



Oakajee Port Terrestrial Development

Offsets Strategy for Carnaby's Black-Cockatoo

Prepared for
Oakajee Port and Rail Pty Ltd

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PREPARED FOR	Oakajee Port and Rail Pty Ltd
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1 Introduction

The following Offsets Strategy outlines the proposed approach of Oakajee Port and Rail Pty Ltd (OPR) to achieving long-term environmental benefits for the Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) in response to the predicted extent of clearing of potential breeding and foraging habitat for the proposed Oakajee Terrestrial Port Development (the Proposal), north of Geraldton, Western Australia.

Carnaby's Black-Cockatoo is listed as an Endangered threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The proponent for the Proposal, Oakajee Port and Rail (OPR), who are developing the port, is proposing to retain and protect habitat for these species, as well as undertake revegetation and restoration of habitat in currently degraded land surrounding, and close to, the site (Figure 1). The aim is to ensure no significant loss of local habitat for these species, enhance local habitat values, and ensure local and regional habitat connectivity for the species is protected.

1.1 PROJECT BACKGROUND

The Proposal is a component of the Oakajee Port and Rail Project, a 45 Mtpa Deepwater Port and 570 km rail development that will provide an integrated world-class iron ore receiving, handling, and exporting facility for the State of Western Australia. The Project comprises three components: the approved Oakajee Deepwater Port (ODP), the OPR Rail Development and the OPR Terrestrial Port Development (the Proposal). The Proposal forms the terrestrial port component of the Project, which comprises the internal port rail system, access and service corridors, a car dumper, stockpiles, ore unloading and out-loading infrastructure, and additional ancillary facilities.

The Proposal is situated within the Oakajee Industrial Estate (OIE) and its industrial buffer, approximately 24 km north of Geraldton, to the south of the Oakajee River mouth and to the north of the Buller River mouth, in the Mid-West of Western Australia. The Proposal will have a total footprint of approximately 324 ha and will require approximately 212 ha of vegetation clearance (Figure 1). The majority of land within the Proposal footprint has previously been cleared for agricultural activities. The Proposal involves clearing of remnant vegetation in varying condition, a portion of which has been identified as potential foraging habitat for Carnaby's Black-Cockatoo. There is also a small area of riparian vegetation along the Oakajee River that is affected, and that may represent potential breeding habitat for the species (Eco Logical Australia 2010).

The Proposal has been referred to the Federal Department of Sustainability, Environment, Water, Population and Communities (DSEWPAC) for consideration of whether it constitutes a Controlled Action under the EPBC Act, and therefore warrants assessment under the Act. This Strategy is intended to support the referral and provide DSEWPAC with additional information in regard to how OPR intends to implement the Proposal to minimise potential impacts to Carnaby's Black-Cockatoo.

1.2 CARNABY'S BLACK-COCKATOO HABITAT AT OAKAJEE

Carnaby's Black-Cockatoo, also known as the Short-billed Black-Cockatoo, is endemic to the southwest of Western Australia, ranging from the lower Murchison River in the north (15 km NNW of Balline), throughout the southwest corner and east to Cape Arid (Johnstone 2010). Carnaby's Black-Cockatoos usually breed in the Wheatbelt region of Western Australia (Cale 2003). During the non-breeding season (mid-October to early July) they disperse to the higher rainfall coastal areas of the southwest of Western Australia to feed (GHD 2006). There is evidence the species is currently expanding its breeding range westward and south into the Jarrah-Marri forests of the Darling Range and into the Tuart forests of the Swan Coastal Plain (Johnstone & Kirkby 2006).

The species has previously been recorded at Howatharra (10 km east of Oakajee) in 1983 and south of Geraldton (Ecologia 2010). *Birddata* has records of the species from Geraldton, Dongara, and the Murchison River. In August 2010, WA Department of Environment and Conservation (DEC) officers recorded two large flocks totalling about 240 birds in the proposed Moresby Range Conservation Park, approximately 3 km east of Oakajee. The flocks were observed foraging and roosting on two separate occasions. To date there has been no recording of Carnaby's Black-Cockatoo on-site at the Proposal.

Records from the Storr-Johnstone Bird Data Bank indicate multiple sightings along Chapman Valley Rd in 2006, indicating there was a small breeding population in the Chapman Valley/Yetna/Nabawa region (approximately 10 – 20 km northeast of Oakajee) at the time (Johnstone 2010). Most of these records appear to be of flocks migrating south-southwest during the autumn/winter period from their breeding quarters in the northern Wheatbelt (Johnstone 2010). No breeding population has been recorded in the Oakajee area (Johnstone 2010). Other records of this species in the region come from Geraldton, Dongara and the Murchison River near Kalbarri (Ecologia 2010a).

Vegetation containing flora species potentially suitable for Cockatoo foraging is present in the Proposal area. The vegetation within the Proposal area has been described and mapped to a finer scale compared to the original vegetation unit (or sub-association) mapping (Figure 1) according to presence and density of potential foraging flora species (Figure 2). Vegetation that has been identified as potential foraging habitat includes Banksia Woodland/open scrub, Acacia-Hakea scrub, Mixed Acacia-Grevillea-Banksia heath, and Melaleuca-Grevillea scrub. Of these, only the Banksia woodland/open scrub, that includes *Banksia prionotes* and *Banksia sessilli*, represents typical foraging habitat because of the known foraging value of these flora species. Other aforementioned areas of vegetation have been identified as potential foraging habitat based on vegetation type, vegetation condition, and the presence and density, or absence, of known, or possible (but not known), foraging plant species (Eco Logical Australia 2010).

In addition, there are a number of trees in the riparian habitat along the Oakajee River that are of sufficient size to be 'hollow bearing' (Eco Logical Australia 2010).

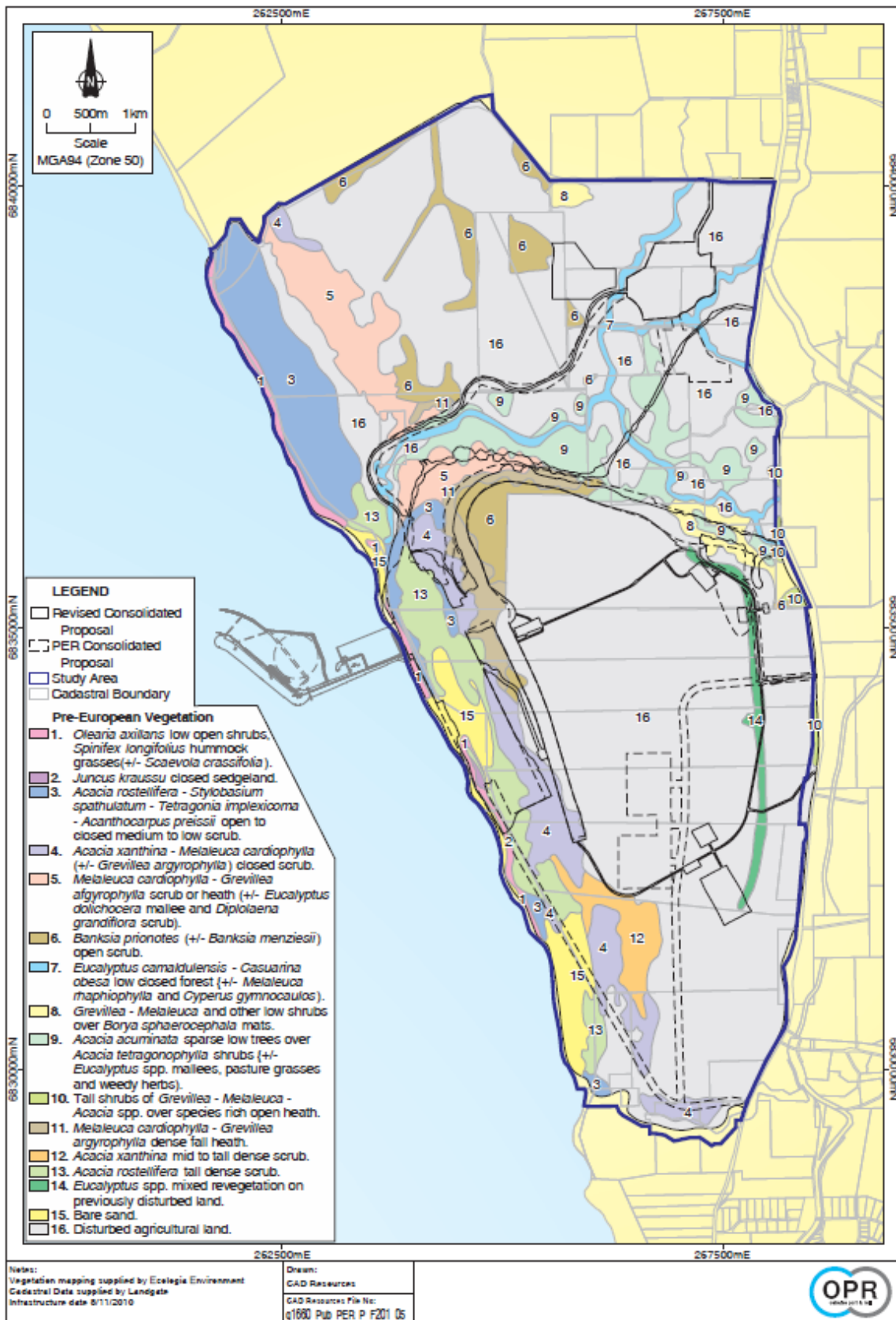


Figure 1: Vegetation units mapped at Oakajee with footprint for the revised consolidated port proposal (following avoidance and minimisation efforts) compared to original 'PER' consolidated proposal. Note: the port terrestrial development (the Proposal) is a component of the consolidated port proposal.

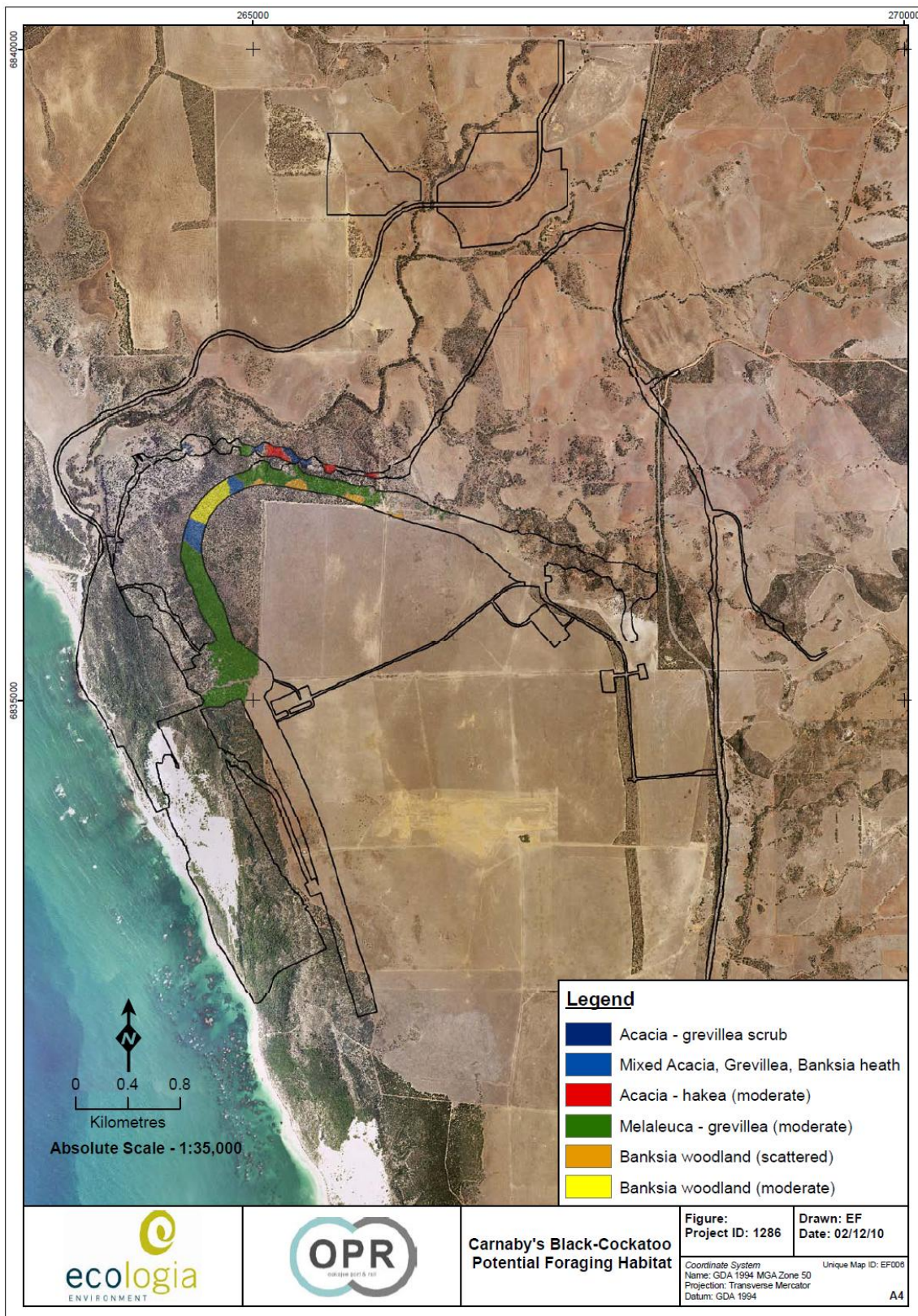


Figure 2: Extent of potential foraging habitat for Carnaby's Black-Cockatoo within the Proposal footprint at Oakajee.

1.3 RATIONALE FOR OFFSETS

OPR is committed to ensuring its actions will not result in significant impacts to Matters of National Environmental Significance (MNES), such as Carnaby's Black-Cockatoo. This strategy has been developed to provide and implement an offsets package that provides a long term benefit to the environment, and that meets the expectations of DSEWPAC. OPR has identified a potential need to provide environmental offsets for significant residual environmental impacts remaining after on-site efforts to avoid, minimise, and mitigate impacts have been applied. This need has been identified through the Public Environmental Review (PER) process, including in response to feedback and submissions from agencies such as DSEWPAC.

A range of considerations were incorporated into the analysis of the appropriate biodiversity offsets for the site. These included:

- The general principles and concepts that drive the identification and implementation of offsets in Australia.
- A set of offset objectives that consider the requirements of DSEWPAC (Section 1.4).
- A focus on providing offsets that are complementary with general landscape objectives and priorities within WA, specifically providing high quality offsets in the direct surroundings of the development site.
- A focus on providing a benefit of environmental values that exceeds the values lost from the development of the Proposal.

1.4 OBJECTIVES OF STRATEGY

In developing objectives for the Offsets Strategy, OPR has been cognisant of the offset policy approaches taken by DSEWPAC. In order to provide a single frame of reference for the development of the Offsets Strategy, a single set of offset objectives have been developed. These are based on the Federal Government's environmental offset principles detailed in the *Draft Environmental Offsets Policy* (Policy Statement 4.1 EPBC Act, DEWR 2007) detailed in Table 1.

Table 1: Federal Government draft offset principles.

Environmental offsets should be targeted to the matter protected by the EPBC Act that is being impacted.
A flexible approach should be taken to the design and use of environmental offsets to achieve long-term and certain conservation outcomes which are cost effective for developers.
Environmental offsets should deliver a real conservation outcome.
Environmental offsets should be developed as a package of actions - which may include both direct and indirect offsets.
Environmental offsets should, as a minimum, be commensurate with the magnitude of the impacts of the development and ideally deliver outcomes that are 'like for like'.
Environmental offsets should be located within the same general area as the development activity.
Environmental offsets should be delivered in a timely manner and be long lasting.
Environmental offsets should be enforceable, monitored and audited.

Based on integrating the values from the above EPBC principles (Table 1 above), the key objectives of the Oakajee Port Terrestrial Offsets Strategy are to:

1. Provide appropriate offsets to compensate for the residual impacts of the Proposal on biodiversity, in particular the threatened species affected.
2. Deliver an offset of a suitable size and condition that provides a “maintain or improve” environmental outcome.
3. Ensure that the offset provides for the protection of like-for-like vegetation and specific habitat attributes.
4. Ensure in-perpetuity security of offset sites and provide a framework for their ongoing and long-term management.

2 On-site Measures Applied to Address Impacts to Habitat

The following section addresses how OPR has approached avoiding, minimising, and mitigating impacts to Carnaby's Black-Cockatoo to reduce the extent and significance of impact to the species, prior to the application of offsets. In order to appropriately address the cumulative impacts of the Project, the Proposal footprint is viewed alongside the terrestrial footprint of the ODP (approved under Ministerial Statement 469) and referred to as the consolidated Proposal footprint (Figure 2).

2.1 HABITAT AVOIDANCE

OPR has taken a positive approach to avoiding potential impacts prior to preparing this offsets strategy. It has attempted to maximise use of degraded and cleared land around the OIE. This has been restricted to a large extent by the limitations placed on OPR by the WA State Government on where it can locate infrastructure around the Oakajee Port. Although there is a substantial area of existing cleared land in the OIE, this land has been allocated for future industrial land and is not available to OPR. OPR has been directed to place infrastructure around the OIE and adjacent to the approved ODP. This has meant some clearing of habitat has been unavoidable.

The following avoidance measures to reduce the extent of potential impact have been undertaken:

- Re-alignment of the port service road to previously cleared land, which has decreased impacts by avoiding the Banksia woodland (potential Carnaby's foraging habitat).
- Relocation of the proposed access road to the north to avoid the more significant coastal vegetation and further reduce fragmentation of the key north-south coastal ecological linkages allowed for a reduction in the required footprint, reducing impacts to vegetation.
- Avoiding fragmenting, and minimising impacts to large good quality patches of native vegetation and/or Carnaby's Black-Cockatoo habitat.

As a result of these measures, the areas proposed for development occupy land which is (where possible) largely comprised of previously cleared and/or degraded lands. Where impacts to Carnaby's Black-Cockatoo habitat could not be avoided, impacts to the more fragmented patches or boundary areas of Carnaby's Black-Cockatoo habitat were favoured, while potentially higher value foraging habitat areas were prioritised for retention, such as the Banksia woodland/open scrub, now mostly situated to the south of the access road. Accordingly the small area of predicted loss/clearing is typically comprised of the more fragmented areas of the Banksia vegetation.

2.2 MINIMISATION OF IMPACT

To further reduce the level of direct impact anticipated from the development works, OPR have actively reviewed and engineered revisions to the PER consolidated Proposal to form the revised consolidated Proposal. Figure 2 provides a comparison of the PER consolidated Proposal and the revised

consolidated Proposal, overlain on the broader vegetation sub-association mapping at Oakajee to indicate the impact reductions achieved through avoidance and minimisation. Key minimisation outcomes are summarised below:

- The vegetation clearance footprint of the consolidated Proposal was reduced by a total of 33 ha.
- Impacts to Banksia woodland/open scrub (likely to be of foraging value) located near the proposed rail corridor were reduced by 1.8 ha (from 15 ha to 13.2 ha) through narrowing dedicated infrastructure areas in proximity to this important vegetation.
- Impacts to riparian vegetation (of potential value as breeding habitat) were reduced by 5.8 ha (from 8.3 ha to 2.5 ha).

2.3 MITIGATION OF IMPACT

OPR will revegetate or landscape areas temporarily disturbed for construction but not required for permanent infrastructure. Further, OPR will prepare and implement a Flora and Vegetation Management Plan and a Conceptual Closure and Rehabilitation Management Plan for the Proposal. The Flora and Vegetation Management Plan shall include:

- Clearing procedures to ensure that vegetation clearance is restricted to that delineated within the Proposal footprint.
- Additional measure to minimise further impacts flora and vegetation where possible.

The Conceptual Closure and Rehabilitation Management Plan shall include:

- Rehabilitation prescriptions for different vegetation types and soil types to include local native species with seed sourced locally where practicable.
- Where practicable direct seeding and/or planting will be undertaken to stabilise surfaces and integrate landforms into the surrounding landscape and ecosystems.
- Rehabilitated areas will be constructed to blend in and allow suitable habitat for recolonising fauna.
- During and following construction, the areas surrounding the Proposal infrastructure will be actively managed to ensure indirect impacts are minimised and to aid regeneration of vegetation. Such management will include invasive weed monitoring and control, erosion management, and monitoring and adaptive management.

2.4 RESIDUAL IMPACT

Following application of avoidance, minimisation, and mitigation measures, OPR estimates that up to 56.9 hectares of vegetation identified as potential Carnaby's Black-Cockatoo foraging habitat, as per the habitat assessment undertaken by Eco Logical Australia 2010, will be disturbed. This assessment was based on vegetation type, vegetation condition, and the presence and density, or absence, of known, or possible, foraging plant species. The assessment took a conservative approach by accounting for species for which the actual foraging value at Oakajee is, in fact, unknown. As a result, the presented impacts of the Proposal to Carnaby's Black-Cockatoo foraging habitat (56.9 ha) is likely to be a 'worst case' assessment.

In addition to potential foraging habitat, it is considered that the 0.3 ha of riparian habitat affected by the Proposal may be considered potential breeding habitat for Carnaby's Black-Cockatoo. The riparian habitat has been considered as potential breeding habitat because of the presence of trees with a diameter breast height (DBH) of > 500 mm (Eco Logical Australia 2010). Seven such trees are within the 0.3 ha of riparian habitat affected by the Proposal.

3 Proposed Offsets

Consistent with OPR's environmental objectives, and with broader conservation strategies for Carnaby's Black-Cockatoo in mind, OPR is proposing conservation offsets for the loss of potential typical foraging habitat within the site. The mitigation strategy for the Proposal is focused on providing local outcomes of greater ecological importance than that proposed for clearing. Accordingly, in order to mitigate the loss of up to 56.9 hectares of potential foraging habitat, OPR is seeking to provide direct offsets for impacts to foraging habitat at a ratio of approximately 6:1, and for impacts to potential breeding habitat at approximately 10:1, which it understands is DSEWPAC's current expectation, with supporting indirect offsets.

The direct and indirect offsets being proposed are as follows:

Direct offsets:

- Retention and protection of unaffected riparian habitat along the Oakajee River adjacent to the Proposal.
- Rehabilitation of degraded habitat immediately adjacent to the area of impact and located within the 50 m buffers surrounding the Oakajee River and potentially the Buller River.
- Acquisition and conservation of land containing high quality typical foraging habitat near Oakajee, similar to, or better than, the mixed woodlands, open scrub and heath habitat at Oakajee, to be retained and protected in perpetuity for the ongoing recovery of the Carnaby's Black-Cockatoo.

Indirect offsets:

- Improvement in management of degraded habitat subject to rehabilitation, and of nearby habitat acquired for conservation.
- Research to increase local knowledge on Carnaby's Black-Cockatoo.

3.1 DIRECT OFFSET – RETENTION AND PROTECTION OF HABITAT ALONG THE OAKAJEE RIVER ADJACENT TO THE PROPOSAL

OPR is working with LandCorp and the Geraldton Port Authority (GPA) through its OIE structure planning process to identify appropriate areas of riparian vegetation and associated land that can be rehabilitated and protected for conservation purposes. OPR and LandCorp are currently looking to dedicate an approximately 3 km corridor which extends 50 m either side of the Oakajee River (totalling approximately 30 ha in area) and immediately adjacent to the Proposal footprint. Referred to as the Oakajee River Valley Restoration Project (ORVRP), the offset will include retention of approximately 6 ha of existing riparian habitat along the Oakajee River supporting *E. camuldulensis* (representing potential breeding habitat). The ORVRP will also include a rehabilitation program to enhance and restore habitat values (Section 3.2).

OPR has already prepared, and will implement, a Flora and Vegetation Management Plan that will address the management of edge effects of the Proposal and measures such as rehabilitation of temporary disturbance areas to enhance the values of the retained vegetation over time. In addition, a detailed Conservation Management Plan (CMP) for the ORVRP will be prepared to address conservation management measures in and around the remnant habitat areas.

3.2 DIRECT OFFSET – REHABILITATION OF LOCAL HABITAT ALONG THE OAKAJEE RIVER ADJACENT TO THE PROPOSAL

The ORVRP will include rehabilitation of approximately 10 ha of degraded land on either side of the fringes of remnant riparian vegetation along the Oakajee River. This location increases the ORVRP's ability to, in the future, replace any local losses to habitat acting as a stepping stone and ecological corridor for fauna in general, but more specifically the Carnaby's Black-Cockatoo. Rehabilitation efforts will focus on providing species known and potentially suitable for foraging as per Eco Logical Australia (2010), to provide a better outcome for the recovery of the species habitat types at Oakajee port.

LandCorp will protect these Oakajee River riparian areas from development as identified in the Draft OIE Structure Plan. Within the Draft OIE Structure Plan, LandCorp has identified a 100 m corridor along the Oakajee and Buller Rivers within which future development will be excluded with the exception of potential infrastructure corridors for roads, rail and services that may be required to traverse these areas. The purpose of this corridor is to protect in perpetuity the riparian and ecological corridor values associated with these landscape features.

The ORVRP will revegetate and rehabilitate currently degraded areas to mitigate the clearing of habitat on-site, by creating and protecting 'like for like or better' habitat in the Oakajee area. The CMP prepared for the ORVRP will describe the rehabilitation procedures, prescription and timing.

The rehabilitation program will require seed harvesting from native vegetation within the Proposal footprint (prior to clearing), and in other vegetated areas in the OIE buffer as agreed with LandCorp. Harvested seed will be separated, weighed, and be stored in cool rooms until required for use. A seed inventory will be established and maintained from which a seeding prescription for rehabilitation areas will be developed.

Within the Proposal area, following the clearing of vegetation, topsoil will be stripped and relocated to the dedicated rehabilitation areas within the ORVRP. It is noted that optimum topsoil handling involves minimising stockpiling (not storing longer than 6 months) and spreading topsoil in rehabilitation areas in summer. The soil will then be scarified and the collected seed shall be spread across the site. The natural seed-bank within the topsoil and 'top-up' spread seed is expected to germinate following winter rains. OPR will implement weed control as required prior to and following topsoil spreading.

As part of the ORVRP, OPR is also proposing to undertake supplementary planting of tree species that may produce hollows with age (e.g. *E. camuldulensis*) within the riparian zone of the ORVRP area. This is to enhance the potential habitat values along this section of the Oakajee River.

These works should lead to the establishment of a consolidated area of both potential foraging and breeding Carnaby's Black-Cockatoo habitat in the Oakajee area.

Revegetation activities will commence following clearing at the development site and continue as necessary to improve the condition of vegetation within the offset area. It is anticipated that rehabilitation management would span a total of five years (Section 3.5).

3.3 DIRECT OFFSET – CONSERVATION OF NEARBY HABITAT

OPR has currently identified a number of suitably sized parcels of land in private ownership to the north of the Proposal along the coast and inland east of the Moresby Ranges that support potential Carnaby's Black-Cockatoo foraging habitat in good condition (ranging *Banksia sp.* Woodland to provide a better than like for like outcome). OPR is aiming to acquire one or more parcels of land totalling in excess of 330 ha in size supporting the potential Carnaby's Black-Cockatoo foraging habitat.

The majority (at least 50%) of this 330 ha area will be acquired north of Oakajee, ideally within 60 km of the Proposal area, and is referred to as the Coastal Remnant Vegetation Conservation Project (CRVCP). This CRVCP is proposed to not only mitigate nationally significant impacts but also to deal with issues of state environmental significance arising from the Proposal, such as impacts to foreshore vegetation and north-south coastal ecological linkages. Although it is designed around mitigating other impacts of the Proposal, Carnaby's Black-Cockatoo habitat conservation is the key objective for the purposes of this offset plan.

The remainder (no more than 50%) of the 330 ha of foraging habitat to be acquired may be sought east of the Moresby Ranges in the Chapman Valley area where there are a number of areas of remnant vegetation that present potential foraging habitat for Carnaby's Black-Cockatoo. Carnaby's Black-Cockatoo is known to be frequenting this area and most recent records in the Geraldton Sandplains area are for the Chapman Valley. If pursued, the land to be acquired will be part of the Moresby Range-Chapman Valley Habitat Conservation Project (MRCVHCP), which is being proposed as part of the OPR Rail Development but, importantly, the land will be in addition to that already committed to as part of the offsets strategy submitted to the WA State Government for that proposal.

At both sites, an on-site assessment is to be undertaken to confirm the presence and density of existent feeding habitat (e.g. *Banksia/Hakea/Grevillea* woodland/scrub). OPR will arrange for the purchase of the property within 12 months of the commencement of Proposal construction works at Oakajee. The purchased land will be vested with the WA Conservation Commission and will be managed by the Department of Environment and Conservation (DEC) for the purposes of conservation and recovery of flora and fauna.

The nominated land is likely to be in a rural setting and subject to varying threatening processes. It is intended to principally search for land that has higher levels of threat and is not currently being managed in any way for conservation.

3.4 INDIRECT OFFSET – IMPROVED MANAGEMENT OF HABITAT

In addition to direct offsets in acquisition, conservation and restoration, OPR proposes a framework for improved management of areas protected as part of the ORVRP, CRVCP, and MRCVHCP. The management objective for the offset areas is simply to: *Create, maintain and improve its natural ecological values.*

It is proposed to achieve this through:

- Maintaining the existing diversity and abundance of native flora and fauna associated with the area and respective vegetation communities.
- The control of noxious weeds within the offset area.
- The control of feral animals.

- Introduction of a bushfire management scheme.
- Erosion control activities.

An adaptive approach to management will be applied. This will ensure that management actions reflect the changing priorities within the landscape to improve the ecological values and function of the area.

OPR will prepare and implement a Conservation Management Plan (CMP) for each of the areas in the ORVRP, CRVCP and MRCVHCP. These measures will include but not be limited to:

- Removal of any rubbish and dumped material.
- Inspection, at appropriate time, for invasive weeds and significant environmental weed infestation.
- Implementation of a weed control program.
- Installation of regional park fencing around appropriate boundaries to prevent informal access.
- Monitoring to assess condition of habitat and effectiveness of measures (Section 3.5).
- Contingency actions to implement should monitoring indicate measures are not being effective.

The CMP for the CRVCP and MRCVHCP will be implemented by OPR over two years or as agreed with DEC. The CMPs for the CRVCP and MRCVHCP will describe measures to reduce ongoing management liabilities for DEC when it takes on management of the land.

In addition to the aspects listed above, the CMP for the ORVRP will also include the rehabilitation program, which will be implemented by OPR over a minimum of five years (Section 3.2). Ownership of the ORVRP will remain with LandCorp.

The removal of threatening processes and on-going management activities such as monitoring, maintenance, preparation and implementation of management plans, etc, represent substantial indirect offsets as per DEWR (2007).

3.5 INDIRECT OFFSET – MONITORING OF HABITAT

Each CMP prepared for areas in the ORVRP, CRVCP, and MRCVHCP will include a habitat monitoring program.

The ORVRP will be subject to the highest degree of monitoring to determine the success of the rehabilitation program. The monitoring program will be described in the CMP for the ORVRP and include completion criteria or key performance indicators for rehabilitation success to be developed in consultation with the DEC and DSEWPAC. Key indicators such as floristic and habitat diversity will be monitored once per year. A number of monitoring sites will be established across the offset areas. Permanent quadrats will be established with the corners of each quadrat permanently marked and recorded using a GPS.

The floristic and habitat diversity will be monitored annually over five years following revegetation works by recording the following parameters:

- Floristics: species area curve and growth forms in 20 m x 20 m quadrats.
- Vegetation/habitat structure (ground cover, logs, litter, projected foliage cover) at 0.5 – 2 m height intervals situated on a permanent transect and recorded at 2 m intervals.

- Understorey species diversity and cover abundance situated on a permanent transect and recorded 4 m intervals.
- Understorey density and growth including established shrubs, direct seeding, tubestock plantings and tree regeneration <5 cm DBH in the 20 m x 20 m quadrat.
- Habitat assessment (tree density (>5 cm DBH), hollows, mistletoe, tree health and survival).

Remedial plantings will be undertaken if monitoring indicates that completion criteria are not, or are not likely to be, achieved.

OPR will conduct a weed monitoring program as part of adaptive management of remnant vegetation areas protected as part of the ORVRP, CRVCP, and MRCVHCP and to ensure the 'maintain and improve' principle is met for the ecological values within the offset areas. Annual spring/summer weed assessments will be conducted across all restoration and conservation project areas prior to handover to DEC to identify areas and densities of weed infestation. This information will be used to guide periodic weed control activities.

3.6 INDIRECT OFFSET – CARNABY'S BLACK-COCKATOO RESEARCH

As part of the offset strategies for both its port and rail projects, OPR proposes to fund research to provide information that will better allow for conservation planning for the species in this developing region. Research shall also seek to accurately identify significant foraging habitat for Carnaby's Black-Cockatoo in the Geraldton Sandplains-Geraldton Hills Interim Biogeographic Regionalisation for Australia (IBRA) sub-region, and place in some context how important individual sites are to the continued survival of the birds. This will be undertaken by determining the food resource base in the Geraldton Sandplains-Geraldton Hills subregion and determining, as best as possible, whether those resources can support the existing cockatoo population (taking into account other competing fauna), and how any expected changes to the availability of food resources will impact on sustainability. This research proposed as a shared component of both the Proposal and the OPR Rail Development Offsets Strategies, in light of the lack of information available on habitat suitability in the region.

It is proposed that this research would be undertaken as a PhD project at a suitable WA University. On approval, OPR would either prepare an Invitation for Expression of Interest for academic institutions to apply for the funding to undertake the research, or, alternatively, approach a specific institution upfront to participate. OPR would provide \$50,000 of funding for the research project, with the expectation that this funding would be used to leverage additional research funding from other sources to undertake the research. This is not in addition to that committed for the rail development, but represents the total amount committed to this research by OPR at this time. OPR would require annual progress reports and final papers to be provided, which would also be provided to DEC and DSEWPAC.

4 Conservation Commitment and Outcomes

OPR is committed to providing dedicated local and regional outcomes for the ongoing protection of key habitat and the recovery of the Carnaby's Black-Cockatoo. A key driver of planning and design for development of the Proposal has been the delivery of a good conservation outcome for Carnaby's Black-Cockatoo.

As part of the Proposal, OPR commits to providing and implementing a suitable conservation offset package that compensates for the terrestrial impacts of the Proposal. OPR is also committed to rehabilitating and reinstating areas on-site following construction (where possible) that are impacted from construction activities but are not required for permanent infrastructure.

Unavoidable biodiversity impacts from the Proposal are being addressed through a systematic and scientific approach to offsetting. This Offsets Plan focuses on delivering a "local – maintain and improve" outcome to address the residual impacts of the Proposal.

4.1 CONSERVATION OUTCOME

The direct and indirect mitigation components and predicted outcomes of the Offsets Strategy for addressing the on-site clearing of 56.9 hectares of potential foraging habitat and 0.3 ha of potential breeding habitat for Carnaby's Black-Cockatoo are summarised below in Table 2 and Table 3.

Table 2: Summary table of Carnaby's Black-Cockatoo foraging habitat offsets.

COMPONENT	PROJECT	DESCRIPTION	AREA	OFFSET RATIO	OUTCOME	OFFSET PRINCIPLE ¹
Direct Offset						
Restoration and rehabilitation of Carnaby's habitat in adjacent land	ORVRP	Includes rehabilitation of at least 10 ha of degraded land at the fringes of remnant riparian vegetation along the Oakajee River and adjacent to the Proposal area.	10 ha (within a 3 km x 100 m corridor)	0.2:1	The creation of a of Carnaby's Black-Cockatoo habitat adjacent to the Proposal area and enhancement of the local area as ecological stepping stone/ corridor linkage.	1, 3, 5, 6, 7, 8
Acquisition and conservation of Carnaby's habitat off-site	CRVCP & MRCVHCP	Acquisition of approximately 330 ha of land supporting potential typical Carnaby's Black-Cockatoo foraging habitat north of Oakajee and inland of Moresby Ranges.	330 ha	5.8:1	Protection in perpetuity of high quality Carnaby's Black-Cockatoo habitat within the local area (within 60 km of the Proposal) along with associated vegetation.	1, 2, 5, 7, 8
Indirect Offset						
Improved management of habitat	ORVRP, CRVCP & MRCVHCP	Improved management and monitoring of all habitat areas retained on-site to create, maintain and improve outcomes.	340 ha	N/A	Improved management and protection in perpetuity of important areas of vegetation for the Carnaby's Black-Cockatoo.	1, 3, 5, 6, 7, 8
Carnaby's Black-Cockatoo research	RESEARCH	Research into Carnaby's Black-Cockatoo feeding requirements in region.	N/A	N/A	Increased local and regional knowledge and science relating to Carnaby's use of the Geraldton area vegetation.	1, 2, 3, 4, 6, 7, 8
Total			340 ha	6:1		

¹ Refer to offset principles detailed in Table 1.

Table 3: Summary table of Carnaby's Black-Cockatoo breeding habitat offsets.

COMPONENT	PROJECT	DESCRIPTION	AREA	OFFSET RATIO	OUTCOME	OFFSET PRINCIPLE ¹
Direct Offset						
Retention of Carnaby's habitat in adjacent land	ORVRP	Riparian vegetation along the Oakajee river within a 3 km corridor will be retained and managed by OPR in perpetuity.	6 ha (within a 3 km x 100 m corridor)	20:1	The retention of remnant habitat on-site to provide/retain suitable areas for ongoing use.	1, 3, 4, 6, 7, 8
Restoration and rehabilitation of Carnaby's habitat in adjacent land	ORVRP	Supplementary planting and enhancement of ecological value of riparian habitat.	6 ha <i>Included in above</i>	20:1 <i>Included in above</i>	The creation of a of Carnaby's Black-Cockatoo habitat adjacent to the site and enhancement local area as ecological stepping stone/ corridor linkage.	1, 3, 5, 6, 7, 8
Indirect Offset						
Improved management of habitat	ORVRP, CRVCP & MRCVHCP	Improved management and monitoring of all habitat areas retained to create, maintain and improve outcomes.	6 ha (within a 3 km x 100 m corridor)	N/A	Improved management and protection in perpetuity of areas of vegetation potentially used for breeding by Carnaby's Black-Cockatoo.	1, 3, 5, 6, 7, 8
Total			6 ha	20:1		

¹ Refer to offset principles detailed in Table 1.

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