exceedance;

3. if determined by the Chief Executive Officer of the Office of the Environmental Protection Authority to be a result of activities undertaken in implementing the proposal, the proponent shall submit actions to be taken to address the exceedance within 21 days of the determination being made to the Chief Executive Officer of the Office of the Environmental Protection Authority; and

4. the proponent shall implement actions to address the exceedance upon approval of the Chief Executive Officer of the Office of the Environmental Protection Authority and shall continue until such time the Chief Executive Officer of the Office of the Environmental Protection Authority determines that the remedial actions may cease.

7-4 The proponent shall prepare an initial report and submit to the Chief Executive Officer of the Office of the Environmental Protection Authority within one year of completion of construction and further reports after 3 and 5 years that provides the results from vegetation condition and health monitoring required

by condition 7-2 and demonstrate that the requirements of condition 7-1 has been met.

7-5 The proponent shall ensure that reports required by condition 7-4 are made publicly available in a manner approved by the Chief Executive Officer of the Office of the Environmental Protection Authority.

8 Weeds

8-1 The proponent shall undertake weed management to ensure that:

1. no new species of weeds (including both declared weeds and environmental weeds) shall be introduced into the proposal area and the proposed conservation lands referred to in Condition 11 as a result of the implementation of the proposal;
2. the cover of weeds (including both declared weeds and environmental weeds) within the proposal area does not exceed that existing on comparable, nearby land, which has not been disturbed during implementation of the proposal; and
3. three reference sites on nearby land are chosen in consultation with the Department of Environment and Conservation and established within the proposal area and outside the impact area. The reference sites are to be monitored at least every 2 years to determine whether changes in weed cover and type are as a result of project implementation or broader regional changes.

8-2 The proponent shall conduct weed surveys of the proposal area in spring annually for at least two years unless otherwise agreed by the Chief Executive Officer of the Office of the Environmental Protection Authority, following completion of construction, to ensure the requirements of condition 8-1 have been met.

8-3 The proponent shall undertake follow up weed control in response to the results of weed surveys undertaken as required by condition 8-2 to the satisfaction of the Chief Executive Officer of the Environmental Protection Authority.

9 Skink & Mallefowl

9-1 The proponent shall ensure there is no loss or disturbance to areas identified as *Leipoa ocellata* (Malleefowl) mounds or rocky *Egernia stokesii badia* (Western Spiny-tailed Skink) habitat, caused by the construction and operation of the proposal unless authorised by the Chief Executive Officer of the Office of the Environmental Protection Authority.

9-2 Prior to undertaking any clearing or ground disturbing activities, the construction area shall be inspected by a suitably qualified zoologist for the presence of *Leipoa ocellata* (Malleefowl) mounds and rocky *Egernia stokesii badia* (Western Spiny-tailed Skink) habitat.

Note: Suitably qualified zoologists would have at least five years field experience relevant to carrying out fauna surveys in the Mid West of Australia to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority.

9-3 Where *Leipoa ocellata* (Malleefowl) mounds and rocky *Egernia stokesii badia* (Western Spiny-tailed Skink) habitat are identified in relation to condition 9-2 the proponent shall ensure that:

1. All records of *Leipoa ocellata* (Malleefowl) mounds and rocky *Egernia stokesii badia* (Western Spiny-tailed Skink) habitat are submitted to the Chief Executive Officer of the Office of the Environmental Protection Authority and the Department of Environment and Conservation prior to undertaking any significant clearing or ground disturbance activities;

2. No clearing, construction activity or unauthorised access occurs within 50 metres of *Leipoa ocellata* (Malleefowl) mounds unless approved by the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation; and

3. No clearing, construction activity or unauthorised access occurs within 50 metres of rocky *Egernia stokesii badia* (Western Spiny-tailed Skink) habitat, with the exception of habitat identified in Figures 3 and 4 whereby no clearing or construction activity shall occur within 20 metres of rocky *Egernia stokesii badia* (Western Spiny-tailed Skink) habitat unless approved by the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

9-4 The proponent shall ensure that areas identified as *Leipoa ocellata* (Malleefowl) mounds and rocky *Egernia stokesii badia* (Western Spiny-tailed Skink) habitat are delineated in the field (by roping or a system of markers) to prevent unauthorised access. Access to these areas shall be restricted to authorised personnel only. Authorised personnel are defined as those personnel nominated by the proponent to perform specific tasks, such as fauna monitoring.

10 Trenches

10-1 The proponent shall ensure that open trenches associated with construction of the water pipeline and the optic fibre cable are cleared of trapped fauna by fauna-rescue personnel at least twice daily. Details of all fauna recovered shall be recorded. The first daily clearing shall be completed no later than three hours after sunrise and shall be repeated between the hours of 3:00 pm and 6:00 pm.

The open trenches shall also be cleared, and fauna details recorded, by fauna-rescue personnel no more than one hour prior to backfilling of trenches.

Note: “fauna-rescue personnel” means an employee of the proponent whose responsibility it is to walk the open trench to recover and record fauna found within the trench.

10-2 The fauna-rescue personnel shall obtain the appropriate licenses as required for fauna rescue under the *Wildlife Conservation Act 1950*.

10-3 Open trench lengths shall not exceed a length capable of being inspected and cleared by the fauna-clearing personnel within the required times as set out in condition 10-1.

10-4 Ramps providing egress points and/or fauna refuges providing suitable shelter from the sun and predators for trapped fauna are to be placed in the open trench at intervals not exceeding 50 metres.

10-5 The proponent shall report all mortalities of fauna listed in Schedule 1 and Schedule 2 of the *Wildlife Conservation Act 1950* including the cause, location, number, species and any actions taken to the Chief Executive Officer of the Office of the Environmental Protection Authority and the Department of Environment and Conservation within 21 days of the mortality being identified.

10-6 The proponent shall report all fauna mortalities and fauna recovered including the cause, location, number, species and any actions taken to the Chief Executive Officer of the Office of the Environmental Protection Authority as part of the compliance assessment report required by condition 4-6 and provide a copy to the Department of Environment and Conservation.

10-7 In the event open trenches are used for construction, the proponent shall produce a report on fauna management within the water pipeline and optic fibre cable corridor at the completion of pipeline and communication link construction. The report shall include the following:

1. details of fauna inspections;
2. the number of each species of fauna cleared from trenches;
3. all fauna mortalities; and
4. actions taken regarding fauna encountered during fauna inspections.

The report shall be provided to the Chief Executive Officer of the Office of the Environmental Protection Authority and the Department of Environment and Conservation no later than 90 days after the completion of pipeline and cable installation, and shall be made publicly available in a manner approved by the Chief Executive Officer of the Office of the Environmental Protection Authority.

11 Conservation Lands

11-1 Prior to commencement of construction the proponent shall prepare a Conservation Lands Management Plan to protect the conservation values of proposed Woolgorong, Twin Peaks and Narloo Conservation Parks for those sections of the railway that traverse or run adjacent to those Conservation

Lands to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice of the Department of Environment and Conservation.

This plan shall address the following:

a) protocols for fire prevention and response to ensure all reasonable precautions are taken against an outbreak of fire from the rail corridor;
b) management of feral animals;
c) provision of unfettered access by the Department of Environment and Conservation personnel for land management activities in the proposed conservation parks;
d) management of weeds and hygiene;
e) impacts on flora and vegetation;
f) impacts on fauna;
g) location and management of borrow pits; and
h) rehabilitation of disturbed areas including completion criteria developed to meet the requirements of conditions 13.

11-2 The proponent shall implement the Conservation Parks Management Plan required by condition 11-1 to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority.

11-3 The proponent shall ensure the Conservation Parks Management Plan referred to in condition 11-1 is made publicly available in a manner approved by the Chief Executive Officer of the Office of the Environmental Protection Authority.

12 Noise

12-1 The proponent shall ensure that the implementation of the proposal does not cause noise emissions from the operation of trains, to exceed the following criteria;

- a level of 35dB(A) in a bedroom, when determined as an L_{Aeq} value over the period 10pm on any day to 6am on the following day ('$L_{Aeq, night}$');
- a level of 40dB(A) in an indoor living area, when determined as an L_{Aeq} value over the period 6am to 10pm on any day ('$L_{Aeq, day}$'); and
- an $L_{Aeq, day}$ level of 55dB(A) in the primary outdoor living area associated with a residence.

12-2 In order to achieve the requirements of condition 12-1, the proponent shall develop and submit a noise mitigation and consultation procedure to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on the advice of Department of Environment and Conservation prior to the commencement of construction. The procedure shall apply to any residence where noise emissions resulting from operation of

trains, when received outside the residence at 1 metre from the façade, are likely to exceed an $L_{Aeq\ night}$ value of 45dB(A).

The noise mitigation and consultation procedure shall include the following steps:

a) undertake predictions of noise emissions resulting from operation of the Oakajee Railway. Noise predictions are to be carried out in accordance with the procedures specified in Western Australian Planning Commission State Planning Policy 5.4 *Road and Rail Transport Noise and Freight Considerations in Land Use Planning* and its Implementation Guidelines.

b) develop an information package outlining the results of noise predictions and the options for noise amelioration, for each landowner;

c) consultation with each landowner, including conducting a survey of the building to identify the form of construction and locations of indoor living and sleeping areas and outdoor living areas, and negotiating an agreement on a form of noise amelioration to be provided by the proponent;

d) submission of evidence of an agreement negotiated with the landowner to office of the EPA; and

e) provision of the agreed noise amelioration package.

12-3 The proponent shall ensure that the noise mitigation and consultation procedure required by condition 12-2 is implemented to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority within 12 months following the operation of the railway.

12-4 To verify the requirements of condition 12-1 have been met, the proponent shall prepare a noise monitoring plan for noise levels at those residences where the agreed noise amelioration package is other than a 'deemed-to-comply' package, to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice the Department of Environment and Conservation, prior to the commencement of construction.

Note: 'Deemed-to-comply' package to be consistent with definition set out in State Planning Policy 5.4 *Road and Rail Transport Noise and Freight Considerations in Land Use Planning* and its Implementation Guidelines.

12-5 Noise measurements required by condition 12-4 shall be undertaken by the proponent in accordance with the procedures specified in the Western Australian Planning Commission State Planning Policy 5.4 *Road and Rail Transport Noise and Freight Considerations in Land Use Planning* and its Implementation Guidelines, following a determination being made by the Chief Executive Officer of the Office of the Environmental Protection Authority that the noise mitigation and consultation procedure has been satisfactorily implemented as required by condition 12-3.

12-6 The proponent shall submit a written report to Chief Executive Officer of the Office of the Environmental Protection Authority on completion of implementation of the procedure including the noise monitoring results required by condition 12-4 not later than 15 months after commencement of operations.

12-7 The proponent shall ensure that the noise mitigation and consultation procedure referred to in condition 12-2 and the report referred to in condition 12-6 are made publicly available in a manner approved by the Chief Executive Officer of the Office of the Environmental Protection Authority.

13 Rehabilitation

13-1 Prior to the commencement of construction the proponent shall collect baseline information on native vegetation composition and condition within areas to be cleared for the proposal in order to develop completion criteria for rehabilitation of construction areas.

13-2 Following the completion of construction the proponent shall rehabilitate all areas cleared of native vegetation for construction that are not required for ongoing operation, to the satisfaction of the Chief Executive Officer of the Office Environmental Protection Authority on advice of the Department of Environment and Conservation.

13-3 Prior to commencement of operation of the proposal the proponent shall:

a) submit a plan to the Chief Executive Officer of the Office of the Environmental Protection Authority which identifies and spatially defines:

   i. areas that have been cleared for construction that are no longer required for the operation of the proposal, to satisfy the requirements of condition 13-2;

   ii. borrow areas that are necessary for the ongoing implementation and maintenance of the proposal,

b) develop completion criteria for rehabilitation of the construction areas identified in item a) i. above based on baseline information collected to satisfy the requirements of condition 13-1; and

c) develop management and monitoring measures for weeds, pathogens, drainage and erosion for those areas identified in item a) ii. above,

to the requirements of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

13-4 The proponent shall monitor the progress of rehabilitation required by condition 13-2 against the rehabilitation completion criteria referred to in condition 13-3 and shall implement contingency measures and supplementary rehabilitation works where the criteria are not being met, to the requirements

of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice of the Department of Environment and Conservation

13-5 The proponent shall include the results of the rehabilitation monitoring required pursuant to condition 13-4 in the compliance assessment report referred to in condition 4-6 commencing from the date rehabilitation was commenced. The report shall address the following:

1. the progress made towards meeting the completion criteria developed pursuant to condition 13-3; and

2. contingency management measures implemented in the event that the completion criteria required by condition 13-3 are unlikely to be met.

13-6 Rehabilitation activities shall continue until such a time as the requirements of Condition 13-2 are demonstrated by inspections and reports to be met, for a minimum of five years to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice of the Department of Environment and Conservation.

14 Decommissioning

14-1 At least six months prior to the anticipated date of closure, the proponent shall meet the following decommissioning criteria.

1) removal or, if agreed in writing by the appropriate regulatory authority, retention of infrastructure agreed in consultation with relevant stakeholders;

2) rehabilitation of all disturbed areas to a standard suitable for the new land use(s) as agreed pursuant to the consultation referred to in condition 13; and

3) identification of contaminated areas, including provision of evidence of notification and proposed management measures to relevant statutory authorities.

15 Environmental Mitigation

15-1 In order to mitigate for the loss of:

- endangered and vulnerable vegetation associations;
- priority flora;
- threatened fauna habitats; and
- native vegetation on land managed for conservation purposes,

by the proposal, the proponent shall undertake the following environmental mitigation projects during the implementation of the proposal, consistent with the *OPR Rail Development Offset Strategy, January 2011* and the Implementation Schedule required by condition 15-2:

a) acquire one or a series of land parcels supporting native vegetation totalling 110 hectares in size in the agricultural zone between Geraldton and Mullewa for addition to the conservation reserve system. The land parcel(s) shall be selected in consultation with the Department of Environment and Conservation and be consistent with the criteria set out in Section 4 of *OPR Rail Development Offset Strategy, January 2011*;

b) acquire one or a series of land parcels supporting native vegetation totalling 140 hectares in size in the Chapman Valley and along the Moresby Ranges near Geraldton for addition to the conservation reserve system. The land parcel(s) shall be selected in consultation with the Department of Environment and Conservation and be consistent with the criteria set out in Section 5 of *OPR Rail Development Offset Strategy, January 2011*;

c) acquire a land parcel supporting native vegetation of at least 950 hectares in size in the Murchison – Western Murchison pastoral region north east of Yalgoo for addition to the conservation reserve system. The land parcel should be selected consistent with the criteria set out in Section 6 of the *OPR Rail Development Offset Strategy, January 2011*; and

d) fund research projects into:

   i. Carnaby's Black Cockatoo visitation behaviour and habitat requirements in the Geraldton Hills-Geraldton Sandplains region shown in the Interim Biogeographic Regionalisation for Australia; and

   ii. regional habitat modelling, mapping and genetic studies for the Western Spiny Tailed Skink.

   The research projects will be finalised in consultation with the Department of Environment and Conservation and be consistent the objectives and funding set out in Section 7 of the *OPR Rail Development Offset Strategy, January 2011,*

to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice of the Department of Environment and Conservation.

15-2 Within four months following the formal authority issued to the decision-making authorities under Section 45(7) of the *Environmental Protection Act 1986*, the proponent shall prepare and submit an Implementation Schedule for meeting the requirements of condition 15-1 to the satisfaction of the Chief Executive Officer of the Environmental Protection Authority on advice of the Department of Environment and Conservation.

The Schedule shall set out:

1. a staged process for achieving the requirements of condition 15-1 and include timeframes, milestones, responsibilities for action, and allocation of resources, and be consistent with Figure 1 in *OPR Rail Development Offset Strategy, January 2011;*

2. outline the process of consultation with the Department of Environment and Conservation to ensure that the land acquisition projects defined within Sections 4, 5 and 6 of *OPR Rail Development Offset Strategy, January 2011.*

15-3 The proponent shall implement the Schedule required by condition 15-2 and provide to the Chief Executive Officer of the Office of the Environmental Protection Authority annual reports on progress.

15-4 The proponent shall prepare and submit a Conservation Management Plan to apply to those lands proposed for acquisition in condition 15-1, to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice of the Department of Environment and Conservation following the acquisition of lands required by condition 15-1 and prior to the commencement of operations.

The objective of the Conservation Management Plan is to provide for early management of the acquired lands to facilitate their return to a condition suitable for addition to the conservation reserve system, and to identify a process for the handing over of management responsibilities to the Department of Environment and Conservation.

The Plan shall include the following:

a) management of existing threatening processes including those from:
    i. feral animals;
    ii. fire;
    iii. grazing pressure;
    iv. uncontrolled access; and
    v. weed infestation,

b) the identification of the existing degraded areas on each parcel of land to receive rehabilitation measures including planting and/or seeding of appropriate local provenance native vegetation species. This shall include an emphasis on using local species suitable for Carnaby's Black Cockatoo foraging and breeding in areas required to meet condition 15-1 b);

c) rehabilitation completion criteria for rehabilitation referred to in b), above; and

d) a rehabilitation monitoring program;

e) identification of resources needed for ongoing management and monitoring in consultation with the Department of Environment and Conservation; and

f) identification of the ongoing management authority and any process for timing of handing over tenure and management responsibilities.

15-5 The proponent shall implement the Conservation Management Plan required by condition 15-4 for at least two years and until such time as it is deemed by the Chief Executive Officer of the Office of the Environmental Protection

Authority, on advice from the Department of Environment and Conservation that the implementation of the Plan is no longer required.

15-6 The proponent shall ensure that the Implementation Schedule and Conservation Management Plan required by conditions 15-2 and 15-4 respectively, are made publicly available in a manner approved by the Chief Executive Officer of the Office of the Environmental Protection Authority

Notes

1. The Minister for Environment will determine any dispute between the proponent and the Office of the Environmental Protection Authority over the fulfilment of the requirements of the conditions.

Schedule 1

The Proposal (Assessment No. 1818)

The proposal is to construct and operate 570 kilometres of railway and associated rail infrastructure extending in a north-easterly direction from the western boundary of Reserve 16200 at Oakajee approximately 24 kilometres north of Geraldton, to the Jack Hills mining operations located approximately 500 kilometres to the northeast. Included in the proposal are two spur lines to the Westnet (Mullewa) line and Weld Range. The proposal also involves the construction of and operations of supporting infrastructure and facilities as described in Table 1 below. The proposal includes the clearing of up to 6008 hectares of native vegetation.

The main characteristics of the proposal are summarised in Table 1 below.

Table 1: Summary of Key Proposal Characteristics

Element	**Description**
Construction period	Approximately 36 months.
Throughput	45 Million tonnes per annum of iron ore.
Railway length	Approximately 570 kilometres. Includes: • 530 kilometre main line from North West Coastal Highway to Jack Hills including rail loop; • 15 kilometre Weld Range spur line including rail loop; and • 20 kilometre Mullewa spur line.
Total railway operation disturbance width	No more than 80 metres.
Total disturbance area (construction)	No more than 7008 hectares.
Total disturbance area (operation)	No more than 5600 hectares.
Total native vegetation to be cleared in: • agricultural area; and • pastoral area.	No more than 108 hectares. No more than 5900 hectares.
Construction elements	• access roads; • borrow pits; • turkeys nests; • ballast stockpiles at a construction depot; • approximately 200 groundwater construction bores, 3.5 gigalitres of water for construction over three years; • up to 6 accommodation camps; • communication towers; • rail welding depot; • sleeper plant; • lay down areas; and • up to three ballast quarries, outside the Special Act Corridor.
Supporting facilities and infrastructure	Up to 2 accommodation camps; communication towers; workshops and lay down areas. Optic

Element	Description
	fibre cable and water pipeline. Road/rail crossings, rail sidings and bridges over water courses.
North West Coastal Highway Deviation	Realignment of the North West Coastal Highway for 3.5 kilometres and Chapman Valley Roads and inclusion of bridges for grade separation of train and vehicular traffic.
Train Operations	Up to 18 train movements per day with two standard gauge locomotives.
Crown Reserve 16200	Up to 2.5 hectares to be cleared.
Proposed Woolgorong Conservation Park	Up to 175 hectares to be cleared.
Proposed Twin Peaks Conservation Park	Up to 290 hectares to be cleared.

Figures (attached)

Figure 1a Location of proposal showing Rail Corridor (as displayed in the above report)

Figure 1b Location of proposal showing Rail Corridor (as displayed in the above report)

Figure 1c Location of proposal showing Rail Corridor (as displayed in the above report)

Figure 2 Location of North West Coastal Highway deviation (as displayed in the above report)

Figure 3 Rocky Skink Habitat Area A (as displayed in the above report)

Figure 4 Rocky Skink Habitat Area B (as displayed in the above report)

Schedule 2

Table 2 Coordinates of Rail Corridor and boundary of North West Coastal Highway deviation

Proposal boundary Coordinates **Note:** All coordinates are provided in MGA94 Zone 50					
Easting	Northing	Easting	Northing	Easting	Northing
Start		339223.8	6864088.65	554787.9	7013953.39
267511.43	6838181.52	342953.95	6867177.83	555758.4	7018052.12
268279.13	6838181.52	343787.66	6873461.41	555912.48	7020267.83
269030.65	6836144.07	345185.5	6876310.59	557226.46	7021562.41
269150.23	6836107.33	347459.06	6877864.89	557415.86	7024240.29
270696.74	6834827.5	349300.48	6883038.64	556400.55	7027286.21
270696.74	6832761.97	352681.83	6885120.49	556683.32	7031352.48
270980.74	6832761.97	355732.72	6885790.93	556683.32	7031352.46
271012.03	6831193	356610.42	6887576.97	556684.83	7031374.26
271537.74	6831203.52	359662.8	6888909.16	554649.87	7034617.86
271544.02	6830904.69	360530.89	6889024.13	556893.54	7043408.42
271973.43	6830908.33	363519.53	6890382.44	556692.82	7047416.62
272340.24	6830951.23	366520.98	6888094.68	560457.53	7051632.57
273189.9	6831278.76	371799.14	6886898.17	560516.03	7063695.91
276094.49	6831148.15	377048.4	6892230.06	558169.23	7068814.16
277082.23	6829073.35	377196.73	6898912.12	558823.39	7080501.67
278207.44	6828254.03	387076.18	6912191.36	558295.68	7082950.75
283768.31	6828626.65	400161.25	6918150.11	554035.05	7086731.18
285184.53	6829322.33	401689.54	6918454.73	551132.1	7092034.65
286111.89	6829227.06	408574.43	6921434.86	546818.93	7099029.37
294419.27	6831635.68	410140.95	6923216.12	541996.06	7101893.44
295048.09	6831721.43	418285.84	6930771.99	536121.81	7108997.24
295875.73	6832226.94	419414.64	6934420.63	536190.89	7112076.68
296515.06	6833106.57	429915.57	6942057.22	534233.61	7119565.8
298890.08	6835845.52	434703.88	6942394.16	533217.81	7120384.08
305626.95	6836053.18	437847.87	6945924.35	531076.75	7120595.78
306273.68	6835251.29	446460.19	6948427.48	527584.16	7123070.94
308293.27	6835775.36	452990.68	6949925.36	524397.42	7120354.62
309307.17	6836726.97	471604.95	6956105.63	520700.68	7114824.94
310464.79	6838138.24	477713.38	6960216.46	518826.58	7113517.99
310732.55	6838972.33	483578.36	6962625.75	513368.26	7112426.67
311982.95	6841106.59	485463.79	6967025.87	512584.04	7116349.05
315817.41	6841055.32	506171.92	6978167.63	517223.48	7117276.63
317075.17	6841894.23	508286.33	6979141.74	517794.3	7117674.7
319663.68	6843103.77	511013.63	6982902.94	521380.4	7123038.92
321304.61	6843135.83	513009.85	6983476.96	527357.84	7128133.96
323005.14	6843764.66	516564.14	6986983.44	532524.95	7124472.1
324417.24	6843780.72	520372.77	6989364.15	534798.29	7124247.32
326720.78	6845303.26	521507.91	6990542.84	537770.11	7121853.38
332443.17	6845893.77	523145.96	6992783.1	540202.43	7112546.56
333439.31	6847713.34	525328.21	6994425.25	540154.23	7110397.64
334851.79	6849718.2	527637.96	6995500.01	544635.88	7104977.94
334607.34	6850929.15	528900.77	6996508.62	549707.27	7101966.27
336676.69	6854876.4	531968.02	6997576.93	554591.16	7094046.03
336567.63	6855034.57	534317.58	7000309.9	557209.95	7089261.7
339730.98	6857215.81	535370.63	7002651.02	561930.08	7085073.55
339949.76	6858824.25	542466.82	7008902.07	562847.29	7080816.81
339025.26	6860005.17	548066.95	7009583.03	562218.37	7069580.3

Proposal boundary Coordinates **Note:** All coordinates are provided in MGA94 Zone 50					
Easting	Northing	Easting	Northing	Easting	Northing
564520.27	7064559.99	436608.4	6938518.28	346990.02	6834200.61
564450.13	7050098.29	431340.53	6938147.6	344441.78	6832808.35
560769.92	7045976.96	422842.86	6931967.85	343797.25	6832457.42
560918.76	7043004.82	421790.84	6928567.37	342232.52	6831968.36
558949.83	7035290.64	413010.39	6920421.9	339571.45	6830956.61
558998.08	7035213.73	410986.07	6918120.1	337175.8	6832640.04
567848.55	7035213.74	402888.34	6914614.99	334777.36	6833841.31
569492.94	7033929.26	401397.43	6914317.83	333613.91	6837243.51
571207.97	7032097.36	389670.9	6908977.72	333254.34	6838641.25
574249.49	7027706.62	381167.43	6897548	326492.97	6841316.88
570829.39	7025337.47	381012.2	6890554.7	325395.72	6840591.64
570829.39	7025337.48	373086.98	6882504.75	323595.44	6840571.16
570596.64	7025338.78	364788.14	6884386	321907.51	6839946.99
568711.47	7025349.35	362997.03	6885751.22	320404.08	6839917.63
568703.8	7023865.05	361645.05	6885136.77	318649.29	6839097.65
568703.8	7023865.05	360746.48	6885017.76	316767.21	6837842.34
567673.21	7023151.14	359553.88	6884497.25	313802.49	6837881.97
564966.29	7027058.84	359210.28	6883798.05	313671.71	6837658.75
564821.27	7027213.74	359023.09	6883735.39	313325.39	6836579.92
560641.08	7027213.73	359080.9	6883668.79	311649.09	6834536.35
561461.98	7024751.05	359125.92	6883626.39	309887.65	6832883.1
561109.92	7019773.29	358472.96	6882297.65	305078.98	6831635.29
559797.86	7018480.59	354202.05	6881359.11	304135.05	6832805.68
559726.08	7017448.54	352596.74	6880370.74	300389.54	6832690.22
558311.22	7011473.15	350791.04	6875297.37	299022.76	6831114.01
549470.21	7005724.19	348312.6	6873603.01	298088.77	6829828.94
544180.48	7005080.99	347666.88	6872286.85	296144.31	6828641.29
538663.75	7000221.28	346712.95	6865097.29	295084.57	6828496.78
537728.1	6998141.16	343133.44	6862132.85	286404.61	6825980.14
534299.78	6994153.39	343092.86	6861298.33	285771.09	6826045.23
530862.51	6992956.2	344141.02	6859959.45	284612.37	6825476.03
529759.88	6992075.53	343456.32	6854925.83	277262.64	6824983.55
527397.17	6990976.13	338838.29	6851741.53	274542.05	6826964.55
526024.88	6989943.48	338729.23	6851899.7	273682.49	6828770.09
524576.95	6987963.24	337968.78	6850449.17	273333.34	6829503.49
522911.53	6986233.91	338261.09	6849001.22	272861.83	6829649.44
519058.9	6983825.7	336159.39	6846018.1	270763.88	6830353.43
515094.05	6979914.18	334443.13	6842883.17	270245.73	6830832.9
513443.13	6979439.46	333620.27	6842798.25	269496.74	6831014.67
510910.37	6975946.56	336620.61	6841610.95	269496.74	6832761.97
507958.12	6974586.45	337449.04	6838390.67	269496.74	6834262.94
488589.95	6964165.63	338032.44	6836684.65	268569.31	6835030.45
486610.94	6959547.17	339232.61	6836083.55	268402.99	6835081.55
479609.36	6956670.96	340134.27	6835449.95	268105.64	6835172.92
473384.45	6952481.75	340923.91	6835750.18	268093.93	6836602.28
454070.46	6946069.16	342229.28	6836158.18	267511.43	6838181.52
447466.33	6944554.38	342526.48	6836319.99		End
440069.49	6942404.53	345077.29	6837713.66		

Appendix 5

Summary of Submissions and
Proponent's Response to Submissions