OAKAJEE RAIL DEVELOPMENT

PUBLIC ENVIRONMENTAL REVIEW
ASSESSMENT NO. 1818

SUMMARY OF SUBMISSIONS & MATTERS TO BE ADDRESSED

This document forms a summary of public submissions regarding the Public Environmental Review.

The public submission period for the proposal commenced on 2 August 2010 for a period of four weeks, ending 30 August 2010.

The principal issues raised in the submissions included environmental, social and planning issues. Other issues focussed on questions of fact and technical aspects of the proposal. Although not all of the issues raised in the submissions are environmental, the proponent is asked to address all issues, comments and questions, as they are relevant to the proposal.

A total of 14 submissions were received.

RAIL PER	
No.	Submitter
1	CSIRO
2	Department of Environment Water Heritage & the Arts
3	Asmussen Family Trust
4	Main Roads WA
5	Shire of Chapman Valley
6	Department of Indigenous Affairs
7	DEC Environmental Management Branch
8	Public Submission
9	DEC Noise Regulation Branch
10	Department of Water
11	Department of Planning
12	Department of Health
13	DEC Air Quality Management Branch
14	Public Transport Authority

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1. Vegetation & Flora

1.1 Survey work

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Public Submission (8)	Submitter is concerned that flora survey work and timing is inadequate as rare flora that occurs on property has not been identified (*Caladenia hoffmanii*).	No

Oakajee Port and Rail (OPR) believes that the effort and timing of *Caledenia hoffmanii* surveys was suitable for assessment of the OPR Rail Development (the Proposal).

A two phase, Level 2 flora survey was undertaken within the Study Area. Phase one involved a quadrat sampling method to provide a detailed floristic species list. This was performed between April and August 2009. Phase two involved targeted surveys for threatened and unknown flora species, including *Caledenia hoffmanii*. This phase was conducted between August and October 2009 and again in March 2010 (Ecologia, 2010a).

As *C. hoffmanii* is known to flower typically from August to October, the survey timing is expected to be suitable for this species.

A total of 605 quadrats and 1,250 km of transects were walked during the surveys, covering 2,364 ha. In addition, previous survey records were searched to determine known recorded locations of *C. hoffmanii*. In this regard, OPR would welcome the opportunity to liaise with the author of this submission to understand their knowledge of species locations in the area, with the view to add to known recorded locations in the area.

The rail alignment has been designed to avoid known populations of *C. hoffmanii*. These populations have been compiled using all available data (Department of Environment and Conservation (DEC) records, Ecologia, Ecoscape etc). It is also unlikely that the Proposal will impact on potential *C. hoffmanii* habitat as this species is generally found growing on clay-loam soils, laterite and granite rocky outcrops, ridges, swamps and gullies, which are mostly areas that would be unsuitable for a rail line due to grade or inundation constraints. In addition, the current Rail Corridor has been aligned to minimise impacts on native vegetation within the Freehold Area, which includes potential *C. hoffmanii* habitat.

As detailed above, the Proposal will not impact on any known populations of *C. hoffmanii*, and impacts on potential *C. hoffmanii* habitat is limited due to engineering constraints and OPR's commitment to minimise vegetation clearing in the Freehold Area.

1.2 General Impacts

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Concerned that although surface water dependant vegetation is listed for monitoring to ensure the engineering design works, there is no commitment for remedial management action specified should vegetation be impacted.	No

This comment is understood to relate to vegetation dependant on sheet flow drainage regimes. OPR has committed to remedial management actions should monitoring indicate vegetation is being affected by interruption of surface water flows and these were described in the Public Environmental Review (PER). A draft Vegetation and Flora Management Plan (VFMP) (OPR 2010) was developed and included as an Appendix in the PER, which contained the following contingency actions:

> *If there is a decline in sheet flow dependent vegetation health, the following actions will occur:*
> - *Investigate potential cause of sheet flow restriction.*
> - *Repair any damaged environmental culverts or remove blockages as required.*

- *If cause is determined to be due to inadequate design of drainage facilities, additional environmental culverts will be installed to reinstate sheet flow regimes.*
- *Continue targeted monitoring in the affected area to confirm the success of implemented actions.*

The contingency action is triggered based on the results of monitoring proposed in the following commitment in Table 7-9 of the PER:

> *Monitoring of vegetation health will be undertaken to ensure that the surface hydrology management measures are suitable.*

The monitoring would include assessment of the performance indicators in Table 7-17 of the PER:

- *Riparian vegetation monitoring downstream of the Proposal*
- *Mulga vegetation monitoring in sheet flow areas*

The performance indicators will be assessed with a focus on monitoring the achievement or likely achievement of a target of "*no vegetation loss outside of approved disturbance footprint through alteration to surface water hydrology*".

The monitoring will enable OPR to implement contingency actions if impacts are recorded.

Eco Logical Australia was commissioned to develop a Vegetation Monitoring Program (Eco Logical Australia 2010). The monitoring program has been developed to assess indirect impacts of the proposed rail formation design on sheet flow dependant vegetation communities. The monitoring program provides an integrated approach using multi-temporal remote sensing analysis with supporting directed ground surveys/assessments. This will provide vegetation condition information across the potential impact area to detect changes requiring on-ground response. Two tiers of trigger levels requiring action are proposed (Figure 1). The first is based on early change detection using remote sensing, which will trigger further on-ground investigations. The second tier of responses is triggered by results of directed ground assessment or changes detected in permanent monitoring plots/quadrats, If this response is triggered then remedial actions will be implemented to mitigate and ameliorate any significant impacts on vegetation communities.

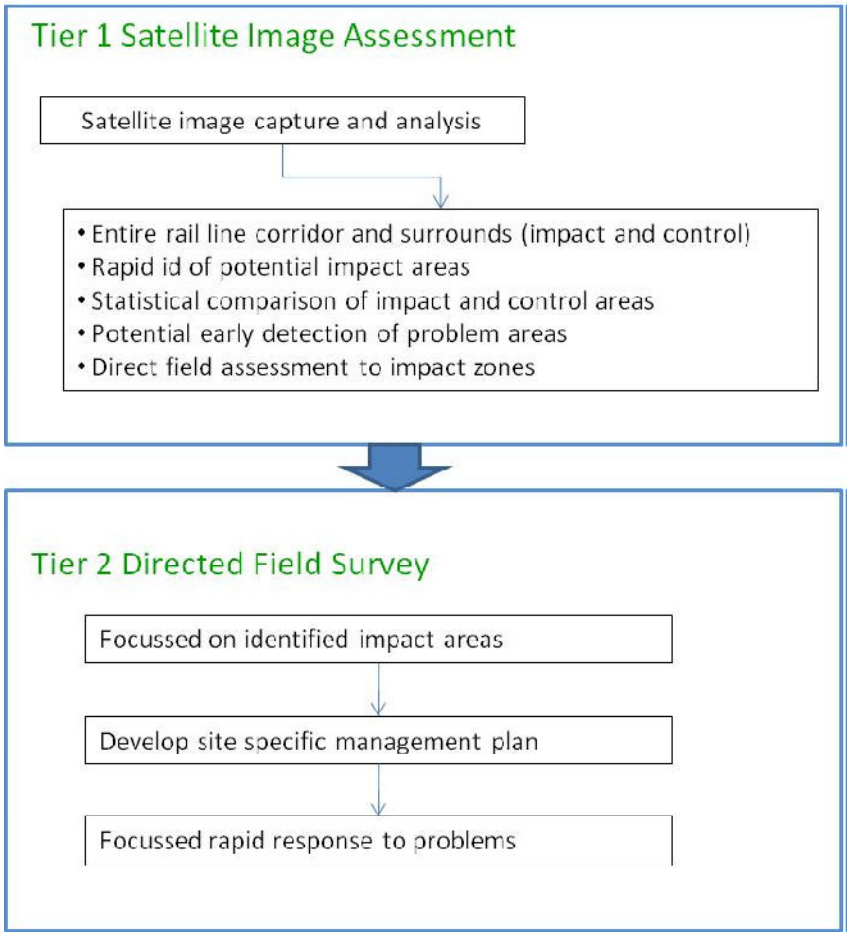

Figure 1: Two tiered approach of the Vegetation Monitoring Program (eco logical Australia 2010)

Should contingency actions be triggered, the subsequent targeted monitoring will determine whether the health of the impacted vegetation is recovering. If the health does not improve within a suitable timeframe then OPR's rehabilitation management actions will be implemented. A matrix defining the response triggers, performance indicators, actions and close out requirements to rectify any detected impact is outlined in Tables 6 and 7 of the Vegetation Monitoring Program (Eco Logical Australia 2010).In summary, OPR will ensure that in the event that its vegetation monitoring program identifies a change to vegetation health and cover as a result of alterations in surface water flows, actions are taken to ensure that vegetation is not impacted further, and that vegetation health recovers.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Considers vegetation fragmentation and loss of high quality vegetation to be a significant issue. PER repeatedly states at a regional scale the vegetation loss is insignificant but many farms have very limited perennial vegetation cover and any loss is significant.	Yes

The vast majority of vegetation proposed to be cleared for the Proposal is not in farming areas (Freehold Area) but in pastoral land that has not been subject to broad scale clearing. OPR agrees with the Shire of Chapman Valley that the loss of remnant vegetation with the Freehold Area is a significant issue. The PER does recognise the significance of remnant vegetation in the Freehold Area given the extent to which vegetation associations have been reduced to below 30% of their pre-European extent. On this basis, OPR has designed the Proposal to generally avoid or minimise remnant vegetation clearing through this area by route selection and committing to avoid remnant vegetation for ancillary items and construction materials such as borrow. It is not possible to avoid all remnant vegetation. Due to a number of engineering constraints posed by the required route such as grade, alignment curvature, existing infrastructure (e.g. homes) and watercourses and the need to re-align the North West Coastal Highway, some clearing is unavoidable.

No more than 107.3 ha will be disturbed within the Freehold Area. This figure was based on detailed aerial mapping and is expected to be the minimum required for construction of the Proposal. It has been revised from 100 ha to 107.3 ha in this response to submissions to include additional area associated with realignment of the North West Coastal Highway which has been extended in consultation with Main Roads WA to provide safer road conditions. The additional 7.3 ha is not considered significant and is made up of Beard Communities e6Mr a19Si (35), a33Sc (413) and mhSc (675). The extended realignment removes the need for any additional impacts on Reserve 16200. The disturbance equates to a loss of approximately 0.043% of the current extent of significant vegetation remaining in the Geraldton Sandplains bioregion.

OPR considers that although any impacts to such vegetation may be thought of as significant because of the level to which they have been historically cleared, the proposed clearing will not further reduce the area of these communities to a significant extent. In all cases, the clearing represents less than 1% of the remaining area of each vegetation association.

In particular, OPR has attempted to further reduce the impact of clearing to vegetation association e6Mr eaSi, of which there is less than 10% of its pre-European extent remaining (7.72%), to as low as practicable. This was achieved by analysing each portion of this vegetation association to determine additional areas that can be avoided within the construction corridor while still allowing safe construction to occur. This has reduced the estimated clearing from 20.3 ha detailed in the PER to a total of 11.5 ha, which represents only 0.15% of what is remaining and would result in the total remaining extent reducing from 7.72% to 7.71%.

As OPR finalises the design for the Proposal and moves into the construction phase it will continue to investigate opportunities to reduce the requirement for native vegetation clearing. To ensure that indirect impacts to vegetation are avoided OPR will implement controls to ensure that dust, pathogens, weeds and erosion issues are appropriately managed.

OPR has developed an offsets strategy that provides for the acquisition of approximately 110 ha of endangered and vulnerable remnant vegetation and for this to be transferred to the conservation estate (Eco Logical 2010c).

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Considers vegetation fragmentation and loss of high quality vegetation to be a significant issue. PER repeatedly states at a regional scale the vegetation loss is insignificant but many farms have very limited perennial vegetation cover and any loss is significant. Additionally the loss of excellent to very good condition vegetation in catchments with limited remnant vegetation is significant.	No

Refer to previous comment.

Issue 4:

Submitter (sub #)	Submission and/or issue	PER modified
Public Submission (8)	Submitter expressed concern regarding borrow pits, stating they have not been identified in size, location and type of material. Considered likely to have a high impact on vegetation and surface water erosion.	No

Borrow search areas have been interpreted from remote sensing data; however, detailed site investigations are required to determine precise information such as borrow pit locations. This work is currently underway. Due to the length of the rail corridor it is impossible to commit exact locations and dimensions at this early stage.

In order to address the limitations presented for impact assessment in the absence of exact locations and dimensions, the PER prescribes criteria or environmental constraints under which locations for borrow pits will be determined to prevent significant impacts to vegetation. Table 7-9 of the PER states the following:

> *Throughout the freehold area native vegetation will not be cleared except for the purposes of the rail alignment and access tracks where alternative routes are not practicable.*

Therefore there will be no clearing of native vegetation in the freehold area for the purposes of borrow pits, i.e. all borrow pits will be located on previously cleared land.

In order to minimise the impact of borrow pits on vegetation within the Pastoral Area OPR has committed within Table 7-9 of the PER to:

- *Required clearing will be minimised, for example:*
  - *Material from cut rail sections will be used where practicable in preference to material sourced from borrow pits to minimise clearing; and*
  - *Pre-disturbed areas will be used wherever possible for temporary infrastructure*
- *All final proposed disturbance areas will be subject to detailed targeted surveys for DRF and the following Priority Flora species prior to disturbance:*
  - *Chamelaucium sp. Yalgoo (P1)*
  - *Eremophila sp. Tallering (P1)*
  - *Goodenia lyrata (P1)*
  - *Gunniopsis divisa (P1)*
  - *Petrophile vana (P1)*
  - *Ptilotus tetrandrus (P1)*
  - *Eremophila arachnoids subsp. arachnoids (P3)*
  - *Homalocalyx echinulatus (P3)*
  - *Tecticornia cymbiformis (P3)*
  - *Thryptomene sp. Moresby Range (P3)*
  - *Thryptomene sp. Wandana (P3)*

  The survey information will be included in OPR databases and documentation to ensure that OPR will not disturb beyond the areas approved in the PER.

OPR agrees that Borrow pits represent a risk of surface water erosion. Borrow pits will need to be developed such that they do not contribute to the sediment load of surface runoff, or impede flow. The

draft Surface Water Management Plan (SWMP) included in the PER as Appendix 9 contains a commitment relating to borrow pits:

> *Construct borrow pits such that they are not an impediment to downstream flow. Borrow pits are to be self draining, where possible, and will contain erosion protection as required.*

Once borrow pits are no longer required they will be shaped and rehabilitated in accordance with OPR's VFMP (OPR 2010) to form part of the surrounding landscape.

Issue 4:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Although the PER states that the linear feature means less erosion and sedimentation impacts to vegetation, this is found to be contrary to experience with regional road networks and farm access tracks. Erosion and sedimentation can occur with sheet flow across the roads	No

Section 7.2.4.6 of the PER states the following:

> *There may be some localised erosion within cleared areas during rainfall events that may cause an increase in sedimentation and a potential impact to vegetation. These impacts are expected to be minor, as the Proposal is a narrow feature and in most cases clearing will run perpendicular to major flows.*

This statement is based on the relatively low levels of erosion and sedimentation risk associated with a narrow feature when compared to a large cleared area. It is recognised that a long lineal feature will require more erosion protection features per unit area then a large contiguous area.

As stated above, OPR expects that some localised erosion may occur due to high flows during significant rainfall events. This risk is expected to be significantly lower during operation, after the rail formation and access tracks have been upgraded and cleared areas have been rehabilitated.

In order to minimise erosion risks further, OPR has committed to "*design and install culverts, bridges or water crossings at drainage crossings*" such that they "*include appropriate erosion protection e.g. rip rap rock protection and reno mattresses*".

Erosion and associated sedimentation is therefore not expected to be a significant issue during construction or operation of the Proposal.

Monitoring programs proposed to identify impacts on downslope or downstream vegetation from interruptions in surface water flow (e.g. riparian or potential sheet flow dependent vegetation) will also detect impacts to vegetation from sedimentation and erosion.

Vegetation monitoring is expected to involve a combination of remote sensing technology and ground-truthing of results. This is expected to provide a high level of detail across the entire length of the Proposal. Further details of the proposed vegetation monitoring program are included in Section 1.5 below.

1.3 Revegetation & rehabilitation

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Suggest PER consider the opportunity for intensive revegetation of an area on each property the size of area cleared, in addition to broader projects proposed in the PER.	Yes

OPR will be consulting with the Department of Sustainability, Environment, Water, Population and Communities (DSEWPC - previously the Department of Environment, Water, Heritage and the Arts (DEWHA)) and DEC's Environmental Management Branch with regards to the development of an offset package to mitigate the Proposal's residual impacts to the environment, including significant fauna habitat, vegetation and Priority Flora. DSEWPC are known to prefer revegetation of land of appropriate

tenure that is being managed for conservation, such as conservation estate. Extensive revegetation of construction areas along the rail corridor (areas no longer required for operation) will occur, and there may be some revegetation performed on other landholder's properties, particularly if there are potential land degradation issues to consider (e.g. erosion).

In these cases it is likely that DSEWPC would require a conservation covenant to be placed on the land for it to be considered as an environmental offset under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). In some areas this will not be able to occur as the land may be required for future expansion plans (such as revegetated areas on the edge of the operational rail corridor). OPR will therefore focus on land suitable for conservation estate when proposing offsets.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Public submission (8)	Question is raised as to how 6000ha can be revegetated and will the vegetation be locally endemic, where will the seed come from and who will grow the plants under what time frame? Has the likelihood of drought been considered in the revegetation plans?	Yes

It is not proposed to revegetate 6000 ha. This figure is the total amount of vegetation clearing potentially required for construction of the Proposal. All construction areas not required for operations will be rehabilitated. Areas such as borrow pits, temporary disturbance areas, temporary access roads through the Pastoral Area will be rehabilitated. Vegetation cleared in the Freehold Area not required for permanent infrastructure (temporary disturbance areas) will generally be revegetated to reduce edge effects. Disturbance through cleared farmland will generally not be revegetated with natives unless specifically requested by landowners.

The development of a detailed rehabilitation plan will require extensive site surveys and expert input to ensure that species selection is appropriate to the site and that key environmental factors such as significant fauna habitat is considered. Strategies for rehabilitation will be specific to each area of clearance. For instance, small areas of cleared land surrounded by intact native vegetation may be rehabilitated by returning topsoil and debris and allowing the seed bank from debris and surrounding vegetation to recolonise.

Larger areas will require a reseeding program which will source seeds from the local provenance wherever feasible. Licensed seed collectors will be utilised for any seed collection. It is likely that rehabilitation will use a combination of direct seeding and seedlings. Seedlings are likely to be grown in local nurseries. Continued drought may impact the success of rehabilitation and may necessitate repeated seeding campaigns to ensure adequate coverage is attained.

Detailed rehabilitation prescriptions will be developed in the lead up to construction and will form the basis of the VFMP (OPR 2010).

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7)	In relation to construction and decommissioning/closure phases of the proposal, the outcomes for quality and security of closure and rehabilitation are not assured, particularly for sections of the rail passing through DEC managed lands. DEC recommend conditions be applied that require: • the development and achievement of completion criteria to the requirements of the OEPA on advice of DEC, particularly in the proposed Woolgoorong, Twin Peaks and Narloo conservation parks. • Monitoring and annual reporting on the recovery of the closure and rehabilitation (including rehabilitation relating to construction activities, i.e. borrow pits, quarries, turkey nests etc), relevant to completion criteria, until criteria have been met to the satisfaction of DEC for lands managed by the department. Monitoring of closure and rehabilitation needs to be undertaken until agreed completion criteria have been achieved to the satisfaction of DEC, particularly for areas adjacent to significant flora populations and DEC managed land. Further management actions may need to be undertaken to meet completion criteria if monitoring shows that any criteria are unlikely to be met.	Yes

OPR agrees with DEC that an agreed prescriptive rehabilitation program will need to be developed, including the proposed Woolgoorong, Twin Peaks and Narloo conservation parks. In this regard, as a part of its landholder consultation program OPR will liaise closely with the DEC to develop detailed rehabilitation prescriptions that will address DEC's requirements with respect to conservation management and are expected to include:

- Access
- Drainage
- Flora and fauna management
- Rehabilitation including suitable completion criteria and monitoring requirements.
- Weed and feral animal control

The Proposal is a public work and as such is being developed as a long life (>50 years) project. It is proposed that prior to construction OPR will develop a preliminary Decommissioning and Closure Plan in consultation with the DEC which will include methodology for determining completion criteria for the rehabilitation of all construction areas not required for operations. It is expected that a final detailed Decommissioning and Closure Plan would be developed by the proponent prior to closure (>50 years away), and that this plan would need to be developed and implemented in consultation with the DEC.

In the short to medium term there will be temporary construction areas that will not be required during operation, which will require rehabilitation and will be managed under a detailed rehabilitation plan.

The development of the rehabilitation plan will require extensive site surveys and expert input to ensure that key environmental factors such as significant fauna habitat, are established. Strategies for rehabilitation will be specific to each area of clearance. For instance, small areas of cleared land surrounded by intact native vegetation may be rehabilitated by returning topsoil and debris and allowing the seed bank from debris and surrounding vegetation to recolonise.

Larger areas will require a reseeding program which will source seeds from the local provenance. Continued drought may impact the success of rehabilitation and may necessitate repeated seeding campaigns to ensure adequate coverage is attained.

The VFMP (OPR 2010) included with the PER included proposed monitoring of rehabilitated areas:

Maintain the Ground Disturbance Permit system to record areas that will require rehabilitation, and also record those areas that have already been rehabilitated.

Maintain the Rehabilitation Register and record the following information:

- *Hectares rehabilitated*
- *Identification of new areas available for rehabilitation to commence*
- *Inspections of rehabilitation success at completed rehabilitation areas*
- *Location and size of topsoil storage areas*

Monitoring will focus on the continual assessment of the achievement or likely achievement of agreed completion criteria. Through conservation estate, these criteria will be as agreed with DEC.

Contingency actions are also proposed in the draft VFMP (OPR 2010) if monitoring identifies that the agreed completion criteria are not being met:

If rehabilitation in an area is deemed to be unsuccessful then the following actions will occur:

- *Assess if rehabilitation occurred according to the Ground Disturbance Permit and Rehabilitation Register conditions*
- *Determine potential reasons for the lack of rehabilitation success, utilising expert advice as required*
- *Take the necessary actions required to address the lack of success*
- *Make changes to rehabilitation procedures as required to minimise the likelihood of reoccurrence.*

The VFMP (OPR 2010) will be finalised in consultation with DEC.

In addition to management actions detailed in the VFMP (OPR 2010), OPR will prepare a Conservation Estate Management Plan in order to ensure that direct and indirect impacts to proposed and existing conservation estate are managed appropriately. This management plan will be developed in consultation with DEC, and OPR will ensure that the plan is signed off between both parties (OPR and DEC) prior to construction within proposed or existing conservation estate. There are a number of contractual mechanisms that OPR will explore with the DEC to ensure that the Conservation Estate Environmental Management Plan is prepared and implemented to and appropriate standard and prior to the implementation of the Proposal. The options include the following:

1. Condition under the State Development Agreement between OPR and the State of WA – a condition could be included within this contract that ensures that an EMP is prepared and implemented.
2. Agreements not to object to land acquisition under the Land Administration Act – prior to implementing the compulsory acquisition clauses under the Land Admin Act OPR will be entering into agreements with all land holders. These agreements may include conditions for various issues that might include specific land management requirements (eg, drainage, borrow locations, access requirements, revegetation, fencing etc). A condition to develop and implement a Conservation Estaet Managemetn Plan could be included within OPR's agreements with the DEC in eraltion to its proposed Conservation reserve aras on Woolgorong, Twin Peaks and Narloo Pastoral Stations.

In recognition of the impacts on DEC managed land, an offsets package has been prepared (Eco Logical 2010c). The package will see the exclusion of 950ha of pastoral lease and inclusion into DEC managed land. The area contains both Malleefowl and Western Spiny-tailed skink habitat and is contiguous with already proposed conservation estate.

Issue 4:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7)	DEC state that monitoring of closure and rehabilitation needs to be undertaken until agreed completion criteria have been achieved to the satisfaction of DEC, particularly for areas adjacent to significant flora populations and DEC managed land. Further management actions may need to be undertaken to meet completion criteria if monitoring shows that any criteria are unlikely to be met.	Yes

Agreed. As stated above, OPR will monitor the success of construction rehabilitation to ensure that it meets the completion criteria agreed with DEC. Contingency actions will be implemented if criteria are not met.

1.4 Weed management

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Weed control and hygiene is mentioned during construction but there is no mention of ongoing future maintenance.	Yes

As identified in Section 7.2.4.5 of the PER, the greatest risk of weed dispersal is expected to occur during construction, due to earthmoving, vehicle and soil movements. Weed control measures in the PER are therefore primarily aimed at the construction phase.

In comparison to the construction phase the weed risk during operations is considered to be much lower due to significantly less earthmoving, soil movement and vehicle traffic. Nevertheless, over time the rail alignment and associated service road may potentially act as a vector for weed movement due to its use as a corridor by grazing animals and vehicles; and the semi-covered or disturbed areas at the interface with the permanent rail formation providing increased opportunity for weed infestation.

The control measures listed in Table 7-9 of the PER will therefore still be applied during operation. OPR's objective with respect to the management of weeds is detailed in Table 7-8 of the PER:

> *Control the introduction and spread of weed species and protect unaffected areas from invasion of exotic noxious weeds.*

To ensure that weeds are appropriately managed during the operational phase of the Proposal, OPR will conduct annual monitoring of weeds along the rail corridor in areas that are considered at highest risk to weed infestation. This monitoring program will take into account any reports from landholders in relation to weed infestations on adjacent properties.

Monitoring of weed infestation will be conducted immediately beyond the outer boundaries of current known weed populations to determine the absence or presence and rate of weed spread into other areas. Monitoring will also occur within current infested areas to determine if there are any increases in the numbers of weeds within these areas.

The results of this annual weed monitoring program will guide the ongoing management of this issue.

The rehabilitation of temporary construction areas cleared during construction but not required for permanent infrastructure will further reduce the potential for the rail corridor to be a vector for weeds.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Performance indicators include acting if monitoring of health and weed survey results are poor but no details about duration are given.	Yes

Vegetation health and weed monitoring will continue until it can be confirmed by external consultants that the Proposal has no significant impacts. With respect to vegetation health monitoring associated with sheet flow areas it is anticipated that a number of seasons of survey will be required. It is anticipated that sheet flow monitoring will occur annually for at least five years or until it can be demonstrated that these impacts are being managed appropriately. This is discussed further within the Vegetation Monitoring Program (Eco Logical Australia 2010).

To ensure that weeds are appropriately managed during the operational phase of the Proposal, OPR will conduct annual monitoring of weeds along the rail corridor in areas that are considered at highest risk to weed infestation. Over time (post five years) the intensity and duration of these surveys is anticipated to reduce as the areas of high risk to weed invasion become known and weed management strategies are refined.

1.5 Impact footprint & monitoring

Issue 1:

Submitter	Submission and/or issue	PER

(sub #)		modified
DEC – Environmental Management Branch (7)	Submission does not consider that the proponent has 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.	Yes

Through discussions with DEC's Environmental Management Branch OPR has identified that the key potential indirect impact to vegetation as a result of the Proposal is alterations to sheet flow regimes. Weeds, erosion and sedimentation may also cause indirect impacts, additional information on these factors are discussed elsewhere in this document:

- Section 1.4 (Weed Management)
- Section 1.2 (General Impacts), Issue 4

Sheet flow management is summarised in Section 7.5.5.2 of the PER, which includes the following commitment:

> *OPR will complete further detailed investigations of the corridor to identify sheet flow dependant vegetation. In these locations OPR will incorporate culverts at an appropriate spacing to restrict sheet flow impacts to within the original construction footprint.*

Astron has recently completed a detailed investigation to determine areas having a high likelihood of sheet flow dependant vegetation (Astron 2010). Investigations used an environmental risk assessment procedure, using both a precautionary and a realistic approach (scenario 1 and 2) to identifying vegetation communities that may have some likelihood of being sheet flow dependent. This assessment included a review of sheet flow studies undertaken for existing rail networks in the Pilbara and has employed the same assessment methodologies utilised for the assessment of potential impacts on sheet flow dependant vegetation as existing linear infrastructure developments. The Astron (2010) assessment identified areas of potential sheet flow dependant vegetation, based on vegetation mapping developed by Ecologia (2010a). A Digital Elevation Model (DEM) was used to generate a terrain slope model for the entire rail alignment. This slope model was then used to identify areas that are likely to experience a sheet flow drainage regime.

The following methodology was employed to assign areas based on the risk of occurrence of sheet flow dependant vegetation:

- Assess and rank mapped vegetation associations within the Study Area according to their dependency on sheet flow and vulnerability to sheet flow disruptions.
- Mapping and scoring the likelihood of sheet flow occurrence across the landforms (plains and slopes);
- Identifying areas of inherent risk and determining the potential severity of ecological consequences within those areas by superimposing or combining risk scores of vegetation dependency with the mapped extent of likely sheet flows.
- Calculate the geographical extent of each category of ecological consequence (inherent risk).
- Recalculate the geographical extent of each category of ecological consequence, assuming the implementation of control measures (residual risk).

The results of each stage of the analysis have been tabulated below. The vegetation associations identified by Ecologia (2010a) were ranked from 'independent' of sheet flow to 'known to be dependant' (Table 1). 47.07 % of vegetation within the Study Area is considered 'independent' or 'unlikely to be dependant' on sheet flow with the remaining 52.93 % of vegetation considered 'possibly', 'likely' or 'known to be dependant' on sheet flow.

Table 1: Area and level of sheet flow dependant vegetation in the Study Area based on realistic (scenario 2) assessment methodology (Astron 2010)

Degree of dependency	Risk Score	Risk Rating	Risk Area (ha)	Area (%)
Independent	1	Very Low	1390.14	25.40
Unlikely to be dependent	2	Low	1185.73	21.67
Possibly dependent	3	Moderate	1980.34	36.18
Likely to be dependent	4	High	466.89	8.53
Known to be dependent	5	Very High	449.90	8.22
			5473.01	100.00

Most of the topography traversed by the Proposal is level to near level plains. The terrain modelling is based on a cell dimension of 30 m x 30 m and is likely to miss areas smaller than the cells which are slightly raised or lower within the general topography. 93% of the landform is considered to have 'occasional to 'frequent' likelihood of sheet flow events with the remaining 7% considered 'improbable or 'remote' likelihood of sheet flow events (Table 2).

Table 2: Area and likelihood of sheet flow in the Study Area (Astron 2010)

Likelihood of sheet flow	Risk Score	Risk Rating	Risk Area (ha)	Area (%)
Improbable	1	Very Low	176.88	3.23
Remote	2	Low	208.62	3.81
Occasional	3	Moderate	345.45	6.31
Probable	4	High	1079.48	19.72
Frequent	5	Very High	3662.58	66.92
			5473.01	99.99

The combined inherent risk, based on the assessment of the vegetations dependency on sheet flow and the geographical areas where sheet flow is likely to occur, categorised approximately 15.13 % of the vegetation studied as very high risk of sheet flow dependency and 26.18 % as high, or a combined area of 2261.07 ha. This is considered to have high to critical ecological consequences respectively if mitigating engineering designs are not incorporated (Table3).

Table 3: Extent of impacts for the rail corridor in the absence of mitigating engineering design based on realistic (scenario 2) assessment methodology (Astron 2010)

Ecological Consequences Description	Risk Score	Risk Rating	Risk Area (ha)	Area (%)
Negligible	2	Very Low	71.67	1.31
Negligible	3		89.22	1.63
Low	4	Low	215.06	3.93
Low	5		502.63	9.18
Moderate	6	Moderate	1161.77	21.23
Moderate	7		1171.59	21.41
High	8	High	1432.99	26.18
Critical	9	Very High	470.69	8.6
Critical	10		357.39	6.53
			5473.01	100

Astron (2010) then used the above information to perform GIS analysis to determine what drainage spacings would be required to re-establish the sheet flow regime resumes within the outer boundary of the construction envelope. It was determined that the final downstream release point was likely to be on

the downslope side of the access road, with an approximate 25 m distance between this point and the outer boundary of the construction envelope. The results have shown that in some high risk areas the drainage spacings will be at approximate 50 m intervals. This information has been supplied to OPR's Rail Engineers for input into their drainage design. Figure 2 depicts the detailed design principle for the environmental culverts, embankments, spoon drains, release points and spreader mechanisms to resume sheet flow within the construction envelope in areas of sheet flow dependant vegetation.

By implementing the mitigation design measures shown in Figure 2, a reduction from 2261.07 ha of areas classified as having high to critical ecological risk to 259.86 ha is achieved(Table 4). This indicates the area of residual impact to sheet flow dependant vegetation should be contained within the construction footprint based on the Astron risk assessment (Astron 2010). As this area would have previously been cleared for construction it is predicted that there will be no additional disturbance expected, however it may impact on rehabilitated vegetation.

Table 4: Extent of sheet flow shadow impacts for the Proposal incorporating mitigating engineering design based on realistic (scenario 2) assessment methodology (Astron 2010)

Ecological Consequences Description	Risk Score	Risk Rating	Risk Area (ha)
Negligible	2	Very Low	8.29
Negligible	3		10.72
Low	4	Low	25.22
Low	5		59.31
Moderate	6	Moderate	136.31
Moderate	7		136.77
High	8	High	161.69
Critical	9	Very High	58.97
Critical	10		39.20

Astron's report has been provided to the Office of the Environmental Protection Authority (OEPA) and DEC's Environmental Management Branch.

OPR accepts that there is potential for indirect impacts to extend outside of the construction disturbance footprint. However, this potential can be minimised by implementing specific sheet flow management controls as detailed above. In addition to engineering design features of the rail, in order to prevent potential indirect impacts as a result of alterations to surface hydrology, the following commitment was made in Table 7-9 of the PER:

> *Monitoring of vegetation health will be undertaken to ensure that the surface hydrology management measures are suitable.*

Eco Logical Australia was commissioned to develop a Vegetation Monitoring Program (Eco Logical Australia 2010). The monitoring program has been developed to assess indirect impacts of the proposed rail formation design on sheet flow dependant vegetation communities. The monitoring program provides an integrated approach using multi-temporal remote sensing analysis with supporting directed ground surveys/assessments. This will provide vegetation condition information across the potential impact area to detect changes requiring on-ground response. Two tiers of trigger levels requiring action are proposed (Figure 1). The first is based on early change detection using remote sensing, which will trigger further on-ground investigations. The second tier of responses is triggered by results of directed ground assessment or changes detected in permanent monitoring plots/quadrats, If this response is triggered then remedial actions will be implemented to mitigate and ameliorate any significant impacts on vegetation communities.

In addition to vegetation health monitoring OPR also intends on monitoring surface water (including sheet flow). Table 7-18 of the PER states that "*monitoring will occur to ensure surface water flows are maintained*". This information will be used to ensure that the following commitment is complied with (also Table 7-18):

> *Prepare and implement a SWMP to contain the following actions:*
> - *Maintain all stormwater infrastructure to their designed capacity or function*

A draft SWMP was included with the PER.. The finalised plan provides clarification about how this issue will be monitored:

Visual observations and inspections during flow events for:

- *Pooling upstream/upslope of Project infrastructure*
- *Diversions of natural drainage lines as a result of the Project*
- *Restriction in flow downstream of Project infrastructure*
- *Inspection of drainage facilities after significant rainfall or at least twice annually, to determine whether blockage, siltation, erosion, structural instability or damage has occurred.*

The SWMP (OPR 2010A) also contains more detail on what contingency actions will be taken if significant pooling, flow diversions or restriction occur as a result of the Project:

- *Identify potential cause of impact*
- *Repair, unblock, redesign or replace drainage facilities if required*
- *Review success of contingency actions during next flow event*

OPR is aware that constructing the Proposal through areas of sheet flow dependant vegetation will require careful design, management and monitoring to ensure that impacts are minimised. OPR has committed to confining the area of sheet flow impact within the boundary of the construction footprint (typically 50 m each side of the rail centreline). By implementing the management measures described above, OPR expects that this outcome can be achieved and that significant impacts to sheet flow dependant vegetation as a result of the Proposal can be avoided.

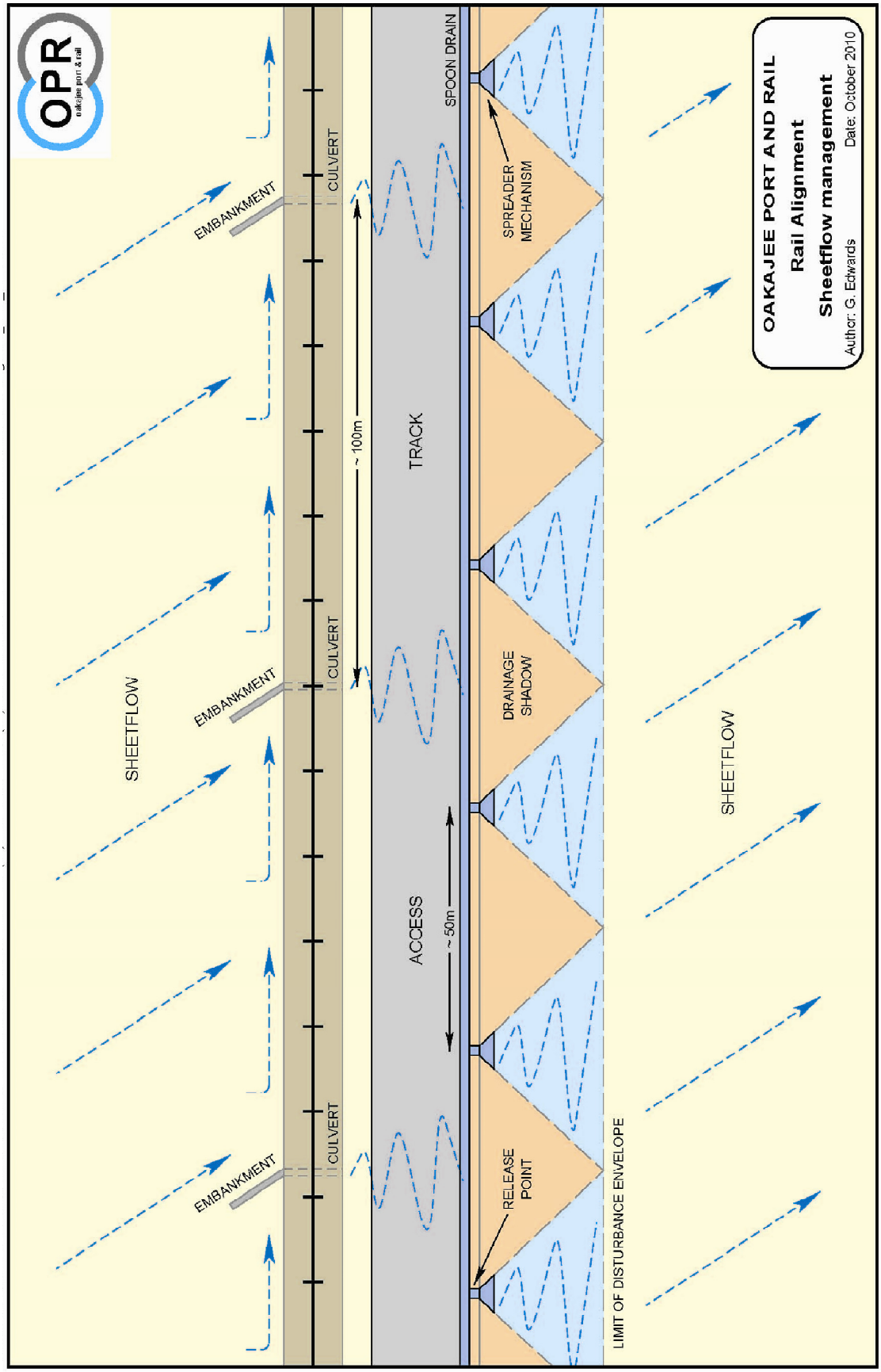

Figure 2: Design of proposed Rail Corridor drainage facilities (Astron 2010)

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7)	Submitter suggests a zone of indirect impacts (adjacent to areas approved for disturbance) be defined for this project by the proponent, and within which, significant flora and vegetation condition and health may decline to agreed limits.	No

The PER included consideration of this issue (Section 7.5). Further information and discussion is provided above – in particular refer to Figure 2.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7)	The extent of indirect impacts of the project on significant flora and associated vegetation communities is not clearly presented in the PER. It is not clear if quantitative descriptions of impacts (i.e. tables 7-2, 7-4, 7-6, 7-7 & 7-8) include indirect impacts. It is important that all impacts proposed by this development, if approved, are made clear and confined as closely as possible to the identified total disturbance footprint. Have indirect impacts been factored into the total disturbance footprint in the PER?	No

Indirect impacts have been factored into the disturbance footprint described within the PER. Refer to response to Issue 1 within this Section 1.5 above.

Issue 4:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7)	Submitter suggests the proponent has not developed a monitoring and management program for areas delineated as being subject to indirect impacts. The proponent should develop a flora health and vegetation condition monitoring program applicable to the defined indirect impact zone, including baseline measurements for areas potentially impacted and where practical, measurements at suitable reference sites that will provide comparative data for measuring impacts. It is recommended that the program is developed in agreement with DEC for areas where significant flora and associated communities are affected and be capable of measuring change in relation to trigger levels.	Yes

Agreed. Refer to response to Issue 1 within Section 1.5 above. OPR has committed to monitor sheet flow dependent and riparian vegetation health downslope of the Project annually following each wet season, or following a significant dry season rainfall event in accordance with the Vegetation Monitoring

Plan (Eco Logical Australia (2010) and the VFMP (OPR 2010) discussed within issue 1 of Section 1.5 above.

Issue 5:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7)	Trigger levels referred to above should be developed and applied to the management of the project in key areas, specifying: 1. the level of acceptable decline in significant flora and vegetation condition and health within the defined indirect impact zone areas; and 2. the level of flora health and vegetation condition change at which contingency measures are to be applied to avert further condition and health decline. Suggest the proponent report annually to the OEPA and DEC on results of the monitoring and any contingency action implemented in response to trigger exceedance.	Yes

Tables 5 and 6 extracted from the Vegetation Monitoring Plan (Eco Logical 2010) identify response triggers and summarises the response process and close out criterion for remote and field based observations, Monitoring results, and if triggered, contingency actions, will be reported to the DEC on an annual basis as defined in the Vegetation Monitoring Plan (Eco Logical 2010).

Table 5: Satellite based monitoring triggers for further Investigation (Eco Logical 2010).

RESPONSE TRIGGER	KEY PERFORMANCE INDICATOR (KPI)	INVESTIGATION	ACTION
Statistical change in a region not consistent with regional patterns	Remote sensing time series analysis	Corroborate statistical analysis with visual image inspection	Investigate via rapid field checking protocol (as required)
Change detection identifies area of significant change (> 1 std dev from average) in area greater than 0.1 ha	Remote sensing change detection	Investigate sources of change via desktop assessment: 1. Obvious external influence e.g. fire, major storm, or unrelated development) 2. Potentially due to altered sheet flow, significant weed infestation, and/or erosion / sedimentation.	Respond to change based on likely source of impact: 1. Identify region of change and tag it as non-project specific impact; or if 2. Undertake directed field investigation via rapid field checking protocol (Table 4). Assess against field based monitoring triggers (Table 7)

Table 6: Field based monitoring triggers and responses for site specific management responses (Eco Logical 2010)

RESPONSE TRIGGER	KEY PERFORMANCE INDICATOR (KPI)	ACTION	CLOSE-OUT REQUIREMENTS
Greater than 25% decline in patch foliar density in SFDV communities	Directed field inspection and assessment using rapid field checking protocol (Table 4) in response to Tier 1 change Foliar density estimates and % cover measurements in permanent quadrats	Identify potential cause and respond if decline is attributable to: 3. Culvert blockage or design inadequate - starving down slope areas of water 4. Water pooling causing adverse effect on SFDV 5. Sediment deposition and/or erosion causing adverse effect on SFDV. Review of Surface Water Management Plan and possible culvert/drain engineering repair or reinstallation. Develop site specific SFDV recovery plan and implement plan. Establish site specific ground survey quadrat, assessed and incorporated into ongoing permanent monitoring program Site specific recovery reported	Site inspected Management plan reviewed, recovery plan prepared and both implemented SFDV recovers to normal regional levels Quadrat established and incorporated into routine monitoring Site recovery report incorporated into annual reporting
% weed cover > 25% of site	% weed cover as measured in rapid field checking protocol (Table 4) in response to Tier 1 change % weed cover measured in permanent quadrats	Determine if invasive environmental or declared weed Enter location and extent of infestation (within limits of inspection) into GIS database If so, engage contractors to undertake weed control Revisit site in following year and measure % weed cover again. Repeat control and monitoring if % weed cover still > 25%	GIS records of infestation Weed control program completed Monitoring indicates decrease in % weed cover
Erosion/sedimentation occurring	Inspections as part of rapid field checking protocol	Identify potential cause and respond if decline is attributable to:	Site inspected Management plan reviewed

RESPONSE TRIGGER	KEY PERFORMANCE INDICATOR (KPI)	ACTION	CLOSE-OUT REQUIREMENTS
	(Table 4) in response to Tier 1 change Observations in permanent quadrats	1. Culvert blockage or design inadequate 2. Water pooling 3. Grade of rail embankments Review of Surface Water Management Plan and possible culvert/drain engineering repair or reinstallation.	and implemented
10% of more decline in species richness or diversity	Number of species and Shannon-Wiener index for diversity measurement in permanent quadrats	Investigate sources of change via desktop assessment: 1. Obvious external influence e.g. fire, major storm, or unrelated development) 2. Potentially due to altered sheet flow 3. Potentially due to other aspects of construction of operation of rail	Respond to change based on likely source of impact: 1. Monitor recovery; or 2. Implement actions as if '% decline in patch foliar density in SFDV communities' above; or 3. Review and revise management plans, address threatening processes and undertake supplementary seeding. Continue to monitor.

Issue 6:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7)	DEC does not consider the extent of indirect impacts of the project on significant flora and associated vegetation communities to have been clearly documented in the PER and it is unclear if the quantitative descriptions of impacts include indirect impacts. 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.	No

Refer to response to Issue 1 within Section 1.5 above.

Issue 7:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7)	DEC has raised the issue that the proposal involves direct (clearing) and potential indirect (dust, weeds, altered surface hydrology & fire) impacts on the conservation values of the project area, specifically where the rail corridor passes through the DEC-managed former pastoral leases Woolgorong Twin Peaks and Narloo (all proposed for reservation as conservation parks). With appropriate management practices these impacts can be minimised. DEC is concerned that management of direct and indirect impacts on the conservation values of the proposed Woolgorong, Twin Peaks and Narloo conservation parks has not been formalised and requests that the proponent prepare and implement a conservation management plan (or equivalent) to the requirements of DEC.	Yes

OPR is aware that the potential impacts of the Proposal on these proposed conservation reserves will need to be closely managed. Land access negotiations are a significant aspect of Proposal implementation and OPR will continue to discuss arrangements with affected parties, including DEC. A key part of these negotiations will be to identify areas of concern for each landholder, and the development of appropriate actions to alleviate these concerns. In some cases an individual management plan may be developed.

OPR is committed to ensuring that the Proposal's implementation and operation through these proposed conservation reserves does not unacceptably impact their environmental values. On this basis, as a part of the ongoing land access consultation OPR will work with the DEC to develop a specific management plan for the former pastoral leases Woolgorong, Twin Peaks and Narloo. It is expected that these Plans will address important land management requirements that include:

- Access
- Drainage
- Flora and fauna management
- Rehabilitation including suitable completion criteria and monitoring requirements.
- Weed and feral animal control

OPR will prepare a Conservation Estate Management Plan in order to ensure that direct and indirect impacts to proposed and existing conservation estate are managed appropriately. This management plan will be developed in consultation with DEC, and OPR will ensure that the plan is signed off between both parties (OPR and DEC) prior to construction within proposed or existing conservation estate. There are a number of contractual mechanisms that OPR will explore with the DEC to ensure that the Conservation Estate Environmental Management Plan is prepared and implemented to an appropriate standard and prior to the implementation of the Proposal. The options include the following:

- Condition under the State Development Agreement between OPR and the State of WA – a condition could be included within this contract that ensures that an EMP is prepared and implemented.

- Agreements not to object to land acquisition under the Land Administration Act – prior to implementing the compulsory acquisition clauses under the Land Admin Act OPR will be entering into agreements with all land holders. These agreements may include conditions for various issues that might include specific land management requirements (eg, drainage, borrow locations, access requirements, revegetation, fencing etc). A condition to develop and implement a Conservation Estaet Managemetn Plan could be included within OPR's agreements with the DEC in eraltion to its proposed Conservation reserve aras on Woolgorong, Twin Peaks and Narloo Pastoral Stations.

In recognition of the impacts on DEC managed land, an offsets package has been prepared. The package will see the exclusion of 950 ha from pastoral lease and inclusion into DEC managed land. The area contains both Malleefowl and Western Spiny-tailed Skink habitat and is contiguous with the already proposed conservation Estate.

1.6 Reserves

Issue 7:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Planning (1)	Although not a conservation reserve the triangle shaped unnamed reserve on the corner of North West Coastal Highway was identified as a significant area in the GRFVS report. The GRFVS quadrat no. 25 located in this area recorded vegetation in excellent condition, Priority 3 *Grevillea triloba* and the greatest species richness (48 native species) of all 81 quadrats in the GRFVS. There is also a high diversity of plant communities occurring in this reserve. Further consideration should be given to minimising the impacts of development on this reserve.	No

OPR agrees that the vegetation in reserve 16200 has considerable conservation value and has determined that further realignment of the North West Coastal Highway can mostly avoid any impact on this area from road works. The realignment also provides safer road conditions and results in an additional 7.3 ha of clearing in the Freehold Area. An extremely small portion of the North West Coastal Highway realignment (southern junction with exiting NWCH) and the rail alignment are unable to be amended to avoid clearing in the Reserve. The reserve (Reserve 16200) was identified in Table 7-14 of the PER, and the following text in Table 7-14 details the management measures proposed for 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.*
- *The rail alignment will be restricted to an average disturbance width of 100 m when it passes through areas of native vegetation in the Freehold Area.*

OPR is aware of the conservation values of this reserve and will ensure that all construction activities through this reserve are managed to minimise impacts. Strict clearing controls will be applied to ensure that vegetation clearing is kept to the minimum amount required for safe construction.

2. Fauna

2.1 Fencing

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7) Public Submission (8) Shire of Chapman Valley (5)	Submitters consider it to be 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.	Yes

OPR intends to fence the final Rail Corridor through the Freehold Area as stated in Table 7-13 of the PER:

> *The Rail Corridor will be fenced through the Freehold Area to prevent livestock death from train strikes.*

This fence will be a typical barb wire ringlock livestock fence, similar to others in the region. This design will allow the movement of larger native fauna (kangaroos, other large marsupials etc) as well as small fauna such as reptiles.

It is expected that OPR will be responsible for the maintenance of this Rail Corridor boundary fence. There will be designated occupational crossing areas provided for landholders and underpasses for stock in some locations if required. Design options for these crossings will be discussed with each affected landholder to reach a suitable outcome.

Through the Pastoral Area it is not proposed to fence the Rail Corridor unless specifically required by pastoralists. Any fencing is likely to be a six-strand wire livestock fence or in some minor cases a ringlock fence will be constructed. Livestock/fauna overpasses will be constructed at regular intervals (interval distance decided upon after discussions with landholder) throughout both the Pastoral and Freehold areas to ensure that the Rail Corridor does not restrict stock movement. These overpasses will be similar to those used for railways in the Pilbara.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Suggests fauna/stock overpasses be offered to avoid impacts on livestock & fauna from proposed fencing.	No

Agreed. Refer to response to Issue 1 within Section 2.1 above.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7)	DEC considers that while fencing the corridor may reduce mortality of some fauna, it may also pose a significant hazard and barrier to natural fauna movement and migration – which will require appropriate assessment and management. An example of this is given – the section of rail in the corner of the proposed Woolgorong Conservation Park where the rail corridor intersects the State Barrier Fence (SBF) presents a fauna hazard and management liability for DEC. Large numbers of animals (particularly emus) migrate north and south on a regular basis, with the SBF preventing their movement into the agricultural zone. With the addition of a fenced rail corridor the movement of these animals will be impeded (east/west) which could result in animals perishing in large numbers between the SBF and the fenced rail corridor during migration events. 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.	Yes

OPR intends to fence the final Rail Corridor through the Freehold Area as stated in Table 7-13 of the PER:

The Rail Corridor will be fenced through the Freehold Area to prevent livestock death from train strikes.

This fence will be a typical barb wire ringlock livestock fence, similar to others in the region. This design will allow the movement of larger native fauna (kangaroos, other large marsupials etc) as well as small fauna such as reptiles.

Through the Pastoral Area it is not proposed to fence the Rail Corridor unless specifically required by pastoralists. Any fencing is likely to be a six-strand wire livestock fence or in some minor cases a ringlock fence will be constructed. Livestock/fauna overpasses will be constructed at regular intervals (interval distance decided upon after discussions with landholder) to ensure that the Rail Corridor does not restrict stock or native fauna movement. These overpasses will be similar to those used for railways in the Pilbara.

The crossing of the State Barrier Fence will be developed in a similar manner to other crossings in the area (roads, access tracks etc), and will designed in consultation with DEC.

2.2 Mitigation

Submitter (sub #)	Submission and/or issue	PER modified
DSEWPC (2)	DSEWPC consider that for the Minister or his delegate to consider the proposal for approval, the following issues will need to be discussed with the department: • Onsite mitigation measures (e.g. rehabilitation and associated management measures) and/or appropriate nearby offsets (including details and maps of proposed offset locations) proposed to compensate for the impacts of the proposed action, including the total loss of threatened species habitat (i.e. Slender-billed Thornbill, Malleefowl, Western Spiny-tailed Skink and Carnaby's Black Cockatoo habitat) through vegetation clearance; • The species proposed (including stocking ratios) for any proposed rehabilitation onsite or nearby and anticipated planting density (e.g. stems/ha); • The proposed target planting densities of planted species (e.g. if after 3 years a survival rate of at least 90% of planted trees has not been achieved, all dead trees must be replaced within 12 months and maintained for a minimum of two years); • What tenure arrangements will be in place to ensure the long term retention of vegetation of any proposed onsite mitigation measure and/or proposed offset measures.	Yes

The submission relates to a number of aspects of matters of National Environmental Significance (NES) relevant to the assessment of the Proposal. OPR has addressed these issues in the response below in the same order as they are raised.

On-site Mitigation Measures

OPR has used the draft documents "Draft Policy Statement: Use of environmental offsets under the *Environmental Protection and Biodiversity Conservation Act* 1999 (EPBC Act) (DEWR 2007a) and Use of environmental offsets under the EPBC Act Discussion Paper (DEWR 2007b) in considering the issues raised in the submission. OPR has also used the "avoid, minimise, rectify, reduce, offset" hierarchical approach outlined in EPA Position Statement No 9 (EPA 2006) in preparing the proposal and defining on-site mitigation measures.

OPR has completed further detailed investigations to confirm the extent of habitat for fauna listed under the EPBC act that known to occur within the study area. These studies include:

- Oakajee Port and Rail, Slender-billed Thornbill Habitat Assessment (ecologia Environment, 2010e)
- Oakajee Port and Rail, Malleefowl Habitat Assessment (ecologia Environment, 2010f)
- Oakajee Port and Rail, Carnaby's Black-Cockatoo Potential Habitat Assessment (ecologia Environment 2010g)
- Carnaby's Black Cockatoo Habitat Assessment Review for Oakajee Port and Rail Developments (Eco Logical Australia 2010b)

OPR has also prepared a detailed offsets strategy to mitigate the proposals residual impacts to significant environmental assets (Eco Logical Australia 2010c). Table 5 of the Offsets Strategy (Eco Logical Australia 2010c) provides a summary of the mitigation undertaken and proposed and the offsets strategy for addressing environmental impacts to key environmental assets from the Proposal. OPR is confident that it has proposed a comprehensive offsets package that will address significant residual impacts of the rail development and result in an overall net environmental benefit from the Proposal.

To clarify how the outcomes resulting from the proposed on-site mitigation measures have been used in relation to the species listed above, OPR has tabulated the information in Table 7 below.

Table 7 Mitigation and outcomes for EPBC Act listed fauna

Species	On-site Mitigation Measures	Outcome
Slender-billed Thornbill	In addition to the avoidance of generally low lying habitat (such as that potentially used by the Slender-billed Thornbill), the following onsite mitigation measures are identified in the PER (Sections 7 and 8) and include: • pre-construction checks of disturbance areas to check for Slender-billed Thornbill nests. • Avoidance of occupied Slender-billed Thornbill nests during incubation period. In the unlikely circumstance that an active nest is located and cannot be avoided the Proponent will use specialist consultants to incubate and hatch eggs prior to an appropriate release date. • Clearing control system to restrict ground disturbance activities in known habitat to that approved for construction of the rail corridor. only • Include NES fauna protection specifications in all construction related contracts • Identification of constraint areas in the field with no access and inclusion of NES fauna identification details in workforce inductions • Apply and enforce vehicle speed limits to vehicles within potential NES habitat. • Implement appropriate signage in potential areas of NES habitat. • Rehabilitation of temporary construction areas as soon as practicable using local native species to re-establish representative habitat. A detailed Rehabilitation Management Plan will be prepared with site specific prescriptions (including stocking rates and target densities for key species) prepared in consultation with regional DEC representatives for Slender –billed Thornbill habitat rehabilitation.	Slender-billed Thornbill habitat tends to occur in low lying areas that are subject to seasonal inundation. Consequently, the costs associated with flood mitigation to protect infrastructure within these areas lends to minimise transit distance through Slender-billed Thornbill habitat. On this basis the Proposal has mostly avoided and minimised development in these areas. Nevertheless, in a small section the Rail Corridor is required to traverse a small portion of potential Thornbill habitat as a result of other constraints such as excessive grade around the Weld Range. The major threat to this species is grazing of habitat by sheep (BirdLife International 2009. *Acanthiza iredalei*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.3. <www.iucnredlist.org>. Downloaded on 11 October 2010. No individuals of this species were noted in the recent surveys completed for the Proposal (Ecologia 2010a and b). Figure 5-17 in the PER shows the extent of potential Slender-billed Thornbill habitat within the Proposal Area (approximately 1100 ha). An assessment of aerial photography confirms that there is approximately 50% additional habitat extending beyond the Proposal area. Therefore at a local level, over 2,000 ha of habitat is within and adjacent to the Proposal Area. The full extent of habitat disturbance based on the likely rail alignment (30.6 ha (ecologia 2010e)) is based on the disturbance envelope required for construction purposes. Management to minimise the actual disturbance during construction, and rehabilitation of areas upon completion of construction, means that approximately 20-50% of the disturbance is expected to be temporary. This means that the total permanent loss of habitat for this species (given that rehabilitation will re-establish local provenance species) is likely to be in the range of approximately 16 to 25 ha. In summary: 1. Detailed habitat mapping has only been completed in the Study Area. The Study Area is surrounded by largely uncleared habitat that has not been mapped to a level of detail suitable for habitat assessment. The basis for impact

		assessment is therefore very conservative (there are likely to be large areas of habitat outside of the Study Area that have not been quantified for the impact assessment. 2. The area of potential habitat for the Slender-billed Thornbill within the Proposal Area alone is approximately 1100 ha 3. The total area of habitat impacted is approximately 30.6 ha, and the area of total permanent loss of habitat is likely to be in the range of 16 to 25 ha. This translates to less than 1.4 - 2.3% of locally mapped habitat within the Study Area and less than about 0.8 to 1.4% when considering the identified habitat adjacent to the Proposal Area. On a regional basis this percentage is expected to be at least an order of magnitude lower. The Proposal does not represent a significant impact to this species. The application of management measures described above and within the PER, will ensure that this species is afforded an appropriate level of protection.
Malleefowl	On site mitigation measures are identified in the PER (Sections 7 and 8) and include: • pre-construction checks of disturbance areas to check for Malleefowl nests. • Avoidance of occupied Malleefowl nests during incubation period, or if not viable, use of specialist consultants to incubate and hatch eggs, and release of chicks when sufficiently mature. • Clearing control system to restrict ground disturbance activities in known habitat to that approved for construction of the rail corridor only • Include NES fauna protection specifications in all construction related contracts • Identification of constraint areas in the field with no access and inclusion of NES fauna identification details in workforce inductions • Apply and enforce vehicle speed limits in locations of potential NES habitat. • Rehabilitation of temporary construction areas as soon as practicable using local native species to re-establish representative habitat. A detailed Rehabilitation Management Plan will be prepared with site specific prescriptions (including stocking rates and target densities for key species) prepared in consultation with regional DEC representatives for Malleefowl habitat rehabilitation.	OPR has completed considerable survey of the corridor to identify Malleefowl habitat. To date no Malleefowl or nests have been located within close proximity to areas of impact associated with the Proposal. No known Malleefowl nests will be directly impacted by the implementation of the Proposal. Malleefowl are not common in the area and the density of any nests is expected to be low. Malleefowl Habitat Assessment (Ecologia 2010f) has restricted suitable Malleefowl habitat to be impacted by the Proposal to areas of Yy1 vegetation association where sufficient vegetation density and leaf litter is evident. The total area of habitat impacted is approximately 33.9 ha) based on the disturbance envelope required for construction purposes (100 m construction disturbance corridor width). Management to minimise the actual disturbance during construction, and rehabilitation of areas upon completion, will ensure that approximately 20-50% of this area is expected to be temporary. No individuals of this species were noted in the recent surveys completed (refer to response to Section 2.3 below) but evidence (abandoned nest, calls and footprints) was noted at Yuin Station. Figure 8-1 in the PER describes the location of observed evidence of Malleefowl activity within proximity to the Proposal Area. In summary: 1. Detailed habitat mapping has only been completed in the Study Area. The Study Area is surrounded by largely uncleared habitat that has not been mapped to a level of detail suitable for habitat assessment. The basis for impact assessment is therefore very conservative (there are likely to be large areas of habitat (Yy1 and Yf5 vegetation associations) outside of the Study Area that have not been quantified for the impact assessment. 2. The area of potential habitat(Yy1 and Yf5 vegetation associations) for Malleefowl within the Proposal Area alone is approximately 1700 ha. Extensive habitat

		mapping has been completed in proximity to the Proposal Area which has confirmed only a small area of habitat will be impacted (33.9 ha). It is expected that the Malleefowl habitat is also well represented beyond the Study Area. 3. The total area of detailed habitat impacted is approximately 33.9 ha, and the area of total permanent loss of habitat is likely to be in 20 to 50% less than this due to the temporary construction impact. The Proposal does not represent a significant impact to this species. The application of management measures described above and within the PER, will ensure that this species is afforded an appropriate level of protection.
Western Spiny-tailed Skink	The Proposal has been specifically located to avoid direct impacts to all Western Spiny-tailed Skink granite outcrop habitat within the Study Area. To manage potential indirect impacts the following mitigation measures, which are described within Sections 7 and 8 of the PER will be implemented: • pre-construction checks of all disturbance areas to check for individuals in and adjacent to core habitat. • Clearing control system to prohibit ground disturbance activities in known habitat • Identification of constraint areas in the field with no access and inclusion of details in workforce inductions • Avoidance of rocky outcrops and large trees around areas of known habitat • Avoidance of ESB habitat will generally be 200 m, except in two areas where the rail mainline bisects habitat areas. Protective fencing will be used to separate the habitat and fauna from construction activities in these areas. • Any handling of Western Spiny-tailed Skink for relocation will be by suitably licensed reptile handler in consultation with regional DEC. • Provision of fauna underpasses below the rail lines every 100m where specific skink habitat occurs within 100m of the rail alignment to allow movement across the corridor. Fauna passage entrances will be developed with suitable cover to prevent predation. This is expected to include large rocks, artificial grates, and/or rehabilitated vegetation. Underpass floors will be lined with sand, mulch and small branches to encourage the local fauna to utilise them. • Minimise length of any trenches and complete inspections of any open trench before work commences each day to remove any trapped fauna • No domestic pets or animals will be permitted on site • Appropriate feral animal controls to be specified in a FMP • Rehabilitation of temporary	Figure 8-3 in the PER describes the location of Western Spiny-tailed Skink populations within and adjacent to the Proposal Area. OPR's regional survey efforts have also identified a total of 50 populations of this species with most extending beyond the Proposal Area approximately 50 km north and 40 km south (Ecologia 2010d). Habitat within the Proposal area has been identified at 12 locations. All but two of the twelve populations in proximity to the Proposal have been avoided by at least 200 m. For the remaining two habitat areas the Proposal has been located to ensure that the operational corridor avoids granite outcrops by at least 30 m. All construction activities will also avoid these areas; and these short-term activities will avoid granite outcrops by at least 20 m. To ensure that the species is afforded an appropriate level of protection during this phase a series of management measures will be implemented (refer to Sections 7 and 8 in the PER and management column within this table). In summary: 1. All populations within Proposal Area have been identified and the Proposal has been located to avoid impacts. 2. For 10 of the 12 populations a 200 m setback has been implemented. 3. For the remaining two populations within less than 200 m from the Proposal OPR will implement management measures to ensure that indirect impacts are avoided. 4. Regional surveys have confirmed that this species is distributed more widely than previous records indicated and that the species is not restricted to the Proposal Area. The Proposal does not represent a significant impact to this species. The application of management measures described above and within the PER, will ensure that this species is afforded an appropriate level of protection.

	construction areas as soon as practicable using local native species to re-establish representative habitat. a detailed Rehabilitation Management Plan will be prepared with site specific prescriptions (including stocking rates and target densities for key species) prepared in consultation with regional DEC representatives for habitat rehabilitation. • Additional studies will be conducted prior to construction within Skink habitat to determine foraging behaviour and Skink movements. • Survey results will be used to determine if further controls are required such as small fauna barriers along the edge of the construction and operational footprints to prevent direct fauna hits.	

OPR is committed to providing direct offsets on a better than like for like basis for mitigating significant residual impacts. As such, OPR commits to providing high offset to impact ratios on a per area basis and to seek opportunities for direct offsets to provide or support additional conservation values to those affected by the Proposal.

The direct offsets proposed are as follows:

- Long term protection/conservation of environmental assets:
    - Acquisition one or more parcels of land containing at least 23 ha of vegetation representative of Beard vegetation association e6Mr eaSi (2 times the extent of proposed clearing from the Proposal. This land would be transferred to DEC tenure on satisfaction land is in appropriate state to be accepted.
    - Acquisition one or more parcels of land containing at least 101.2 ha of vegetation representative of two or more of the vulnerable vegetation associations affected by the Proposal (2 times the extent of proposed clearing from the Proposal). One of these vegetation associations must be x3SZc, of which only 10.3% remains of its pre-European extent with 18.8 ha being affected by the Proposal or and/or x3SZc/acSc, with 8.9 ha affected and of which 11% of its pre-European extent remains. This land would be transferred to DEC tenure on satisfaction land is in appropriate state to be accepted. Land supporting as many of the affected associations as possible will be prioritised however other factors such as Slender-billed Thornbill habitat may also be considered.
    - Acquisition of one of more additional parcels of land supporting remnant areas of vulnerable vegetation associations, Priority flora populations and Carnaby□s Black Cockatoo habitat in the Moresby Range-Chapman Valley area. If a suitable parcel of land is found, it will reduce the area of offset required to be secured elsewhere for the remaining vulnerable vegetation associations above. The acquisition of new conservation estate in the Moresby Range-Chapman Valley area will also directly offset impacts to Reserve 16200 in the freehold land.
    - Acquisition of a portion of pastoral land adjacent to the proposed Woolgorong and Twin Peaks Conservation Reserves and twice the size of the area within the proposed reserves affected by the Proposal for future amalgamation into one of these reserves. The land is expected to support Western Spiny-tailed Skink and Malleefowl habitat to provide direct offsets for impacts to Malleefowl habitat by the Proposal.
- Restoration or rehabilitation of existing degraded habitat and re-establishing habitat
    - Revegetation and supplementary planting program in future conservation tenure land in the Chapman Valley area for Carnaby□s Black Cockatoo habitat enhancement and restoration. This may include works on lower slopes of valley for foraging habitat and along watercourses for future breeding habitat for Carnaby□s Black Cockatoo.

The following indirect or supporting offsets are proposed and/or are an integral component to ensure the objectives of the strategy are met:

- Implementation of recovery plan actions – including surveys
    - OPR will conduct a regional habitat assessment with supporting surveys for ground truthing to increase knowledge of the distribution and extent of Western Spiny-tailed Skink in the Western Murchison
- Contributions to relevant research or education programs
    - OPR will provide funding towards a research project on the food resource base of Carnaby□s Black Cockatoo in the Geraldton Sandplains-Geraldton Hills subregion
    - OPR will undertake propagation and plant recruitment trials for Priority flora species as part of its land rehabilitation program, which will increase knowledge on the biology of these species.
- Removal of threatening processes
    - OPR will undertake works on land acquired for the purpose of conservation to address existing threatening process such as feral animals, grazing pressure, uncontrolled access, weed infestation, prior to handover to DEC
- On-going management activities
    - OPR will prepare Conservation Management Plans (CMPs) for the land acquired in the freehold land to address management of threatening processes, and describing any revegetation programs, and related monitoring. The CMPs would be implemented by OPR for two years or until that time DEC agree to accept land under their management

OPR respectfully submits that the mitigation measures outlined above are sufficient for the Minister or his delegate to approve the Proposal with respect to the identified impacts on these species.

With respect to Carnaby's Black Cockatoo, a detailed response is discussed in Issue 5 and 6 below.

Rehabilitation

A detailed Rehabilitation Management Plan will be developed to ensure that EPBC Act listed fauna habitat is reinstated or upgraded as part of rehabilitation of construction areas. The Rehabilitation Management Plan will contain a range of rehabilitation prescriptions to establish native vegetation that is consistent with surrounding areas and where appropriate reinstates suitable habitat for EPBC Act listed fauna. The rehabilitation prescription will be specific to each area to ensure that soil management, species selection, plant establishment and planting densities are suitable for the site. For instance, small areas of cleared land surrounded by intact fauna habitat may be rehabilitated by returning topsoil and cleared vegetation and allowing the seed bank from topsoil and surrounding vegetation to recolonise.

Larger areas will require a reseeding program. Seeds of local provenance will be obtained wherever feasible, with specific consideration of flora species utilised by the above EPBC Act listed species.

The Rehabilitation Management Plan will include:

- **Species proposed in each habitat area**. This information will be developed following site review by a native vegetation rehabilitation specialist. Consideration will be given to key flora species deemed to be necessary to support EPBC Act listed fauna.
- **Proposed planting densities** (number of each species/ha). Decisions on planting densities will be developed following site investigations to determine densities that are common in nearby high quality habitat, availability of seed, establishment success rates and species best suited for the targeted fauna species.
- **Proposed targets for planting success rates**. Suitable targets for planting success will vary depending on location (rainfall, risk of flooding/drought etc). In many locations within the Proposal Area the climate and landscape is harsh and rehabilitation may require work over several years to reach a successful outcome. Based on this information it is proposed that advice will be gathered from local DEC offices and local vegetation experts to generate agreed rehabilitation prescriptions and likely outcomes.
- **Monitoring program to determine rehabilitation outcomes**. The monitoring program will be established including sufficient control sites to identify seasonal and other external influences on rehabilitation outcomes.
- **Contingency actions when identified outcomes are not reached**. Contingency actions may include the following:
    - Reseeding in targeted areas
    - Eradication of weeds

  Additional monitoring will be conducted to determine the success of contingency actions.

OPR has also commissioned further habitat assessment work on EPBC Act listed species to enable it to refine its management actions and ensure that the Rehabilitation Management Plan is appropriately targeted.

Tenure

Tenure for the Proposal will be a Special Act Corridor that will be nominated and approved via the WA Parliament. The nominated land will be vested in the Public Transport Authority (PTA) who will lease the final operational corridor back to OPR on a long-term basis. The activities in the corridor will be subject to a detailed "Implementation Agreement" between OPR and PTA. It can be reasonably expected that one of the conditions of the lease and implementation agreement will be compliance with relevant environmental legislation.

Some of the land rehabilitated will be returned to pastoral or freehold purpose following construction. For freehold land it can be expected that the landholder will require the land to be returned to productive agricultural use, or if it is rehabilitated to native vegetation, that this land is "purchased" by OPR. In this case, the land would logically be held by PTA.

Where existing remnants of native vegetation exist adjacent to the construction and operational areas, OPR will negotiate with landholders and liaise with DEC and DSEWPC as necessary to identify opportunities to vest land for conservation purposes.

2.3 Threatened species habitat

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
DSEWPC (2)	Regarding the statement "*OPR commits to not disturbing any **active** Malleefowl mound. Should a nest be discovered that cannot be avoided, the nest will be disturbed only once all Malleefowl adults and chicks have left the nest. If this is possible OPR will apply for permission to disturb*". This statement is confused and needs to be clearly defined.	Yes

The above statement should be replaced with the following:

> *OPR commits to not disturbing any active Malleefowl mound for infrastructure that can be relocated (i.e. other than the rail centreline). In the unlikely circumstance that a nest is discovered that cannot be avoided, OPR will attempt to only perform ground disturbance outside of breeding season. If this is not possible then OPR will employ an appropriately trained zoologist to relocate the eggs for incubation at an appropriate facility. The Malleefowl chicks will be released at a time and location agreed with Regional DEC staff.*

OPR expects that it is unlikely that Malleefowl mounds will be encountered within proposed disturbance areas. Survey results have shown that the mounds are rare, with only one abandoned mound being found within the Study Area (well away from the disturbance footprint) during over 600 hours of fauna surveys.

Pre-disturbance fauna surveys have been committed to in Table 7-13 of the PER:

> *All disturbance areas have or will be surveyed for Priority Fauna and EPBC Act protected species prior to disturbance.*

Recent surveys of geotechnical points and polygons was undertaken, 23 points of interest in 2009 and 414 points of interest throughout the Pastoral Area in 2010. A small amount of potentially suitable habitat was recorded from three areas; however no mounds or individuals were observed. It is therefore considered unlikely that the Proposal will have a significant impact on Malleefowl populations.

To ensure that impacts to Malleefowl are avoided, OPR is committed to fauna surveys prior to the commencement of construction. In the unlikely circumstance that a Malleefowl mound is found OPR will endeavour to avoid the mound through design revisions. Any Ground Disturbance Permits issued by OPR for disturbance activities in the vicinity of the mound will implement a 50 m buffer consistent with recent buffer conditions applied to DEC clearing permits. Further to this OPR also commissioned ecologia to undertake an assessment of vegetation within the rail corridor suitable of providing Malleefowl habitat (ecologia 2010f). This assessment identified areas of a single vegetation unit (Yy1) where sufficient vegetation density and leaf litter is evident, as potentially being suitable Malleefowl habitat. With the exception of the rail construction footprint, no ground disturbing activities will be undertaken within identified potential Malleefowl habitat restricting impact to identified Malleefowl habitat to 33.9 ha.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
DSEWPC (2)	The proposed amount of (*Leipoa ocellata*) Malleefowl habitat proposed to be cleared needs to be included (i.e. the amount proposed to be cleared within sections Yy1 and Yf5). A rationale for why these vegetation units were the only vegetation units considered to contain potential Malleefowl habitat should be provided.	Yes

OPR commissioned Ecologia to undertake an assessment of vegetation within the rail corridor with the potential to provide habitat for Malleefowl. This assessment identified a single vegetation unit (Yy1) as having areas of sufficient density and leaf litter to provide usable habitat for Malleefowl.

Initial desktop and literary assessments based on historical Malleefowl records and vegetation attributes identified Yy1 and Yf5 vegetation units as providing known or suitable habitat within the Study Area. These vegetation units are widespread throughout parts of the Study Area, covering an area of 12,972 ha. It should be noted that not all of the vegetation within Yy1 and Yf5 vegetation units is suitable habitat as Malleefowl tend to prefer the thicker patches of vegetation to nest and forage in.

Based on previous records, it was determined that Malleefowl are most likely to occur within the Tallering, Yuin and Murgoo pastoral leases. Vegetation associations mapped by ecologia and landsystems mapped by Payne et al (1998) within these areas were assessed for the presence of suitable vegetation attributes (acacia scrub) and soil attributes (sandy soils). Based on this assessment the following associations were identified:

- Vegetation Association Yy1: Acacia ramulosa var. linophylla and Acacia ramulosa var. ramulosa open tall shrubland.
- Vegetation Association Yf5: Acacia eremaea sparse tall shrubland, over mixed Chenopod spp. Low shrubland

To provide more information regarding these vegetation associations, an additional site visit was conducted between 7th – 9th October 2010. An ornithologist conducted transects within the above mentioned vegetation associations recording the habitat type, condition, and habitat suitability for Malleefowl. These areas were traversed on foot and GPS coordinates and photographs were recorded. Vegetation condition was assessed using the scale produced by Keighery (Government of Western Australia 2000). Vegetation associations adjacent to these associations were also assessed to ensure no other vegetation associations were suitable as Malleefowl habitat within the rail alignment.

The field based assessment discounted Vegetation Unit, Yf5 as it was found to be too open, and lacked the understorey and leaf litter density components required by Malleefowl for breeding.

The assessment identified assessment identified areas of a single vegetation unit (Yy1) where sufficient vegetation density and leaf litter is evident, as potentially being suitable Malleefowl habitat. Based on this assessment of habitat within the rail corridor, it is expected that approximately 33.9 ha of suitable Malleefowl habitat will be impacted by the construction of the proposed OPR rail alignment. Ground disturbing activities will be limited to the rail construction corridor only, in areas of Malleefowl habitat.

In recognition of the potential impacts to Malleefowl, an offsets package has been prepared (Eco Logical, 2010c). The package will see the exclusion of 950 ha from pastoral lease and inclusion into DEC managed land. The area contains both Malleefowl and Western Spiny-tailed skink habitat and is contiguous with the already proposed Conservation Estate.

On the basis of the above information it is unlikely that this species will be significantly impacted by the Proposal.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
DSEWPC (2)	Page 236 – statement regarding studies of closely related species to the Western Spiny-tailed Skink and similarity of	Yes

	life history strategy – "*92% of individuals had moved less than 11 metres when recaptured*". PER should provide further detail related to this study and reasons why *E. cunninghami* movement patterns can be considered relevant to the species. i.e. provide details why the species should be considered closely related with a similar life history strategy and hence likely to stay within a limited area.	

E. cunninghami has been identified as a closely related species, and research specifically related to the Western Spiny-tailed Skink also indicates low levels of dispersal and high levels of relatedness amongst individual groups (Gardner *et al* 2001). Although there are potentially up to four subspecies of Western Spiny-tailed Skink, all sub-species exhibit similar behaviour, thus this information is considered relevant (Ecologia *pers comm*, 2010).

Issue 4:

Submitter (sub #)	Submission and/or issue	PER modified
DSEWPC (2)	PER states that "*with the exception of the rail corridor no disturbance will occur within a 200m buffer of known Ergenia stokesii badia habitat. If the rail corridor must pass through these areas a 50-60m buffer will be maintained between the rail line and specific habitat used for shelter (rock outcrops), and the construction disturbance width will be limited to an average of 100m*" This commitment is confused and needs to be more clearly defined. Explain more clearly: • the rationale for why the rail corridor is excluded; • how a 50-60m buffer from the rail centreline can be maintained if the construction disturbance width will be an average of 100m; • and an assessment of the level of risk that Western Spiny-tailed Skink populations would face with a buffer of 200m and 50-60m in place.	Yes

Rationale for why the rail corridor is excluded

The Rail Corridor was not excluded from the proposed 200 m buffer, and this buffer was used during design to ensure potential habitat was avoided wherever possible. Section 8.3.2 of the PER details this information:

> *A mapping exercise was undertaken to identify potential habitats to ensure the Proposal does not significantly impact upon populations of Western Spiny-tailed Skink. During the design phase the rail alignment was deviated around known Western Spiny-tailed Skink populations where possible.*

OPR has defined Western Spiny-Tailed Skink habitat as:

> Granite boulder piles in stony hills and fractured granite outcrops containing deep horizontal rocky crevices, suitable for habitation by the Western Spiny-Tailed skink.

There are two large areas of scattered rocky outcrops containing habitat where it was not possible to apply the 200 m buffer due to rocky outcrops occurring over large areas across the project corridor (spread over approximately 3,230 and 9245 ha). Within these areas there are some sections where it is not possible for the rail to avoid all rocky outcrops by 200 m.

Proposal planning and design has occurred in stages that reflect the amount of detail available at the time. The ability to influence rail route is greatest at the early planning stages. As Western Spiny-tailed Skink was identified as an issue early in the planning process, OPR has managed to deviate the original rail route to avoid the majority of habitats within the Proposal Area by more than 200 m. Whilst consideration was given to a larger buffer, the engineering practicality of avoiding these areas by more than 200 m was limited. Thus 200 m was selected as a reasonable buffer as it substantially reduces the risk of impact upon these populations without affecting Proposal viability.

In the two locations where the Proposal comes within 200 m of rocky outcrops, the Project team relocated the rail to avoid these features. In some locations for a small portion of the rail alignment (several hundred metres) the gap between granite outcrops is narrow (approximately 150 m) and as such the construction footprint (up to 100 m wide) for the Proposal may be 20 m from the edge of the granite outcrops. During operation the Proposal footprint will be able to be reduced to 50 - 80 m, with any unused areas being rehabilitated. Consequently, a 30 – 50 m buffer between the outside edge of the operational corridor (rail, service road etc) and the granite outcrops will be maintained. As detailed design is completed for this section of the rail, OPR will investigate further opportunities where these separation distances can be increased.

Whilst both of these separation distances are within the range of possible movement for the species, they are considered outside of the normal range of movement of Western Spiny-tailed Skink; hence these separation distances will significantly reduce the risk of impact on individual animals and therefore the viability of the individual populations. OPR intends to commission further investigations into this species to obtain detailed information about foraging characteristics and Skink movements. These investigations will inform the development of additional management measures to further minimise any potential indirect impacts associated with the Proposal.

As a precautionary measure OPR will install skink underpasses every 100m where specific skink habitat occurs within 100m of the rail alignment. The underpasses will be of an appropriate size for skink entry but small enough to prevent predation and designed in accordance with the following design features adopted by OPR for fauna underpasses:

> OPR will ensure that the entrances of fauna underpasses within significant fauna habitat areas will contain suitable cover from predation. This is expected to include large rocks, artificial grates, and/or rehabilitated vegetation. Underpass floors will be lined with sand, mulch and small branches to encourage the local fauna to utilise them.

How a 100 m wide construction corridor can maintain a 50-60 m buffer

The PER stated that a 50 – 60 m buffer would be maintained between granite outcrops and the rail centreline. As detailed above, due to the narrow gap between granite outcrops in some small areas it was not possible to maintain a buffer of 50 – 60 m between the edge of the construction footprint and granite outcrops. An additional commitment is therefore proposed that provides a 20 m buffer through the narrow areas of granite outcrops. Recent design information has also confirmed that a 50-60 m buffer can be met from the edge of the rail formation, rather than the centreline as stated in the PER (Figure 2).

Additional engineering design refinements will be investigated to determine what measures can be taken to reduce the construction corridor width further. This may include storing topsoil away from the narrowest gaps between outcrops, narrowing of access tracks etc. The maximum distance of 100 m should therefore be assumed as a worst case scenario.

Details of the Proposal footprint and minimum separation distance from habitat are shown in Figure 3. Note that this situation occurs in only a portion (several hundred metres) of the populations within the Proposal Area. In all other situations planning has managed to avoid habitat by more than 200 m.

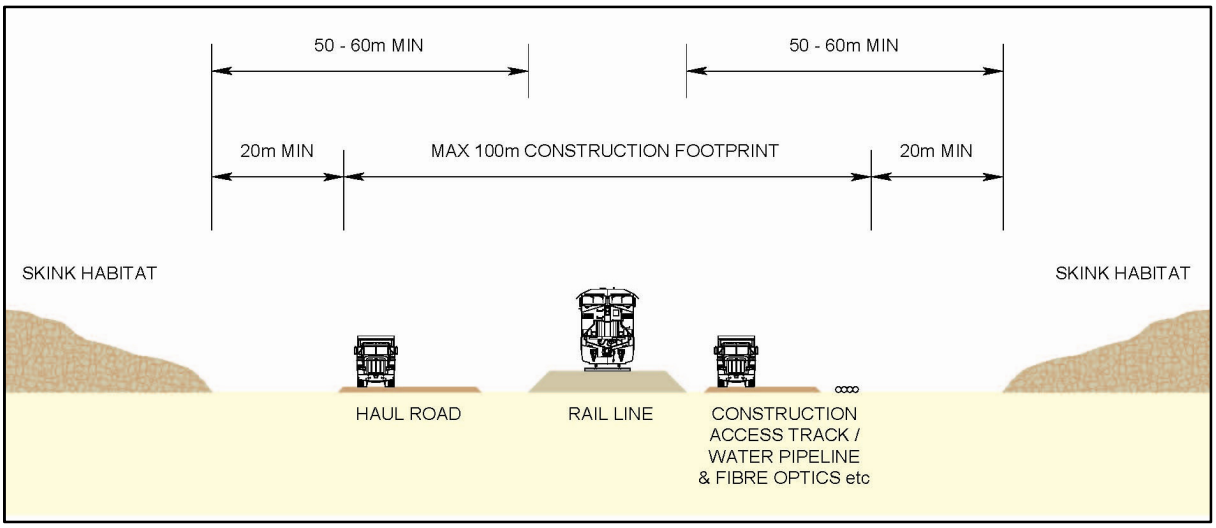

Figure 3 Proposal footprint cross-section

Risk Assessment for buffer distances of 50 m and 200 m

As detailed in the response to Issue 3 above (Section 2.3), a study into a similar species with identified similar movement characteristics (*E. cunninghami*) found that 92% of individuals had travelled less than 11 m when recaptured (Ecologia 2010e). Based on these studies it is expected that only a small percentage of Western Spiny-tailed Skinks will travel within the Proposal construction footprint (minimum 20 m distance), with even less reaching the operational footprint (minimum 30 m distance) or rail formation (minimum 50 m).

On the basis that the vast majority of Western Spiny-tailed Skink habitat is avoided and noting the limited foraging range for this species combined with the mitigation measures described in Section 2.2 of this document (above) it is considered that this species is provided an appropriate level of protection.

In recognition of the potential impacts to Western Spiny-tailed Skinks, an offsets package has been prepared (Eco Logical, 2010c). The package will see the exclusion of 950 ha from pastoral lease and inclusion into DEC managed land. The area contains both Malleefowl and Western Spiny-tailed skink habitat and is contiguous with the already proposed Conservation Estate. The offsets package also includes a commitment to implement a foraging behavioural study for the Western Spiny-tailed. It is anticipated that this study will result in a better understanding of the foraging ranges for this species and assist OPR in further enhancing its management strategies around this species.

Issue 5:

Submitter (sub #)	Submission and/or issue	PER modified
DSEWPC (2)	Regarding the list of vegetation units considered to contain Carnaby's Black Cockatoo foraging species on page 228: The rationale behind why these vegetation units were considered foraging habitat and why other vegetation units proposed to be cleared were not considered to contain foraging species needs to be included.	Yes

At the time of assessment OPR's consultants were of the view that the Proposal was located at the northern limit of Carnaby's range and therefore the species was not considered an issue for the Proposal. Ecologia was of the view that due to the small level of disturbance associated with the Proposal within the context of the regional extent of Carnaby's and their foraging habitat that the Proposal did not present a significant impact to this species. At the time, results from flora and fauna surveys confirmed this as the most likely outcome.

Since the start of the PER public comment period OPR has liaised further with experts on this species and has received similar information which indicates that Carnaby's has recently been sighted in the vicinity of the Proposal area. Johnston (2010) confirms that during 2005 and 2006 there were numerous sightings of Carnaby's within the Chapman Valley Road area which is approximately 10 km from OPR's Port Proposal and an area through which the Rail Corridor traverses. Specifically, the report from the

WA Museum (Johnstone, 2010) identifies that most records within the Geraldton Region appear to be of birds migrating southwards during the autumn/winter period. Johnston (2010) suggests that as large flocks of up to 400 are recorded in the Irwin District in late summer that these are birds migrating south-west from their breeding quarters in the northern Wheatbelt. In August 2010 DEC reported the sighting of two flocks of Carnaby's Black Cockatoos within the proposed Moresby Range Conservation Park. Together the flocks numbered approximately 240 birds and they were observed foraging and roosting in the area on two separate occasions. DEC was also of the view that Carnaby's Black Cockatoos use the area more frequently than what has historically been recorded.

Johnston (2010) identified that there are no breeding records for the Geraldton region; however, small numbers of birds have been recorded in this area during the breeding season. Recent surveys (Ecologia, unpublished) of all areas of potential habitat within the Rail Proposals disturbance footprint did not identify nesting/breeding habitat for Carnaby's Black-Cockatoo.

Ecologia (2010b & c) has advised that although there is the potential for Carnaby's Black Cockatoo to use the Proposal Area as a feeding visitor, the general feeding habitat within the area is low quality, and is limited to a few small remnants which are unlikely to be a main food source for Carnaby's cockatoo.

Recently Eco Logical Australia (2010b) was commissioned by OPR to review reports documenting habitat and vegetation data and provide an assessment of the likely extent of Carnaby's Black Cockatoo habitat within the respective footprints for the proposed Rail and Port. This included a port-rail interface area associated with the North-West Coastal Highway realignment. Within the proposed Rail development footprint, 16.02 ha has been assessed as potentially suitable foraging habitat and combined with the NW Coastal Highway impact of up to 7.42 ha of foraging habitat, the total impact of the Rail will be up to 23.44 ha (Eco Logical Australia 2010b). To mitigate it's impacts to Carnaby's foraging habitat OPR has committed within its offsets strategy to acquire 140 ha of similar habitat and for this land to be transferred to the conservation estate (Eco Logical Australia 2010c).

Issue 6:

Submitter (sub #)	Submission and/or issue	PER modified
DSEWPC (2)	Information on the area and quality of the Carnaby's habitat proposed to be cleared should be provided, such as: • aerial photographs • assessments of vegetation condition • size of remnant patches • detail of how sparse the vegetation within the remnants is.	Yes

Refer to response to Issue 5 above.

Issue 7:

Submitter (sub #)	Submission and/or issue	PER modified
DSEWPC (2)	The total amount of Slender-billed Thornbill habitat (*Acanthiza iredalei iredelai*) proposed to be cleared needs to be clearly stated. It is not currently clear how much habitat is proposed to be cleared within sections OPR-B, OPR-D, OPR-E & OPR-F in addition to the habitat proposed to be cleared in MF1, MF2 and MF3.	

The preferred habitat for Slender-billed Thornbills is samphire and chenopod vegetation types associated with salt flats and ephemeral wetlands. Ephemeral wetlands and salt lakes are common throughout the Mid-West region. Chenopod vegetation types only occur in one location within the Proposal Area. They have been mapped by Ecologia as Mf1, Mf2, and Mf3. All these vegetation units fall within the OPR-B area referenced in Figure 5-23 of the PER.

The area of impact on all vegetation units considered to be habitat for the Slender-billed Thornbill is detailed below.

Table 8 Area of potential impact

Code	Potential area impacted (ha)	Total area within Proposal Area	% of total area
Mf1	14	528.7	2.6
Mf2	1	20	5
Mf3	17	567.7	3
Total	**32**	**1,117**	**2.9%**

As identified in Section 8.2.2.1 of the PER, the total area of potential habitat within the Study Area is 1,117 ha, with approximately 2.9% (32 ha) being potentially impacted by the Proposal. These potential impacts should be considered as worst case as it is expected that not all areas of the vegetation listed will actually be suitable as Slender-billed Thornbill habitat (lack of suitable trees, degraded vegetation etc).

Figure 5-17 in the PER shows the extent of potential Slender-billed Thornbill habitat within the Proposal Area (approximately 1117 ha). An assessment of aerial photography identifies that the low lying area associated with this habitat extends beyond the Proposal Area, which confirms that there is approximately 50% more of this local habitat extending immediately outside the Proposal Area. This local habitat area comprises a large salt lake, of which approximately 50% falls within the Proposal area. This salt lake system covers an area of over 2,000 ha of habitat within and adjacent to the Proposal Area.

The full extent of habitat disturbance based on the proposed rail alignment (32 ha) is based on the disturbance envelope required for construction purposes. Management to minimise the actual disturbance during construction and rehabilitation of areas upon completion of construction, means that approximately 20-50% of the disturbance is expected to be temporary. This means that the total permanent loss of habitat for this species (given that rehabilitation will re-establish local provenance species) is likely to be in the range of approximately 16 to 25 ha. At the local assessment level used in this analysis, this translates to less than 1.4 to 2.3% of locally mapped habitat within the Project Area and less than about 0.8 to 1.4% when including habitat contiguous with the habitat within the Project Area. On a regional basis this percentage is expected to be at least an order of magnitude lower.

Additional habitat surveys have recently been completed for the above species to provide detailed information to allow suitable management of impacts to these species. The surveys were focussed on determining the extent of Slender-billed Thornbill habitat within the Rail Corridor. Preliminary results have reported that the maximum disturbance area of the Slender-billed Thornbill habitat is 12.2 ha, 0.8 ha and 17.6 ha of Mf1, Mf2 and Mf3 respectively. These preliminary results are similar to those provided in the PER and therefore can verify the impact assessment in the PER and the additional information detailed above. These final survey results will nevertheless provide more detailed information, which will be used to develop specific management measures for this species.

The level of disturbance of this degraded and sparse vegetation does not represent a significant impact to this species. The application of management measures described above and within the PER, will ensure that this species is afforded an appropriate level of protection.

Issue 8:

Submitter (sub #)	Submission and/or issue	PER modified
DSEWPC (2)	For DSEWPC to determine the level of impact of the proposal on threatened species for this project, the department requires the amount and type of all threatened species habitat proposed to be cleared for the entire project. It is understood the footprint may include ballast quarries requiring clearing of up to 150ha. Based on this understanding, it is DSEWPC's view that information on clearance for any proposed ballast quarries (including relevant location and vegetation maps) should be included in the discussion of likely impacts on relevant listed threatened species.	Yes

	A worst case scenario should be presented, unless further certainty can be given that the quarries will not be required.	

Noted. See responses to comments above for any additional calculations not included in the PER.

Although the final locations of the ballast quarries have not yet been confirmed, some conclusions can be presented based on design requirements and avoidance commitments included in the PER.

OPR has committed in the PER to not clear Western Spiny-tailed Skink habitat or native vegetation within the Freehold Area for the purposes of ballast quarries. There will therefore be no impacts to any Skink habitat or habitat in the Freehold Area, where all potential Carnaby's habitat is located.

Therefore the following assumptions can be made:

- No impact from quarries on Western Spiny-tailed Skink habitat
- No impact from quarries on Carnaby's Black Cockatoo habitat

There will also be no impact from quarries on Slender-billed Thornbill habitat, as their habitat is limited to floodplain and salt lake vegetation, which would not be suitable for a ballast quarry.

Due to the limited area of significant quality Malleefowl habitat within the Study Area (due to extensive grazing and subsequent loss of leaf litter), OPR will not disturb identified Malleefowl habitat for the purpose of ballast quarries.

Based on the above OPR is confident that there will be no impacts on NES fauna habitat from the development of ballast quarries. In addition all ballast quarry disturbance areas will be surveyed for NES flora species and if found they will not be disturbed.

OPR is also investigating opportunities to source ballast material from existing quarry and mining operations in the region. This would minimise disturbance required for ballast quarries and potentially lead to reuse of waste materials.

2.4 General impacts

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Concerned that the bulk of the text relating to fauna excludes mention of direct hits until the performance indicators and 7.3.6. It should be included in Table 7.13 – given that there will be the equivalent of more than 18km of train movements every day, direct fauna loss can occur.	No

Direct fauna hits are expected to represent less of a risk than other potential impacts detailed within the PER such as habitat disturbance, entrapment and feral animals. Direct fauna hits will be captured within the finalised FMP.

Within the PER OPR identified that there may be some direct fauna hits as a result of train or vehicle movements (Section 7.3.6). The draft FMP included as Appendix 9 to the PER, commits OPR to reduce the potential for road kills by enforcing speed restriction on all access roads, and restricting off road traversing by vehicles.

A fauna injury/death register will be used to determine short and long-term trends by recording locations of direct fauna hits. This information can be used to determine if there are any areas where fauna strikes are more common, which may be identified as areas that may require further speed reductions or other mitigation (fencing, alert signage etc). Such triggers and contingency measures will be detailed in the FMP.

In areas of significant fauna habitat OPR will install fauna underpasses. The underpasses will be designed for use by small mammals, marsupials, reptiles and insect species. OPR will ensure that the entrances of fauna underpasses will contain suitable cover from predation. This is expected to include large rocks, artificial grates, and/or rehabilitated vegetation. Underpass floors will be lined with sand, mulch and small branches to encourage the local fauna to utilise them.

3. Water

3.1 Water Availability

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Submitter is concerned that existing bores are not licensed in many freehold areas and DoW does not take their needs into account.	No

These key land management issues will be discussed through OPR's landholder consultation process. Section 7.6.4.2 contains the following commitment:

> *OPR will undertake detailed and ongoing consultation with landholders to include water supply aspects.*

It is therefore expected that potential impacts to water supply will be identified through this process.

OPR is investigating all potential water supply options to determine the most suitable water sources for construction and operation of the Proposal. A key aspect of the selection of these sources will be to ensure that there are no impacts on landholder's water supplies.

Furthermore, in the unlikely circumstance that a local groundwater user's supply is impacted by OPR's activities, it is anticipated that any licences issued by DoW will require OPR to cease its groundwater abstraction and make good any water supplies impacted.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Submitter considers the discussion and units in which data for water abstraction is presented in the PER makes it difficult to assess abstraction requirements of the project.	No

The PER uses different units as they differentiate between water use or requirements (GL/yr or ML/yr) and yield (L/s). Water requirements for the Proposal is listed in Section 7.6.1 which states:

> *The Proposal is expected to require 3.5 GL of groundwater over the 36 month construction period and 130 ML/yr during operation.*

Discussions in Section 5.2.4.2 of the PER relate to allocated yield of current groundwater bores:

> *The remaining licenses have average licence abstraction allocations of between 0-20 L/s*

There are no other units used.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5) Public Submission (8) Asmussen Family Trust (3)	Submissions expressed concern that water requirements for construction and maintenance of access roads is substantial and likely to impact the sustainability of existing water supplies. Shire suggest landholders require consultation regarding their water supplies and capacity of their supplies to cope with additional drawdown.	No

As stated in Section 7.6.4.2 of the PER:

> *The groundwater licensing assessment process requires the Proponent to demonstrate that the proposed groundwater abstraction will not have a detrimental impact on the environment or existing users, or if an impact is likely, that effective mitigating measures will be implemented (e.g. supply water to these users, deepen existing wells etc).*

OPR expects that there will be no significant impacts on groundwater as a result of the Proposal

OPR has committed to landholder consultation regarding groundwater use in Section 7.6.4.2 of the PER:

> *OPR will undertake detailed and ongoing consultation with landholders to include water supply aspects. Any impacts on pastoral water supply due to the Proposal will be addressed and rectified by OPR.*

The above statement will also apply to freehold land.

Issue 4:

Submitter (sub #)	Submission and/or issue	PER modified
Public Submission (8)	Submission does not consider information in the PER has taken into account the declining rainfall in the Midwest over the past 30 years and the impact this has on groundwater re-charge. Questions the relevance of using long term records of rainfall for the region due to the recent decline.	No

The proposed groundwater abstraction for the construction of the Proposal is for short term use. Recent water demand estimates indicate that the total water volume required for the rail construction is approximately 3.5 GL over a period of only 36 months.

Since submission of the PER, groundwater exploration investigations have continued to evaluate potential groundwater supply areas for rail construction. Earlier groundwater assessments suggested that development of numerous groundwater supplies (production bores) within the proposed rail corridor had unacceptable costs and risks to the Project. Therefore, investigations have been focussed on assessing larger and more reliable areas for groundwater abstraction outside the Proposal Area.

A conservative approach will be adopted when assessing the sustainable yield of groundwater resources and potential impacts of abstraction by assuming zero rainfall recharge conditions. In addition, OPR will apply monitoring and management measures in consultation with DoW (e.g. water level and water quality trigger levels, contingencies, etc) to reduce adverse impacts on the environment and existing users.

OPR is therefore committed to establishing sustainable water supply sources for construction and operation of the Proposal. Declines in rainfall recharge will be taken into account when assessing the sustainability of proposed water supply sources.

3.2 Water Quality

Issue 1:

Submitter (sub #)	**Submission and/or issue**	**PER modified**
Department of Health (12)	Submission states that the proponent will need to address the following for each private water supply site: • Comply with the *Australian Drinking Water Guideline 2004* • Establish a Drinking Water Quality Management Plan, including the extraction points, water supply pipeline, the water treatment process and storage facilities. • Attention will also need to be given to any potable water tanks located on different sites and how it will be safely transported and maintained. • Guidelines are available for drinking water cartage. • Establish drinking water quality reporting procedures with WA Health.	No

Noted. OPR will address the above requirements when developing any potable water source.

3.3 Drainage

Issue 1:

Submitter (sub #)	**Submission and/or issue**	**PER modified**
Shire of Chapman Valley (5)	Expressed concern that there are no firm commitments relating to the management of drainage structures in the PER.	No

Ensuring suitable drainage design is a key requirement of the Proposal, as it is in OPR's interest that Rail Corridor drainage is maintained. Poorly managed drainage structures could impact on the integrity of the Rail foundations.

OPR has committed to monitoring to ensure surface water flows are maintained. Visible ponding may require repairs or redesigns of the relevant drainage structures.

Table 7-18 of the PER states that "*monitoring will occur to ensure surface water flows are maintained*". This information will be used to ensure that the following commitment is complied with (also Table 7-18):

Prepare and implement a SWMP to contain the following actions:

- *Maintain all stormwater infrastructure to their designed capacity or function*

A draft SWMP was included with the PER. The final plan provides some clarification about how this issue will be monitored:

Visual observations and inspections during flow events for:

- *Pooling upstream/upslope of Project infrastructure*
- *Diversions of natural drainage lines as a result of the Project*
- *Restriction in flow downstream of Project infrastructure*
- *Inspection of drainage facilities after significant rainfall or at least twice annually, to determine whether blockage, siltation, erosion, structural instability or damage has occurred.*

The SWMP (OPR 2010A) also contains more detail on the mitigation that will be taken if significant pooling, flow diversions or restriction occur as a result of the Project:

- *Identify potential cause of impact*
- *Repair, unblock, redesign or replace drainage facilities if required*
- *Review success of contingency actions during next flow event*

In accordance with Australian Engineering Standards the Proposal's drainage design will be capable of handling in excess of 1 in 20-year flood events; therefore drainage would be capable of handling an increase in frequency of storm events.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Concerned about the risk of secondary salinisation associated with ponding caused by inadequate drainage structures & sheet management strategies. Suggest this has not been recognised in the PER.	Yes

Refer to response to Issue 1 within Section 3.3 above for information on management of drainage facilities.

Drainage structures will be designed for at least a 1 in 20-year average recurrent interval flood, and at times there will be temporary ponding behind the structures and rail embankment, when the floodwaters exceed the capacity of the structure and water backs up behind the structure. However any such ponding in a large rain event would be temporary, and persist for a relatively short period of time (hours rather than days). Salinisation is therefore not expected to be an issue.

Any potential ponding would relate to drainage trapped behind the rail embankment as it passes through flat terrain, which is common along the Rail Corridor. However, drainage design will include longitudinal transfer of floodwaters (via longitudinal table drains located adjacent to the rail embankment) to the nearest culvert through the rail embankment (refer to Figure 7-2 in the PER). As such, significant, long-term, random ponding behind the rail embankment will be avoided. Some minor short-term ponding may occur at times behind the embankment when in very flat terrain.

Salinisation from ponding is generally associated with large volumes of surface water infiltrating to the groundwater in cleared areas, increasing the groundwater table which mobilises salts stored within the soil profile. Should this salt-laden groundwater reach the surface soil, salinisation occurs which leads to plant death and a breakdown in soil structure. Within the Proposal Area the majority of cleared land is located within the Freehold Area, which generally has more incised drainage features. As these features will be crossed using structures that are designed to cope with at least a 1 in 20 year flood event (bridges, culverts etc), the risk of ponding is therefore minimal. In the Pastoral Area where the risk of ponding is higher due to increased sheet flow areas, the area remains predominantly uncleared, which combined with OPR's sheet flow management should reduce the potential for salinisation to occur.

The Proposal is therefore unlikely to significantly increase the risk of salinisation.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Road drainage intended to function as a floodway may create alterations to erosion and sedimentation patterns. Has this matter been considered?	No

Section 7.5.5.2 of the PER contains the following statement, which includes the potential use of floodways:

> *OPR will undertake detailed consultation with landholders to assist in the design of rail and road drainage design, land access arrangements and land management measures.*

The use of floodways will require erosion protection, as will all significant drainage crossings, and OPR have committed to this in Table 7-18 of the PER:

> *Design and install culverts, bridges, or water crossings at drainage crossings, according to the following commitments:*
> - *Include appropriate erosion protection e.g. rip rap rock protection and reno mattresses*

Table 7-17 of the PER states that a target of "*no significant increase in sedimentation downstream of Proposal infrastructure*" will be used during construction and operation of the Proposal.

Monitoring will be used to determine compliance with this target. As floodways would not be used for major crossings, monitoring of floodway areas will consist of visual monitoring for the presence of sedimentation downstream of the floodway. The draft SWMP that was included as an appendix to the PER included proposed contingency measures that would apply if the target listed above was not reached:

> *Identify Project areas that may have caused the increase in TDS or TSS*
> - *Inspect onsite drainage containment measures. Repair, redesign or replace onsite drainage containment facilities if required*
> - *Stabilise any areas that are susceptible to erosion*
> - *Resample to confirm success of contingency measures*

As detailed above, floodways will be managed in accordance with the commitments in the PER and those proposed in the SWMP (OPR 2010A). It is unlikely that the Proposal will result in the occurrence of significant erosion and sedimentation events.

4. Noise

4.1 Noise - operational

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Asmussen Family Trust (3) Public submission (8)	Submitters are concerned that their properties have not been adequately considered in the noise modelling presented in the PER, nor under the typical wind conditions of the area.	No

OPR is confident that it would have considered the submitter's property in its noise modelling. The identification of sensitive receptors in the noise modelling was based on all buildings (including sheds etc) encountered along the alignment. This approach is most likely to have overestimated rather than underestimated the number over sensitive receptors in proximity to the proposal. The number and location of sensitive receptors used in the PER assessment was therefore a worst case scenario. OPR has performed a cross-check of the buildings located on properties on White Peak Road via aerial photographs and can confirm that all nearby buildings were included in the noise modelling as sensitive receptors for the purpose of assessment of potential impact.

Modelling is based on all weather conditions, with the modelling results showing the worst case noise levels in each direction. Therefore typical wind conditions were included in the assessment. The model also incorporates topographical data to determine results.

OPR has developed a noise mitigation program that is being integrated into its landholder consultation program. The program not only addresses the requirements of SPP 5.4, but extends beyond those requirements to address potential noise impacts at marginal levels. OPR's resident consultation and noise control validation will occur in a three-stage process in consultation with DEC's Noise Branch. OPR will finalise its residential noise management consultation process with DEC in the coming months; however, it is anticipated that the agreed process will include DEC's independent review of modelling and mitigation packages. Attachment 1 details the anticipated noise mitigation, community consolation and DEC review process.

OPR would welcome discussions with the submitters regarding their concerns about potential noise impacts.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Noise Regulation Branch (9)	Submission notes that results indicate that three receptors are predicted to receive noise above the *Limit* criteria in SPP5.4 at night; and that there are a further three receptors owned by the WA Land Authority that will also receive noise above the *Limit*. These latter have lease conditions that mean they will not be considered noise-sensitive premises. Submitter considers that residences exposed to noise above the *Limit* are not likely to be suitable as places of residence without significant noise amelioration, and notes that while the PER proposes noise management measures, it is not clear whether these measures would also apply to the residences owned by the WA Land Authority. A response is sought from the proponent on the following: • Is it intended that the three residences that are owned by the WA Land Authority, and where noise is predicted to be above the *Limit*, will remain in residential occupation, and if so, what noise ameliorative measures are proposed for these residences? • Is it intended that the noise management strategies for rail noise that will apply to residences where noise is predicted to exceed the *Target* criteria in SPP 5.4 will apply to the residences owned by the WA Land Authority as well as to the private residences?	Yes

The three residences that are owned by the WA Land Authority, where noise is predicted to be above the *Limit* will not remain in residential occupation due to the requirement of the Shire of Chapman Valley Town Planning Scheme 1, regarding residences with the Oakajee Industrial Investigation Zone and Buffer:

> ...should the cumulative environmental impacts of incremental industrial development exceed the Environmental Protection Authority criteria, the Estate Manager is required to make suitable arrangements for occupants of residences within the Oakajee Industrial Investigation Zone buffer to vacate that residence.

As such no noise ameliorative measures will be required at these residences.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Noise Regulation Branch (9)	Submitter notes that the PER identifies a further 55 receiver locations (not all of which are necessarily residential buildings) where rail noise is predicted to be audible based on the criteria in preliminary draft Guidance 14, although in compliance with the *Target* criteria in SPP5.4. DEC considers that the noise at these locations may be noticeable, and will not necessarily be inaudible at other receiving locations. A response is sought on the following: • What actions will be taken to identify those locations where noise may be noticeable although in compliance with the Target criteria, and what consultation will be undertaken regarding potential noise impacts?	Yes

For the purposes of landholder consultation OPR has commissioned additional noise modelling based on realistic case noise emissions. The results will determine the level of audibility at a number of receptors, but not necessarily at all 55 locations. The expected noise levels at the remaining receptors will be extrapolated from the modelling results and sites classified according to whether or not noise is likely to be noticeable.

Consultation is already well underway with all landholders directly impacted by the rail, and consultation by letter has been conducted with all landholders within the Proposal Area. OPR plans to send all landholders within the Proposal Area an information pack on noise, including the expected noise levels at their residence. Landholders would then have the opportunity to consult further with OPR if they deem the impacts to be significant or are not satisfied with the level of information provided.

As identified in response to section 4.1 Issue 1 response to issue OPR has developed a noise mitigation program into its landholder consultation program. OPR's resident consultation and noise control validation will occur in a three-stage process in consultation with the DEC's Noise Branch. OPR will finalise its residential noise management consultation process with the DEC in the coming months; however, it is anticipated that the agreed process will include the DEC's independent review of modelling and mitigation packages. Attachment 1 details the anticipated noise mitigation, community consultation and DEC review process.

Issue 4:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Noise Regulation Branch (9)	Submission is concerned that the PER indicates that the noise from rolling stock will be based on Pilbara best practice, with further muffling to be investigated. Submitter notes that the noise level assumed for the locomotives in the noise predictions was 92dB(A) at 15 metres, which is slightly higher than the noise emission from a 'Q Class' locomotive, thus there may well be potential for some noise reduction. It is not clear however by what process best practice will be achieved and demonstrated: for example through the noise management plan. A response is therefore sought on the following: • By what process is it intended that best practice rolling stock noise emissions will achieved and demonstrated?	Yes

Q Class locomotives were investigated early in the process as potentially being used for the OPR Proposal. 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
- 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, 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 minimizing the noise emissions from the Proposal and as such will investigate the viability of additional muffling of locomotives. This is scheduled to occur as part of the tendering process once finance approval has been granted for this project. OPR will inform the DEC noise branch of the progress of muffling investigations at appropriate intervals until an outcome is determined.

Apart from engine noise, much of the noise from trains, particularly the more readily perceived higher pitched "wheel squeal" noise, is associated with tighter curves in the railway. Most of this is avoided in the Proposal with its gentle curves (being 1000 m minimum radius but generally 2000 m or more where this is possible).

OPR commits to complying with the environmental noise requirements of SP5.4 at all sensitive receptors and has committed to additional noise mitigation options such as external noise barriers, sound-proofing affected residences and potentially relocation or property purchase in the Proposal PER, if required.

The process for managing noise reduction at receptors has been outlined in the response to issue Section 4.1 (above).

Issue 5:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Noise Regulation Branch (9)	Submitter notes that the noise predictions carried out in accordance with SPP5.4 would not normally include additional noise from train horns at level crossings or noise radiated from bridge structures. A response is therefore sought on the following: • Are any residential receivers located in the vicinity of level crossings and if so what impacts are likely to result from the use of train horns at these crossings and what measures may be available to reduce these impacts? • Are any residential receivers located in the vicinity of bridge structures and if so what measures are proposed to reduce the noise radiated from the structure?	Yes

Level Crossings

There are several receptors in the vicinity of potential level crossings that may be impacted by the train horn. The closest receptor is 390 m from a level crossing and based on typical train horn noise levels, could receive a noise level of approximately L_{Amax} 82 dB (Lloyd Acoustics *pers comms*, 2010). To manage this impact, OPR will be installing flashing lights and early warning system lights, which would theoretically negate the need for the driver to use the horn. However, the use of the horn is at the driver's discretion and out of the control of OPR. It should be noted that this receptor has already been identified as potentially experiencing noise levels above SPP5.4 'Limit' criteria, and a commitment has been given in the PER to provide noise mitigation at this location.

There are four other receptors within 800 m of potential level crossing sites that have been identified as being above the State Planning Policy 5.4 (SPP5.4) 'Target' criteria during operation, and a commitment has been given in the PER to provide noise mitigation at these locations. OPR will consider train horn noise during discussions with the residents on potential noise mitigation options.

Other receptors were identified as being in the vicinity of potential train level crossings, however are in compliance with the SPP5.4 'Target' criteria. The distances range from 437 m to 714 m. An assessment of the noise impact from the train horn will be made and if considered appropriate, noise control in the form of crossing control and/or facade protection will be implemented.

Bridge Crossings

There are several receptors in the vicinity of potential bridge crossings that may be impacted by radiated noise from the bridge structure as trains pass over the bridge. The closest receptor is 142 m from the bridge crossing and that may potentially result in a noise issue. Although at this stage the bridge structures have not been designed, it is accepted that should radiated noise been considered as an issue, vibration isolation will be incorporated into the design of the bridge and/or track. It should be noted that the closest receptor has already been identified as potentially experiencing noise levels above SPP5.4 'Limit' criteria and a commitment has been given in the PER to provide noise mitigation at this location.

A similar scenario exists for the second closest receptor, located at 240 m from a potential bridge crossing.

The closest remaining receptors are located between 715 m, and 943 m from bridge structure. These receptors have previously been assessed as complying with SPP5.4 criteria, and due to their relatively large distance from the potential bridge crossings, it is unlikely that noise will be an issue. Nevertheless, if non-compliances are confirmed, noise mitigation options detailed in the PER will also be applied to these receptors in accordance with the process identified in Attachment 1.

Issue 6:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Noise Regulation Branch (9)	The PER indicates that any future land use changes may require consideration of operational noise. A response is therefore sought on the following: • What land use planning measures are proposed to ensure that future land use changes do not cause noise-sensitive development in rail-noise-affected areas?	No

It is expected that land use planning measures would be managed by local government agencies and the Western Australian Planning Commission (WAPC) rather than OPR. Local Government will control land use planning adjacent to the Proposal and will be responsible for setting development recommendations and requirements based on proximity to the Proposal. As a part of OPR's extensive consultation program it has initiated discussions with local governments with respect to the Proposal. Although it is at the Shire's discretion, it is anticipated that local town planning schemes may apply 'Special Control Areas' over the Proposal area to ensure that any development within this area is managed appropriately.

OPR would expect that it would be invited, along with the PTA, to comment on changes in zoning or structure planning that may result in introduction of new sensitive land uses in proximity to the rail.

Issue 7:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Noise Regulation Branch (9)	With regard to ground vibration, the PER suggests that vibration is not likely to be an issue as residences are located beyond 20 metres from the tracks. Submitter has	No

	expressed that vibration from railways has been found to be an issue at distances up to 50 metres from the track in some cases. The PER indicates that vibration monitoring *may* be used to verify the predictions. A response is therefore sought on the following: • At what distances are the nearest residences from the tracks, and are any within 50 metres? • What measures are proposed for the monitoring, assessment and control of ground vibration?	

There will be no residences located within 50 m from the rail line during operation. Based on current design information the closest residence to the rail line during operation would be at 150 m distance. Therefore there will be no residents in close enough proximity to be affected by vibration from the rail line.

It is expected that vibration monitoring would only occur if specific residents identify vibration from the rail as being detectable at their residences. As detailed above, due to required set back distances this is expected to be unlikely.

Issue 8:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5) Asmussen Family Trust (3)	Concern raised regarding residents in the Wokatherra Gap falling within the "above noise target, below noise limit of 55dBA". Submitters contend that noise will be substantially different to the ambience that is currently experienced and that consideration should be given to the construction program and opportunities for alignment design to attenuate the impacts of noise further.	No

OPR agrees that the rail noise will result in periodic changes in ambient noise and differ in nature to current noise emissions in the Wokatherra Gap area. Specific consideration has therefore been given to landholder impacts and proximity to residences when designing the alignment of the Rail Corridor through the Wokatherra Gap. As stated in Section 7.7.4.2 of the PER:

> *The location of noise receptors has already been considered in route selection to establish the preferred centreline. The preferred alignment will impact on the least number of residences.*

While some noise impacts are unavoidable the Proposal has been designed to minimise these impacts. Further noise mitigation will be implemented as stated in Table 7-24 of the PER:

> *Consultation program with affected landholders based around the preferred centreline to identify and agree upon mitigation options that may include external noise barriers, internal sound proofing, building relocation or property purchase.*

There may be some increases in noise levels during construction however these will be minimised using the following measures listed in Table 7-24 of the PER:

- *Construction Noise Management Plan will be developed*
- *Consultation with the occupants of affected premises regarding key construction activities such as blasting, haulage, compacting and pile driving will continue through construction periods*

Section 4.4.7 of the PER also provides additional commitments regarding construction during daylight hours:

> *Construction is expected to primarily occur during daylight hours; however in some cases construction may be required on a 24-hour basis.*

OPR therefore believes that all reasonable measures will be taken or committed to in order to minimise noise impacts on sensitive receptors and has committed to a consultative process in Attachment 1 to achieve this outcome.

Issue 9:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Health (12)	Submission considers the requirement for vibration monitoring or vibration mitigation strategies to be unclear.	Yes

It has been predicted that vibration will not be felt more than 50 m from the rail line. There will be no residences located within 50 m from the rail line during construction or operation. Therefore there will be no residents in close enough proximity to be affected by vibration from the rail line.

It is expected that vibration monitoring would only occur if specific residents identify vibration from the rail as being detectable at their residences. As detailed above, due to required set back distances this is expected to be unlikely. Nevertheless, the proposed Construction Noise Management Plan will include requirements for management of potential vibration from the Proposal.

Issue 10:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Submission considers that workforce and operations could have an impact on residents for sections of the rail if 24 hour operations are intended. Are 24 hour operations intended for the rail?	No

Noted. This is identified in the Key Characteristics Table of the PER, 24 hour operations are required for efficient movement of ore from Mid-West mining operations to the Oakajee Port and subsequent shipping.

Specific consideration has therefore been given to landholder impacts and proximity to residences when designing the alignment of the Rail Corridor through the Wokatherra Gap. As stated in Section 7.7.4.2 of the PER:

> *The location of noise receptors has already been considered in route selection to establish the preferred centreline. The preferred alignment will impact on the least number of residences.*

While some changes in ambient noise levels are unavoidable in proximity to the rail, the Proposal has been designed to minimise these impacts. Further noise mitigation will be implemented as stated in Table 7-24 of the PER:

> *Consultation program with affected landholders based around the preferred centreline to identify and agree upon mitigation options that may include external noise barriers, internal sound proofing, building relocation or property purchase.*

OPR believes that all reasonable measures have been taken or committed to in order to minimise noise impacts on and ensure reasonable levels at sensitive receptors.

4.2 Noise - construction

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Noise Regulation Branch (9)	With regard to approval of the construction noise and vibration management plan under noise regulation 13, the PER indicates that this approval will be given by DEC, however it should be noted that the approval may alternatively be granted by the CEO of the Shire of	Yes

	Chapman Valley or by an Inspector appointed under the Act and employed by the Shire. The approving agency will be determined by consultation between the parties.	

Noted. OPR will submit noise and vibration management plans to DEC or the local government authority for the area for which the plan applies.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Noise Regulation Branch (9)	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?	Yes

Until geotechnical investigations can be performed it is impossible at this stage to determine if piling will be required. Based on current visual surveys it is estimated that seven of the nine bridges will require piling.

There are two receptors in close proximity to locations where piling may be conducted. These receptors are 142 m and 240 m respectively from the bridge crossing. It is recognised that careful management of the piling noise is required at these locations. The final management will be determined following consultation with the affected residents, however, it is envisaged that piling would only occur during agreed times and that a noise complaint response system will be implemented. If required, alternative accommodation may be offered to these residents during times of intense piling.

The closest remaining receptors are located between 715 m, and 943 m from potential bridge crossings. The impacts to these receptors are not considered to be high; however, restrictions on the times when piling activities occur, notification on potential impacts and a complaints response service will be implemented.

In summary, a Construction Noise Management Plan will be developed prior to construction which will be submitted to DEC or other authorised agencies for approval under the Environmental Protection (Noise) Regulations 1997. This management plan will include piling techniques, an assessment of piling noise impacts and the actions taken to mitigate any impacts.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Noise Regulation Branch (9)	Potential ballast sites are identified in the PER – will any of these sites require trucking of ballast in the vicinity of noise-sensitive premises and if so what impacts are likely to result and how will these be managed?	Yes

The final locations of ballast source areas is yet to be determined; however, there are several options that can be considered for the purpose of assessing potential noise impacts from quarry traffic.

One option being considered is obtaining ballast by processing the overburden from the abandoned Great Fingall mine near Cue. A crushing plant would be established on the abandoned mine site to recycle overburden into ballast. There are already trucks carting iron ore from Jack Hills to Cue, which could backhaul the ballast to a ballast rock siding within the Proposal Area, rather than returning empty. As this option would not require additional traffic, there will be no increase in noise levels along the haulage routes.

If a ballast quarry is developed alongside or within the SAC it is proposed that the internal Proposal haul roads would be used to transport the ballast material. There would be no public road haulage and therefore no noise impacts.

The remaining option is to use other existing ballast quarries within suitable distance from the Proposal. As these quarries would already be operational, quarry haulage noise would not be a new impact to surrounding receptors, and because the Geraldton – Mt Magnet, Mullewa – Morawa and Mullewa –

Carnarvon roads already have substantial heavy truck traffic, the addition of quarry trucks would only fractionally add to truck movements along those roads.

A Construction Noise and Vibration Management Plan will be developed prior to construction which will be submitted to DEC or other authorised agencies for approval under the Environmental Protection (Noise) Regulations 1997. This management plan will include quarry transport noise impacts.

Issue 4:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Concerns raised over vibration issues associated with pile driving for river crossings that may impact on landholders and failure of PER to address the issue.	Yes

Vibration issues were not addressed in detail in the PER because the closest receptor to any bridge crossing is 142 m and at that distance short-term vibration impacts are not expected to be noticeable.

Geotechnical investigations are still to be undertaken to confirm if piling will be required. Based on current visual surveys it is estimated that seven of the nine bridges will require piling but this is not certain. It is possible, although relatively unlikely at this stage, that piling will not be required at all.

A Construction Noise and Vibration Management Plan will be developed prior to construction which will be submitted to DEC or other authorised agencies for approval under the Environmental Protection (Noise) Regulations 1997. This management plan will address piling noise and vibration impacts.

Issue 5:

Submitter (sub #)	Submission and/or issue	PER modified
Asmussen Family Trust (3)	Submitter believes construction activity should be restricted to daylight hours along populated areas of the proposed rail route.	Yes

OPR will construct primarily during daylight hours; however, there will be times when night work is necessary.

Section 4.4.7 of the PER provides information regarding proposed construction times:

> *Construction is expected to primarily occur during daylight hours; however in some cases construction may be required on a 24-hour basis.*

Daytime construction is a preferred option due to safety and efficiency reasons, but there will be some cases where night construction will be required due to a number of reasons (schedule, road safety, weather or delivery delays etc).

OPR will take surrounding landholders' noise concerns into consideration wherever practicable, which will include a preference for daytime construction. When night works are required they will be subject to the following measures listed in Table 7-24 of the PER:

- *Construction Noise Management Plan will be developed*
- *Consultation with the occupants of affected premises regarding key construction activities such as blasting, haulage, compacting and pile driving will continue through construction periods*

The consultation listed above will include discussions of proposed night works and timing/measures to reduce impacts.

OPR therefore believes that all reasonable measures have been taken or committed to in order to minimise night noise impacts on sensitive receptors to acceptable levels.

4.3 Consultation

Issue 5:

Submitter (sub #)	Submission and/or issue	PER modified
Asmussen Family Trust (3)	Submitter raises the point they have not been consulted regarding potential impacts of noise on their residence. Suggests residential properties adjacent the corridor be consulted regarding mitigation measures such as double glazed windows being made available by the proponent.	Yes

All potentially noise affected residents have been, are in the process of, or are planned to be consulted. The impacts of operational noise emissions on residents has been highlighted in the PER as an important issue that will require close management. Table 7-24 of the PER states:

> *Consultation program with affected landholders based around the preferred centreline to identify and agree upon mitigation options that may include external noise barriers, internal sound proofing, building relocation or property purchase.*

Consultation is already well underway with all landholders directly impacted by the rail (were their land is being intersected by alignment) having been contacted and discussions regarding impacts and implications entered into. Further consultation by introduction via letter has been conducted with all remaining landholders within the Proposal Area. Within this area OPR plans to send all landholders an information pack on noise, including the expected noise levels at their residence. Landholders would then have the opportunity to contact OPR and enter into further discussions, including possible noise mitigation, if they deem the impacts to be significant. Mitigation will be recommended to landowners where noise modelling indicates levels could cause a nuisance and/or affect amenity of the residence.

For the purposes of landholder consultation OPR has commissioned additional noise modelling based on realistic-case noise emissions. The results will determine the level of audibility at a number of receptors.

As detailed above, mitigation such as double glazed windows will be discussed with all residences that have the potential to be significantly impacted from rail noise.

As per commitments made in the PER, OPR will ensure that all potentially noise affected residents will be consulted and mitigation proposed where impacts to amenity are likely.

Not to mention the above commitments, OPR will liaise with the Asmussen Family to discuss their concerns with respect to this issue and others raised within their submissions on both the Port Terrestrial and Rail PER's under the framework established in Attachment 1.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Public Transport Authority (15)	PTA have noted advice from OPR that draft EMPs will be incorporated into the PER for public release. A draft noise and vibration management plan is included, however issues related to noise, vibration, dust and light remain of interest to PTA., particularly near the port and ancillary facilities such as construction camp, sidings, both during construction and into the operations phase. PTA have requested OEPA note OPR's undertaking to review and amend the EMP content in liaison with PTA closer to construction.	No

Noted and agreed. The Noise, Vibration and Light Management Plan will be finalised in consultation with PTA.

5. Waste Management

5.1 Landfill usage

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Shire expressed concern regarding a management strategy for waste described in the PER intending to use Shire landfills and lack of discussion with the Shire from the proponents.	No

At present it is too early to confirm exact waste disposal requirements. It is expected that once construction contracts are awarded the sub-contractor will confirm waste disposal requirements.

Section 7.10.5.2 of the PER states:

> *It is anticipated that there will be a requirement for a small number of Class II landfill sites along the Proposal Area for the disposal of putrescible wastes. Shire landfills may also be used where practicable.*

OPR therefore will investigate suitable waste disposal options such as on-site landfills or off-site disposal to Shire landfills. Approval from local government authorities will be sought if it is desirable for some wastes to be disposed of at Shire landfills.

5.2 Hydrocarbons

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Submission is concerned that regular maintenance greasing of 2km long trains will result in low level continous hydrocarbon loss along the length of the line. Suggests there is no recognition of the cumulative impacts of this nor management of the impact to adjoining landholders.	No

OPR expects that maintenance greasing of trains will not have a significant environmental impact. There may be some minor losses of grease during operation of the trains; however' the loss is expected to be extremely low over 570 km of rail and are not expected to be significantly different from other rail projects in WA, including current rail networks in the Mid-West and Pilbara.

Hydrocarbons in low concentrations will generally break down in an open environment within a relatively short timeframe; therefore cumulative impacts from the minimal volumes of hydrocarbons that may be released by OPR's rolling stock over the life of the Proposal are not expected to be significant.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Laydown areas on pastoral areas listed for rehabilitation including hydrocarbon treatment. It does not specify whether laydown areas on freehold land will be bunded in case of spills or accidents.	Yes

Hydrocarbon storage areas will be bunded in accordance with relevant legislation and Australian Standards (refer to Section 7.10 of the PER), however it is unlikely that entire laydown areas will be bunded.

Section 7.10.5.2 of the PER states:

- *Storage, transport and use of hazardous materials will be in accordance with Dangerous Goods legislation and Australian Standards*
- *Hydrocarbon spills will be reported as incidents and responded to immediately*
- *Spill kits will be kept in designated positions to allow the swift response to these events*

Table 7-31 of the PER also details further control measures to be implemented during construction and operation of the Proposal.

Based on the control measures detailed in the PER, including bunding of hydrocarbon storage areas, OPR expects that bunds around entire laydown areas will not be required except to control surface water runoff and to minimise erosion and sediment transport.

5.3 Wastewater

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Health (12)	Where multiple wastewater treatment plants (WWTP) are to be used, each installation requires approval under the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations*.	No

Noted. OPR is aware of its obligations under the *Health Act 1911* and subsidiary regulations, with regards to wastewater treatment and reuse. OPR predicts there will be numerous wastewater treatment facilities associated with the construction and operation of the Proposal, each of which will be subject to approval from the Department of Health (DoH), local Shires and potentially DEC.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Health (12)	Proposals for the recycling of effluent, including for dust suppression, require separate approval and individual applications will be required for each WWTP. Submissions are to be made to the WA Health Water Unit, with a Recycled Water Quality Management Plan, in accordance with the (draft*) Guidelines for the Use of Recycled Water in Western Australia, April 2009.*	No

Noted. OPR is aware of its obligations under the *Health Act 1911* and subsidiary regulations, with regards to wastewater treatment and reuse. OPR predicts there will be numerous wastewater treatment facilities associated with the construction and operation of the Proposal, each of which will be subject to approval from DoH, local Shires and potentially DEC.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Health (12)	Submitter suggests it be noted that wastewater recycling proposals are subject to ongoing water sampling and quality requirements. If WWTP equipment is to be relocated as temporary camps are moved, the transferred plant will again require a separate application and verification testing before recycling resumes.	No

Noted. OPR is aware of DoH approval requirements relating to sampling and quality requirements of wastewater treatment and reuse. Should wastewater treatment plants or infrastructure require relocation, OPR will contact DoH to ensure the correct approval process is followed.

6. Square Kilometre Array (SKA) radio telescope

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Commonwealth Scientific and Industrial Research Organisation (CSIRO) (1)	Submission is concerned that for the majority of its length, the proposed OPR rail route lies within the Mid-West Radio Quiet Zone, administered by the Australian communications and Media Authority (ACMA) to protect the radio-frequency environment over the Murchison Radio-astronomy Observatory (MRO). The MRO is being established as Australia's premier site for radio astronomy observations in Australia. The MRO is also Australia's candidate core site for the international SKA. The low level of background radio-frequency radiation on the MRO is a key differentiator that makes the MRO the best site scientifically for the SKA and for current telescopes being constructed on site. The ACMA Radio-Quiet Zone regulatory controls are designed to ensure that unacceptable radio-frequency emissions do not damage the scientific integrity of the MRO site. CSIRO considers that it would be appropriate to include CSIRO in OPR's Summary of Stakeholder Consultation (Table 6-2), and for radio-quiet compliance to be included in the list of Issues Raised in 6.3, and in the Summary of Stakeholder Interests in Table 6-3 of the submission.	No

OPR is aware of CSIRO's concerns and is working with CSIRO to ensure a technical solution to this matter can be implemented such that both Projects are compatible. OPR expects that the radio-quiet requirements that will be decided upon between OPR and CSIRO will be a commercial contractual arrangement, with conditions set once technical solutions have been identified. This level of information was not available for inclusion in the PER document, and regardless would be better managed outside of this process.

Regardless of the above, OPR will include any technical solutions to radio-quiet requirements in their Environmental Management System (EMS) and relevant EMPs (see below).

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
(CSIRO) (1)	Poor control of radio-quiet could lead to the MRO not being able to operate and, therefore, the impact on the MRO should be included in the Social Impact Assessment referred to in 7.14.1.2.	No

Refer to response to comment above.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
(CSIRO) (1)	To ensure adequate ongoing consideration of radio-quiet compliance, it would be useful for OPR to include radio-quiet compliance in its Environmental Management System, including development of a management strategy in Table 9-2, and inclusion of radio-quiet compliance mechanisms in OPR's Environmental Management Plan.	No

OPR is currently in the process of liaising with CSIRO to decide on a radio communications design that will meet the requirements of both parties. Key factors under discussion include:

- The potential requirement for OPR's radio signal to be as low in power and as directional along the rail line as possible so as to minimise the signal in the direction of the Murchison Radioastronomy Observatory (MRO)
- the potential requirement to use fibre optic cable as the communications backbone
- parallel radio propagation modelling including the impact of OPR's radio

OPR will submit frequency licensing applications to the Australian Communications and Media Authority (ACMA) following the formal receipt of acceptance of OPR's proposed plan by CSIRO.

OPR will include details of any technical solutions to radio-quiet requirements in their EMS and relevant EMPs, with compliance required from all personnel. The EMS and EMPs will include details on mechanisms for communicating these requirements to personnel, such as training programs, start-up and toolbox meetings, and inductions.

7. Visual Amenity

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Planning (11)	Submitter is unclear as to the definition of what a visual amenity management plan is, nor the phrase "visual amenity modelling for public viewscapes". If this is in reference to the identification of view sheds there is a need to specify the view points to be used in the analysis. These should include: • Chapman Valley Road • Morrell Road • North West Coastal Highway • Minor roads in the vicinity of White Peak and Wokatherra Gap Have view points been specified for the visual amenity modelling proposed in the PER?	Yes

OPR is completing a further more detailed visual impact modelling and assessment. The additional modelling will assist in providing a more comprehensive assessment of potential visual impacts on a range of sensitive receptors, as a result of the Proposal, including views from Chapman Valley Road, Morrell Road, North West Coastal Highway and other key viewing locations.

This modelling will include some specific infrastructure information (such as formation heights, cut/fill locations etc), given Proposal design has progressed since the development of the PER. The outcomes

of this modelling will determine the detail of any mitigation actions to be implemented, to reduce disturbance to visual amenity such as screening, redesign, selection of materials, colours and location of components of the development (where applicable).

Part of this assessment will include the development and implementation of a Visual Amenity Management Plan that will be prepared with reference to relevant guidelines, including:

- Guidelines for Landscape and Visual Impact Assessment Landscape Institute and Institute of Environmental Management and Assessment, 2002;
- Visual Landscape Planning in WA (WAPC, 2007); and
- Reading the remote: landscape characters of Western Australia (CALM, 2004).

It is expected that any impacts can be appropriately mitigated.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Environment & Conservation – Environmental Management Branch (7)	Submission is concerned about impacts to the visual amenity and scenic values of the proposed Moresby Range Conservation Park caused by the rail corridor. Suggest the proponent provide results of the visual amenity modelling proposed in the PER – to DEC for review prior to ground disturbance commencing through the Wokatherra Gap.	Yes

Agreed. OPR will provide a copy of the visual amenity assessment report to DEC for comment prior to construction through the Wokatherra Gap and take comments into account in developing the Visual Amenity Management Plan (VAMP). As described above this work is currently underway.

It is noted that the EPA has previously considered visual amenity as part of its assessment of the Narngulu to Oakajee rail route and service corridor in November 1998. The EPA recognised that the greatest visual impact was likely to occur in the vicinity of the Moresby Range; however, their position was that the potential impacts could be addressed through proper management. In the EPA Bulletin (EPA 1998) it states the following:

> *Whilst development in the Services Corridor may detract from the existing rural amenity of the area, the EPA believes that the impact should be able to be managed to an acceptable level.*

OPR is of a similar opinion regarding the Proposal in that it is expected that any impacts can be appropriately mitigated with suitable management.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
DEC – Environmental Management Branch (7)	Suggests the preparation of a visual amenity management plan should be done in consultation with DEC and the OEPA to identify methods for reduction or mitigation of impacts on recreational and landscape values identified in the above mentioned modelling. The management plan should address the application of suitable design techniques to the rail formation design and detailed alignment to minimise impacts on visual amenity in the area.	Yes

Agreed. The VAMP will be developed following the completion of the visual impact assessment detailed above. OPR will consult with key stakeholders including the DEC, OEPA, Department of Planning (DoP) and Shire of Chapman Valley, to confirm the scope of the plan and a draft copy of the VAMP will be provided for comment.

Issue 4:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Planning (11)	Suggestion that the management plan include assessment components such as: • Identification of key views • Simulation of the views with the railway added • Visual management objectives for each of the key views • Identification of the most visually sensitive areas	No

Noted. The VAMP will consider the above issues.

Issue 5:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Planning (11)	Submitter suggests mitigation measures for impacts to visual amenity should be clarified and suggests: • Increase visual diversity of landscape the railway passes through by increasing planting along watercourses • This should not occur through regimented screen planting along property or lot boundaries as this would be foreign to the landscape • Planting suggested is with regard to emphasising natural characteristics of the landscape not to plant along the rail embankment and draw attention to the rail.	No

These suggestions are to be taken into account when developing the VAMP. OPR is currently undertaking detailed visual impact assessment. Additional visual impact modelling will assist in providing a more comprehensive assessment of potential visual impacts on a range of sensitive receptors, including views from Chapman Valley Road, Morrell Road, North West Coastal Highway (NWCH) and other key viewing locations.

Following this assessment, OPR will finalise and implement the VAMP that will be prepared with reference to relevant guidelines, including:

- Guidelines for Landscape and Visual Impact Assessment Landscape Institute and Institute of Environmental Management and Assessment, 2002);
- Visual Landscape Planning in WA (WAPC, 2007); and
- Reading the remote: landscape characters of Western Australia (CALM, 2004).

DoP's suggestions above will be taken into account when developing the VAMP.

Issue 6:

Submitter (sub #)	Submission and/or issue	PER modified
Asmussen Family Trust (3)	Submission suggests an earth wall be built along the length of the rail route around populated areas and rehabilitated with locally endemic flora and fauna.	No

The detailed visual impact assessment is currently underway, and OPR understands that the concerns of the community need to be addressed where possible.

The modelling and subsequent VAMP will provide options to reduce the visual impact of the Proposal, and these options will be considered with input from relevant Government agencies and the community. Options may include earth walls and vegetation screening in some areas; however, it is unlikely that an earth wall will be constructed throughout the entire Wokatherra Gap section as this may increase the visual impact of the rail formation in some areas rather than decrease it. This is because an earth wall will need to be much higher than the actual rail formation and therefore would be more visible in the landscape.

8. Safety and Risk

8.1 Traffic management & interface requirements

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Main Roads WA (7)	OPR are required to assess and obtain the necessary environmental clearances for any agreed road modifications and agreed measures to protect any other rail/road interface issues to minimise community risk.	No

Noted and agreed. Finalising the design of all road crossings, including the NWCH and Morrell/Chapman Roads will continue to occur in close consultation with Main Roads, DoP and PTA. OPR has revised the NWCH realignment in consultation with MRWA resulting in a slightly longer and safer realignment. This will result in the key characteristics of the Proposal requiring 107.3 ha of native vegetation disturbance in the freehold zone (see Section 1.6 above).

Both the Rail Referral supporting document and Scoping Documents (Sections 3.2.5.4 of both documents) described that the current North West Coastal Highway bisects Reserve 16200 and that OPR proposes to realign the highway so that it runs along the eastern boundary of this reserve, within the State designated North West Coastal Highway road reserve. In addition, road traffic on the North West Coastal Highway will be grade separated from the rail traffic, with a two lane vehicular bridge to be constructed over the proposed railway line. The grade separation of the NWCH is required for safety reasons i.e. a boom gate style crossing is not acceptable with the amount of vehicular and train movement anticipated at this intersection.

At the time that the Rail PER was published the final design for the NWC Highway had not been finalised and agreed with MRWA. This element of the Proposal was described at a conceptual level within the PER. However, Section 1.4 (of the PER described that two vehicular bridges, including the North West Coastal Highway (NWCH) Bridge would be constructed to provide grade separation of train and vehicular traffic. Whilst Section 4.4.5 of the PER described that the current North West Coastal Highway bisects Reserve 16200 and that OPR proposes to realign the highway so that it runs along the eastern boundary of the reserve, within the existing State designated North West Coastal Highway road reserve (refer Figure 4). The PER also described that the road traffic on the North West Coastal Highway will be grade separated from the rail traffic, with a two lane vehicular bridge to be constructed over the proposed railway line. This has not changed.

The NWCH deviation is required to provide safe passage of vehicles over the rail alignment and to improve the safety characteristics of the NWCH through this section. The alignment has been chosen based on MRWA safety standards. To enable the NWCH deviation to comply with MRWA safety standards in relation to distance separations and visibility requirements, the proposal must be constructed outside of the conceptual alignment shown in the PER. This means the alignment is outside of the existing road reserve located to the east of Reserve 16200 as shown in Figure 4.

Now that OPR has determined an alignment in consultation with MRWA, it will commence consultation with other relevant stakeholders. As the alignment complies with MRWA standards it is not expected that this consultation will result in any change to the NWCH realignment and associated modifications to the feeder roads.

With the realignment of the NWCH and the requirement for a grade separated rail crossing, the existing Wells Road intersection with the NWCH would require an additional road over rail bridge and substantial additional modification to achieve the MRWA safety standards for the NWCH to enable 2 feeder roads to be in such close proximity at the design speeds required with the road gradients that exist. Essentially

this would involve additional width on this whole section of the NWCH to install additional lanes beyond the additional lanes already included. The location of a number of private properties to the East of the OIE requires that Wells Road is maintained to provide unfettered and safe access to these locations.

The preferred alignment for the NWCH deviation and associated feeder roads will result in a significant reduction in impacts to vegetation and priority species in comparison to the conceptual deviation described within the PER. There is approximately 1 ha less vegetation clearing and significant reduction in impacts to Priority species. This is largely due to the avoidance of vegetation clearing within the existing NWCH road reserve which is contiguous with the eastern boundary of Reserve 16200.

Table 9: Impacts of NWCH realignment on key environmental elements

Environmental element		**PER location**	**Preferred location**
Priority Species	Priority 3 Grevillea triloba	1426	50
	Priority 3 - Verticordia densiflora var. roseostella	20	0
	Priority 4 -Verticordia penicillaris	495	1
Beard Communities	Unit 35	2.2	4.65
	Unit 413	0	0.04
	Unit 675	6.06	2.6
Total Vegetation Clearing (ha)		8.26 ha	7.3 ha

Figure 4 shows the location of the original deviation described within the PER and the location of the preferred alignment for the NWCH deviation.

The 7.3 ha of additional clearing has been assessed in relation to key environmental elements such as priority flora, vegetation communities and Carnaby's Black Cockatoo Habitat and acknowledged within OPR's offsets commitments. The following provides a summary of OPR's direct offsetting commitments for the rail proposal:

- Acquisition of land for conservation in the agricultural zone on Geraldton Sandplains between Geraldton and Mullewa. The land should include at least one and up to four parcels of land totalling at least 110 ha in size and including both vulnerable and endangered Beard vegetation communities. This land will be transferred to the Conservation Estate.
- Acquisition of land for conservation and rehabilitation of habitat in agricultural land in the Chapman Valley and along the Moresby Ranges near Geraldton. The land should include up to two parcels of land totalling 140 ha and have Intact areas of Eucalypt-Banksia spp. Woodland and areas of remnant vegetation with some cleared land covering a valley with low mallee woodland over shrubland/sedgeland and closed tall to mid shrubland over sedgeland on hills and upper slopes with remnant pockets of Acacia and Hakea on mid-slopes down to Eucalypt woodland along watercourse.

With respect to the rehabilitation of the original NWCH that traverses Reserve 16200, once OPR's preferred realignment is commissioned OPR is committed to removing the closed portion of the Hwy and rehabilitating it with species endemic to the area.

The NWCH deviation and realignment to feeder roads has been located to avoid impacts to Reserve 16200 and to minimise vegetation impacts. The preferred deviation and location of feeder roads also avoids impacts to a significant number of Priority flora (refer Table 9).

The NWCH deviation footprint, as a result of it occurring at the Rail-Port interface has sections that have been subject to separate flora and fauna surveys and habitat mapping and assessments. There is also a small 0.2 ha area that is immediately outside the area surveyed for which vegetation community and habitat type has been inferred from aerial photography and adjacent vegetation mapping. This is consistent with mapping inferences made with the level of survey appropriate to the proposal.

The inclusion of the NWCH deviation has required a revision of impacts to native vegetation clearing within the Freehold area from 100 ha to 107.3 ha. The additional7.3ha is not considered significant and is made up of Beard Communities 35, 413 and 675. The extended realignment removes the need for impacts on Reserve 16200. The disturbance equates to a loss of approximately 0.043% of the current extent of significant vegetation remaining in the Geraldton Sandplains bioregion. No Beard units will see an increase in their conservation significance as a result of this clearing.

As part of the final design assessment OPR will obtain all relevant State Government and Shire approvals to ensure that environmental and public risk issues are considered and mitigated.

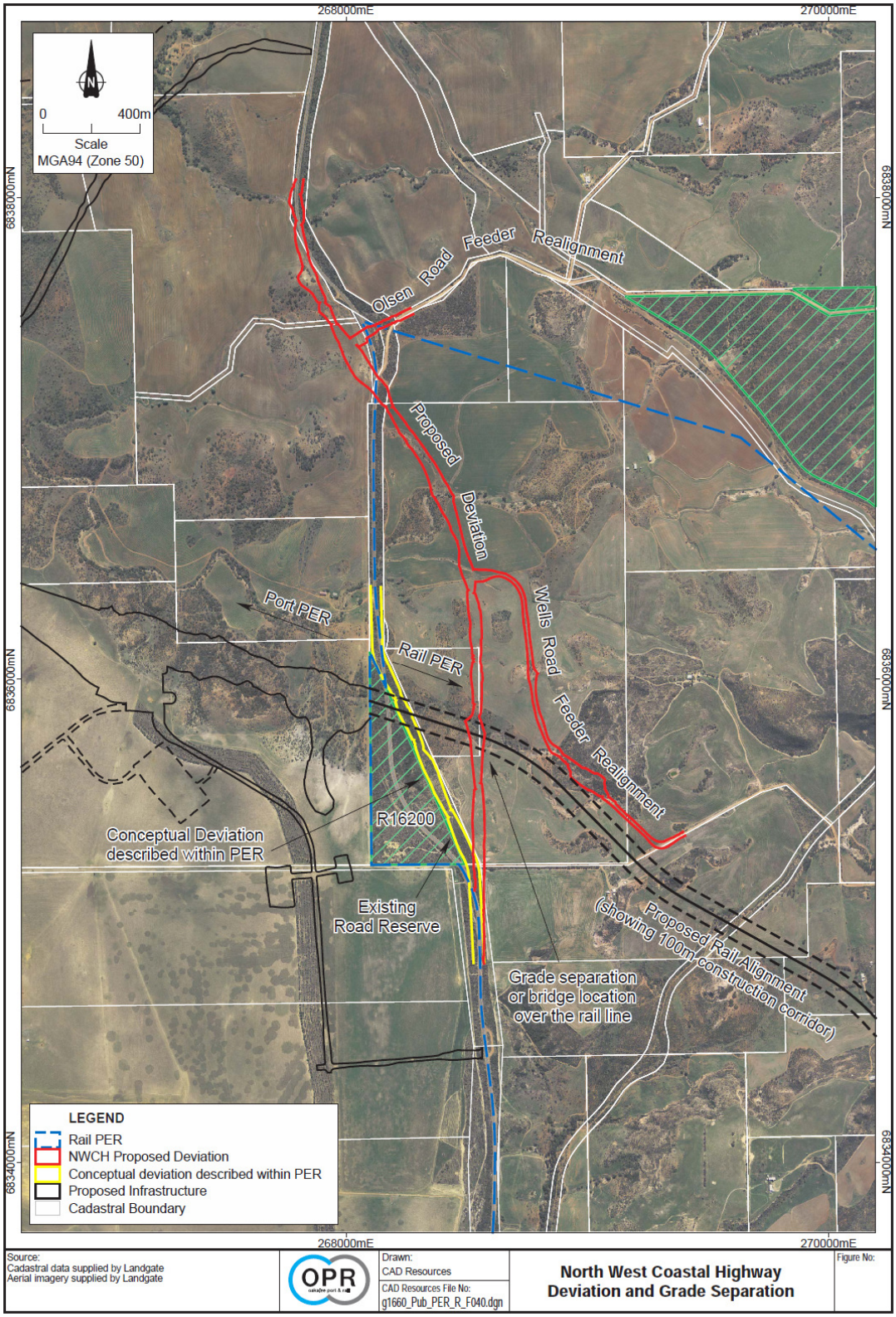

Figure 4 North West Coastal Highway deviation and grade separation comparison between conceptual alignment described within the PER and the final alignment.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Concern expressed regarding the proximity of construction and maintenance maps to existing Shire roads. It is necessary that OPR works integrate with the Shire's roadworks maintenance program through liaison with the Shire. Suggest the PER fails to provide details regarding road upgrades nor the need for increased maintenance to support additional traffic that will result from implementation of the project.	Yes

It is expected that impacts to Shire roads and road traffic will not be significant as the majority of associated traffic will be contained within the Proposal Area. Section 7.14.4 of the PER states:

> *While there may be additional construction traffic on public roads, these impacts are expected to be minimal as the Proposal Area itself will be used for access on most occasions, and on site construction accommodation will reduce the number of vehicles driving to and from site.*

Construction traffic will generally utilise OPR's rail access tracks unless otherwise impracticable. OPR will consult with relevant Shires regarding any potential for increases in traffic loads on Shire roads. Consultation will include discussions on public risk, maintenance and upgrades, depending on requirements.

Construction traffic will be primarily short-term, as the construction face will progress along the Proposal Area. Traffic during operation is expected to be minimal due to the low numbers of personnel required along the length of the Proposal.

Based on the above it is therefore expected that the potential impact of the Proposal on Shire roads can be managed such that there is no significant safety or public nuisance issue arising from their establishment and operation.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	OPR should note there will be increased road safety hazards in the region at harvest time.	Yes

Noted. OPR will ensure that all personnel are aware of the increased hazards on public roads during this period. This will be reinforced through such measures as inductions, training sessions, and start-up and toolbox meetings during harvest time.

Issue 4:

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Although there is recognition of traffic issues during construction there is no further reference to the permanent camps mentioned in Section 4.4.6.	No

The final locations of the accommodation camps has not been finalised and as such the implications of these camps on traffic and safety along specific sections of public roads cannot be accurately determined. However it is expected that impacts to Shire roads and road traffic will not be significant as the majority of associated traffic will be contained within the Proposal Area. Section 7.14.4 of the PER states:

While there may be additional construction traffic on public roads, these impacts are expected to be minimal as the Proposal Area itself will be used for access on most occasions, and on site construction accommodation will reduce the number of vehicles driving to and from site.

This statement includes accommodation camp traffic. It is expected that traffic will generally utilise OPR's rail access tracks unless otherwise impracticable.

OPR will consult with relevant Shires regarding any potential for increases in traffic loads on Shire roads. Consultation will include discussions on public risk, maintenance and upgrades, depending on requirements.

Based on the above it is therefore expected that the potential impact of the accommodation camps on Shire roads can be managed such that there is no significant safety or public nuisance issue arising from their establishment and operation.

8.2 Private property access

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Public Submission (8)	Expressed concern regarding access to farm property on Wells Road. Will access to properties on Wells Road off North West Coastal Highway be impacted by the rail corridor?	No

Landholder access to their properties will generally be maintained throughout construction and operation. Wells Road is a rural gravel road connecting the NWCH and extending east to provide access to several landholdings. The Wells road connection to NWCH occurs in a location where the NWCH is to be realigned to allow a bridge to be built over the Rail Corridor. Wells Road will also therefore require realignment in order to maintain access.

During construction access will be maintained by constructing a new temporary access road or allowing the use of a section of the Proposal access track that has been upgraded to public road standards. There may be some minor delays or detours during heavy haulage or hazardous construction activities; however, this will be short-term and residents will be informed of any potential delays.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Asmussen Family Trust (3)	Submitter is concerned that access to Moresby Range Conservation Park from White Peak Road will be impacted by the rail corridor. Is this access to be impacted by the rail corridor?	No

The current access from White Peak Road to the Moresby Range Conservation Park is planned to be maintained during construction and operation; however, if this is not possible due to unforseen constraints then suitable alternative access arrangements will be developed. Exact details of crossings will be developed at a later stage in consultation with relevant government agencies.

8.3 Compensation

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Public Submission (8)	Submitter has asked whether compensation for loss of access; income and depreciation of assets caused by the project have been considered, and how they will be addressed.	No

OPR is committed to minimising the impacts on landholders wherever practicable. Where this is not possible compensation for a loss of assets or land productivity may be considered. Section 7.14.4 of the PER states:

> *Individual landholders may be inconvenienced by the dissection of farm paddocks and disruption to farm operations. Land access negotiations with individual landholders have commenced and will specifically address the social and economic issues associated with land agreements to facilitate the Rail Proposal as they are conducted at a more detailed level.*

These negotiations will allow OPR to develop appropriate compensation packages where required.

9. Proposal Definition

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Public Transport Authority (15)	PTA have noted that precise locations are yet to be determined by OPR for a future train siding (to be located west of Wokatherra Gap), construction and maintenance camps, ballast quarries and borrow pits. There will also be the subject of future approvals related to this.	No

Correct. Detailed site investigations are required to be conducted in order to determine precise information such as ballast quarries and borrow pit locations. This work is currently underway; however, due to the length of the rail corridor it is impossible to determine exact locations at this early stage.

Future train sidings do not form part of the Proposal, and will subject to separate future approval processes.

10. Omissions & errors of fact

10.1 Flora & Fauna

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Planning (10)	Section 7.2.2.2 (p. 140); section 5.2.1.1 (p. 49) should refer to the GRFVS. The Ecologia vegetation units (pp. 146-8) should be compared with GRFVS plant communities.	Yes
Department of Planning (10)	Table 5.8 (p. 58) and Table 7.2 (p. 144) should provide statistics on the proportion of Beard vegetation associations remaining in WA, not just the IBRA region. GRFVS identified that 10.56% of Beard vegetation association 35 remains in WA. The conservation value of association 35 therefore requires further discussion on p. 145.	Yes

The Geraldtion Regional Flora and Vegetation Survey (GRFVS) was not referred to in the PER as it was only relevant for a small portion of the Proposal Area. The Ecologia surveys were on a similar level of detail to the GRFVS but were undertaken across a much larger area and provided better context.

Noting the relevance of the GRFVS to the coastal areas of the OPR Development, the GRFVS was extensively referred to within the Port Terrestrial PER. A detailed assessment was completed using this information and was detailed within that PER.

The percentage of vegetation associations remaining in the Geraldton Sandplains IBRA region was used as all but one vegetation association listed in Table 7-3 of the PER are highly endemic to this bioregion. a33Sc is 50% endemic to the Geraldton Sandplains bioregion and this is discussed in Section 7.2.4.2 of the PER:

> *The extent to which these associations have been cleared elsewhere in the state is not available, therefore the current extent cannot be determined. It is assumed that since the degree of clearing diminishes further to the east, due to lower levels of agricultural and urban development, these associations have a higher level of preservation, albeit in variable condition due to grazing, than is reported in Table 7-2.*

Vegetation association 35 (unit code e6Mr a19Si) was identified as being of conservation value in Table 7-3 of the PER. The extent remaining in the PER differs from what was stated in the GRFVS as the PER was based on detailed mapping by Ecologia to verify the accuracy of Beard mapping and current extent boundaries. Table 5-4 of OPR's Port Terrestrial PER details the issues with the relevant datasets:

> *The pre-European dataset (DAFWA, 2005) contains some edge matching issues; these are of a botanic nature and cannot be resolved without remapping. The current Native Vegetation Extent dataset (DAFWA, 2006) contains some polygon errors such as overlaps, which have been corrected by Ecologia to come up with those figures presented in Table 5-4.*

In order to correct the dataset Ecologia digitised current extent data extracted from aerial photographs and overlaid them onto the pre-European Beard vegetation data boundaries. This was determined to be an accurate representation of the current extent of Beard vegetation associations.

The GRFVS does not provide sufficient information as to how the current extent calculations listed were determined and this level of detailed information is not expected to be able to be provided.

As detailed above OPR expects that the figures listed in Table 7-3 of the PER are accurate. However, if the current extent data for e6Mr a19Si is used as listed in the GRFVS, the maximum predicted impact of 10.35 ha would reduce the percentage remaining from 10.560% to 10.555%, i.e. a reduction of 0.005% of pre-European extent. If cumulative impacts associated with the Port Terrestrial and Approved Port are taken into account the percentage remaining would be reduced from 10.56% to 10.55%, a reduction of 0.01% of pre-European extent.

During design and construction OPR will investigate any opportunities to further reduce native vegetation clearing through the Freehold Area.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
DSEWPC (2)	The following threatened species should be added to the list of threatened species on p. 18: • *Calyptorhynchus latirostris* (Carnaby's Black Cockatoo) • *Caladenia wanosa* (Kalbarri Spider-orchid) • *Ptilotus fasciculatus* (Fitzgerald's Mulla-mulla) Carnaby's Black Cockatoo should be included in the list of threatened species on p.163 that DSEWPC will assess, and the list of threatened species potentially impacted by the project in Appendix 8 (draft Fauna Management Plan).	Yes

Noted and agreed. Pages 18 should have included the above species on the list of relevant matters of NES. Page 163 should have included Carnaby's Black Cockatoo as a species that DSEWPC will assess.

Section 8 detailed potential impacts to matters of NES, and all species identified above, including Carnaby's Black Cockatoo, were included in this assessment. The oversight was only in the omission in listing on pages 18 and 163, not in the impact assessment itself.

The draft FMP will be amended to include Carnaby's Black Cockatoo as a species potentially impacted by the Proposal.

10.2 Visual Amenity

Issue 1:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Planning (11)	Submission makes reference to Table EFS-2: Note the term "viewscape' should be removed from throughout the PER, including this table. It is undefined and is not commonly used in the field of visual landscape planning. Within the PER it seems to have been assigned a number of different meanings, dependant on each context. Each use of this term should be replaced.	No

Noted. Given the PER is a published document, these changes cannot be made. However, this comment will be noted and applied during the preparation of the visual amenity assessment report and VAMP.

Issue 2:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Planning (11)	With regard to the term 'visual amenity' – this is not frequently used in visual landscape planning and is superfluous. e.g. The usual term would be 'visual impact assessment' not 'visual amenity impact assessment'.	No

Noted. Terms will be amended during the development of the visual amenity assessment report and VAMP.

Issue 3:

Submitter (sub #)	Submission and/or issue	PER modified
Department of Planning (11)	Regarding Table ES-2, Visual Amenity section: The following alterations should be made to the second and third dot points in the *Existing Environment* column: • "Population and exposure to visual impact is highest in the vicinity of the North West Coastal Highway, the Wokatherra gap (through the Moresby Range) and the Chapman Valley, at the western end of the study area." • "The Moresby Range has iconic value as the dominant landscape feature in the Geraldton area, forming a distinctive backdrop to the town. It is the subject of specific planning activity by the Shire of Chapman Valley and the Department of Planning, designed to protect its inherent values. The Chapman Valley is part of a scenic route promoted to tourists."	No

	Suggested alterations to first and second dot points of the *Potential Impacts* column: • "the proposal will comprise a sinuous linear feature with potential impacts on views from public and private locations at the western end." • "Views are more significant in the western part of the proposal area, where the route traverses….."	

Noted. Given the PER is a published document, these changes cannot be made. However, this advice will be considered during the development of the visual amenity assessment report and VAMP. OPR is cognisant of the high landscape values of the Moresby Ranges and the importance of minimising the impact of the rail infrastructure on the appearance of the surrounding landscape from key viewpoints.

10.3 Offsets

Submitter (sub #)	Submission and/or issue	PER modified
Public Transport Authority (15)	PTA has noted details of offsets, mitigation strategies and other management processes have not been provided for review by the PTA. OPR has undertaken to liaise with the PTA to provide details of approval conditions and to ensure that responsibilities for any obligations incurred by OPR do not unreasonably transfer to the PTA.	Yes

OPR will be consulting with DSEWPC and DEC's Environmental Management Branch with regards to the development of the offset package being developed for the mitigation of significant residual environmental impacts. OPR will continue to consult with the PTA through this process.

10.4 General

Submitter (sub #)	Submission and/or issue	PER modified
Shire of Chapman Valley (5)	Concerned that the facilities and infrastructure section does not recognise the existing Shire infrastructure nor provide information about the implications of work camps and traffic in relation to grain haulage.	Yes

It is expected that impacts to Shire roads and road traffic will not be significant. Section 7.14.4 of the PER states:

> *While there may be additional construction traffic on public roads, these impacts are expected to be minimal as the Proposal Area itself will be used for access on most occasions, and on site construction accommodation will reduce the number of vehicles driving to and from site.*

It is expected that construction traffic will utilise OPR's rail access tracks where practicable. OPR will consult with relevant Shires regarding any potential for increases in traffic loads on Shire roads. Consultation will include discussions on public risk, maintenance and upgrades, depending on requirements.

Construction traffic will be primarily short-term, as the construction face will progress along the Proposal Area. Traffic during operation is expected to be minimal due to the low numbers of personnel required along the length of the Proposal.

Based on the above it is therefore expected that the potential impact of the Proposal on Shire roads can be managed appropriately and will not be significant.

10.5 Proposal description

Submitter (sub #)	Submission and/or issue	PER modified
Public Transport Authority (15)	PTA has noted that precise locations are yet to be determined by OPR for a future train siding (to be located west of Wokatherra Gap), construction and maintenance camps, ballast quarries and borrow pits. There will also be the subject of future approvals related to this.	No

Correct. Detailed site investigations are required to be conducted in order to determine precise information such as ballast quarries and borrow pit locations. This work is currently underway; however, due to the length of the rail corridor it is impossible to determine exact locations at this early stage.

Future train sidings do not form part of the Proposal, and will subject to future approval processes.

Attachment 1:

Noise mitigation component to landholder consultation program.

OPR's resident consultation and noise control validation will occur in a three-stage process in consultation with the DEC's Noise Branch. OPR will finalise its residential noise management consultation process with the DEC in the coming months; however, it is anticipated that the agreed process which will include the DEC's independent review of modelling and mitigation packages will be structured as follows:

Stage 1 – Pre-construction - presentation of mitigation package to landholder

Prior to consultation with residents OPR will confirm the number of dwellings within proximity to the Proposal. It is noted that the current modelling has included all buildings) including sheds and workshops) as potential receivers. OPR will then predict the noise levels at confirmed dwellings in proximity to the rail corridor using computer modelling and considering any noise mitigation controls that might be implemented along the rail corridor (eg, noise walls, bunds etc). It is anticipated that there will be up to three groups of dwellings identified as a result of this modelling:

Group 1 – >55dBLAeq night, - There are six buildings within this group three of which are owned by LandCorp and will not require noise mitigation.

Group 2 – 51-55dBLAeq night, - There are 11 buildings within this group four of which are owned by LandCorp and will not require noise mitigation.

Group 3 – 46-50dBLAeq night, There are 38 buildings within this group three of which are owned by LandCorp and will not require noise mitigation. This is the Group that is not currently covered by SPP 5.4.

Options for potential noise mitigation will then be determined for each of these groups. Although these packages are yet to be finalised it is expected that potential mitigation packages might include the following:

Group 1 – Package B from SPP5.4 Guidelines plus screening of outdoor area plus offer of purchase or relocation where rail infrastructure seriously impacts property residence and farming operation (where not already owned by LandCorp);

Group 2 – Package A from SPP5.4 Guidelines plus screening of outdoor area;

Group 3 – Package A from SPP5.4 Guidelines for bedrooms only.

Mitigation packages describing the typical treatments for noise and the predicted noise levels to the various facades of the dwelling will be developed and submitted to DEC Noise Branch for review and endorsement. It is anticipated that OPR and DEC could potentially agree on a deemed-to-comply' package that can be fairly standard for each house and be applicable to dwellings within Groups 2 and 3. Once DEC Noise Branch is satisfied with each package, OPR will meet with the residents or owner of the affected dwellings and present the proposed mitigation package.

Stage 2 – Pre-construction - negotiation of mitigation package between landholder and OPR

OPR will undertake a site specific survey of each dwelling during the time that the resident/landholder is reviewing the proposed package. The objective of this survey will be to gain an understanding of the usage of different rooms at affected facades and to better inform management of noise impacts. Once the resident/landholder has reviewed the mitigation package OPR will work with the landholder or resident to identify acceptable treatment options that achieve the acoustic requirements.

Details of the final agreement between the resident/landholder and OPR will be provided to DEC for review and endorsement. If the DEC does not accept the selected treatment, then further negotiations between OPR and the resident/landholder will occur until a suitable treatment option is identified. Once the DEC's endorsement has been received OPR will implement the selected treatment option(s) as agreed with the resident/landholder. It is anticipated that the selected treatments for Groups 1, 2 and 3 will be implemented during the construction phase of the Proposal and prior to commissioning of the rail alignment.

Stage 3 – Post-construction – validation of noise mitigation package

OPR will monitor noise levels at the Group 1 & 2 residences during operation to determine if the implemented noise mitigation measures are successful. OPR will investigate additional mitigation options in consultation with the landholder and DEC if it is identified that accepted noise limits have not been met. If results are favourable, then a report will be provided to DEC for their records and endorsement if required.

With respect to Group 3, for those dwellings that have been received a ‘deemed to comply’ noise treatment package OPR will only undertake noise monitoring if a complaint is received. Monitoring will also be implemented for those dwellings that have, via negotiation with landholders, been subject to a modified ‘deemed to comply’ noise management package.

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OAKAJEE RAIL DEVELOPMENT

PUBLIC ENVIRONMENTAL REVIEW
ASSESSMENT NO. 1818

SUMMARY OF MATTERS TO BE ADDRESSED

This document forms a summary of the matters raised by the Office of the Environmental Protection Authority (OEPA)

The public submission period for the proposal commenced on 2 August 2010 for a period of four weeks, ending 30 August 2010.

Table of Contents

1. Fauna

1.1 Ecological linkage

Issue 1	PER modified
Regional ecological linkages impacted by the proposed railway corridor need to be considered in more detail, especially in the western portion of the proposed corridor. The linkages comprising East Yuna Nature Reserve and Bindoo Hill Nature Reserve which is adjacent to the corridor and other habitat remnants to the south and east in a largely cleared agricultural landscape need to be assessed to determine if special management provisions need to be in this area.	Yes

Regional ecological linkages between the East Yuna and Bindoo Hill Nature Reserves and other areas of remnant vegetation are much reduced due to clearing for agriculture. The strongest linkages are located to the north and east where relatively large areas of remnant vegetation occur. To the south and west, remnant vegetation that could potentially act as ecological linkages is much more degraded and fragmented and the areas that they are linking are few and also potentially degraded. Using aerial imagery only four blocks of remnant vegetation remain to the south of East Yuna and Bindoo Nature Reserves. The Greenough River may potentially form one of the more important linkages through the region, connecting these areas of remnant vegetation, as it is one of the few landscape features that retains some remnant vegetation and traverses long linear distances.

OPR considers that there are three locations intersected by the rail alignment which may function as important corridors for localised fauna movements. These locations are the Chapman River Crossing at 26 km from the eastern boundary of the Proposal Area, the Chapman River East Crossing at 35 km and the Greenough River Bridge at 80.5 km. Potential impacts to the ecological values of each of the corridors are discussed below:

Riparian vegetation at the Chapman River, Chapman River East and Greenough River rail intersects are 70, 110 and 250 m wide respectively. Under the worst case construction width scenario (100 m) there is a cumulative impact to 4.3 ha of the aforementioned corridors. The worst case cumulative footprint from the operational corridor (80 m wide) will be 3.44 ha. Impact areas for each corridor have been presented in (Table 1). Maps of each of these locations are attached to this report (Chapman River - Figure 1, Chapman River East - Figure 2 and the Greenough River Bridge - Figure 3).

Table 1: Direct impacts to potential ecological corridors

Direct impacts to potential ecological corridors (worst case scenarios)			
Ecological Corridor	Width of Veg at intercept (m)	Construction impact (100 m width worst case) ha	Operational impact (80 m width worst case) ha
Chapman River	70	0.7	0.56
Chapman River East	110	1.1	0.88
Greenough River	250	2.5	2

The actual operational footprint will have a far lower impact than stated as bridges will be constructed at these crossings allowing the impacted areas not required for operation to be rehabilitated as defined below. Bridges will allow fauna to pass under the rail alignment uninhibited and the designs will minimise impact to river flow. The impacts to remnant vegetation that forms ecological linkages is expected to be minimal as only a few areas are crossed by the proposed rail and structures such as culverts and overpasses will always allow movement of fauna to continue.

OPR believes that with appropriate management the impacts to ecological linkages within the Proposal Area can be minimised. As an example the ecological linkage mentioned in the comment above comprises of remnant vegetation within the East Yuna and Bindoo Hill Nature Reserves, which is connected by another large area of remnant vegetation. The Proposal Area passes below these reserves; however, there is a narrow (approximately 250 m wide in some areas) linkage along the Greenough River to other areas to the south (Figure 3).

The Proposal will cross the Greenough River at this location using a bridge structure at one of the narrowest points in this area (approximately 250 m in width) (Figure 3). Apart from this crossing there is no other disturbance to this linkage. There is also another crossing of the Greenough River towards the western edge of the Freehold Area that may act as an ecological linkage.

There are several other smaller (<100m wide) ecological linkages that extend in a north-south direction along the Chapman River and tributaries. These linkages will also be crossed by the Proposal but are not considered to be significant corridors either due to their width and the density of vegetation for suitable fauna habitat, or the low quality of the fauna habitat that the corridors are linking (i.e. corridors intersecting the rail that link cleared paddocks and significantly impacted vegetation providing poor fauna habitat). Nevertheless, at these locations culverts will ensure that small fauna movements can continue along these features.

The impact of the rail formation is not expected to be significantly greater than other infrastructure that currently intersects these ecological corridors, such as the Chapman Valley Road and the Geraldton-Mt Magnet Road; however, as it is a new area of disturbance it will require strict management to ensure that these ecological corridor values are maintained.

With respect to the Greenough and Chapman Rivers, apart from the very narrow disturbance area associated with the Rail Corridor bridge crossing, the Proposal is located well away from these watercourses. Significant disruptions to the ecological linkage values of these river systems are not proposed. It is noted that remnant vegetation around the Greenough and Chapman Rivers is already highly fragmented due to agriculture and a number of other existing roads. Consequently, the Proposal is not expected to significantly contribute to an increase in fragmentation in a north-south direction.

Any potential river crossings will be designed to meet the Department of Water (DoW) standards and will not significantly impact surface water flow such that pooling upstream or increased erosion downstream occurs and that maintenance of these riparian ecosystems is maintained.

With respect to habitat fragmentation, in meeting DoW requirements, fauna habitat will be considered and impacts managed. The rail alignment has been selected so as to minimise impact to riparian and significant vegetation. Management measures such as the installation of suitable bridge crossings, culverts, traffic controls, appropriate signage and fauna egress areas will be adopted during detailed Proposal design to reduce impacts on fauna. Furthermore, the potential for direct fauna hits from vehicle movements will be managed within the Proposal's FMP. The FMP will commit OPR to reduce the potential for direct fauna hits by enforcing lower vehicle speed restrictions through these areas, and restricting off road traversing by vehicles.

Awareness material will be communicated to all employees and contractors undertaking work on the rail alignment through the following processes:

- The environmental value of ecological linkages and their locations will be identified in rail environmental induction material
- Reduced vehicle speed limits through ecological linkages will be enforced
- Fauna crossing signage placed at appropriate distances from any road intersections with ecological linkages

A fauna injury/death register will be used to determine short and long-term trends by recording locations of direct fauna hits. This information can be used to determine if there are any areas where fauna strikes are more common, which may be identified as areas that may require further speed reductions or other mitigation (fencing, alert signage etc). Such triggers and contingency measures will be detailed in the FMP.

Construction disturbance areas will be narrowed at waterway crossings such that impacts to riparian vegetation are avoided. Construction areas (no longer required for operation) associated with bridge river crossings will be subject to detailed rehabilitation to restore natural habitat. A prescriptive rehabilitation program will be developed, particularly in relation to areas that have conservation significance including the above mentioned ecological linkages. In this regard, OPR will liaise closely with OEPA and DEC to develop detailed rehabilitation plans that are expected to include:

- Access
- Drainage
- Flora and fauna management
- Rehabilitation including suitable completion criteria and monitoring requirements.
- Weed and feral animal control

The development of the rehabilitation plan will require extensive site surveys and expert input to ensure that key environmental factors such as significant fauna habitat, are established. Strategies for rehabilitation will be specific to each area of clearance. For instance, small areas of cleared land surrounded by intact native vegetation may be rehabilitated by returning topsoil and debris and allowing the seed bank from debris and surrounding vegetation to recolonise.

Larger areas will require a reseeding programme which will source seeds from the local provenance. Continued drought may impact the success of rehabilitation and may necessitate repeated seeding campaigns to ensure adequate coverage is attained.

The draft VFMP included with the PER included proposed monitoring of rehabilitated areas:

> *Maintain the Ground Disturbance Permit system to record areas that will require rehabilitation, and also record those areas that have already been rehabilitated.*
>
> *Maintain the Rehabilitation Register and record the following information:*
> - *Hectares rehabilitated*
> - *Identification of new areas available for rehabilitation to commence*
> - *Inspections of rehabilitation success at completed rehabilitation areas*
> - *Location and size of topsoil storage areas*

Monitoring will focus on the continual assessment of the achievement or likely achievement of agreed completion criteria.

Contingency actions are also proposed in the draft VFMP if monitoring identifies that the agreed completion criteria are not being met:

> *If rehabilitation in an area is deemed to be unsuccessful then the following actions will occur:*
> - *Assess if rehabilitation occurred according to the Ground Disturbance Permit and Rehabilitation Register conditions*
> - *Determine potential reasons for the lack of rehabilitation success, utilising expert advice as required*
> - *Take the necessary actions required to address the lack of success*
> - *Make changes to rehabilitation procedures as required to minimise the likelihood of reoccurrence.*

OPR has identified all important ecological corridors intercepted by the Proposal and investigate measures that can be implemented to improve the values and viability of these features. OPR may investigate as a part of an offsets strategy/plan a number of actions in these areas that includes:

- working with farmers to fence these remnants;
- implement feral animal control programs; and
- instigate some level of riparian revegetation.

Through the implementation of the above controls and management actions detailed in the Fauna, Vegetation and Flora, Surface Water and Construction Environmental Management Plans which will be applied at these ecological corridors, the Proposal is unlikely to significantly impact on the ecological values associated with waterways through the highly fragmented freehold portion of the Proposal.

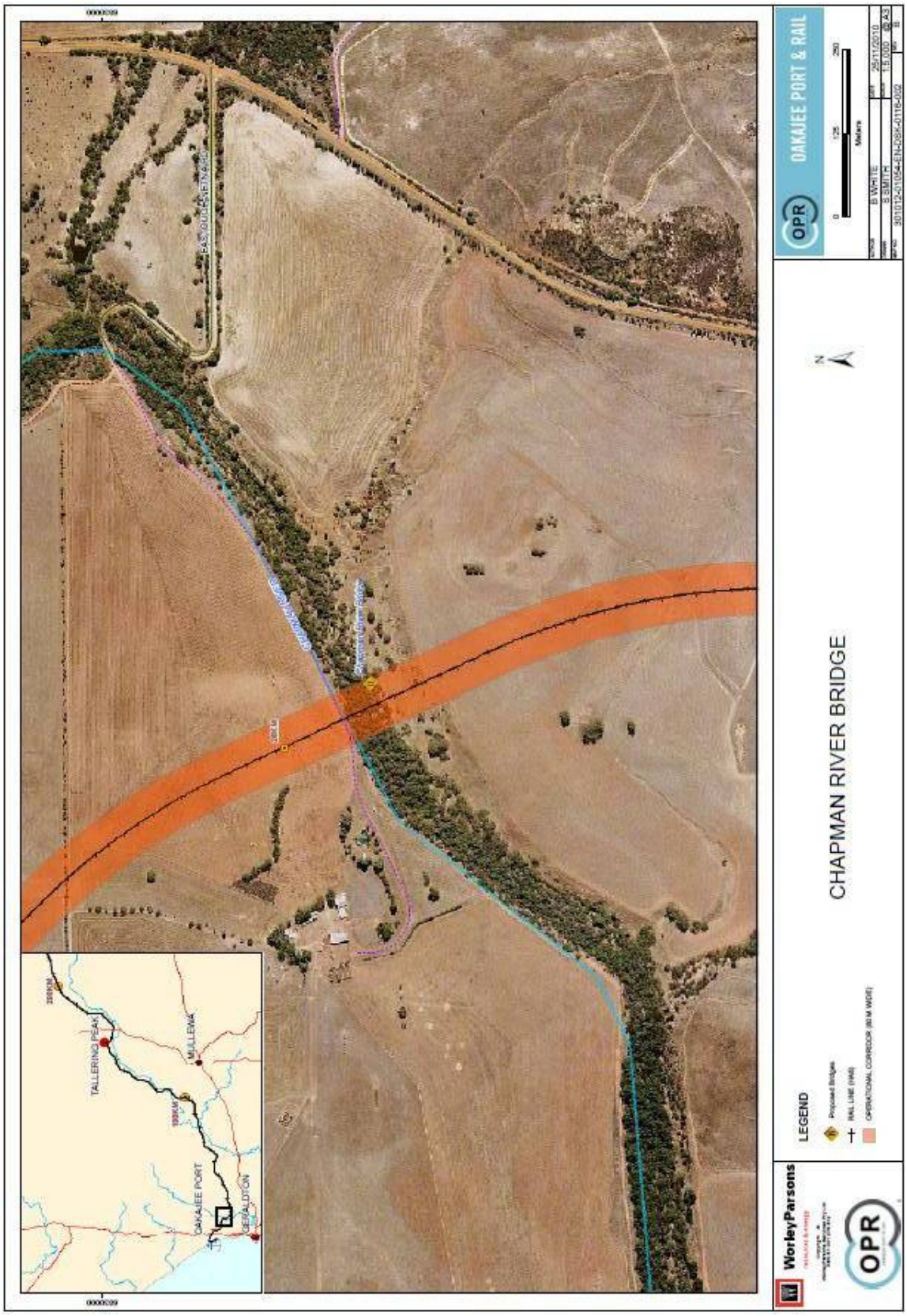

Figure 1: Chapman River Crossing

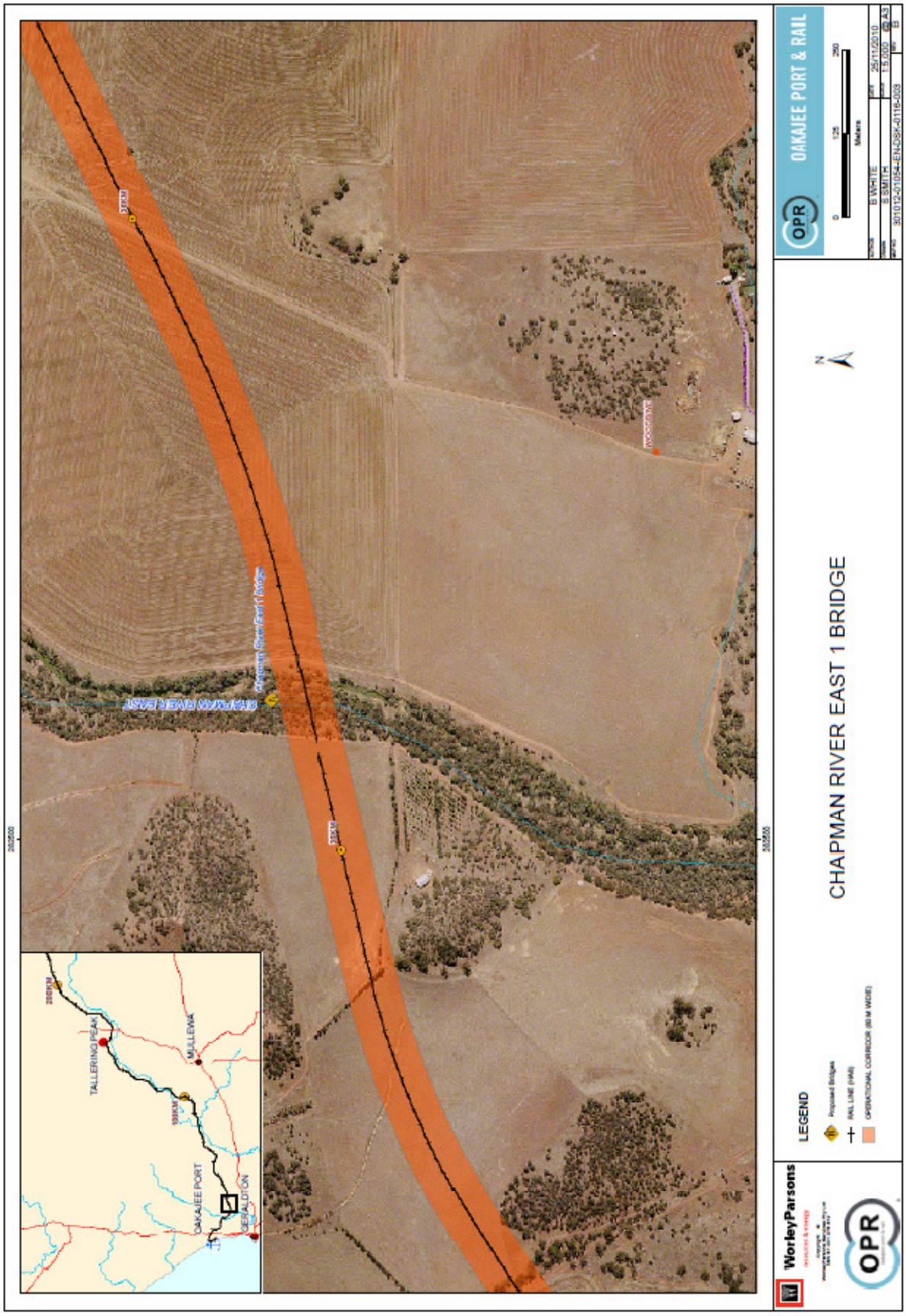

Figure 2: Chapman River East Crossing

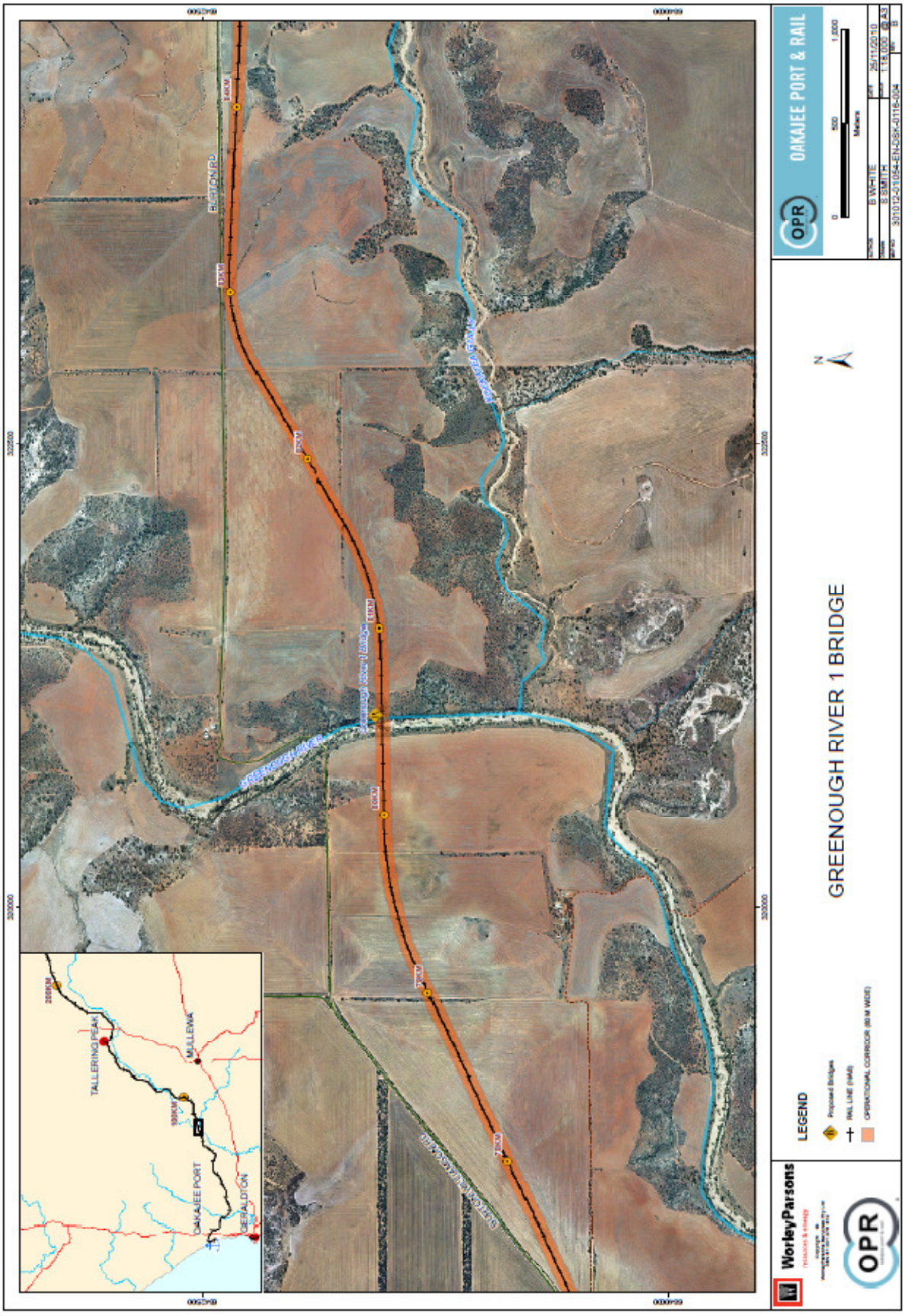

Figure 3: Greenough River Crossing

1.2 Threatened species habitat

Issue 1	**PER modified**
Statements regarding 6000ha of potential fauna habitat that is to be cleared however "*the majority of fauna habitat within the Proposal Area is well represented beyond the proposal footprint*" - needs to be substantiated.	Yes

The majority of fauna habitat to be disturbed within the Proposal Area is within the Pastoral Area (5900 ha out of 6000 ha). This area is predominantly open mulga woodland, which occurs throughout the rangelands. As this area remains mainly uncleared, a long narrow disturbance footprint would encompass only a small section of any broad fauna habitat extent. Narrower fauna habitat features such as watercourses or ranges will be predominantly crossed at right angles and therefore the proportion of disturbance will again be minimal.

In areas considered important for their ecological linkages OPR will endeavour to improve this ecological linkage values (refer previous section).

An example of the above is that important habitats such as granite boulder areas (Western Spiny-tailed Skink habitat) and chenopod/samphire vegetation types (Slender-billed Thornbill habitat) have already been identified in numerous locations outside of the Proposal Area (refer to Section 8 of the PER).

Issue 2	**PER modified**
Regarding the statement "*OPR commits to not disturbing any **active** Malleefowl mound. Should a nest be discovered that cannot be avoided, the nest will be disturbed only once all Malleefowl adults and chicks have left the nest. If this is not possible OPR will apply for permission to disturb*". This statement is confused and needs to be clearly defined. As Malleefowl have seasonal renovation and maintenance activities at mounds depending on their breeding status it would not be true to describe a mound as "inactive" after the young have left. A mound might not show any Malleefowl activity for several months but this does not mean it is not going to be used during the appropriate time for breeding.	Yes

In order to clarify the above statement it should be replaced with the following statement:

> *OPR commits to not disturbing any active Malleefowl mound for infrastructure that can be relocated (i.e. other than the rail centreline). Should a nest be discovered that cannot be avoided, OPR will attempt to only perform ground disturbance outside of breeding season. If this is not possible then OPR will employ an appropriately trained zoologist to relocate the eggs for incubation at an appropriate facility. The Malleefowl chicks will be released at a time and location agreed with Regional DEC staff.*

OPR expects that it is unlikely that Malleefowl mounds will be encountered within proposed disturbance areas. Survey results have shown that the mounds are rare, with only one abandoned mound being found within the Study Area (well away from the disturbance footprint) during over 600 hours of fauna surveys.

Pre-disturbance fauna surveys have been committed to in Table 7-13 of the PER:

> *All disturbance areas have or will be surveyed for Priority Fauna and EPBC protected species prior to disturbance.*

Recent surveys of geotechnical points and polygons was undertaken, 23 points of interest in 2009 and 414 points of interest throughout the Pastoral Area in 2010. A small amount of potentially suitable

habitat was recorded from three areas; however no mounds or individuals were observed. It is therefore considered unlikely that the Proposal will have a significant impact on Malleefowl populations.

The ongoing pre-disturbance fauna surveys will ensure that any Malleefowl mounds within the disturbance area are identified prior to clearing / ground disturbance. In the unlikely circumstance that a Malleefowl mound is found then OPR will endeavour to avoid the mound through design revisions. Any Ground Disturbance Permits issued by OPR for disturbance activities in the vicinity of the mound will implement a 50 m buffer requirement consistent with recent buffer conditions applied to DEC clearing permits. Further to this OPR also commissioned ecologia to undertake an assessment of vegetation within the rail corridor suitable of providing Malleefowl habitat (ecologia 2010a). This assessment identified a single vegetation unit (Yy1) which contained areas of sufficient vegetation density and leaf litter considered to be potential Malleefowl habitat. With the exception of the rail construction footprint, no ground disturbing activities will be undertaken within this identified potential Malleefowl habitat (ecologia 2010a).

All locations that had potential to support Malleefowl habitat were visited during ecologia's recent survey. The survey confirmed that within the rail construction corridor there will be approximately 34 ha of potential Malleefowl habitat impacted, 20 ha of this impact being located within the proposed Twin Peaks Conservation Estate.

Issue 3	**PER modified**
With regard to this statement regarding Malleefowl "*provision of fauna passages below the rail lines will allow for movement across the rail corridor*". Examples of fauna passages and their dimensions where Malleefowl use them should be provided. It is unlikely that Malleefowl would use small diameter pipe culverts.	Yes

The statement quoted above was directed at small fauna that may not be able to cross over the rail formation. Section 8.2.2.3 states that "*Malleefowl will most likely be capable of crossing the rail embankment*". The fauna passages specified are for small fauna that may find it difficult to cross the rail embankment, and it is not proposed to provide for larger fauna crossings. OPR agrees that Malleefowl will not use culverts to cross the rail, but as they are capable of flying, the rail formation is not expected to form any barrier to their movement.

Fauna underpasses are intended for use by small mammals, marsupials, reptiles and insect species as larger animals are expected to be able to pass over the rail uninhibited. OPR will ensure that the entrances of fauna underpasses within significant fauna habitat areas will contain suitable cover from predation. This is expected to include large rocks, artificial grates and/or rehabilitated vegetation. Underpass floors will be lined with sand, mulch and small branches to encourage the local fauna to utilise them.

Issue 4	**PER modified**
Section 7.3.4.1 of the PER should recognize that southern populations of the Western Spiny-tailed Skink are generally found in fallen logs not rock outcrops. A statement needs to be included which indicates whether woodland habitats and hence fallen logs were adequately searched for this species.	Yes

The brown form of *Egernia stokesii badia* (southern) was considered during all surveys and any observed suitable habitat was searched. No individuals were recorded during Ecologia surveys (Refer to Appendix 2 of the PER; Ecologia 2010), and none have been found within the Proposal Area during previous surveys.

Issue 5	PER modified
Table 7-13 requires trenches longer than 1000 metres to be inspected. What is the justification for this distance? To avoid fauna deaths all trenches should be inspected as appropriate.	Yes

This statement was an oversight and is incorrect. The management strategy in Table 7-13 should read as follows:

> *Minimise trench length where practicable. If trenches are required to remain open overnight, provide fauna ramps, inspect trenches before work resumes the next morning, and safely remove any trapped fauna.*

This control measure will be included in the FMP along with further information about management of trenches and associated potential fauna entrapment impacts. The FMP is expected to include the following management controls:

- Trenches are to remain open for the minimum time practicable
- Trapped fauna shall be removed from trenches no later than 3 hours after sunrise, and again prior to sunset
- Fauna egress ramps will be placed in trenches at intervals of no less than 50 m
- Suitable procedures will be developed for fauna handling and relocation, as well as housing and care if required
- All deceased fauna will be recorded and removed from the trench to prevent scavengers

The FMP will be finalised prior to construction.

Issue 6	PER modified
Submission is concerned that proposed fauna passages of 600mm culverts have been shown to funnel small animals to feral carnivores. Suggests wider overpasses would be of benefit for many larger native animals.	Yes

Fauna underpasses are intended for use by small mammals, marsupials, reptiles and insect species as larger fauna species are expected to be able to cross the rail embankment, therefore large fauna underpasses are not expected to be required.

Feral predators may learn to associate culverts with increased prey abundance but this is unlikely as the densities of small mammals are relatively low (Ecologia 2010). OPR will ensure that the entrances of fauna underpasses within significant fauna habitat areas will contain suitable cover from predation. This is expected to include large rocks, artificial grates and/or rehabilitated vegetation. Underpass floors will be lined with sand, mulch and small branches to encourage the local fauna to utilise them. Areas where the rail is level or only slightly raised or below the ground level will act as crossing points for larger animals.

In addition, impacts from feral animals will be reduced by implementing feral animal controls that have been developed to be consistent with regional and local feral animal control initiatives. OPR will investigate the implementation of specific feral animal control programs in proximity to regionally significant ecological corridors that its Proposal intersects (refer to Section 1.1 above).

2. Proposal Definition

Issue 1	PER modified
A revised and succinct proposal description needs to be submitted to reflect any changes as a result of a response to submissions, and to meet the requirements outlined in *Draft Environmental Assessment Guideline No 1, Defining a Proposal* (EPA, October 2009). A discrete proposal definition is required which includes the following four elements: written summary of the proposal; Key Characteristics Table; spatial data; and relevant figure(s). It is likely that this will produce a shorter written summary (than Section 4); a longer key characteristics table with each element separately described; spatial data that includes all elements, both within and outside the rail corridor; and more detailed figures to show particular elements along the rail corridor. Description of the rail corridor and associated elements can incorporate flexibility in the proposal definition by broadly defining a maximum disturbance boundary, within which a proposal element may be included, e.g. a ballast quarry will disturb 50 hectares of vegetation, within a defined 500 hectare area. Where particular constraints are known that will reduce the width of the rail corridor, these should be reflected in the proposal description and figures.	Yes

A written summary has been prepared and is included below:

The Proposal extends in a north-easterly direction from the North West Coastal Highway (NWCH) at Oakajee to the Jack Hills mining operations located approximately 500 km to the northeast. In addition there will be two spur lines to Westnet (Mullewa) line and Weld Range (Figure 1-1). The Proposal comprises the following features:

- Approximately 570 km of rail formation and track (including two spur lines), with a typical final operational disturbance width of 50 m to 80 m
- Watercourse/drainage channel crossings including an estimated nine bridges, multi-barrel culverts for major drainage channels and additional culverts for environmental flows
- Realignment of the NWCH and Chapman Valley Roads and inclusion of bridges providing grade separation of train and vehicular traffic
- Supporting infrastructure including:
    - up to three large quarries and numerous borrow pits
    - approximately 200 construction groundwater production bores, a portion of which will remain during operation
    - power via generators for construction camps, bores, etc
    - up to six construction camps for approximately 3,000 personnel in total at peak occupancy, some portions of some camps being retained to accommodate maintenance personnel during the operational phase of the Proposal
    - vehicle access tracks
    - temporary construction areas including lay down areas, turkey's nests and construction roads
    - rail loops at Jack Hills and Weld Range mines
    - temporary rail welding depot, sleeper plant and ballast stockpiles at a Construction Depot, part of which will be retained as a permanent track maintenance depot
    - Up to 18 train movements a day (highest movements in the western portion of the rail from Oakajee to the Mullewa spur)

With respect to the NWCH realignment, finalising the design of all road crossings, including the NWCH and has continued to occur in close consultation with Main Roads, DoP and PTA since the PER was published in August 2010. Consequently, OPR in consult with MRWA has revised the NWCH realignment described within the PER resulting in a slightly longer and safer realignment. This has resulted in the key characteristics of the Proposal requiring 107.3 ha of native vegetation disturbance in the freehold zone. Issue 1 within Section 8 of OPR's response to PER submissions provides background to this recent revision.

The Key Characteristics Table has been amended as per OEPA's request and is included as Table 1 below.

Figures 4-2, 4-3 and 4-4 show the area within which the Proposal will be constructed. Flexibility is required to locate infrastructure within this area due to the potential for required changes resulting from geotechnical results, heritage sites, cut/fill requirements, identification of Priority flora species during pre construction surveys etc.

OPR considers that the PER contains sufficient constraint commitments to ensure that Proposal infrastructure is located such that environmental impacts are minimised. An example of this is OPR's commitment to not disturb native vegetation within the freehold area for anything other than the rail corridor and service road. All temporary construction disturbance areas (borrow, ballast quarries, turkeys nests construction roads, camps etc) will be located within previously cleared land. This commitment allows flexibility without sacrificing environmental values. Similar constraints have also been placed on this 'flexible' infrastructure in areas of significant environmental value (including potential Western Spiny-tailed Skink, Malleefowl and Slender-Billed Thornbill habitat, DRF and significant Priority Flora populations) that may be located within the pastoral portions of the Proposal area. The unavoidable impacts of the rail corridor to environmental assets have been summarised within Attachment 1.

For the operational phase of the proposal the upper limit for the final disturbance area is expected to be approximately 90 ha within the Freehold Area, and 5500 ha in total. This estimation is based on the following:

- 80 m width operational rail corridor (~4600 ha)
- Retention of two accommodation camps (~200 ha)
- Retention of a third of borrow areas (~400 ha)
- Retention of a third of groundwater bores, laydown areas, quarries (~300 ha)

Electronic spatial data - GIS or CAD on CD, geo-referenced and conforming to the following parameters:

- GIS: polygons representing all activities and named
- CAD: simple closed polygons representing all activities and named
- datum: GDA94
- projection: Geographic (latitude/longitude) or Map Grid of Australia (MGA)
- format: Arcview shapefile, Arcinfo coverages, Microstation or AutoCAD

for the following items

- Special Act Corridor;
- Construction disturbance corridor;
- Indicative alignment (noting that some further requirements are needed following the EPA meeting);
- Ballast quarry locations (realistic ones) outside corridor.
- Extent of freehold area that coincides with the Proposal area
- Skink habitat boundaries (rocky outcrops and 'broader' habitat.
- Extent of freehold area that coincides with the proposal area
- Indicative alignment in the freehold area
- NWC Highway deviation

Table 2 Key Characteristics Table

Non-spatial elements	Description	
Proposal Life	In excess of 50 years	
Throughput	45 Mtpa of iron ore	
Train Operations	Diesel electric locomotives, up to 200 wagons (approximately 2 km in length) with a carrying capacity of approximately 20,000 tonnes. Approximately 18 train movements per day (9 each way).	
Operating hours	Construction and operations 24 hours/day, 365 days/year	
Accommodation	Construction: 6 camps capable of holding up to 3000 personnel in total Operation: Up to 2 camps holding up to 80 - 100 personnel in total	
Construction timeframe	Approximately 36 months	
Groundwater requirements	Construction: approximately 3.5 GL (total over 36 months), Operation: approximately 140 ML per year	
Spatial elements	**Description**	**Approximate footprint**

Rail Corridor	Final operating disturbance width of 50 – 80 m. Includes:
	• approximately 570 km of rail line including:
	  ◦ 530 km main line from NWCH to Jack Hills including rail loop;
	  ◦ 10 – 15 km Weld Range spur line including rail loop; and
	  ◦ 20 km Mullewa spur line.
	• 10 m wide access road running parallel to the rail line (20 m wide during construction);
	• numerous road/rail crossings;
	• numerous rail sidings;
	• optic fibre cable running parallel to the rail line;
	• water pipeline running parallel to the rail line; and
	• approximately nine bridges over water courses.
		4500 ha

North-West Coastal Highway Deviation	Approximately 3.5 km deviation to North West Coastal Highway	7.3 ha
Construction activities	Including: • numerous borrow pits; • up to three ballast quarries; • numerous turkey's nests; and • associated access roads.	1450 ha
Supporting facilities	Including: • up to six accommodation camps; • numerous lay down areas; • numerous communication towers; • up to 200 groundwater supply sources; • numerous workshops; and • associated access roads.	1050 ha
Total area of native vegetation clearing	Maximum area of native vegetation clearing within the freehold area	107.3 ha
	Approximate area of native vegetation clearing within the pastoral area	5900 ha
Total area of disturbance	Combination of native vegetation clearing and disturbance of cleared land.	7007.3 ha

3. Omissions & errors of fact

3.1 Flora & Fauna

Issue 1	PER modified
Section 4.1.2. The value of using the presence of the seven bird species as indicators of ecosystem health is questionable. For example the Emu is highly mobile and nomadic and responds to seasonal conditions, moving into the region in large numbers during periods of drought elsewhere. The Australian Bustard is mobile and nomadic and moves long distances in response to seasonal conditions. The Banded Lapwing has increased in abundance and distribution in many parts of the State as a result of clearing as it is essentially a bird of open partly vegetated areas. The statement that the Jacky Winter was the only indicator species not recorded "as the Study Area lies at the northern edge of the species range" is incorrect. The Study area completely bisects the species range in this part of Western Australia.	Yes

Comment noted and agreed. The seven indicator species listed were obtained from the Australian Natural Resources Atlas website. However, it does not indicate what they are indicators for and hence, as stated, they should not be used as indicators of ecosystem health.

The Jacky Winter does indeed occur to both the north and south of the Study Area, in particular within the Freehold Area.

This information is general in nature and not expected to affect assessment of the Proposal.

Issue 2	PER modified
Section 5.2.3. Considering that this report is dated May 2010, reference to the Wildlife Conservation (Specially Protected Fauna) Notice should have referred to the 2010 notice and not the outdated 2008 notice. This would have allowed correct reference to Schedule 3 which is a list of Western Australian birds protected by international agreements. This would have enabled appropriate migratory birds to be identified in Appendix D2 where the majority of migratory species are not identified as such. Section 7.3.2.3 should also have referred to the 2010 Notice and the list of WA species included in Schedule 3.	Yes

The comments below relate to Ecologia's Vertebrate Fauna Report located as Appendix 2a of the PER.

This can be confirmed as an administrative error and is not expected to affect assessment of the Proposal. Section 1.2 indicates that the current gazette was February 2010 (now Aug 2010) and this is the information that was used. Reference to 2008 was a typographic mistake. Reference is made to Schedule 3 in the dot points that make up Section 5.2.3 although Schedule 3 species are not listed in Appendix D, and eleven species were not identified as migratory.

Ecologia can confirm that eleven of the species listed in Appendix D2 should have also been marked as migratory. The below list has been corrected and indicates all of the migratory species / Schedule 3 that pertain to the rail Vertebrate Fauna Report. The species that were not previously indicated as migratory are coloured red.

Table 2 Migratory species list

FAMILY and *Species*	Common name	Conservation Status		
		EPBC	WCA	DEC
Actitis hypoleucos	Common Sandpiper	M	S3	
Apus pacificus	Fork-tailed Swift	M	S3	
Ardea ibis	Cattle Egret	M	S3	
Ardea modesta	Eastern Great Egret	M	S3	
Arenaria interpres	Ruddy Turnstone	M	S3	
Calidris acuminata	Sharp-tailed Sandpiper	M	S3	
Calidris alba	Sanderling	M	S3	
Calidris ferruginea	Curlew Sandpiper	M	S3	
Calidris ruficollis	Red-necked Stint	M	S3	
Egretta sacra	Eastern Reef Egret	M	S3	
Haliaeetus leucogaster	White-bellied Sea-Eagle	M	S3	
Limosa lapponica	Bar-tailed Godwit	M	S3	
Merops ornatus	Rainbow Bee-eater	M	S3	
Numenius phaeopus	Whimbrel	M	S3	
Plegadis falcinellus	Glossy Ibis	M	S3	
Pluvialis squatarola	Grey Plover	M	S3	
Tringa brevipes	Grey-tailed Tattler	M	S3	
Tringa glareola	Wood Sandpiper	M	S3	
Tringa nebularia	Common Greenshank	M	S3	
Tringa stagnatilis	Marsh Sandpiper	M	S3	
Xenus cinereus	Terek Sandpiper	M	S3	

Issue 3	**PER modified**
Appendix D3. *Cryptoblepharus buchananii* and *C. plagiocephalus* are names for the same species. Listing this species under different names affects the species number recorded. *Pseudonaja affinis* should be removed from the list. The observation cited is incorrectly identified as this species does not occur within 100's of kilometres from the project area.	Yes

Cryptoblepharus buchananii and *C. plagiocephalus* are separate species as described in 2007 (Horner 2007). Both species distributions incorporate sections of the Rail.

We agree that *Pseudonaja affinis* should not occur within 100 km of the Study Area and should be removed from the list. Discussion with Brad Maryan at the WA Museum also indicates that Dugites should not occur north of Cervantes and the specimens are most likely Gwardars (*Pseudonaja nuchalis*).

The reason for this error is due to information provided in the referenced report by ATA Environmental/Coffey Environments (ATA Environmental 2007), that indicated that two individuals were recorded during this survey. As this report had been peer reviewed by Dr Graham Thompson, we believed that all data within should have been accurate. Recent discussions with staff at Coffey Environments confirm that the specimens may have been misidentified and should be labelled as *Pseudonaja* sp.

This error is not expected to affect assessment of the Proposal.

REFERENCES

ATA Environmental. 2007. Vertebrate Fauna Assessment, Shire of Greenough. Unpublished report for Bayform Holdings Pty Ltd.

ecologia Environment, 2010, *Oakajee Port and Rail, OPR Rail Proposal: Terrestrial Fauna Assessment*, Unpublished report for Oakajee Port and Rail Pty Ltd, Perth, WA.

ecologia Environment, 2010a, *Oakajee Port and Rail, OPR Rail, Mallefowl Habitat Assessment*, Rail Alignment, Unpublished report for Oakajee Port and Rail Pty Ltd, Perth, WA.*ecologia* Environment, 2010b, *Oakajee Port and Rail, OPR Rail, Slender-Billed Thornbill Habitat Assessment*, Rail Alignment, Unpublished report for Oakajee Port and Rail Pty Ltd, Perth, WA.

ecologia Environment, 2010c, *Oakajee Port and Rail, OPR Rail, Carnaby's Black Cockatoo Potential Habitat Assessment*, Rail Alignment, Unpublished report for Oakajee Port and Rail Pty Ltd, Perth, WA.

ecologia Environment, 2010d, *Oakajee Port and Rail, Egernia Stokesii Badia Summary of Results*, Appendix 2d Oakajee Port and Rail Public Environmental Review Document, Rail Development.

Eco Logical Australia (2010) Carnaby's Black Cockatoo Habitat Assessment Review for Oakajee Port and Rail Developments, Unpublished report for Oakajee Port and Rail Pty Ltd, Perth, WA.

Horner, P. 2007. Systematics of the snake-eyed skinks, *Cryptoblepharus* Wiegmann (Reptilia: Squamata: Scincidae) - an Australian-based review. The Beagle, Records of the Museums and Art Galleries of the Northern Territory. Supplement 3:21-198.

Attachment 1 – INVENTORY OF ENVIRONMENTAL ASSETS POTENTIALLY DISTURBED BY THE RAIL CONSTRUCTION CORRIDOR

Protected ecological communities:

- No disturbance to TEC's
- No disturbance to PEC's

Endangered vegetation associations (<10% Pre European Distribution):

- 11.5 ha of e6Mr eaSi

Vulnerable vegetation associations (>10% but <30% Pre European Distribution):
Total of 54.2 ha, consisting of:

- a33Sc – 3.6 ha
- e6Mr a19Si – 10.4 ha
- mhSc – 12.9 ha
- x2SZc – 1.1 ha
- x3SZc – 18.8 ha
- x3SZc/acSc – 7.4 ha

Significant Flora:

- No known locations of DRF to be disturbed.
- No known locations of P1 or P2 species to be disturbed.
- 14 P3 species to be potentially disturbed,
- One P4 species to be disturbed.

Current or proposed conservation estate:

- 2.5 ha of current reserve (Reserve 16200).
- No impact to proposed Moresby Range Conservation Park
- No impact to proposed Narloo conservation reserve
- Approximately 175 ha & 290 ha of proposed Woolgorong and Twin Peaks conservation reserves respectively

Significant fauna habitat:

- No impacts to rock outcrops utilised by Western Spiny-tailed Skink (ecologia 2010d)
- Up to 34 ha of disturbance to potential Malleefowl habitat (although no Malleefowl nests/mounds have been recorded within area of impact) (ecologia 2010a)
- Up to 32 ha of disturbance to potential Slender-billed Thornbill habitat (ecologia 2010b)
- Up to 23.4 ha of disturbance to potential Carnaby's Black Cockatoo foraging habitat (Eco Logical Australia 2010)
- Potential disturbance to habitat for Yuna Broad-blazed slider, Lerista eupoda (no common name), Crested Bellbird (Oreioca gutturalis) (southern subspecies), and Rufous Fieldwren (western subspecies)

Ecological Corridors:

- Chapman River - 0.7 ha during construction, <0.56 ha during operations
- Chapman River East - 1.1 ha during construction, <0.88 ha during operations
- Greenough River - 2.5 ha during construction, <2 ha during operations