



Catalina Residential Development Mitigation and Offsets Management Plan

Prepared for
Tamala Park Regional Council

December 2010

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Contents

- Contents..... 3
- 1 Introduction 4
 - 1.1 Project Background..... 4
 - 1.2 Purpose and Scope 4
 - 1.3 Relevant guidance..... 5
- 2 Matters of National Environmental Significance..... 7
 - 2.1 Carnaby’s Black-Cockatoo Habitat..... 7
 - 2.2 Graceful Sun Moth Habitat 8
- 3 Offset Objectives..... 9
- 4 Carnaby’s Black-Cockatoo Mitigation and Offsets..... 11
 - 4.1 On Site Mitigation 11
 - 4.2 Direct Offsets – Conservation of Adjacent Local Habitat..... 12
 - 4.3 Direct Offset - Acquisition and Conservation of Further Regional Habitat..... 13
- 5 Graceful Sun Moth – Mitigation and Offsets..... 14
 - 5.1 On Site Retention and Habitat Conservation..... 14
 - 5.2 Direct Offsets – Conservation of Habitat..... 14
- 6 Offsite Offsets Implementation..... 15
 - 6.1 Western offset site..... 15
 - 6.2 Supplementary offset site (further afield)..... 15
- 7 Conservation Commitment and Outcome 17
 - 7.1 TPRC’s commitment..... 17
 - 7.2 Conservation Outcome..... 17
- 8 References..... 20
- 9 Figures..... 21

1 Introduction

The following Offset and Mitigation Management Plan (herein referred to as the 'Offsets Plan') outlines Tamala Park Regional Council's (TPRC) proposed approach to achieving long-term environmental benefits from the Catalina Development for the Carnaby's Black-Cockatoo and Graceful Sun Moth within and surrounding the Catalina site.

TPRC is proposing a residential development on approximately 180 ha of land in Clarkson (See **Figure 1**) which affects known habitat for the Carnaby's Black-Cockatoo and Graceful Sun Moth, both listed Endangered threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The TPRC is proposing to retain and protect habitat for these species in land surrounding the site, **Figure 2** shows the location of proposed local offset site. The aim is to ensure no significant loss of habitat for these species following consideration of residual impacts from the proposal.

1.1 PROJECT BACKGROUND

Tamala Park Regional Council (TPRC) is the corporate entity representing the interests of seven local governments in the urban development of 180 hectares of land south of Somerly in Perth's northern suburbs. The TPRC includes the cities of Perth, Joondalup, Stirling, Wanneroo and the Towns of Cambridge, Victoria Park and Vincent.

The Catalina project site in Clarkson is loosely divided into three (3) large land lots, known as the western, central and eastern cells. Currently the land is vacant and unused with the exception of occasional four wheel driving and illegal refuse dumping, which is more prominent in the eastern portion of the site closer to the railway line. Accordingly large areas of the site are in a degraded condition, with other consolidated areas of good quality vegetation. The site is predominately proposed for residential development, which is in accordance with the current MRS zoning. It is planned that the site will comprise the following urban land uses:

- Residential lots
- Coastal village/node
- Neighbourhood movement/transport network
- Civic and Cultural
- Business centre
- Commercial precinct
- Public open space
- Mixed use precinct.

As part of identifying appropriate extent and location of the development, land under the ownership of TPRC, particularly to the west of the proposed development, was designated for conservation purposes.

1.2 PURPOSE AND SCOPE

This Offsets Plan has been developed to provide further detail on the measures proposed by TPRC to mitigate impacts to matters of National Environmental Significance (NES). The Offsets Plan further describes TPRC's commitments in relation to terrestrial conservation offsets for impacts arising from

development of the site after all available avoidance and mitigation measures have been implemented. Accordingly the Offsets Plan outlines:

- the measures applied in design of the Catalina site layout, and to be implemented during and following development, to maximise the potential for the project area to continue to be utilised by Carnaby's Black-Cockatoo during and following development (referred to as 'on-site mitigation')
- an outline of a revegetation and rehabilitation program to restore feeding habitat areas of Carnaby's Black-Cockatoo in adjacent lands, using where possible, materials removed from the site prior and during development
- an ongoing management program to ensure Carnaby's Black-Cockatoo use of the site, surrounding vegetation remnants and areas of off-site revegetation/rehabilitation
- measures taken to mitigate loss of Graceful Sun Moth habitat in proximity to the project area, through protection in perpetuity of key habitat.

Consistent with Tamala Park Regional Council's environmental policies and with broader conservation strategies for this species, TPRC is proposing conservation offsets for the loss of potential habitat within the site. Accordingly, in order to mitigate the loss of Carnaby's Black-Cockatoo and Graceful Sun Moth habitat, TPRC has, as part of the MRS amendment process, actively purchased and set aside 91 ha of high quality vegetation (*Western Offset*) to be retained in Bush Forever within Tamala Park Regional Council's western holdings. The '*Western Offset*' area (see **Figure 3**) of 91 ha is proposed to be used to offset for areas of unavoidable loss of habitat within the site.

Additional offset measures, such as securing larger areas of habitat further afield for conservation, have also been addressed in this Plan. TPRC is proposing to purchase lands in consultation with WA DEC in the Gingin region to the immediate north of the proposal to compensate for residual impacts to Carnaby's Black-Cockatoo habitat.

More detailed work plans for particular sites may be developed after endorsement of this Offset Plan has been granted, which will govern the on-ground implementation of the agreed offsets.

This document is intended to be read in conjunction with the EPBC Referral documentation for this project.

1.3 RELEVANT GUIDANCE

The Federal Government has provided advice on the use of environmental offsets in *Draft Policy Statement: Use of environmental offsets under the Environment Protection and Biodiversity Conservation Act 1999* (Department of Environment and Water Resources (DEWR), August 2007). The Federal Government defines environmental offsets as 'actions taken outside a development site that compensate for the impacts of that development - including direct, indirect or consequential impacts'. Environmental offsets provide an opportunity to achieve long-term conservation outcomes whilst providing flexibility for proponents seeking to undertake development which will have environmental impacts (DEWR 2007). Actions that can be considered as environmental offsets are generally categorised into direct and indirect offsets.

Direct offsets are aimed at on-ground maintenance and improvement of habitat or landscape values. They may include:

- long-term protection of existing habitat – including through the acquisition and inclusion of land in the conservation estate, and covenanting arrangements on private land
- restoration or rehabilitation of existing degraded habitat
- re-establishing habitat (DEWR 2007)

Indirect offsets are the range of other actions that improve knowledge, understanding and management leading to improved conservation outcomes. They may include:

- implementation of recovery plan actions – including surveys
- contributions to relevant research or education programs
- removal of threatening processes
- contributions to appropriate trust funds or banking schemes that can deliver direct offsets through a consolidation of funds and investment in priority areas
- on-going management activities such as monitoring, maintenance, preparation and implementation of management plans etc (DEWR 2007).

2 Matters of National Environmental Significance

This Offsets Plan has been prepared to inform of measures to be undertaken to mitigate impacts and protect and create habitat for two matters of National Environmental Significance being the Carnaby's Black-Cockatoo and the Graceful Sun Moth, both listed as Endangered threatened species under the *EPBC Act*.

2.1 CARNABY'S BLACK-COCKATOO HABITAT

Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) usually breeds 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 south-west of Western Australia to feed (GHD 2006). There is evidence the species is currently expanding its breeding range westward and south into the Jarrah-Mari forests of the Darling Range and into the Tuart forests of the Swan Coastal Plain (Johnstone & Kirkby 2006).

On the Swan Coastal Plain, Carnaby's Black-Cockatoos are known to exploit the rich and densely packed food source provided by mature cones of the introduced pine trees. Shah (2006) found the species occurred in all regions across the Swan Coastal Plain but with a higher number and greater abundance in areas with native vegetation and pine plantations, with the largest counts of individuals being in pine plantations. The proposed action alone is not expected to have the potential to affect the distribution and size of Carnaby's Black-Cockatoo populations, in consideration of the scale of the impact compared to the large area of feeding habitat available to the species in the southern metropolitan area and the known importance of pine plantations to the species.

Current data on distribution (using NatureMap) shows that Carnaby's Black-Cockatoo is known from numerous records and is extensive and widespread along the Northern Swan Coastal Plain. This includes records to the north of the project area in the vicinity of Eglinton and Carabooda. It also occurs further to the north near Two Rocks and there are coastal records around Marnion.

The habitat areas referred to have been identified based on vegetation complex/association data and mapping produced by Syrinx environmental (2009) for the Catalina site. Eco Logical Australia further undertook a site reconnaissance to establish and confirm species habitat values at Catalina. Analysis of the mapping and the consequent site reconnaissance confirmed several indicator species on site being *Banksia attenuata*, *Banksia menziesii* and *Banksia sessilis*, *Eucalyptus Gomphocephala*, *Eucalyptus marginata*, *Allocasurina humilis*, *Xanthorrhoea preissii* and *Hakea lissocarpha*, these species provide both foraging and the possibility of nesting (*Eucalyptus Gomphocephala* and *Eucalyptus marginata*) habitat within the site and have been used to calculate potential breeding and/or foraging habitat within the site.

2.1.1 Regional Context

Approximately 17,000 ha of Carnaby's Black-Cockatoo habitat has been recorded within the City of Wanneroo, for which 0.5% of this is located on the site. There is a substantial area of remnant vegetation still existing in the region particularly north and north-east of the Catalina site (**Figure 4**). Yanchep National Park is 17 km to the north of the site and contains some of the Northern Swan

Coastal Plain's highest quality foraging habitat for the Carnaby's Black-Cockatoo, further there is a documented 48,648 ha of habitat within a 20km radius of the Yanchep National Park.

Catalina, in a regional context contains 85.8 ha of potential Carnaby's Black-Cockatoo habitat, for which (under the Local Structure Plan) it is proposed to clear 72.5 ha of this habitat. This proposed loss equates to 0.15 % of the habitat available within a 20km radius of the Yanchep National Park and is not considered significant in the broader regional context.

2.2 GRACEFUL SUN MOTH HABITAT

The Graceful Sun Moth (*Synemon gratiosa*) is a medium sized diurnal flying sun moth that is similar in appearance to a butterfly (WAISS 1993). Adults are active only in autumn, predominantly in March. Australian species of Castniid moth tend to breed on grasses, sedges and rushes, and the juvenile stages exist underground (Edwards 1997). The Graceful Sun Moth has been observed to oviposit on *Lomandra* species, which may prove to also be the foodplant.

Given the presence of potential habitat for this species within the western cell of Catalina, targeted surveys were conducted in March 2010 by Syrnix Environmental.

The site was surveyed on four separate occasions between 5th March 2010 and 26th March 2010 during the periods when Graceful Sun Moth are known to be flying. Surveys were undertaken to standard procedure stipulated by the Department of Environment and Conservation (DEC). Involving four replicate searches (on suitable separate survey days) to conclude the presence or absence of the Graceful Sun Moth with a high degree of confidence within each survey area. The timing for Graceful Sun Moth survey is critical as it needs to coincide with the brief but seasonal period of peak moth activity. Accordingly the prescribed DEC methodology surveys must be undertaken during the peak activity period (usually the first two weeks of March). The survey must also be carried out during specific weather conditions and consider wind, temperature, sun light and time of day.

Within the project area, two Graceful Sun Moths were recorded occurring in areas with low vegetation community structure that were dominated by *Lomandra maritima*. A single specimen was also observed in the area proposed for conservation (*Western Offset*) (it should be noted, not all habitat areas within the Western Offset site were surveyed at this time).

Based on survey result and habitat assessments, it is estimated that the site contains 6 ha of Graceful Sun Moth habitat.

3 Offset Objectives

TPRC is committed to providing and implementing a terrestrial offset package that provides a long term benefit to the 'local' and regional habitat values, which contributes to the recovery of threatened species and that meets the regulatory requirements of both WA and Commonwealth Governments.

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

- the general principles and concepts that drive the identification and implementation of offsets in Australia;
- 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; and
- a focus on providing a benefit of environmental values that exceeds the values lost from the development of Catalina.

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

Table 1: Commonwealth draft offset principles

1	Environmental offsets should be targeted to the matter protected by the EPBC Act that is being impacted.
2	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.
3	Environmental offsets should deliver a real conservation outcome.
4	Environmental offsets should be developed as a package of actions - which may include both direct and indirect offsets.
5	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'.
6	Environmental offsets should be located within the same general area as the development activity.
7	Environmental offsets should be delivered in a timely manner and be long lasting.
8	Environmental offsets should be enforceable, monitored and audited.

Based on integrating the values from the Commonwealth EPBC principles, the key objectives of the Catalina Offset Plan are to:

1. provide appropriate offsets to compensate for the residual impacts of the project 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. develop an offset package that focuses on the local area;
4. ensure that the offset provides for the protection of like-for-like vegetation and specific habitat attributes; and
5. ensure in-perpetuity security of offset sites and provide a framework for their ongoing and long-term management.

4 Carnaby's Black-Cockatoo Mitigation and Offsets

Measures to mitigate the impacts of development at Catalina are proposed both onsite and offsite, through retention, protection, management and creation of suitable habitat for the Carnaby's Black-Cockatoo.

4.1 ON SITE MITIGATION

TPRC are proposing several mitigation measures to maximise the potential for the site to continue to be utilised by Carnaby's Black-Cockatoos during and following development at Catalina. Implementation of mitigation measures will span the life of the development, from specific habitat protection at project clearing inception through to the ongoing management of dedicated habitat areas in Public Open Space (POS).

4.1.1 Habitat Avoidance and Mitigation of Impacts

Of the 85.8 ha of Carnaby's Black-Cockatoo habitat at Tamala Park, 13.3 ha (15.5%) will be retained and managed to ensure the site remains a viable and functioning stepping-stone between the *Western Offset* (within Bush Forever 322 site to the west) and the Neerabup National Park and Bush Forever to the east of Catalina. The Carnaby's Black-Cockatoo habitat being retained comprises the vast majority of high quality vegetation at Catalina; specifically two large areas of POS in the west of the Central cell (see **Figure 1**). Additionally, this equates to the integrity of some of the larger patches of existing Carnaby's Black-Cockatoo habitat on site being maintained and protected.

The areas that have been designated for residential development have been selected to avoid and minimise impacts to Carnaby's Black-Cockatoo habitat. The following principles were followed in selecting development land:

- Where possible, avoid species habitat by maximising use of degraded areas characterised by grazed exotic pasture.
- Avoid fragmenting and minimising impacts to large good quality patches of native vegetation and/or Carnaby's Black-Cockatoo habitat.
- Avoid loss where possible of good quality Carnaby's Black-Cockatoo habitat.

As a result, the areas proposed for development occupy land which is (where possible) largely comprised of exotic/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 high quality areas were prioritised for retention (e.g. POS within the Central Cell). Any loss is typically comprised of the more fragmented patches or boundary areas of Carnaby's Black-Cockatoo habitat on site.

4.1.2 On Site Retention and Habitat Conservation

TPRC worked with Syrinx Environmental to define key areas for protection and mitigation in relation to the development of the site structure plan. This section of the Offsets Plan contains the results of that work.

Two large areas of remnant bushland have been specifically chosen, following several levels of environmental survey and assessment, to be protected in perpetuity for the ongoing recovery of the Carnaby's Black-Cockatoo (western POS of the Central Cell). These areas of bushland contain good to very good condition habitat for the species. The 11.6 ha of bushland area will be protected through provisions in the Town Planning Scheme for a condition at subdivision requiring the POS to be ceded to the Crown free of cost and vested in the City of Wanneroo as a local reserve for the purpose of conservation. A Conservation Management Plan will be prepared by TPRC also as a condition of subdivision, which would then guide the City's ongoing management of the area. This in combination with a specified reserve purpose of conservation would provide a formal, ongoing protection mechanism for the bushland under the City's Town Planning Scheme.

The retention of a representative area of high quality vegetation, which will also serve as a key feeding ground for Carnaby's Black-Cockatoo on site, was a key consideration in determining the location of POS areas.

4.1.3 Management of Public Open Space

Management is to be undertaken by TPRC during inception and development stages. Following completion, management and maintenance of the open space areas is to be undertaken by the City of Wanneroo.

4.1.4 Provision of Foraging Species in Streetscape and Road Reserves

Native trees suitable for Carnaby's Black-Cockatoo will be utilised in streetscapes throughout the development area. These will be established by TPRC following construction of roads. The trees will be maintained by TPRC until handover of the street environments to the City of Wanneroo.

Approximately 1 ha in total of streets, median islands and roundabouts will be landscaped with irrigated feature native planting. All individual residential lots will receive a minimum of one street tree, with corner lots receiving two street trees. Over 500 Street trees are expected to be installed for the development.

4.2 DIRECT OFFSETS – CONSERVATION OF ADJACENT LOCAL HABITAT

Significant impacts to threatened species can potentially be directly offset through acquisition or retention of habitat and securing for conservation purposes. A review of previous approval decisions relating to impacts to Carnaby's Black Cockatoo habitat indicates that the closer the area of habitat to be conserved is to the area of impact the higher its value as an effective offset. This can be limited by the fact that development is occurring in urban zoned areas and adjacent land has often already been identified in State Metropolitan Region Scheme and local Town Planning Schemes for development. The cost of acquisition is often prohibitive. In the case of the Catalina Development, TPRC has been able to achieve this through retention of habitat within areas of land already owned by the Council and through negotiation with its sister Council, the Mindarie Regional Council, for additional adjacent land.

TPRC is consequently presenting a large site immediately adjacent to the development for conservation purposes, being 91 ha of land to the west of the site that includes key, high quality Carnaby's Black-Cockatoo habitat (referred to as the *Western Offset* area - see **Figure 3**).

The Western Offset is immediately west of the Development site and was actually part of the land vested with the TPRC for the purpose of development (**Figure 3**). The 91 ha site contains approximately 16.5 ha of heath and/or woodland vegetation that represents potential feeding habitat for Carnaby's Black-Cockatoo and which would benefit from active conservation management and

protection. The surrounding vegetation also complements the Carnaby's Black Cockatoo feeding habitat, providing a natural buffer from threatening processes.

Further protection (in perpetuity) and management is proposed for this offset area to increase its viability and value in creating an important east-west habitat corridor for the Carnaby's Black-Cockatoo. The site has been previously recognised as being suitable for conservation when designated part of Bush Forever site 322, which itself contains over 490 ha of bushland, identified by the State for potential conservation because of its environmental values, including high quality remnant vegetation. The Western Offset site also supports Graceful Sun Moth habitat and is proposed as an offset area for impacts to this species (Section 5.2).

TPRC proposes to transfer the *Western Offset* site to the WA Department of Environment and Conservation (DEC) for the purpose of conservation. The DEC proposes that the site become an A Class Reserve and be vested to the Conservation Commission of Western Australia to be managed as a Conservation Park. The site is of high value for offsetting local impacts of clearing of habitat in the development area because they are immediately adjacent to the impact area.

The transfer of this land to the conservation estate and its use as an offset for clearing of habitat associated with the Catalina development is directly attributable to the Catalina project, having been a direct outcome of planning for the project.

4.3 DIRECT OFFSET - ACQUISITION AND CONSERVATION OF FURTHER REGIONAL HABITAT

TPRC is currently working with WA DEC in relation to identifying a suitably sized parcel of land in private ownership to the north-east of the development site that supports both foraging and nesting habitat for Carnaby's Black-Cockatoo habitat.

TPRC is aiming to acquire a parcel of land that is between 400 and 420 ha in size. The property to be purchased will be one of a number currently proposed for acquisition by the DEC in an area south of Gingin. These properties contain quality Carnaby's Black-Cockatoo habitat and are to be incorporated into a substantially expanded nature conservation estate in the area. TPRC will provide funds for the acquisition of the property within 6 months of the commencement of development. An on-site assessment will be undertaken of candidate sites to confirm the presence of potential nesting trees for Carnaby's Black-Cockatoo and supporting feeding habitat (e.g. Banksia, Hakea vegetation). TPRC will arrange with DEC for the purchase the property within 12 months of the commencement of development at Catalina. The purchased land will be vested with the WA Conservation Commission and will be managed by the DEC for the purposes of conservation of flora and fauna.

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

5 Graceful Sun Moth – Mitigation and Offsets

Measures to mitigate the impacts of development at Catalina are focused offsite, through retention, protection and management of suitable habitat for the Graceful Sun Moth directly abutting the project site.

5.1 ON SITE RETENTION AND HABITAT CONSERVATION

Currently, the majority of habitat on site has been avoided through the planning process for Catalina. Large important areas of Graceful Sun Moth habitat are being conserved and protected in TPRC land to the west (*Western Offset*). Accordingly there is little onsite retention of suitable habitat other than a consolidated patch located in POS (in the west of the western cell). This area to be conserved onsite abuts the large areas of conservation in the *Western Offset* area.

Considering the above, only 5.9 ha of Graceful Sun Moth habitat is situated within the development boundary. TPRC propose to conserve 0.5 ha of this habitat in perpetuity within onsite POS.

5.2 DIRECT OFFSETS – CONSERVATION OF HABITAT

TPRC has acquired for conservation purposes the *Western Offset* area, 91 ha of land to the west of the site that supports large areas of Graceful Sun Moth habitat (see **Figure 3**). The *Western Offset* is contiguous with the remainder of Bush Forever site 322, which itself contains over 490 ha of high quality remnant vegetation important to the Graceful Sun Moth.

Based on survey result and habitat assessments, the offset site contains 35.2 ha of *Lomandra maritima* that provides excellent habitat for Graceful Sun Moth and which would benefit from active conservation management and protection. Further protection (in perpetuity) and management is proposed for this offset area to increase its viability and value for the Graceful Sun Moth.

The *Western Offset* site contains large areas of undisturbed *Lomandra maritima*, the key habitat species for the Graceful Sun Moth and was accordingly selected for this aspect

This direct offset alone provides six times the habitat proposed for clearing due to development. Securing this habitat for ongoing protection will ensure that future urban development proposed for Perth's northern suburbs, will not encroach and impact on this key habitat.

As identified in section 4.2, the DEC proposes that the site become an A Class Reserve and is vested to the Conservation Commission of Western Australia to be managed as a Conservation Park.

The transfer of this land to the conservation estate and its use as an offset for clearing of habitat associated with the Catalina development is directly attributable to the Catalina project, having been a direct outcome of planning for the project.

6 Offsite Offsets Implementation

Maintenance and improvement of connectivity across the proposed site location was a key criterion for both conceptual design and the selection of sites for offsets and rehabilitation. In addition to the retention of Carnaby's Black-Cockatoo habitat on site with the greatest ecological value, the Western Offset site will also protect key vegetation for the Carnaby's Black-Cockatoo from urban pressures. This work will lead to the establishment of a consolidated and highly significant area of Carnaby's Black-Cockatoo habitat in the region.

The acquisition of an additional offset site for conservation purposes in the region supporting Carnaby's Black Cockatoo habitat will also provide additional security for the maintenance of the species and contribute to its recovery. The intent is overall the project will provide environmental benefits to the species from protection, restoration and improved management of habitat.

The following sections detail the implementation programs for these offsets.

6.1 WESTERN OFFSET SITE

The Western Offset Site is 91 ha of land to the immediate west of the Catalina development site in Mindarie and Tamala Park, WA (as per **Figure 2**).

6.1.1 Ecological values

- 16.5 ha of remnant vegetation representing potential Carnaby's Black-Cockatoo feeding habitat
- 35.2 ha of vegetation with *Lomandra maritima* that provides excellent habitat for Graceful Sun Moth
- Surrounding vegetation also complements the Carnaby's Black Cockatoo feeding habitat, providing a natural buffer from threatening processes.
- Coastal protection and ecological linkages

6.1.2 Objective/s

- Ensure in-perpetuity security of site for conservation and provide a framework for its ongoing and long-term management.
- Maintain and improve the sites natural ecological values, particularly in reference to Carnaby's Black Cockatoo and Graceful Sun moth.

6.1.3 Actions

- Transfer of land to the DEC/Conservation Commission for the purpose of conservation.
- Conduct final site inspection with DEC/City of Wanneroo
- Finalise transfer of land on receipt of confirmation from DEC/City of Wanneroo that land is in suitable state for acceptance for long term management.

6.2 SUPPLEMENTARY OFFSET SITE (FURTHER AFIELD)

The supplementary offsite site will be between 400 and 420 ha to the north of the development site within the agricultural zone and currently subject to a number of threatening processes due to conflicting land uses to its conservation value.

6.2.1 Ecological values

- Nesting trees for Carnaby's Black-Cockatoo
- Supporting feeding habitat for Carnaby's Black-Cockatoo (e.g. banksia, hakea vegetation)

- Functions as key stepping stone and/or part of significant local and/or regional ecological linkage for species.

6.2.2 Objectives

- Ensure in-perpetuity security of site for conservation

6.2.3 Actions

- Review candidate sites in consultation with DEC and the Federal Government
- Select site for acquisition
- TPRC to provide funds to DEC towards purchase of land
- DEC to make offer on property, subject to required subdivision (if required)
- Settlement of purchase
- Transfer of land to DEC under s16 of Conservation and Land Management Act for interim management
- Initiation of process for land to be placed in conservation tenure.

6.2.4 Monitoring

- TPRC will monitor acquisition process through regular liaison with DEC

7 Conservation Commitment and Outcome

TPRC is committed to providing dedicated *local* outcomes for the ongoing protection of key habitat and the recovery of the Carnaby's Black-Cockatoo and the Graceful Sun Moth. A key driver of planning and design for development of Catalina at Tamala Park has been the delivery of a good conservation outcome for both Carnaby's Black-Cockatoo and Graceful Sun Moth habitat.

7.1 TPRC'S COMMITMENT

As part of the Catalina development project, TPRC commit to providing and implementing a suitable conservation offset package that compensates for the terrestrial impacts of the project. TPRC are also committed to rehabilitating and reinstating areas on-site (where possible) that incur ecological losses arising from construction activities.

Unavoidable biodiversity impacts from the project 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 project.

7.2 CONSERVATION OUTCOME

Development at Catalina provides for the protection and management of approximately 13.3 ha of land for conservation purposes within the development site. Of the 85.8 ha of Carnaby's Black-Cockatoo habitat currently present at Catalina, 15.5% will be retained. Importantly, the Carnaby's Black-Cockatoo habitat being retained comprises mostly of the high quality Carnaby's Black-Cockatoo habitat on site and ensures that the functionality of an important east west biodiversity corridor will be maintained and enhanced.

In addition to this, approximately 16.5 ha of key habitat will be protected in the *Western Offset*. The aim of this area is to help achieve no net loss of Carnaby's Black-Cockatoo habitat as a result of development, while providing important local outcomes.

As well as retaining Carnaby's Black-Cockatoo habitat on site with the greatest ecological value, the conservation of land for the *Western Offset* enables greater linkage between currently fragmented patches of Carnaby's Black-Cockatoo habitat through the *Southern Offset* restoration work, creating important local stepping-stones.

These conservation efforts for Carnaby's Black-Cockatoo habitat surrounding Catalina in the Tamala Park area entail substantial costs. It is important to acknowledge that these conservation gains for Carnaby's Black-Cockatoo habitat near Catalina could only be achieved as a product of required development. Funding from development will provide the ongoing resources for protection, management and improvement of this key habitat.

The on-site and off-site mitigation components of the Offsets Plan are summarised below in **Tables 2** and **3**.

Table 2: Summary table of Carnaby's Black-Cockatoo Offsets

Conservation Component	Description	Area	Offset ratio	Outcome	Relevant EPBC Offset Principle Addressed (refer Table 1)
Onsite Mitigation					
Retention of CBC habitat on site	13.3 ha of good to very good condition CBC retained as Public Open space and ceded to the City of Wanneroo to be managed for conservation	13.3 ha	0.2:1	The retention of remnant habitat on site to provide/retain suitable areas for ongoing foraging	1, 3, 4, 6, 7, 8
Planting of CBC habitat within landscape and streetscape plantings	Native CBC habitat trees utilised in streetscapes where appropriate throughout the development area	1 ha	0.01:1	The creation of foraging habitat throughout the development, to increase feeding possibilities.	1, 3, 6, 8
Offsite Mitigation					
<i>Western Offset</i>	Conservation of Offset area (<i>Western Offset</i>) for the purposes of species habitat recovery and protection, directly to the west of the project site	16.5 ha feeding habitat within a 91 ha intact area of vegetation	0.2:1* * based on 16.5 ha	Protection in perpetuity of high quality CBC habitat within the local area (abutting the site) along with associated vegetation	1, 3, 5, 6, 7, 8
Offsite Acquisition	Provision of funds to the DEC for the purpose of acquisition of approximately 400-420 ha of land supporting Carnaby's Black-Cockatoo habitat in the Gingin region	405 ha	5.6:1		1, 2, 5, 7, 8
Total Offset Ratio		435 ha	6:1		1, 2, 3, 4, 5, 6, 7, 8

Table 3: Summary table of Graceful Sun Moth Offsets

Conservation Component	Description	Area	Offset ratio	Outcome	Relevant EPBC Offset Principle Addressed
Offsite Mitigation					
Retention of GSM habitat on site	0.47 ha of good to very good condition CBC retained as Public Open space and ceded to the City of Wanneroo to be managed for conservation	0.5 ha	0.1:1	The retention of remnant habitat on site to provide/retain suitable areas for ongoing foraging	1, 3, 4, 6, 7, 8
Western Offset habitat acquisition for conservation	Acquisition of Direct Offset area (<i>Western Offset</i>) directly to the west of the project site, containing undisturbed GSM habitat	35.1 ha	6.4:1	Protection in perpetuity of high quality GSM habitat within the local area (abutting the site)	1, 3, 5, 6, 7, 8
Total Offset Ratio		35.6 ha	6.5:1		1, 3, 4, 5, 6, 7, 8

8 References

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Johnstone, R.E. and Storr, G.M. (1998). *Handbook of Western Australian Birds, Volume I, Non-passerines (Emu to Dollarbird)*. Western Australian Museum, Perth.

Shah, B. (2006). *Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia*. Birds Australia WA.

9 Figures

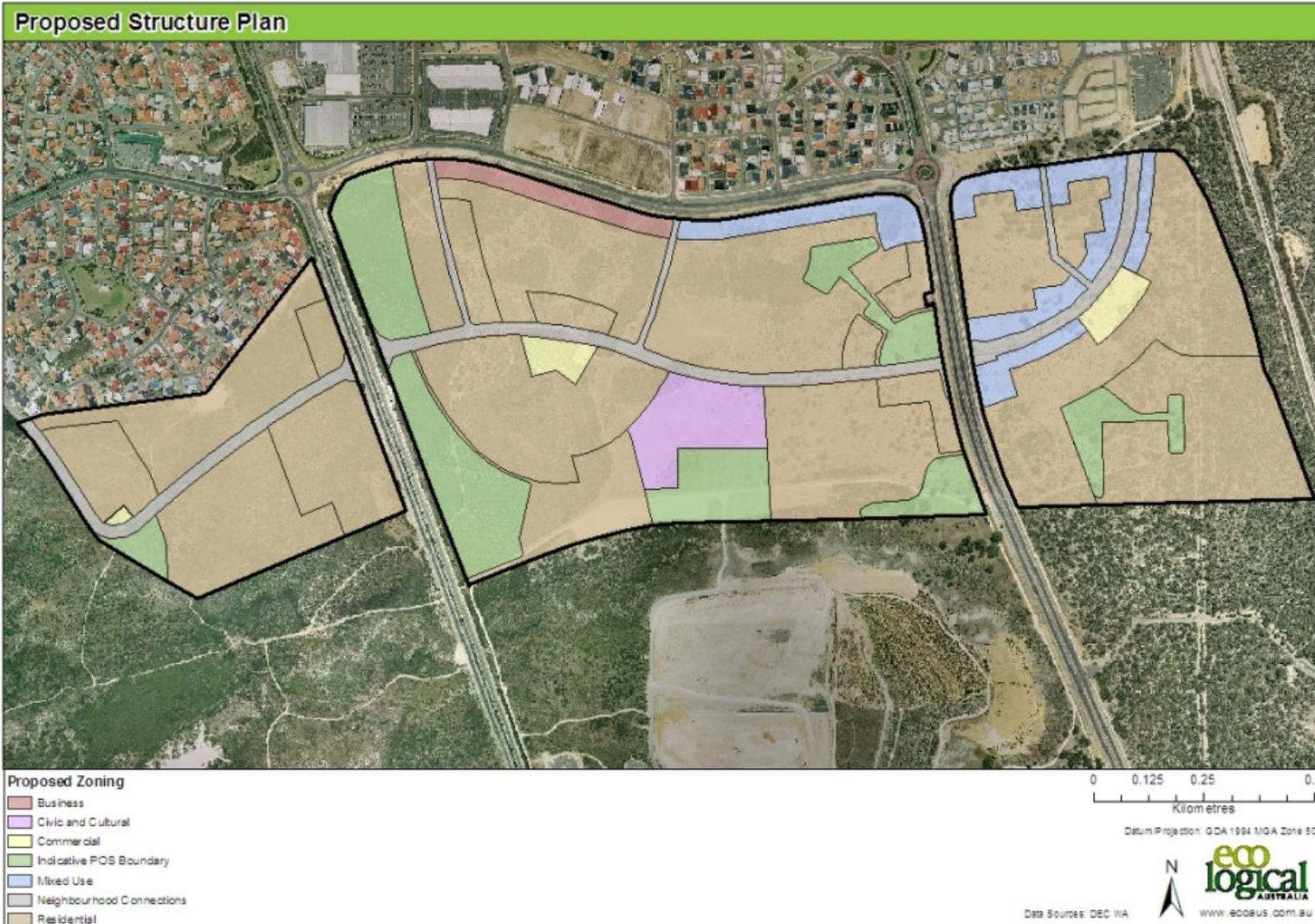


Figure 1: Proposed site structure plan

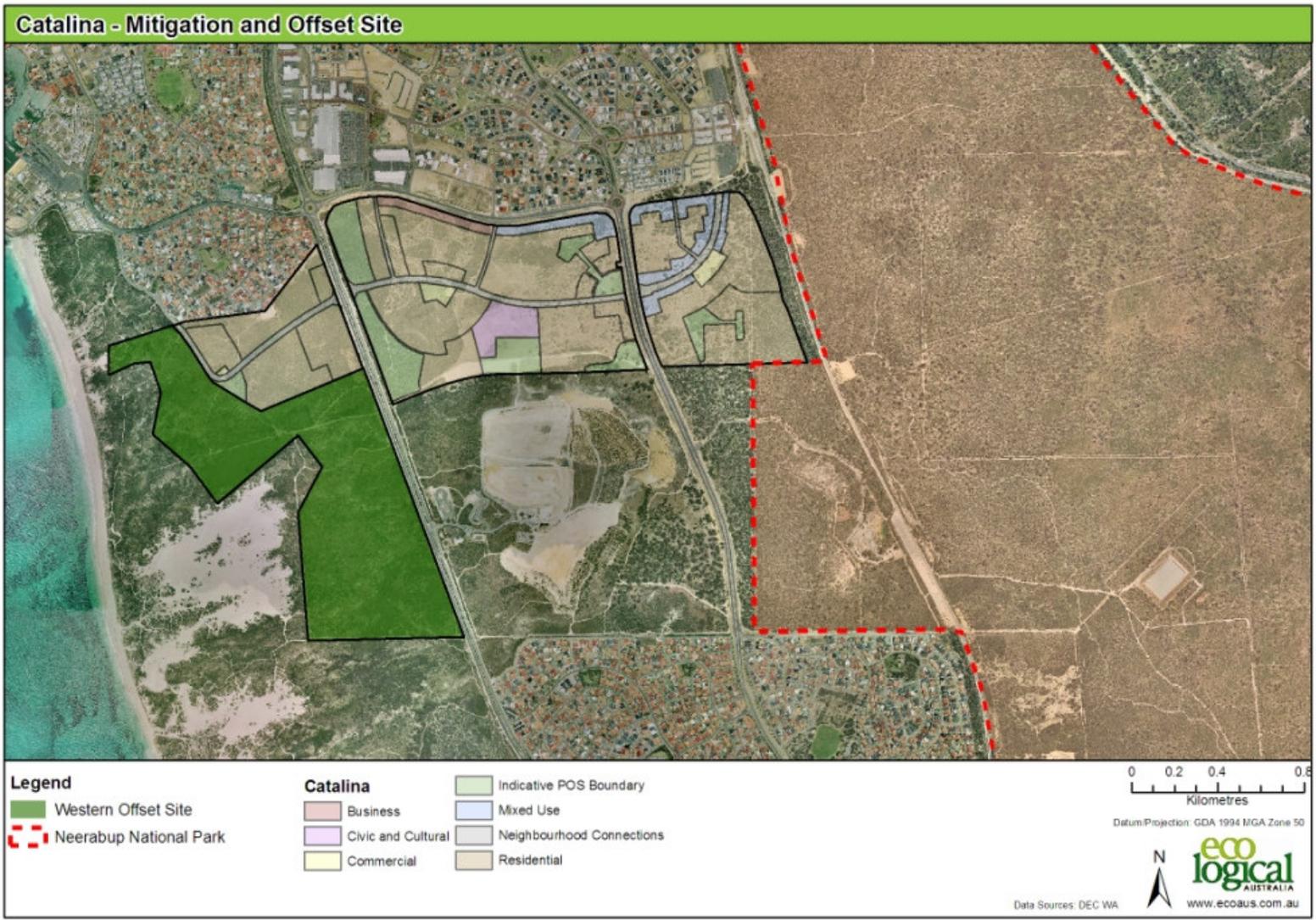
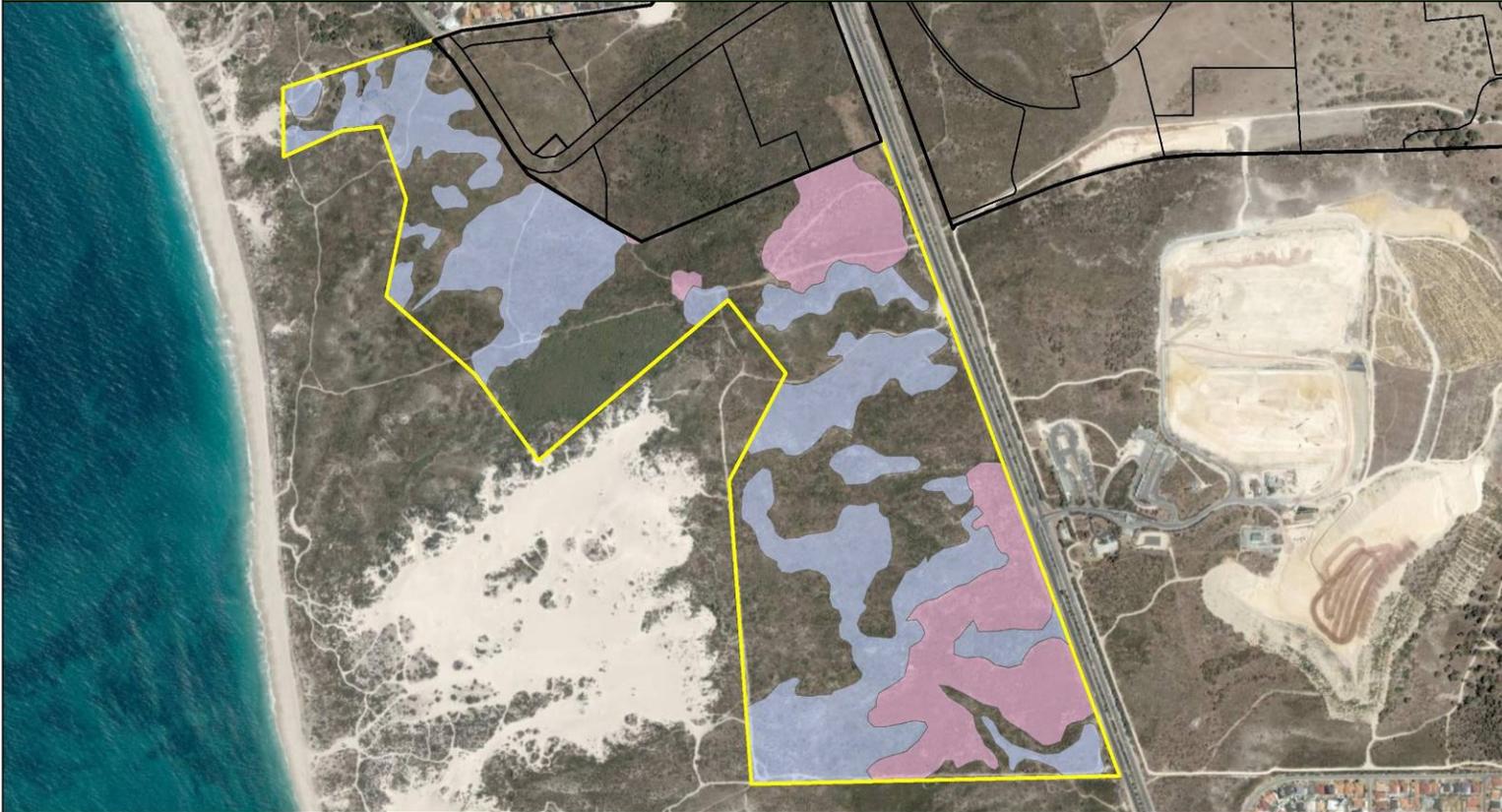


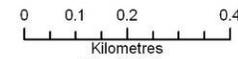
Figure 2: Site context and Western Offset site

Catalina - Western Offset Site



Legend

- Study Area
- Structure Plan
- Catalina - Western Offset Site - 92ha
- Carnaby's Black Cockatoo Habitat - 16.48ha
- Graceful Sun Moth habitat - 35.17ha



Datum/Projection:
GDA 1994 MGA Zone 50

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AUSTRALIA
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Data Sources:
Microsoft Virtual Earth

Date: 01/12/2010
 Status: Draft
 Approved by: BD
 Prepared by: VH

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Figure 3: Western Offset site

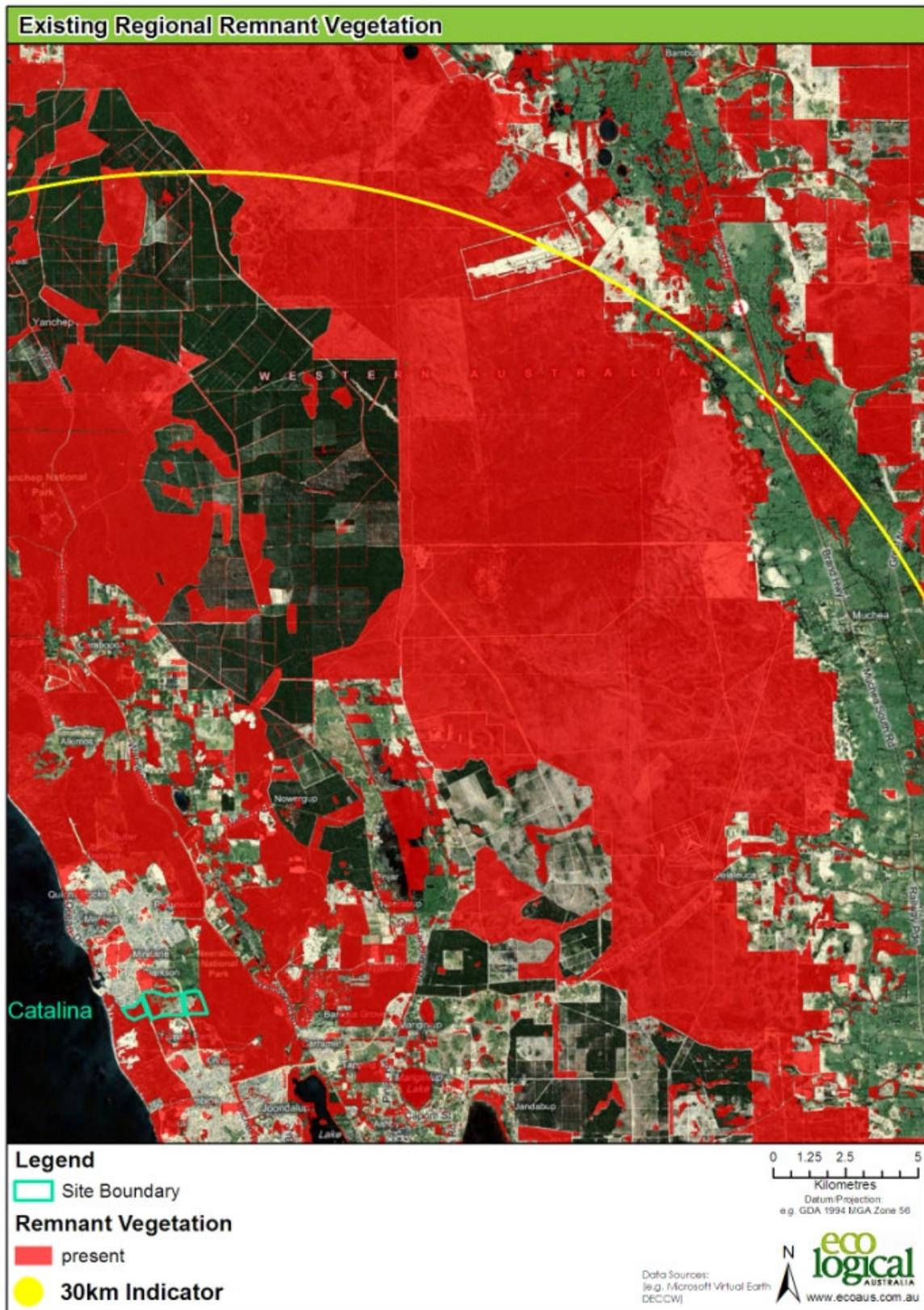


Figure 4: Regional remnant vegetation context



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