

Holcim (Australia) Pty Ltd

**Ecological Assessment for the
Proposed Minor Modification to
Holcim Regional Distribution Centre
(RDC) Rooty Hill, NSW**

September 2010

Ecological Assessment for the Proposed Minor Modification to Holcim Regional Distribution Centre (RDC) Rooty Hill, NSW

Prepared by

Umwelt (Australia) Pty Limited

on behalf of

Holcim (Australia) Pty Ltd

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1.0 Introduction

1.1 Background

Holcim (Australia) Pty Limited (Holcim) obtained Project Approval under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in April 2006 (Approval No. 05_0051) to construct and operate a Regional Distribution Centre (RDC) for quarry products located at Rooty Hill, New South Wales (NSW). Since the approval was granted and building on the recent change in ownership, Holcim conducted a review of the approved RDC project and has identified a number of operational, capital and environmental benefits in modifying the approved but yet to be constructed RDC layout. Accordingly, Holcim is seeking to modify the original Project Approval to allow these minor modifications to the approved RDC (refer to **Figure 1.1**).

Umwelt (Australia) Pty Limited (Umwelt) has been commissioned by Holcim to undertake an updated ecological survey and ecological assessment that will focus on the proposed modifications to the RDC's project area (refer to **Figure 1.2**).

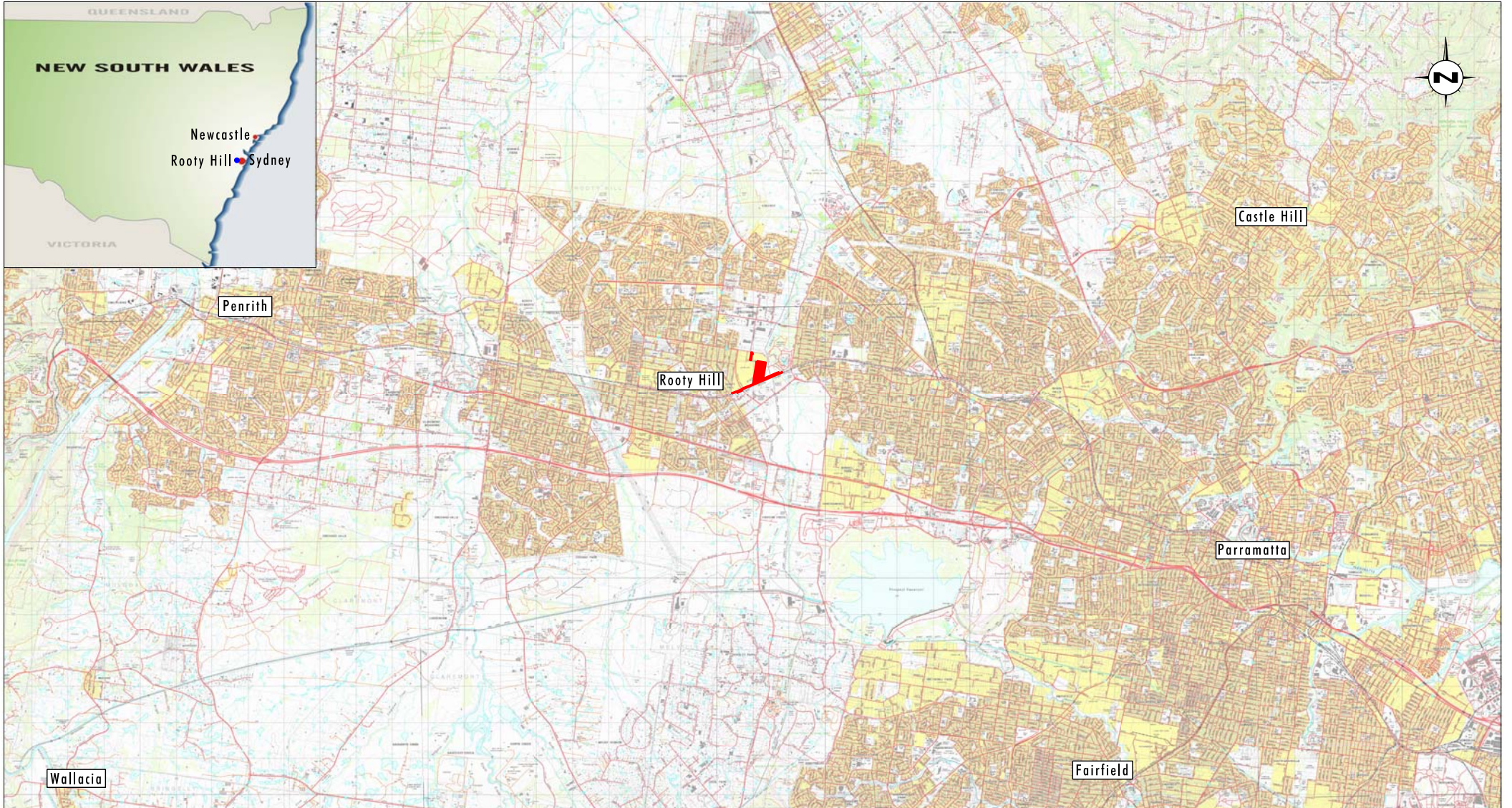
1.2 Description of the Approved RDC

Holcim currently supplies the Sydney market with quarry products from the company's Penrith Lakes Development Corporation (PLDC) operations. However, this resource is nearly depleted and the facility is approaching closure. Consequently Holcim has had to locate alternative sources of quarry products to meet the needs of its Sydney market. These quarry products will come from quarries outside the Sydney region, including the new Lynwood Quarry near Marulan in the Southern Tablelands region of NSW. The approved RDC will allow Holcim to receive, store and distribute bulk construction materials to meet customer requirements in the Sydney region.

The RDC is approved to handle up to 4 million tonnes (Mt) of quarry product per annum. Construction materials such as sand and aggregate will be transported by rail to the RDC. These materials will be blended by equipment at the RDC as required and distributed by road to the Sydney market.

The approved RDC includes the following:

- a regional office building and materials testing laboratory;
- a rail siding and rail unloading facility;
- elevated steel storage bins and truck load out facilities;
- ground storage and reclaim facilities;
- blending plant/pug mill;
- a conveyor system linking the unloading station to the storage and truck load out facilities;
- workshop, stores, site offices and amenities facilities, truck washdown facilities, truck refuelling, weighbridges, truck and car parking;
- concrete batching plant (CBP);



Source: Department of Lands 2006

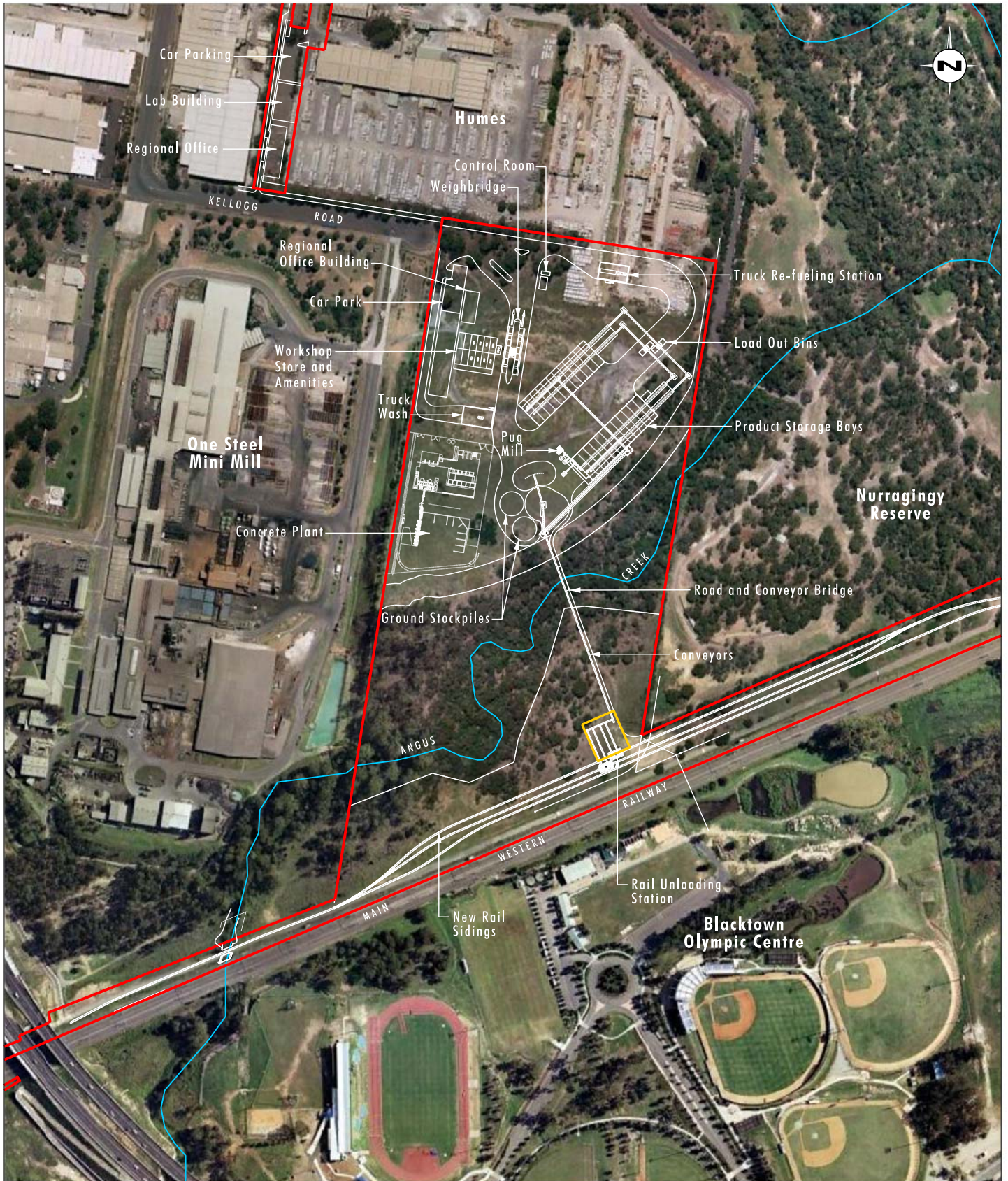
0 0.25 0.5 0.75 km
1:150 000

Legend

■ Approved RDC Site Boundary

FIGURE 1.1

Locality Plan



Source: Holcim and Google Earth 2010

0 100 200 250m
1:5000

Legend

- Approved RDC Site Boundary
- Ecological Assessment Study Area
- Indicative Modified RDC Layout

FIGURE 1.2

Indicative Modified RDC Layout
and Study Area

- bridges at two locations over Angus Creek; and
- realignment of the existing North Parade and creation of New North Parade.

The approved RDC will operate 24 hours per day, seven days a week. The RDC will take approximately two years to build and will employ approximately 220 people during construction. During operation of the approved RDC, approximately 250 people will be employed on-site. At 4 Mtpa the approved RDC will dispatch approximately 400 heavy vehicles from the site on an average day. All traffic to the RDC will access the site via Kellogg Road, with the exception of some minor laboratory traffic. Those vehicles accessing Kellogg Road to/from the south will do so via Woodstock Avenue direct from the M7. Heavy vehicles accessing Kellogg Road to/from the north would do so via Glendenning Road and Power Street direct from the M7. Construction of the RDC is planned to begin in 2011 and the RDC is expected to commence operations in 2013.

1.3 Description of the Proposed Modifications

The proposed minor changes to the RDC will not result in changes to overall RDC components or to the approved RDC capacity of 4 Mtpa. The RDC will operate in much the same way as is currently approved. There will be no change to the number, size or tonnages of heavy vehicles accessing the facility during construction or operation of the RDC. Traffic arrangements and volumes will not change from the currently approved RDC design.

The proposed modifications to the approved RDC include:

- changing from elevated steel storage bins to on-ground concrete storage bins, this will reduce the height of the storage facility by about 10 metres;
- changing the configuration and location of the rail unloader and rail sidings to accommodate shorter trains, for the initial phase of the development;
- reducing the payload capacity of trains, for the initial phase of the development;
- removal of the ground storage bins that were originally sited west of the steel storage bins;
- closure of North Parade by Blacktown City Council rather than relocation of the road;
- an increased ground storage area at the radial stacker; and
- minor changes to the locations of the office, workshop and other internal facilities to improve operating efficiencies and in response to the layout changes outlined above.

The proposed modifications will have no impact on the currently approved disturbance footprint of the RDC, except for one small area of land (hereafter referred to as the study area). Holcim proposes to change the configuration and location of the rail unloader and rail sidings, for the initial phase of the development. The modification of the rail unloader and its associated rail sidings layout will alter the disturbance footprint of the originally approved RDC development. The study area is located in the south-east section of the RDC site and was targeted during the ecological survey and impact assessment. It is estimated that a maximum of an additional 0.09 hectares of land will be impacted by the proposed modifications.

1.4 Location of the RDC

The approved RDC is located at Kellogg Road and Woodstock Avenue, Rooty Hill within the Blacktown Local Government Area (LGA). The southern side of the RDC site is bounded by the Main Western Railway line, with industrial development (which includes the OneSteel Mini Mill) lying adjacent along the north and west boundaries of the site and Nurragingy Reserve encompassing the eastern side.

The majority of the RDC site consists of disturbed cleared grassland dominated by native and exotic species. Angus Creek, a tributary of Eastern Creek, passes through the southern section of the site before flowing east from the RDC site into Nurragingy Reserve where it converges with Eastern Creek. The Cumberland Plain Woodland Critically Endangered Ecological Community (CEEC) and River-Flat Eucalypt Forest Endangered Ecological Community (EEC) run along the Angus Creek tributary.

1.5 Definitions

The following terms are used throughout this document and these are defined below:

Modified RDC: refers to the proposed minor modifications to the approved RDC which includes a change to the configuration and location of the rail unloader and rail sidings, for the initial phase of the development.

RDC site: refers to the approximately 26 hectares of land on which the approved RDC will be constructed and, that was subject to the original ecological survey undertaken by Biosis Research Pty Ltd in 2005.

Study Area: refers to the complete rail uploading facility area located in the south-eastern corner of the RDC site that will alter and impact the original Project Approvals disturbance footprint. The study area covers approximately 0.12 hectares and was the primary focus of this ecological survey and impact assessment. Additional areas of disturbance associated with the modified RDC total approximately 0.09 hectares.

Project Approval: refers to the 2006 Project Approval (Approval No. 05_0051) for the construction and operation of a Regional Distribution Centre (RDC) at Rooty Hill.

1.6 Purpose and Objectives of the Ecological Assessment

The purpose of the ecological assessment is to evaluate the level of significance of potential impacts on ecological features within the study area in relation to any changes in the disturbance footprint in the RDC site. This ecological assessment does so by identifying the flora and fauna species and ecological communities present in the proposed new disturbance area and their condition; and consequently determining the likely impacts of the proposed modifications. Particular attention is given to threatened species, endangered populations and threatened ecological communities (TECs).

The objectives of this ecological assessment are to:

- record flora and fauna species diversity of the study area;
- identify and describe vegetation communities of the study area;
- evaluate the condition of the vegetation communities;

- record important fauna habitat features such as hollow-bearing trees and active nests present within the study area;
- identify any threatened species, endangered populations or TECs listed under the *Threatened Species Conservation Act 1995* (TSC Act), *Fisheries Management Act 1994* (FM Act), or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) occurring, or with the potential to occur in the study area;
- assess the impacts of the proposed modifications on threatened species, endangered populations, TECs or their habitats that may be present within the study area according to the assessment criteria under the EP&A Act and the EPBC Act; and
- provide advice on mitigation measures for identified impacts of the proposed modifications on significant ecological features of the study area.

2.0 Methods

2.1 Literature Review

In order to gain an understanding of the ecological features of the study area and its regional context, Umwelt has completed reviews of the following relevant available literature:

- The Department of Environment, Climate Change and Water (DECCW) Atlas of NSW Wildlife Database for listed flora and fauna species recorded (or with potential to occur) within a 10 kilometre radius of the study area.
- The Department of Environment, Water, Heritage and the Arts (DEWHA) Protected Matters Database for listed flora and fauna species recorded (or with potential to occur) within a 10 kilometre radius of the study area.
- Information from the previous ecological report produced by Biosis Research Pty Ltd (Biosis 2005) for Holcim to develop field methods, and to contribute to the impact assessment.

2.2 Field Surveys

A field survey was conducted in the study area on 16 June 2010. The field survey thoroughly assessed the entire study area, which is shown in **Figure 1.2**.

2.2.1 Flora Survey Methods

Meandering vegetation transects throughout the study area were undertaken to identify boundaries of vegetation communities and to describe and map their occurrence throughout the study area. Vegetation communities were also assessed for their general health, natural regeneration evidence, occurrence and abundance of weeds and for disturbance from feral animals. Threatened flora species were targeted by conducting searches within likely habitats identified in vegetation communities.

Individual species throughout the site were assigned cover-abundance values to reflect their relative cover and abundance throughout the site. A modified Braun-Blanquet 6-point scale (Braun-Blanquet 1927, with selected modifications sourced from Poore 1955 and Austin *et al.* 2000) was used to estimate cover-abundances of all plant species within the study area. **Table 2.1** provides the cover-abundance categories used.

Table 2.1 - Modified Braun-Blanquet Crown Cover-abundance Scale

Class	Cover-abundance*	Notes
1	Few individuals (less than 5 % cover)	Herbs, sedges and grasses: <5 individuals Shrubs and small trees: <5 individuals
2	Many individuals (less than 5 % cover)	Herbs, sedges and grasses: 5 or more individuals Shrubs and small trees: 5 or more individuals Medium-large overhanging tree
3	5 – less than 20 % cover	-
4	20 – less than 50 % cover	-
5	50 – less than 75 % cover	-
6	75 – 100 % cover	-

Note: * Modified Braun-Blanquet scale (Poore 1955; Austin *et al.* 2000)

2.2.2 Fauna Survey Methods

Opportunistic fauna observations were undertaken during the field surveys to identify bird, mammal, reptile and amphibian species that occur within and surrounding the study area.

A general habitat assessment was also undertaken to assess valuable features of habitat such as the presence of hollow bearing trees, logs and the potential for suitable habitat to provide breeding, nesting, feeding and roosting resources for native species.

3.0 Results

3.1 Literature Review

3.1.1 Database Searches

A search of the DECCW Atlas of NSW Wildlife Database identified 17 threatened flora and 23 threatened fauna species previously recorded within 10 kilometres of the study area. It is considered that *Grevillea juniperina* subsp. *juniperina* and the Cumberland land snail (*Meridolum corneovirens*) have the potential to occur within the study area (see **Section 3.5**).

A search of the Commonwealth DEWHA Protected Matters Database identified nine threatened flora, 14 threatened fauna and 12 migratory bird species that have been previously recorded or predicted to occur within 10 kilometres of the study area. The search also identified one threatened ecological community, *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest*, that has the potential to occur within the study area.

3.1.2 Biosis Flora and Fauna Impact Assessment (2005)

In 2005, Biosis Research Pty Ltd (Biosis) undertook the original terrestrial flora and fauna assessment that accompanied the 2005 Project Application.

Biosis undertook a general flora and fauna assessment which involved mapping of vegetation communities, habitat assessment, active fauna surveys and targeted threatened species searches within the entire RDC site.

During the field surveys Biosis recorded one threatened flora species (*Grevillea juniperina* subsp. *juniperina*), one threatened fauna species (Cumberland land snail *Meridolum corneovirens*) and two Threatened Ecological Communities (TECs) (*Cumberland Plain Woodland* and *River-flat Eucalypt Forest*) (**Figure 3.1**)

Biosis concluded that the majority of the Project construction area consisted of highly disturbed cleared grassland, with a small proportion of moderate to poor quality Cumberland Plain Woodland, and a very small proportion of poor quality River-Flat Eucalypt Forest that would be impacted by the development.

Biosis concluded, using the TSC Act Eight Part Test Assessment (now replaced by the Seven Part Test) and EPBC Act Assessment of Significance, that the now approved RDC was unlikely to have a significant impact on any threatened species or communities within the RDC site.

3.2 Flora Surveys

3.2.1 Flora Species

A list of the flora species identified by Umwelt throughout the study area is provided in **Appendix A**. Floristic surveys identified a total of 24 species, of these species nine (37.5 per cent) were identified as native and 15 (62.5 per cent) were identified as introduced species.

Of the plants identified, one was of the class Filicopsida (ferns) and 23 were identified as Magnoliopsida (flowering plants). Within the Magnoliopsida, ten were sub-class Liliidae



Source: BIOSIS Research PTY Ltd

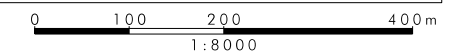


FIGURE 3.1

Vegetation Mapping - Biosis 2005

(monocots) and 13 were sub-class Magnoliidae (dicots). Species were recorded from a total of ten plant families, with the most species families being Poaceae (9) and Asteraceae (5).

3.2.2 Vegetation Communities

Two vegetation communities were identified in the study area. These are shown in **Figure 3.2**.

Cleared / disturbed areas

The majority of the study area is characterised by disturbed grassland or cleared areas. These areas are dominated by exotic groundcover species including Rhodes grass (*Chloris gayana*), African lovegrass (*Eragrostis curvula*), kikuyu (*Pennisetum clandestinum*), fireweed (*Senecio madagascariensis*), lamb's tongues (*Plantago lanceolata*), paspalum (*Paspalum dilatatum*) and flaxleaf fleabane (*Conyza bonariensis*). Temporary wet areas within disturbed grassland are characterised by sharp rush (*Juncus acutus*). Native species such as kangaroo grass (*Themeda australis*) were also recorded in these areas in low densities.

Eucalypt woodland (Cumberland Plain Woodland)

Regenerating eucalypt woodland (Cumberland Plain Woodland) was recorded within a small section of the study area. This community consisted of a sub-canopy of young forest red gums (*Eucalyptus tereticornis*) and occasional occurrences of Parramatta wattle (*Acacia parramattensis*). The understorey was dominated by blackthorn (*Bursaria spinosa*). The groundcover was majority native and included kangaroo grass, threeawn speargrass (*Aristida vagans*) and slender rat's tail grass (*Sporobolus creber*).

This community is characteristic of Cumberland Plain Woodland (CPW) listed under the TSC Act and EPBC Act as a Critically Endangered Ecological Community (CEEC). This community was assessed as low-quality regenerating CPW with mature stands of characteristic dominant canopy species forest red gum and grey box (*E. moluccana*) occurring outside the study area. The area was dominated by native groundcover species, however exotic species were also present as an influence from the adjacent disturbed grasslands.

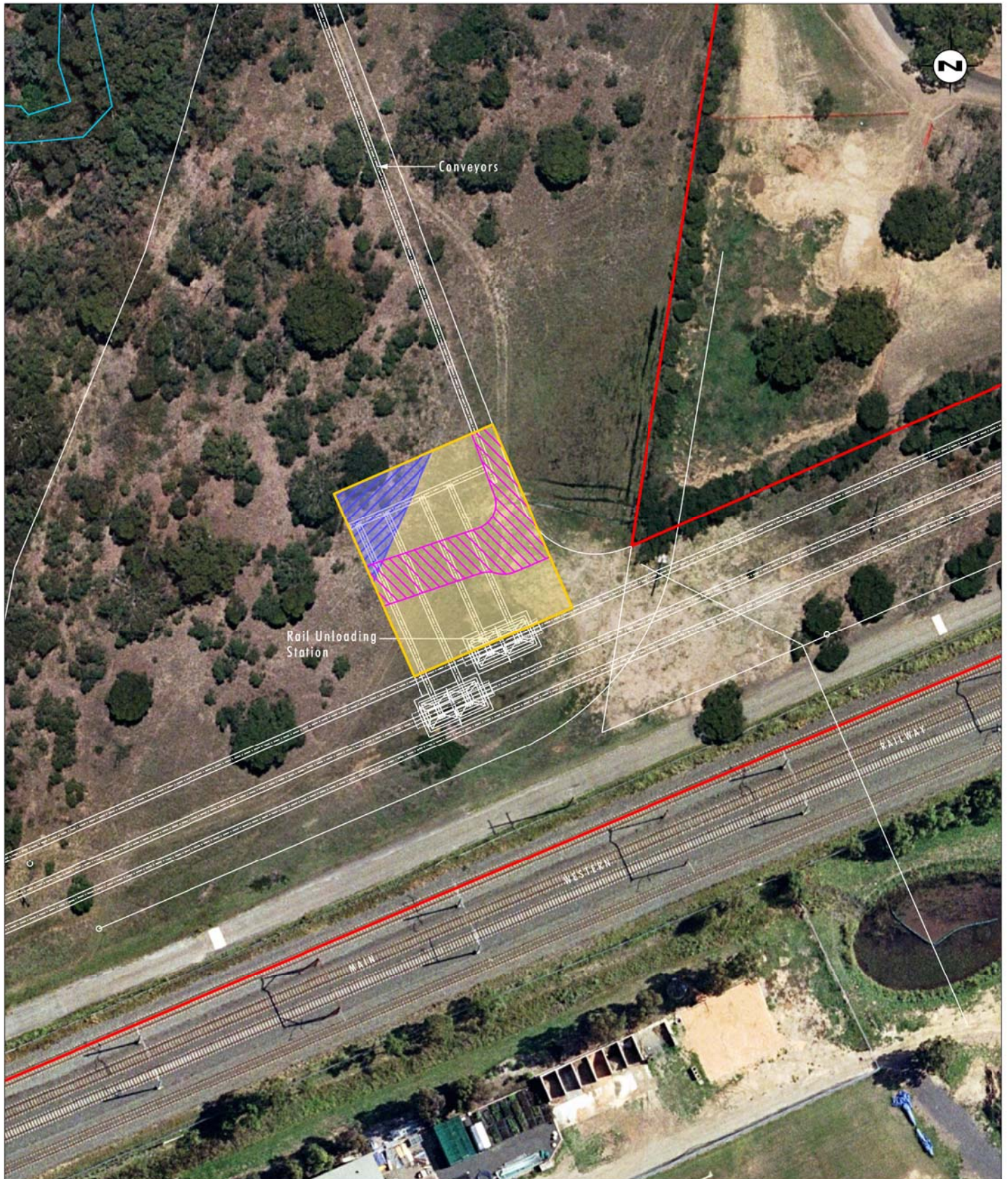
According to Biosis (2005), CPW was recorded across the southern section of the RDC site with scattered occurrences in the northern areas of the site. It was noted that the community has varying degrees of quality across the RDC site ranging from low to moderate depending on the level of disturbance within the area.

3.3 Fauna Surveys

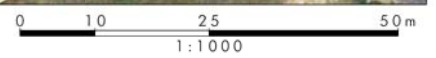
A total of 12 vertebrate fauna species were identified in the study area during the field surveys undertaken by Umwelt including 11 bird species and one amphibian species. No mammal species were recorded. The majority of the fauna species recorded were opportunistic observations of birds. A list of fauna species recorded in the study area is provided in **Appendix B**.

3.3.1 Birds

Eleven bird species were recorded during the field surveys. The most frequently recorded species were common urban birds including noisy miner (*Manorina melanocephala*), Australian magpie (*Gymnorhina tibicen*), Australian white ibis (*Threskiornis molucca*) and crested pigeon (*Ocyphaps lophotes*). Woodland parrot species such as rainbow lorikeet



Source: Holcim and Google Earth 2010



Legend

- Approved RDC Site Boundary
- Study Area
- Indicative Modified RDC Layout
- Cumberland Plain Woodland
- Cleared/Disturbed Area
- Critically Endangered Ecological Community (CEEC)
- Approved Disturbance Area

FIGURE 3.2

Vegetation Mapping of Study Area

(*Trichoglossus haematodus*) and galah (*Cacatua roseicapilla*) were observed near the Nurragingy Reserve. One introduced species, common myna (*Acridotheres tristis*), was recorded in the study area.

No threatened bird species were recorded during the field surveys. It is not expected that any threatened bird species listed under the TSC Act or EPBC Act would be impacted by the modified RDC.

3.3.2 Herpetofauna

One amphibian species, common eastern froglet (*Crinia signifera*), was recorded during the field surveys. The results of the DECCW and DEWHA database searches identified seven threatened amphibian species that have the potential to occur or have been previously recorded within 10 kilometres of the study area. Suitable habitat for these species does not occur within the study area and it is not expected that these species would be impacted by the modified RDC.

No reptile species were recorded during the field surveys, however the results of the DECCW and DEWHA database searches identified two threatened reptile species that have the potential to occur or have been previously recorded within 10 kilometres of the study area. Suitable habitat for these species does not occur within the study area and it is not expected that these species would be impacted by the modified RDC.

3.4 Fauna Habitat

Fauna roosting and foraging habitat within this study area was minimal due to the majority of the study area being dominated by disturbed grassland and cleared areas. Long grasses associated with the disturbed grassland may provide reptile habitat. Marginal bird foraging habitat occurs within the regenerating eucalypt woodland community in a small section of the study area. Small areas of wet habitat would provide temporary habitat for common amphibian species.

No habitat trees or hollow-bearing trees were recorded within the study area.

3.5 Threatened Species, Endangered Populations and Threatened Ecological Communities

3.5.1 Threatened Flora Species

No threatened flora species were recorded within the study area during the field surveys, however 26 species were identified as having the potential to occur within a 10 kilometre radius of the study area from reviews of the DEWHA Protected Matters Database and the DECCW Atlas of NSW Wildlife (see **Appendix C**). Biosis (2005) recorded *Grevillea juniperina* subsp. *juniperina* within the Cumberland Plain Woodland community which occurs within the study area.

3.5.2 Threatened Ecological Communities

One threatened ecological community, Cumberland Plain Woodland listed under the TSC Act and EPBC Act as a CEEC, was recorded within the study area during the field survey and identified during the literature review as having been recorded on site previously (see **Appendix C**).

3.5.3 Threatened Fauna Species

No threatened fauna species were identified in the study area however 35 threatened fauna species were identified as having the potential to occur within a 10 kilometre radius of the study area from reviews of the DEWHA Protected Matters Database and the DECCW Atlas of NSW Wildlife (see **Appendix C**). Biosis (2005) recorded the Cumberland land snail (*Meridolum corneovirens*) within the Cumberland Plain Woodland community which occurs within the study area.

3.5.4 Endangered Populations

One endangered flora population, *Marsdenia viridiflora* R. Br. subsp. *viridiflora* (in the LGAs of Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith), was identified as having the potential to occur within 10 kilometres of the study area from reviews of the DEWHA Protected Matters Database and the DECCW Atlas of NSW Wildlife (see **Appendix C**). It is considered unlikely that this population occurs within the study area.

There were no endangered fauna populations considered likely to occur within the study area.

3.5.5 Critical Habitat

There are four declared critical habitats in NSW and two recommendations for critical habitat status in NSW. The declared critical habitats are the:

- Goulds Petrel Critical habitat;
- the little penguin population in Sydney's North Harbour;
- Mitchells Rainforest Snail in Stotts Island Nature Reserve; and
- the Wollemi Pine.

Areas that have been recommended for critical habitat are the:

- *Bomaderry zieria* within the Bomaderry bushland; and
- Eastern Suburbs Banksia Scrub Endangered Ecological Community.

None of these identified areas of critical habitat are located within the boundaries of the study area. Accordingly, there is no need to assess critical habitat impacts.

3.6 EPBC Act Listed Migratory Species

Searches of the DEWHA Protected Matters Database were undertaken within a 10 kilometre radius of the study area in order to determine the likelihood of any EPBC Act listed migratory species to be potentially impacted by the proposed modifications. This search indicated that 13 species have the potential to occur. These species and the likelihood of their occurrence within the study area are listed in **Table 3.1**.

Table 3.1 - Migratory Species with the Potential to Occur Within a 10 Kilometre Radius of the Study Area

Species	Status	Potential to Occur in Study Area
White-bellied Sea-Eagle <i>Haliaeetus leucogaster</i>	Migratory Marine	Low
White-throated Needletail <i>Hirundapus caudacutus</i>	Migratory Marine	Low
Rainbow Bee-eater <i>Merops ornatus</i>	Migratory Marine	Low
Black-faced Monarch <i>Monarcha melanopsis</i>	Migratory Marine	Low
Satin Flycatcher <i>Myiagra cyanoleuca</i>	Migratory Marine	Moderate
Rufous Fantail <i>Rhipidura rufifrons</i>	Migratory Marine	Low
Regent Honeyeater <i>Anthochaera phrygia</i>	Migratory	Low
Great Egret, White Egret <i>Ardea alba</i>	Migratory Marine	Low
Cattle Egret <i>Ardea ibis</i>	Migratory Marine	Low
Latham's Snipe <i>Gallinago hardwickii</i>	Migratory Marine	Moderate
Painted Snipe <i>Rostratula benghalensis s. lat.</i>	Migratory Marine	Low
Fork-tailed Swift <i>Apus pacificus</i>	Migratory Marine	Low
Swift Parrot <i>Lathamus discolor</i>	Migratory Marine	Low

Of the 13 migratory species listed above, none were recorded in the study area. However, there is the potential for the habitat to support four of these species, the details of which are further discussed in **Section 4.4**.

4.0 Impact Assessment

The proposed RDC modifications would disturb an additional 0.09 hectares of vegetation within the study area. The study area is currently subject to impacts resulting from habitat fragmentation and edge effects from nearby access tracks, North Parade and the Main Western Railway Line. It supports minimal habitat for local fauna and native fauna due to the general disturbance, small size of the area and the invasion of exotic species.

4.1 Impacts on Flora

The native species recorded within the study area are widespread and commonly occurring within the region and therefore, considering the small area of impact, any disturbance to these will not be significant.

The majority of the study area (with exception of the Cumberland Plain Woodland) is not considered to have significant conservation value as a result of the following factors:

- most of the flora species recorded are widespread in the region;
- the majority of dominant flora species recorded within the study area were exotic; and
- no species were identified within the area that had distributions restricted to the area.

There is a potential for weeds and introduced flora to spread throughout the disturbed areas and into the adjacent Cumberland Plain Woodland community. Weed species thrive within disturbed areas and can be easily distributed by seeds caught on vehicles, plant, equipment or people. However, the potential for weed spread is considered to be low as, in this case, the area that will be disturbed will mostly be subject to construction of the infrastructure and minimal ongoing vehicle movements.

Consequently, the proposed modifications are not expected to cause significant detriment to the flora species of the region.

4.1.1 Impacts on Threatened Flora Species

No threatened flora species were recorded within the study area during the field surveys, however 26 species were identified as having the potential to occur within a 10 kilometre radius of the study area from reviews of the DEWHA Protected Matters Database and the DECCW Atlas of NSW Wildlife. **Appendix C** displays the species that occur within the local area and assesses the potential for these species to occur in the study area and the potential for these species to be subjected to significant impacts.

Biosis (2005) recorded *Grevillea juniperina* subsp. *juniperina* within Cumberland Plain Woodland, a community which occurs within the study area. Although the species was not recorded, despite thorough surveys, it is likely that suitable habitat for the species occurs within the study area and the species could potentially be present in a soil seedbank. Because of this possibility, an assessment of significance is provided in **Appendix D** for *Grevillea juniperina* subsp. *juniperina*. The assessment concludes that the proposed modifications would not have a significant impact on the species.

4.1.2 Impacts on Endangered Flora Populations

One endangered population, *Marsdenia viridiflora* R. Br. subsp. *viridiflora* (in the LGAs of Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith), was identified as having the potential to occur within 10 kilometres of the study area from reviews of the DEWHA Protected Matters Database and the DECCW Atlas of NSW Wildlife. It is considered unlikely that this population occurs within the study area. **Appendix C** assesses the potential for this population to occur in the study area and the potential for it to be subjected to significant impacts. The assessment concludes that the population does not occur within the study area and therefore the proposed modifications would not have an impact on the species.

There were no other endangered flora populations considered likely to occur within the study area and the proposed modifications are not expected to impact upon endangered flora populations.

4.1.3 Impacts on Threatened Ecological Communities

One TEC, Cumberland Plain Woodland, was identified within the study area and is listed under both the TSC Act and EPBC Act as a critically endangered ecological community (CEEC).

In December 2009 the Cumberland Plain Woodland Endangered Ecological Community was relisted as a Critically Endangered Ecological Community (CEEC) at both State and Federal Levels under Part 2 of Schedule 1A of the TSC Act and under the EPBC Act.

An assessment of significance under the TSC Act and EPBC Act has been undertaken for this community and it concluded that the removal of approximately 0.02 hectares of regenerating Cumberland Plain Woodland is unlikely to have a significant impact on the community (refer to **Appendices 4 and 5**).

Appendix C identifies other TECs that occur within the local area and assesses the potential for these to occur in the study area. **Appendix C** also assesses the potential for these TECs to be subjected to significant impacts. No other TECs have any potential of occurring in the study area or being subjected to a significant impact.

4.2 Impacts on Fauna and Habitats

4.2.1 Impacts on Threatened Fauna Species

No threatened fauna species were identified in the study area however 35 threatened fauna species were identified as having the potential to occur within a 10 kilometre radius of the study area from reviews of the DEWHA Protected Matters Database and the DECCW Atlas of NSW Wildlife. **Appendix C** displays the species that occur within the local area and assesses the potential for these species to occur in the study area and the potential for these species to be subjected to significant impacts.

Biosis (2005) recorded Cumberland land snail (*Meridolum corneovirens*) within the Cumberland Plain Woodland community within the RDC site, which also occurs within the study area. It is considered that suitable habitat for this species occurs within the study area. An assessment of significance is provided in **Appendix D** for Cumberland land snail. This assessment concludes that the proposed RDC modifications are unlikely to have a significant impact on the species.

4.2.2 Impacts on Fauna Habitats

The study area is currently subject to impacts resulting from habitat fragmentation and edge effects from nearby access tracks, North Parade and the Main Western Railway Line. The study area supports minimal foraging habitat for local fauna due to the general disturbance and small size of the area and the lack of significant habitat resources. Fauna species recorded during the field surveys are typically widespread and common in the region. Additionally, the study area is surrounded by similar or better quality habitat and it is expected that foraging or roosting fauna in this area would be utilising the wider surrounds. The majority of fauna will not be reliant on the study area for survival. Therefore the RDC modifications would not have a significant impact on fauna habitats within the study area,

4.2.3 Impacts on Endangered Fauna Populations

As there were no endangered fauna populations identified within the study area and none identified as having the potential to occur, the proposed RDC modifications will have no impact upon endangered fauna populations.

4.3 Environment Protection and Biodiversity Conservation Act 1999

If a development application could have a significant impact on any EPBC Act matters of national environmental significance (NES), then it must be referred to the Commonwealth Minister for the Environment, Water, Heritage and the Arts for approval before works can proceed.

The original RDC project was referred in March 2005 to the Commonwealth Minister for the Environment, Water, Heritage and the Arts for assessment under the EPBC Act. The RDC project was referred due to the potential impacts associated with clearing 1.4 hectares of CPW. This referral resulted in the RDC being deemed not to be a controlled action.

Table 4.1 contains the EPBC Act matters of NES identified from the search of the DEWHA Protected Matters Database, along with the potential for each to occur within the study area, and outlines the likelihood of the proposed RDC modifications significantly impacting on these matters. **Appendix C** displays the species that occur within the local area, assesses the potential for these species to occur in the study area and outlines the potential for these species to be significantly impacted. Assessments of threatened species and migratory species listed under the EPBC Act with the potential to occur in the study area are presented in **Appendix E**. The assessment concluded that the proposed RDC modifications would not have a significant impact on EPBC Act matters of NES.

Table 4.1 - EPBC Act Matters of National Environmental Significance

Matter of National Environmental Significance	Potential to Occur Within the Study Area	Potential for a significant Impact to Occur
Listed threatened species and communities.	Threatened Fauna Species Birds <ul style="list-style-type: none"> • regent honeyeater (<i>Anthochaera phrygia</i>); • swift parrot (<i>Lathamus discolor</i>); and • Australian painted snipe (<i>Rostratula australis</i>). 	None of these EPBC Act listed threatened species are likely to be significantly impacted by the proposed RDC modifications.

Matter of National Environmental Significance	Potential to Occur Within the Study Area	Potential for a significant Impact to Occur
	<p>Frogs</p> <ul style="list-style-type: none"> • giant burrowing frog (<i>Heleioporus australiacus</i>); • green and golden bell frog (<i>Litoria aurea</i>); and • growling grass frog (<i>Litoria raniformis</i>); <p>Mammals</p> <ul style="list-style-type: none"> • large-eared pied bat (<i>Chalinolobus dwyeri</i>); • spotted-tailed quoll (<i>Dasyurus maculatus maculatus</i> (SE mainland population)); • brush-tailed rock-wallaby (<i>Petrogale penicillata</i>); • long-nosed potoroo (SE mainland) (<i>Potorous tridactylus tridactylus</i>); and • grey-headed flying-fox (<i>Pteropus poliocephalus</i>). <p>Potentially occurring Flora Species (none were recorded):</p> <ul style="list-style-type: none"> • downy wattle (<i>Acacia pubescens</i>); • <i>Dillwynia tenuifolia</i>; • small-flower grevillea (<i>Grevillea parviflora</i> subsp. <i>parviflora</i>); • <i>Persoonia nutans</i>; • <i>Pimelea curviflora</i> var. <i>curviflora</i>; • <i>Pimelea spicata</i>; • rufous pomaderris (<i>Pomaderris brunnea</i>); and • <i>Pultenaea parviflora</i>; 	
Listed Migratory species.	Thirteen migratory bird species were identified as having the potential to occur in the study area (see Table 3-1). None were recorded during the field surveys.	<p>None of these EPBC Act listed migratory species are likely to be significantly impacted by the proposed modifications, however there is moderate potential for the following species to occur:</p> <ul style="list-style-type: none"> • satin flycatcher (<i>Myiagra cyanoleuca</i>) • Latham's snipe (<i>Gallinago hardwickii</i>) <p>An assessment of the significance of the impacts of the proposed RDC modifications on potentially occurring migratory species is provided in Appendix E.</p>

4.4 Key Threatening Processes

Key Threatening Processes (KTPs) are processes that may threaten the abundance, survival or evolutionary development of a native species or ecological community. Lists of KTPs are listed under both the EPBC Act and the TSC Act, and those that are considered to be relevant to the proposed extension are listed below.

- **Clearing of native vegetation** (TSC Act and EPBC Act)

The native vegetation cleared for the purposes of this project will only be from a relatively small area (0.09 ha) and will not result in a loss of biodiversity for the local area.

- **Removal of dead wood and dead trees** (TSC Act)

Any dead wood will be relocated to a new location in the study area so that habitat will be retained.

- **Invasion of native plant communities by exotic perennial grasses** (TSC Act)

The disturbed/cleared grassland section of the study area is dominated by exotic grasses. Mitigation measures have been recommended to minimise the possible spread of these exotic species into the surrounding woodland habitats.

It is not expected that the proposed RDC modifications would result in the increase of these key threatening processes.

4.5 Summary of Impacts

It is expected that all vegetation within the additional disturbance area will be cleared in order to allow for the construction of the RDC's modified rail unloader. The proposed modification is likely to disturb 0.07 hectares of cleared/disturbed grassland and approximately 0.02 hectares of Cumberland Plain Woodland CEEC and has the potential to impact a very small area of potential habitat for the threatened Cumberland land snail and *Grevillea juniperina* subsp. *juniperina*.

As a result of the assessment, it is not expected that the modified RDC will result in significant loss of native biodiversity, including flora and fauna species, threatened species, endangered populations and TECs. Due to the relatively small area of disturbance associated with the proposed modifications and the implementation of mitigation measures outlined in **Section 5.0**, the proposed modifications will not have a significant impact on any recorded or potentially occurring threatened species, endangered populations or TECs.

5.0 Impact Mitigation Measures

In order to reduce the impacts of the proposed RDC modifications on the flora and fauna within the study area, it is recommended that:

- Prior to any clearing operations being undertaken, the limits of clearing should be clearly marked;
- Native logs and bark removed from woodland habitats would be retained in areas of Cumberland Plain Woodland, during regeneration and revegetation to provide sheltering habitat for the Cumberland land snail;
- Sedimentation and erosion control measures would be put in place and maintained during construction to prevent sediment from construction entering the surrounding woodland;
- Any vegetation rehabilitation post-construction should use local native plant species and incorporate a weed control program to prevent the spread of weed species into the surrounding woodland landscape;
- Condition 2.24 of the Project Approval requires Holcim to prepare and implement a Vegetation Management Plan (VMP) prior to the commencement of construction activities. The VMP will be prepared in consultation with DECCW and will include details of weed management and replanting / revegetation to be undertaken within the RDC site. The potential ecological impacts associated with impacting on an additional 0.09 hectares of the RDC site (0.02 hectares of which is CPW) will be addressed and mitigated within the VMP; and
- Condition 5.5(c) of the Project Approval requires the preparation and implementation of a Soil and Water Management Plan (SWMP) as part of the Operation Environmental Management Plan (OEMP) for the RDC. The SWMP will detail the erosion and sediment control measures to be implemented within the active operational stockpile and traffic areas to prevent quarry products from leaving the area defined by the dirty water management system.

5.1 Offsetting Impacts

It is expected that the proposed modifications to the RDC layout will result in the loss of approximately 0.02 hectares (200 m²) of regenerating Cumberland Plain Woodland CEEC. The community was assessed as being in relatively poor condition, with characteristic understorey species occurring together with exotic groundcovers consistent with the adjacent disturbed grasslands. There is a sparse regenerating tree cover comprising of forest red gum which are up to 2 metres in height.

The approved RDC layout will remove approximately 1.4 hectares of this community. The Project Approval for the RDC includes a requirement for a compensatory habitat package to be established in consultation with DECCW. The package is to include one or more of the following compensatory measures:

- a) provision of no less than 3 hectares of compensatory habitat comprising of Cumberland Plain Woodland, whether new or restored, for every 1 hectare of "Core Habitat" or "Support to Core" habitat impacted; or

- b) equivalent financial contribution to a rehabilitation project in the Blacktown local government area; or
- c) any other form of compensatory habitat agreed by the DEC.

Holcim is committed to providing appropriate compensatory habitat measures for the Cumberland Plain Woodland CEEC in line with that required in the 2006 Project Approval and will liaise with DECCW in this regard prior to commencing construction on the site. The compensatory habitat package will address the small area of impact on CPW resulting from the proposed modified RDC.

6.0 Conclusion

The study area supports potential habitat for one threatened flora species, *Grevillea juniperina* subsp. *juniperina* (Vulnerable under the TSC Act), one threatened fauna species Cumberland land snail (*Meridolum corneovirens*) (Endangered under the TSC Act) and one threatened ecological community, Cumberland Plain Woodland (Critically Endangered under the TSC Act and EPBC Act). The impact of disturbance to approximately 0.02 hectares of potential habitat for these species and community is quite low, given the local distribution of these species, the small area to be impacted, and the proximity of the study area to habitat of a greater quality that could potentially support even greater quantities of the species. Given these details it has been determined that the proposed RDC modifications will not potentially remove numbers of these species or remove an area of this community that they will become locally extinct.

A detailed assessment of significance was undertaken for all listed flora and fauna species and communities with potential to be impacted by the proposed RDC modifications. The assessment concluded that the proposed modifications will not result in a significant impact on any threatened species, endangered populations or TECs.

The implementation of impact mitigation measures outlined in **Section 5.0** of this document will contribute to the reduction of impacts on the ecological values of the study area and the areas surrounding the study area.

7.0 References

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APPENDIX A

Flora Species List

Appendix A – Flora Species List

The following flora list was developed from field surveys of the proposed RDC modifications to the approved Holcim Regional Distribution Centre Rooty Hill, NSW, detailed in **Section 1** of the main report. It includes all species of vascular plants observed on the study area during fieldwork. Not all species are readily detected at any one time of the year; therefore, the list will not necessarily include all plant species likely to occur in the study area. Many species flower only during restricted periods of the year, and some flower only once in several years. In the absence of flowering material, many of these species cannot be identified, or even detected.

The following abbreviations or symbols are used in the list:

- asterisk (*) denotes species not indigenous to the study area;
- subsp. denotes subspecies;

All vascular plants recorded or collected were identified using keys and nomenclature in Harden (1992, 1993, 2000 & 2002) and Wheeler et al. (2002). Where known, changes to nomenclature and classification have been incorporated into the results, as derived from *PlantNET* (Botanic Gardens Trust 2010), the on-line plant name database maintained by the National Herbarium of New South Wales.

Common names used follow Harden (1992, 1993, 2000 & 2002) where available, and draw on other sources such as local names where these references do not provide a common name.

Family/Subfamily	Scientific Name	Common Name
Filicopsida (Ferns)		
Adiantaceae	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	Poison Rock Fern
Magnoliopsida (Flowering Plants) – Liliidae (Monocots)		
Juncaceae	* <i>Juncus acutus</i>	Sharp Rush
Poaceae	<i>Aristida vagans</i>	Threeawn Speargrass
Poaceae	* <i>Chloris gayana</i>	Rhodes Grass
Poaceae	<i>Cynodon dactylon</i>	Common Couch
Poaceae	* <i>Eragrostis curvula</i>	African Lovegrass
Poaceae	* <i>Paspalum dilatatum</i>	Paspalum
Poaceae	* <i>Pennisetum clandestinum</i>	Kikuyu Grass
Poaceae	<i>Sporobolus creber</i>	Slender Rat's Tail Grass
Poaceae	<i>Themeda australis</i>	Kangaroo Grass
Poaceae	* <i>Setaria parviflora</i>	Pigeon Grass
Magnoliopsida (Flowering Plants) – Magnoliidae (Dicots)		
Apiaceae	* <i>Foeniculum vulgare</i>	Fennel
Apiaceae	<i>Centella asiatica</i>	Pennywort
Asteraceae	* <i>Bidens pilosa</i>	Cobber's Pegs
Asteraceae	* <i>Cirsium vulgare</i>	Spear Thistle
Asteraceae	* <i>Conyza bonariensis</i>	Flaxleaf Fleabane
Asteraceae	* <i>Hypochaeris radicata</i>	Catsear
Asteraceae	* <i>Senecio madagascariensis</i>	Fireweed
Fabaceae	<i>Acacia parramattensis</i>	Parramatta Wattle
Fabaceae	* <i>Trifolium repens</i>	White Clover
Myrtaceae	<i>Eucalyptus tereticornis</i>	Forest Red Gum
Pittosporaceae	<i>Bursaria spinosa</i>	Blackthorn
Plantaginaceae	* <i>Plantago lanceolata</i>	Lamb's Tongues
Verbenaceae	* <i>Verbena bonariensis</i>	Purpletop

APPENDIX B

Fauna Species List

Appendix B – Fauna Species List

The following fauna list was developed from field surveys of the proposed RDC modifications to the approved Holcim Regional Distribution Centre Rooty Hill, NSW, detailed in **Section 1** of the main report.

The following abbreviations or symbols are used in the list:

- asterisk (*) denotes species not indigenous to the study area.

Birds recorded were identified using descriptions in Pizzey and Knight (2007) and the scientific and common name nomenclature and taxonomy adopted by Birds Australia.

Amphibians recorded were identified using keys and descriptions in Cogger (2000), Robinson (1998), and the scientific and common name nomenclature of Cogger (2000).

Scientific Name	Common Name	Conservation Status	
		TSC Act	EPBC Act
BIRDS			
Threskiornithidae			
<i>Threskiornis molucca</i>	Australian White Ibis	-	-
Artamidae			
<i>Gymnorhina tibicen</i>	Australian Magpie	-	-
Cacatuidae			
<i>Cacatua roseicapilla</i>	Galah	-	-
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	-	-
Psittacidae			
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	-	-
Anatidae			
<i>Chenonetta jubata</i>	Australian Wood Duck	-	-
Sturnidae			
* <i>Acridotheres tristis</i>	Common Myna	-	-
Columbidae			
<i>Ocyphaps lophotes</i>	Crested Pigeon	-	-
Meliphagidae			
<i>Manorina melanocephala</i>	Noisy Miner	-	-
Hirundinidae			
<i>Hirundo neoxena</i>	Welcome Swallow	-	-
Corvidae			
<i>Corvus coronoides</i>	Australian Raven	-	-
AMPHIBIANS			
Myobatrachidae			
<i>Crinia signifera</i>	Common Eastern Froglet	-	-

APPENDIX C

Threatened Species, Endangered Populations, TECs, and Migratory Species and their Potential to Occur within the Study Area

Appendix C – Threatened Species, Endangered Populations, TECs and Migratory Species and their Potential to occur within the Study Area

The following tables identified the threatened flora and fauna species, endangered populations, threatened ecological communities (TECs) and migratory species that have a potential to occur within a 10 kilometre radius of the Study Area. This information was obtained from searches undertaken of the DECCW Atlas of NSW Wildlife (2010) and the Commonwealth DEWHA Protected Matters database (2010).

For each species, population or community identified in these searches; the status, specific habitat requirements, distribution, source of information, potential for occurrence in the study area and the requirement for an 'assessment of significance' is stated.

Table 1 - Threatened Flora Species Recorded or with Potential to Occur within in the Study Area

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
Bynoe's wattle (<i>Acacia bynoeana</i>)	E (TSC) V (EPBC) 3VC (ROTAP)	Occurs in heath or dry sclerophyll forest on sandy soils. Often prefers open, sometimes slightly disturbed sites such as track margins, edges of roadside, spoil mounds and in recently burnt patches.	This species has been found in central eastern NSW, from the lower Hunter district south to the Southern Highlands and west to the Blue Mountains.	Castlereagh NR Bargo SCA		✓			There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
downy wattle (<i>Acacia pubescens</i>)	V (TSC) 3VCa (ROTAP)	Occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravelly soils, often with ironstone. Occurs in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh	Concentrated around the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon.	Prospect NR		✓			The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		Ironbark Forest, Shale-Gravel Transition Forest and Cumberland Plain Woodland.								
white-flowered wax plant (<i>Cynanchum elegans</i>)	E (TSC) E (EPBC) 3ECi (ROTAP)	This species occurs on soils with varying levels of fertility and lithology, usually on steeper slopes. It varies in altitude between approximately sea level and 600 metres above. It is typically found in habitats that have hot and humid summers with high rainfall and cool winters with low rainfall.	The distribution of this plant is restricted from Wollongong in NSW through to the south-east of Queensland and as far west as Mt Dangar. This species is most common in the Kempsey region.	This species is not known to occur in any reserves in the region.		✓			The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No
<i>Darwinia biflora</i>	V (TSC) V (EPBC) 2VCa (ROTAP)	This species occurs on intergrade habitats between weathered shale-capped ridges and Hawkesbury sandstone. It is usually found in	This species is located in the Baulkham Hills, Hornsby, Ku-ring-gai and Ryde LGAs. All known locations are located in the north and north-	This species is not known to occur in any reserves in the region	✓				The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		either woodland, open forest or scrub-heath and is typically associated with <i>Eucalyptus haemastoma</i> , <i>Corymbia gummifera</i> and/or <i>Eucalyptus squamosa</i> .	western suburbs of Sydney.							
<i>Dillwynia tenuifolia</i>	V (TSC) V (EPBC) 2RCa (ROTAP)	This species is typically associated with dry shrubby/heath, in particular in areas transitioning to Castlereagh Scribbly Gum Woodland (when found west of Sydney), or in disturbed escarpment woodlands (when found in Yengo NP).	This species is mostly found in the Cumberland Plains between Deans Park, Penrith east and Windsor. However, it can also be found in the Bulga Mountains (in Yengo NP), the lower Blue Mountains (Kurrajong Heights and Woodford), Baulkham Hills Shire, Liverpool LGA and Penrith LGA.	Castlereagh NR Agnes Banks NR Windsor Downs NR		✓			The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
<i>Epacris purpurascens</i> var. <i>purpurascens</i>	V (TSC)	Found in a range of habitat types, most of which have a strong shale soil influence.	Recorded from Gosford in the north, to Narrabeen in the east, Silverdale in the west and Avon Dam vicinity in the South.	This species is not known to occur in any reserves in the region.	✓				The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No
narrow-leaved black-peppermint (<i>Eucalyptus nicholii</i>)	V (TSC) V (EPBC) 3V (ROTAP)	The narrow-leaved black peppermint is associated with nutrient-poor, granite derived shallow soils within dry grassy woodlands.	This species is confined to the New England Tablelands. In the New England Tablelands it is restricted between Nundle and just north of Tenterfield. It is also commonly planted along street lines and in gardens and has been recorded near Mount Arthur.	This species is not known to occur in any reserves in the region.	✓				The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
<i>Eucalyptus</i> sp. Cattai	E (TSC)	This species typically grows on laterised clays which overlay sandstone, usually in scrub, heath or low woodlands. This eucalypt usually grows on flat ridge-tops in the landscape.	This species is distributed in north-west Sydney between Colo Heights and Castle Hill. Records have also been recorded in the past in central Sydney, although none have been recently confirmed.	This species is not known to occur in any reserves in the region.	✓				The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No
juniper-leaved grevillea (<i>Grevillea juniperina</i> subsp <i>juniperina</i>)	V (TSC)	Grows on reddish clay to sandy soils derived from Wianamatta Shale and Tertiary alluvium, typically containing lateritic gravels. Recorded from Cumberland Plain Woodland, Castlereagh Ironbark Woodland, Castlereagh Scribbly Gum Woodland and Shale-Gravel Transition Forest.	Endemic to the Western Sydney region centred between Bankstown, Erskine Park, Londonderry and Windsor with outlier populations at Kemps Creek and Pitt Town.	Castlereagh NR	✓			✓	The species was recorded within the locality during a previous survey (Biosis 2005) within the same habitat that occurs within the study area.	Yes

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
small-flower grevillea <i>(Grevillea parviflora subsp. parviflora)</i>	V (TSC) V (EPBC)	Grows in sandy or light clay soils usually over thin shales. Occurs in a range of vegetation types from heath and shrubby woodland to open forest and a range of altitudes from flat, low-lying areas to upper slopes and ridge crests. Often occurs in open, slightly disturbed sites such as along tracks.	Sporadically distributed throughout the Sydney Basin with the main occurrence centred around Picton, Appin and Bargo (and possibly further south to the Moss Vale area). Separate populations are also known further north from Putty to Wyong and Lake Macquarie on the Central Coast and Cessnock and Kurri Kurri in the Lower Hunter.		✓	✓			The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
<i>Hibbertia superans</i>	E (TSC)	This species is known from both shrublands and heathlands, usually is disturbed areas usually on sandstone ridge-tops. These areas are typically at lithology transitions between shale and sandstone.	This species is mostly distributed in the northern outskirts of Sydney from Baulkham Hills to South Maroota, with the exception of a small outlying population at Mount Boss (near Kempsey).	This species is not known to occur in any reserves in the region.	✓				The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No
<i>Hypsela sessiliflora</i>	E (TSC)	Species is found growing in damp places on the Cumberland Plain in freshwater wetlands, grasslands/alluvial woodlands as well as in the alluvial Cumberland Plain Woodland ecotone.	Species is currently known to occur on a Private property at Erskine Park in Penrith's LGA.	This species is not known to occur in any reserves in the region.	✓				The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
<i>Leucopogon fletcheri</i> subsp. <i>fletcheri</i>	E (TSC) 2RC (ROTAP)	Occurs in dry eucalypt woodland or in shrubland on clayey lateritic soils, generally on flat to gently sloping terrain along ridges and spurs. This threatened species flowers between August and September and fruits in October.	Restricted to north-western Sydney between St Albans in the north and Annangrove in the south, within the local government areas of Hawkesbury, Baulkham Hills and Blue Mountains.	This species is not known to occur in any reserves in the region.	✓				The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No
<i>Micromyrtus minutiflora</i>	V (EPBC) E (TSC)	Occurs in open forest on Tertiary Alluvium and consolidated river sediments and also grows in Castlereagh Scribbly Gum Woodland, Ironbark Forest, Shale-Gravel Transition Forest.	Distribution is restricted to the Western Sydney between Richmond and Penrith. The only known population to occur, consists of fewer than 50 individuals in the Castlereagh Nature Reserve.	Castlereagh NR	✓				The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
<i>Persoonia nutans</i>	E (TSC) E (EPBC)	Occurs on laterite, Hawkesbury Sandstone or in alluvial sand below 60 meters elevation. Occurs in Castlereagh Scribbly Gum Woodlands and Agnes Banks woodland.	Found in Western Sydney's Macquarie Fields & East Hills, particularly near the Nepean and Georges Rivers. Population is restricted to aeolian and alluvial sediments on the Cumberland Plain in Western Sydney, NSW.	Agnes Banks NR Castlereagh NR Windsor Downs NR	✓	✓			The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No
<i>Pimelea curviflora</i> var. <i>curviflora</i>	V (TSC) V (EPBC)	Occurs on shale/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Flowers October to May.	Confined to the coastal area of Sydney between northern Sydney in the south and Maroota in the north-west. Former range extended south to the Parramatta River and Port Jackson region including Five Dock, Bellevue Hill and Manly.	This species is not known to occur in any reserves in the region.	✓	✓			The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
spiked rice-flower <i>(Pimelea spicata)</i>	E (EPBC) V (TSC)	Grows in open woodlands and grasslands, in undulating to hilly areas on Wiannamatta shales and well-structured clay soils.	Found in relatively scattered distributions in the Cumberland Plain (western Sydney) and the Illawarra Region near Wollongong, NSW. In western Sydney, the distribution extends from Camden in the south to Maraylya in the north and from Horsley Park east to Bankstown.	Prospect NR	✓	✓			The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No
brown pomaderris <i>(Pomaderris brunnea)</i>	V (TSC) V (EPBC) 2VC- (ROTAP)	Grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines.	Found in a very limited area around the Nepean and Hawkesbury Rivers, including the Bargo area. It also occurs at Walcha on the New England Tablelands and in far eastern Gippsland in Victoria.	This species is not known to occur in any reserves in the region.		✓			The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
Sydney bush pea <i>(Pultenaea parviflora)</i>	E (TSC) 2E (ROTAP) V (EPBC)	May be locally abundant, particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale-Gravel Transition Forest on tertiary alluvium or laterised clays. <i>Eucalyptus fibrosa</i> is usually the dominant canopy species. Flowering may occur between August and November depending on environmental conditions.	Endemic to the Cumberland Plain. Core distribution is from Windsor to Penrith and east to Dean Park. Outlier populations are recorded from Kemps Creek and Wilberforce.	Agnes Banks NR Castlereagh NR Windsor Downs NR	✓	✓			The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No
magenta lilly pilly <i>(Syzygium paniculatum)</i>	E (TSC) V (EPBC) 3VCi (ROTAP)	This species grows in subtropical and littoral rainforests on sandy soils or stabilised dunes near the sea.	Occurs in widely separated localities between Bulahdelah and Jervis Bay.	This species is not known to occur in any reserves in the region	✓				The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Table 2 - Threatened Populations Recorded or with Potential to Occur within in the Study Area

Community	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> (in the LGAs of Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith)	EP (TSC)	Populations grow in vine thickets in open shale woodlands. Currently widespread throughout sub-coastal southern Queensland but has been rarely recorded in NSW. It currently occurs in disjunct populations near Sydney.	Currently populations are found in disjunct areas in Prospect, Bankstown, Smithfield, Cabramatta Creek and St Marys. Was previously known to occur north from Razorback Range.	This population is not known to occur in any reserves in the region	✓				The Study Area does not provide suitable habitat for this species and it was not recorded. There is no potential for an impact on this species.	No

Table 3 - Threatened Ecological Communities Recorded or with Potential to Occur within in the Study Area

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
Cumberland Plain Woodland (TSC Act) and Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (EPBC Act)	CEEC (TSC) CEEC (EPBC)	This CEEC is found predominantly on clay soil, derived from Wianamatta Shale. A part of this CEEC is also associated with shale soils that have high concentrations of iron in gravel or is overlain by Tertiary Alluvium. The CEEC is also known to grow in Hawkesbury Sandstone, Aeolian deposits, Holocene Alluvium in well drained areas and soils derived from the Mittagong Formation as well.	The CEEC is restricted to the Sydney Basin Bioregion, the Cumberland sub region. Most occurrences of this CEEC have been identified between the Sydney Metro and Hawkesbury-Nepean Natural Resource Management Regions.	This CEEC is not known to occur in any reserves in the region		✓	✓		This CEEC was recorded within in the Study Area during the field surveys.	Yes

Table 4 - Threatened Fauna Species Recorded or with Potential to Occur within in the Study Area

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
Cumberland plain snail (<i>Meridolum corneovirens</i>)	E (TSC)	Primarily inhabits the open Cumberland Plain Woodland EEC. Typically found sheltering under litter such as leaves, bark or logs, or burrowing into loose soil that surrounds grass clumps or trees etc. Also has been found sheltering beneath rubbish and similar debris.	This species is only known to occur in the very small remnant bush land area on the Cumberland Plain west of Sydney. Found from Richmond and Windsor South to Picton and Liverpool West out to the Hawkesbury and Nepean Rivers.	Agnes Banks NR Bents Basin SCA Castlereagh NR Kemps Creek NR Mulgoa NR Prospect NR Windsor Downs NR	✓			✓	The species was recorded within the locality during a previous survey (Biosis 2005) within the same habitat that occurs within the study area.	Yes
giant burrowing frog (<i>Heleioporus australiacus</i>)	V (TSC)	Found in heath, woodland and open forest with sandy soils.	Occurs from the NSW Central Coast to eastern Victoria, but is most common on the Sydney sandstone. It has been found from the coast to the Great Dividing Range.	Gulguer NR Bargo SCA	✓	✓			There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
green and golden bell frog (<i>Litoria aurea</i>)	E (TSC) V (EPBC)	Occurs amongst emergent aquatic or riparian vegetation and amongst vegetation, fallen timber, including grassland, cropland and modified pastures. Breeds in still or slow flowing waterbodies with some vegetation such as <i>Typha</i> spp. and <i>Eleocharis</i> spp.	NSW North Coast near Brunswick Heads, southwards along the NSW Coast to Victoria where it extends into east Gippsland.	Prospect NR		✓			No suitable wetland habitat is present for this species. There is no potential for an impact on this species.	No
southern bell frog (<i>Litoria raniformis</i>)	E (TSC) V (EPBC)	Occurs amongst emergent vegetation in or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds and farm dams, although they can be found floating in warmer waters in temperatures between 18–25°C. Additionally they can be found in	Distribution includes the Southern Tablelands and the Central Tablelands as far north as Bathurst (in NSW it had disappeared from sites in the central and southern highlands), however it is currently widespread throughout the Murray and Murrumbidgee River valleys and their	This species is not known to occur in any reserves in the region		✓			There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		clays or well-watered sandy soils, open grassland, open forest, and ephemeral and permanent non-saline marshes and swamps, montane eucalypt forest, dry sclerophyll forest in coastal Victoria, steep-banked water edges (like ditches and drains) and gently graded edges containing fringing plants; and formerly, areas of high altitudes.	tributaries.							
broad-headed snake (<i>Hoplocephalus bungaroides</i>)	E (TSC) V (EPBC)	This species is nocturnal and shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. Moves from the sandstone rocks to shelters in hollows in large trees within 200	The broad-headed snake is largely confined to Triassic and Permian sandstones, including the Hawkesbury, Narrabeen and Shoalhaven groups, within the coast and ranges in an area within approximately	This species is not known to occur in any reserves in the region		✓			This species occurs in areas of sandstone habitat, which does not correspond to the geology of this site. There is no potential for this species to occur in the	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		meters of escarpments in summer.	250 km of Sydney.						Study Area.	
regent honeyeater (<i>Anthochaera phrygia</i>)	E (TSC) PD CE (TSC) E (EPBC) MIG (EPBC)	This species generally occurs in temperate eucalypt woodlands and open forests of south eastern Australia. It is commonly recorded from box-ironbark eucalypt associations, wet lowland coastal forests dominated by swamp mahogany, spotted gum and riverine casuarina woodlands. An apparent preference exists for the wettest, most fertile sites within these associations, such as creek flats, river valleys and foothills.	Once recorded between Adelaide and the central coast of Queensland, its range has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland.	Bents Basin SCA		✓			There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
black-necked stork (<i>Ephippiorhynchus asiaticus</i>)	E (TSC)	Inhabits permanent freshwater wetlands including margins of billabongs, swamps, shallow floodwaters, and adjacent grasslands and savannah woodlands. It can also be found occasionally on inter-tidal shorelines, mangrove margins and estuaries.	This species is widespread across coastal northern and eastern Australia, becoming uncommon further south into NSW, and rarely found south of Sydney.	Pitt Town NR	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
Australian painted snipe (<i>Rostratula australis</i>)	E (TSC) V (EPBC) MAR (EPBC) MIG (EPBC)	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	In NSW, this species has been recorded at the Paroo wetlands, Lake Cowal, Macquarie Marshes and Hexham Swamp. Most common in the Murray-Darling Basin.	This species is not known to occur in any reserves in the region.	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
square-tailed kite (<i>Lophoictinia isura</i>)	V (TSC)	Found in a wide range of timbered habitats with a preference for timbered	Scattered records of the species throughout the state indicate that the species is a regular	This species is not known to occur in any reserves in the region.	✓				There is no appropriate habitat present in the Study Area for this	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		<p>watercourses, although it has previously been sighted in stony areas of chenopods and grass ground-cover, with open acacia scrub and patches of low open eucalypt woodland.</p> <p>This species tends to pick prey from along the outer-foliage of trees and hunts passerines, particularly honeyeater nestlings, and canopy insects.</p> <p>This species generally nests in forks or large horizontal limbs located along or near water courses.</p>	resident in the north, north-east and along the major west-flowing river systems.						<p>species.</p> <p>There is no potential for an impact on this species.</p>	
gang-gang cockatoo (<i>Callocephalon fimbriatum</i>)	V (TSC)	In summer this species occurs in tall mountain forests and woodlands, particularly in	In NSW this species occurs from the south east coast to the Hunter region and inland to the Central Tablelands	Bargo SCA Thirlmere Lakes NP Pitt Town NR Gulguer NR	✓				There is no appropriate habitat present in the Study Area for this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		heavily timbered and mature wet sclerophyll forests. In winter this species moves to drier more open eucalypt forests and woodlands. It favours old growth trees for nesting and roosting.	and South-west Slopes.						There is no potential for an impact on this species.	
turquoise parrot (<i>Neophema pulchella</i>)	V (TSC)	This species lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. It nests in tree hollows, logs or posts, from August to December.	The turquoise parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range.	This species is not known to occur in any reserves in the region.	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
swift parrot (<i>Lathamus discolor</i>)	E (TSC) E (EPBC) MIG & MAR (EPBC)	This species often visits box-ironbark forests, feeding on nectar and lerps. In NSW, typical tree species in which it forages include mugga ironbark, grey box, swamp mahogany, spotted	In NSW this species has been recorded from the western slopes region along the inland slopes of the Great Dividing Range, as well as forests along the coastal plains from southern to northern	Castlereagh NR		✓			There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		gum, red bloodwood, narrow-leaved red ironbark, forest red gum and yellow box. This bird is a migratory species that breeds in Tasmania during the spring and summer, and migrates to the mainland during the cooler months of the year.	NSW. The project area is within the known distribution of this species.							
barking owl (<i>Ninox connivens</i>)	V (TSC)	Habitat for this species includes dry forests and woodlands, often in association with hydrological features such as rivers and swamps.	The barking owl is distributed sparsely throughout temperate and semi-arid areas of mainland Australia; however it is most abundant in the tropical north. Most records for this species occur west of the Great Dividing Range.	This species is not known to occur in any reserves in the region	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
powerful owl (<i>Ninox strenua</i>)	V (TSC)	The powerful owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. It generally requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation.	The powerful owl occurs in eastern Australia, mostly on the coastal side of the Great Dividing Range, from south western Victoria to Bowen in Queensland.	Gulguer NR Bargo SCA Bents Basin SCA	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
masked owl (<i>Tyto novaehollandiae</i>)	V (TSC)	This species is generally recorded from open forest habitat with sparse mid-storey but patches of dense, low ground cover. It is also recorded	The masked owl occurs sparsely throughout the continent and nearby islands, including Tasmania and New Guinea.	Agnes Banks NR Mulgoa NR Prospect NR	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		from ecotones between wet and dry eucalypt forest, along minor drainage lines and near boundaries between forest and cleared land.							impact on this species.	
brown treecreeper (eastern subspecies) (<i>Climacteris picumnus victoriae</i>)	V (TSC)	Typical habitat for this species includes drier forests, woodlands and scrubs with fallen branches; river red gums on watercourses and around lake-shores; paddocks with standing dead timber; and margins of denser wooded areas. This species prefers areas without a dense understorey.	This species occurs over central NSW, west of the Great Dividing Range and sparsely scattered to the east of the divide in drier areas such as the Cumberland Plain of Western Sydney, and in parts of the Hunter, Clarence, Richmond, and Snowy River valleys.	Thirlmere Lakes NP	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
varied sittella (<i>Daphoenositta chrysoptera</i>)	V (TSC)	The varied sittella can typically be found in eucalypt forests and woodlands, especially of rough-	The varied sittella is a sedentary species that inhabits the majority of mainland Australia with the exception of the	Agnes Banks NR Bargo SCA Castlereagh NR Gulguer NR Kemps Creek NR	✓				There is no appropriate habitat present in the Study Area for this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		barked species and mature smooth-barked gums with dead branches. It can also be found in mallee and acacia woodlands. This species builds a cup shaped nest made of plant fibres and spiders webs which is placed at the canopy level in the fork of a living tree.	treeless deserts and open grasslands. Its NSW distribution is basically continuous from the coast to the far west.	Mulgoa NR Prospect NR Thirlmere Lakes NP Windsor Downs NR					There is no potential for an impact on this species.	
scarlet robin (<i>Petroica boodang</i>)	V (TSC)	This species can be found in woodlands and open forests from the coast through to inland slopes. It can sometimes be found on the eastern fringe of the inland plains in the colder months of the year. Woody debris and logs are both important structural elements of its habitat. It forages from low perches on	The scarlet robin can be found in south-eastern Australia, from Tasmania to the southern end of Queensland, to western Victoria and south SA. In NSW it is found throughout the eastern areas of the state, no further than 500 km from the coast.	Bargo SCA Castlereagh NR Windsor Downs NR	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		invertebrates either on the ground or in woody debris or tree trunks.								
flame robin (<i>Petroica phoenicea</i>)	V (TSC)	This species is known to breed in moist eucalypt forests and woodlands. It can usually be found on ridges and slopes in areas where there is an open understorey. This species migrates during the winter to more lowland areas such as grasslands where there are scattered trees, as well as open woodland of the inland slopes and plains.	This species is located in south-eastern Australia from the Queensland border to Tasmania and into Victoria as well as south-east SA. In NSW it has been recorded from the coast to as far west as the NSW-Victoria border at Mildura.	Castlereagh NR Kemps Creek NR Mulgoa NR	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
spotted-tailed quoll (<i>Dasyurus maculatus</i>)	V (TSC) E (EPBC)	Habitat for this species is highly varied, ranging from sclerophyll forest, woodlands, coastal heathlands and rainforests. Records exist from	In NSW the spotted-tailed quoll occurs on both sides of the Great Dividing Range, with the highest densities occurring in the north east of the	This species is not known to occur in any reserves in the region.	✓	✓			There is no appropriate habitat present in the Study Area for this species. There is no potential for an	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		open country, grazing lands and rocky outcrops. Suitable den sites include hollow logs, tree hollows, rocky outcrops or caves.	state. It occurs from the coast to the snowline and inland to the Murray River.						impact on this species.	
koala (<i>Phascolarctos cinereus</i>)	V (TSC)	This species inhabits eucalypt forest and woodland, with suitability influenced by tree species and age, soil fertility, climate, rainfall and fragmentation patterns. The species is known to feed on a large number of eucalypt and non-eucalypt species, however it tends to specialise on a small number in different areas. <i>Eucalyptus tereticornis</i> , <i>E. punctata</i> , <i>E. cypellocarpa</i> , <i>E. viminalis</i> , <i>E. microcorys</i> , <i>E.</i>	The koala has a fragmented distribution throughout eastern Australia, with the majority of records from NSW occurring on the central and north coasts, as well as some areas further west. It is known to occur along inland rivers on the western side of the Great Dividing Range.	Bargo SCA Thirlmere Lakes NP	✓				Young regenerating <i>E.tereticornis</i> was present within the study area, however these did not provide appropriate habitat for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		<i>robusta</i> , <i>E. albens</i> , <i>E. camaldulensis</i> and <i>E. populnea</i> are some preferred species.								
brush-tailed rock-wallaby (<i>Petrogale penicillata</i>)	E (TSC) V (EPBC)	This species occupies rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges facing north. It browses on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. This species shelters or bask during the day in rock crevices, caves and overhangs and is most active at night.	The brush-tailed rock-wallaby was once abundant and ubiquitous throughout the mountainous country of south-eastern Australia. Its distribution roughly followed the Great Dividing Range for 2500 km from the Grampians in West Victoria to Nanango in south-east Queensland, with outlying populations in coastal valleys and ranges to the east of the divide, and the slopes and plains as far west as Cobar in NSW and Injune (500 km NW of Brisbane) in Queensland.	Thirlmere Lakes NP		✓			There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
long-nosed potoroo (south east mainland) <i>(Potorous tridactylus tridactylus)</i>	V (TSC) V (EPBC)	Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of its habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or <i>Melaleucas</i> . A sandy loam soil is also a common feature.	This species is found on the south-eastern coast of Australia, from Queensland to eastern Victoria and Tasmania, including some of the Bass Strait islands. In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range.	This species is not known to occur in any reserves in the region.		✓			There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
grey-headed flying-fox <i>(Pteropus poliocephalus)</i>	V (TSC) V (EPBC)	This species occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source	Grey-headed flying-foxes are found within 200 km of the east coast of Australia, from Bundaberg in Queensland to Melbourne in Victoria.	Agnes Banks NR Castlereagh NR Gulguer NR Kemps Creek NR Mulgoa NR Prospect NR	✓	✓			There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		and are commonly found in gullies, close to water, in vegetation with a dense canopy.								
yellow-bellied sheathtail bat (<i>Saccolaimus flaviventris</i>)	V (TSC)	This species forages for insects, flies high and fast over the forest canopy, but lower in more open country. It forages in most habitats across its very wide range, with and without trees; and appears to defend an aerial territory. It roosts singly or in groups of up to six, in tree hollows and buildings. In treeless areas they are known to use mammal burrows.	The yellow-bellied sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes.	This species is not known to occur in any reserves in the region.	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
eastern freetail-bat (<i>Mormopterus norfolkensis</i>)	V (TSC)	This species occurs in dry sclerophyll forest and woodland east of the Great Dividing Range. It roosts mainly in tree	The eastern freetail-bat is found along the east coast from south Queensland to southern NSW.	Agnes Banks NR Bents Basin SCA Castlereagh NR Gulguer NR Mulgoa NR	✓				There is no appropriate habitat present in the Study Area for this species. There is no	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		hollows but will also roost under bark or in man-made structures.							potential for an impact on this species.	
large-eared pied bat (<i>Chalinolobus dwyeri</i>)	V (TSC) V (EPBC)	The large-eared pied bat is generally found in a variety of drier habitats, including dry sclerophyll forests and woodlands, however, it probably tolerates a wide range of habitats. It tends to roost in the twilight zones of mines and caves, generally in colonies or common groups.	This species has a distribution from south western Queensland to NSW from the coast to the western slopes of the Great Dividing Range.	Mulgoa NR	✓	✓			There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
eastern false pipistrelle (<i>Falsistrellus tasmaniensis</i>)	V (TSC)	Habitat for this species includes sclerophyll forest. It prefers wet habitats, with trees over 20 metres high, and generally roosts in tree hollows or trunks.	This species has a range from south eastern Queensland, through NSW, Victoria and into Tasmania, and occurs from the Great Dividing Range to the coast.	This species is not known to occur in any reserves in the region.	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
eastern bentwing-bat (<i>Miniopterus schreibersii oceanensis</i>)	V (TSC)	This species hunts in forested areas and uses caves as the primary roosting habitat, but also uses derelict mines, storm-water tunnels, buildings and other man-made structures. It forms discrete populations centred around a maternity cave that is used annually in spring and summer for the birth and rearing of young.	Eastern bentwing-bats occur along the east and north-west coasts of Australia. In NSW they are found both east and west of the Great Dividing Range, but typically no further than 300 km from the coast.	Agnes Banks NR Bargo SCA Bents Basin SCA Gulguer NR Mulgoa NR	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No
large-footed myotis (<i>Myotis adversus</i>)	V (TSC)	This species generally roosts in groups of 10 - 15, close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. It forages over streams and pools catching insects and small fish by	This species occurs along coastal Australia from the north-west of Australia, across the Top End and south to western Victoria. In NSW it generally occurs east of the Great Dividing Range, with scattered inland records in the south west of the state.	Castlereagh NR Gulguer NR Kemps Creek NR Mulgoa NR	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Species	Legal Status	Specific Habitat	Distribution in Relation to Study Area	Reservation in the Region	DECCW 10km	DEWHA 10km	Recorded in Study Area	Other	Occurrence in Study Area and Potential for Significant Impact	Assessment of Significance required?
		raking its feet across the water surface.								
greater broad-nosed bat (<i>Scoteanax rueppellii</i>)	V (TSC)	The greater broad-nosed bat appears to prefer moist environments such as moist gullies in coastal forests, or rainforest. They have also been found in gullies associated with wet and dry sclerophyll forests and open woodland. It roosts in hollows in tree trunks and branches and has also been found to roost in the roofs of old buildings.	The greater broad-nosed bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however it does not occur at altitudes above 500 meters.	Agnes Banks NR Castlereagh NR Kemps Creek NR Mulgoa NR	✓				There is no appropriate habitat present in the Study Area for this species. There is no potential for an impact on this species.	No

Note

CEEC:	critically endangered ecological community
DECCW 10km:	identified on the DECCW Atlas of NSW Wildlife as previously recorded or predicted to occur within 10km of the Study Area
DEWHA 10km:	identified on the Commonwealth DEWHA Protected Matters Database as previously recorded within 10km of the Study Area
Other:	identified in other literature or previous surveys of the Study Area
E:	endangered
EP:	endangered population
EEC:	endangered ecological community
EPBC:	Environment Protection Biodiversity Conservation Act 1999
LGA:	Local Government Area
MAR:	Marine
MIG:	Migratory

NP: National Park
NR: Nature Reserve
ROTAP: Rare or Threatened Australian Plants
SF: State Forest
SCA: State Conservation Area
TSC: Threatened Species Conservation Act 1995
V: vulnerable

APPENDIX D

Assessment of Significance (EP&A Act)

Appendix D - Assessment of Significance – *Environmental Planning & Assessment Act 1979*

Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) requires an assessment of significance relating to the potential impacts of a project on listed threatened species, endangered populations or TECs. As a formal assessment method is yet to be established by the relevant government authorities for Part 3A projects, an assessment that applies the key principles of the Section 5A assessment is used here to assess the potential for the project to impact on threatened species, endangered populations or TECs within the study area.

An assessment of significance is provided below for those identified threatened species or TECs recorded in the study area or considered likely to occur based on the identification of suitable habitat (within **Tables 1, 2, 3 and 4** of **Appendix C**). The following species are assessed:

Threatened Flora Species

- Juniper-leaved grevillea (*Grevillea juniperina* subsp. *juniperina*)

Threatened Fauna Species

- Cumberland land snail (*Meridolum corneovirens*)

Critically Endangered Ecological Communities

- Cumberland Plain Woodland

Assessment of Significance under EP&A Act

Juniper-leaved Grevillea (*Grevillea juniperina* subsp. *juniperina*)

Juniper-leaved grevillea is listed as Vulnerable under the TSC Act.

Juniper-leaved grevillea was not recorded within the study area during the field surveys undertaken for this assessment. However, a previous survey of the surrounding area (Biosis 2005) found four individuals located within Cumberland Plain Woodland habitat which is the same habitat that is present within the study area. It is considered that the regenerating woodland within the study area may provide suitable habitat for the species.

a) *Whether the life cycle of the species is likely to be disrupted such that a local viable population of the species is likely to be placed at risk of extinction.*

The project is expected to clear approximately 0.02 hectares of regenerating Cumberland Plain Woodland, which is considered suitable potential habitat for juniper-leaved grevillea. Given that no individuals were recorded within the study area and the minimal amount of poor quality potential habitat to be cleared it is considered unlikely that the proposed development will affect the life cycle of juniper-leaved grevillea, such that the species is likely to be placed at risk of extinction.

b) *In relation to the regional distribution of the habitat of the threatened species, whether a significant area of known habitat is to be modified or removed, or isolated from currently interconnecting or proximate areas.*

Juniper-leaved grevillea occurs within an area bounded by Blacktown, Londonderry, Windsor and Erskine Park in Western Sydney. The study area is located in what appears to be the eastern limit of the species. Previous recordings of juniper-leaved grevillea are centralised in the Blacktown area and large amounts of potential habitat occurs outside the study area.

The study area contains Cumberland Plain Woodland which is considered suitable habitat for the species. The project is expected to clear approximately 0.02 hectares of poor quality habitat. It is considered that a significant area of known habitat for juniper-leaved grevillea will not be modified or removed, or isolated from currently interconnecting or proximate areas in a regional context.

c) *Whether the species, or its habitat, are adequately represented in conservation reserves (or other similar protected areas) in the region.*

Small populations of juniper-leaved grevillea occur within the Castlereagh Nature Reserve and Windsor Downs Nature Reserve. The species is not considered to be adequately reserved in the region.

d) *Whether the species is at the limit of its known distribution.*

The juniper-leaved grevillea is considered to be at the eastern limit of its known distribution in the study area.

Cumberland Land Snail (*Meridolum corneovirens*)

Cumberland land snail is listed as Endangered under the TSC Act.

Cumberland land snail was not recorded within the study area during the field surveys undertaken for this assessment. However, a previous survey targeting the species to the north of the study area (Biosis 2005) found the species within Cumberland Plain Woodland habitat. Similar habitat is present within the study area. It is considered that the regenerating woodland within the study area may provide suitable habitat for the species.

a) *Whether the life cycle of the species is likely to be disrupted such that a local viable population of the species is likely to be placed at risk of extinction.*

The project is expected to clear approximately 0.02 hectares of regenerating Cumberland Plain Woodland, which is considered potential habitat for Cumberland land snail. Given that no individuals were recorded within the study area, the minimal amount of poor quality potential habitat to be cleared and the presence of higher quality habitat surrounding the study area, it is considered unlikely that the project will affect the life cycle of Cumberland land snail, such that the species is likely to be placed at risk of extinction.

b) *In relation to the regional distribution of the habitat of the threatened species, whether a significant area of known habitat is to be modified or removed, or isolated from currently interconnecting or proximate areas.*

Cumberland land snail is known to occur only in Cumberland Plain Woodland in western Sydney. Small and isolated populations occur in Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Penrith, and Wollondilly local government areas in western Sydney. The study area is located in the centre of the known distribution of the species.

The study area contains Cumberland Plain Woodland which is considered suitable habitat for the species. The project is expected to clear approximately 0.02 hectares of poor quality habitat. It is considered that a significant area of known habitat for Cumberland land snail will not be modified or removed, or isolated from currently interconnecting or proximate areas in a regional context.

c) *Whether the species, or its habitat, are adequately represented in conservation reserves (or other similar protected areas) in the region.*

The majority of the known populations for Cumberland land snail occur outside of conservation reserves. It has been recorded from Scheyville National Park, Agnes Banks Nature Reserve, Castlereagh Nature Reserve, Windsor Downs Nature Reserve and the northern tip of Gulguer Nature Reserve.

d) *Whether the species is at the limit of its known distribution.*

The current known habitat for Cumberland land snail is within Cumberland Plain Woodland in western Sydney. Cumberland land snail is not at the limit of its distribution in the study area.

Cumberland Plain Woodland

Cumberland Plain Woodland is listed as a Critically Endangered Ecological Community under the TSC Act.

A small section of woodland community recorded within the study area was characteristic of Cumberland Plain Woodland CEEC. This community consisted of a sub-canopy of young forest red gums (*Eucalyptus tereticornis*) and occasional occurrences of Parramatta wattle (*Acacia parramattensis*). The understorey was dominated by blackthorn (*Bursaria spinosa*). The groundcover was majority native and included kangaroo grass (*Themeda australis*), threeawn speargrass (*Aristida vagans*) and slender rat's tail grass (*Sporobolus creber*).

This community was assessed as low-quality, regenerating Cumberland Plain Woodland with mature stands of characteristic dominant canopy species forest red gum (*Eucalyptus tereticornis*) and grey box (*E. moluccana*) occurring immediately adjacent to the study area. The area was dominated by native groundcover species, however exotic species also were present as influenced by the adjacent disturbed grasslands.

a) *In relation to the regional distribution of the habitat of the endangered ecological community, whether a significant area of known habitat is to be modified or removed, or isolated from currently interconnecting or proximate areas.*

Cumberland Plain Woodland occurs on soils derived from Wianamatta Shale, and throughout the driest part of the Sydney Basin. Before European settlement, it was extensive across the Cumberland Plain, western Sydney. It is considered that less than 6 per cent of its original extent remains due to major clearing and development in these areas. The majority of the remaining community occurs in scattered and isolated areas of western Sydney.

The project is expected to clear approximately 0.02 hectares of poor quality regenerating Cumberland Plain Woodland within the study area. The area to be cleared is very minimal and would mainly remove the regenerating understorey species blackthorn, and associated groundcovers. The project is not expected to impact the adjacent higher quality woodland to the north of the study area. Therefore, the project is considered unlikely to result in a significant area of known habitat being modified in a regional context.

b) *Whether the endangered ecological community, or its habitat, are adequately represented in conservation reserves (or other similar protected areas) in the region.*

Cumberland Plain Woodland occurs at Scheyville National Park, Windsor Downs Nature Reserve, Leacock Regional Park and Mulgoa Nature Reserve. The community is not considered to be adequately represented in conservation reserves in the region.

c) *Whether the endangered ecological community is at the limit of its known distribution.*

Cumberland Plain Woodland has scattered and isolated occurrences between Scheyville, Penrith, Parramatta and Thirlmere. The study area occurs near the eastern limit of the distribution of this community.

Conclusion

The project is not expected to have a significant impact on threatened species or endangered ecological communities. The area of Cumberland Plain Woodland CEEC and threatened flora and fauna habitat to be removed is very minimal (approximately 0.02 hectares). Higher quality habitat and woodland community occurs outside the study area and would not be impacted as a result of the project.

The proposed modification, which involves the disturbance of an additional approximate 0.09 hectares for the project is not expected to result in the substantial alteration to habitat such that threatened flora and fauna species or TECs are significantly impacted.

APPENDIX E

Assessment of Significance (EPBC Act)

Appendix E – Assessment of Significance under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

A search of the Commonwealth Department of the Environment, Heritage, Water and the Arts (DEWHA) Protected Matters Database (24 June 2010) identified (discounting fishes, marine and migratory wetland species) 21 EPBC Act listed threatened species, seven migratory species and one threatened ecological community (TEC) known to occur or considered likely to occur, on the basis of habitat modelling, within 10 kilometres of the study area.

Of the 21 threatened species identified from the DEWHA database search, none were found to have potential to occur due to the study area's small size, highly disturbed nature and lack of quality foraging or roosting habitat.

Although no migratory species were recorded during the field surveys, two migratory species identified from the DEWHA database search were found to have moderate potential to occur within the study area. These were the satin flycatcher (*Myiagra cyanoleuca*) and Latham's Snipe (*Gallinago hardwickii*).

The only TEC identified from the DEWHA database search, Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest Critically Endangered Ecological Community (CEEC), was recorded within the study area during the field surveys undertaken for this assessment.

An assessment of the potential impacts of the proposed modification is provided below for threatened and migratory species identified from the DEWHA database search. The assessment is based on the disturbance of 0.09 hectares of disturbed habitat, including 0.02 hectares of Cumberland Plain Woodland CEEC.

The aim of this assessment is to determine whether the proposed modifications to the Regional Distribution Centre at Rooty Hill NSW, are likely to have a significant impact on EPBC Act matters of national environmental significance (MNES). In this instance, MNES with potential to occur within the study area include:

- listed endangered ecological communities; and
- listed migratory species.

Each category is addressed separately below.

Threatened Ecological Communities

Cumberland Plain Woodland

The critically endangered ecological community (CEEC) Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (hereafter termed Cumberland Plain Woodland) was recorded within the study area. The Project will impact on approximately 0.02 hectares of this CEEC. The loss of 0.02 hectares of this community does not represent a significant area of known habitat to be removed or isolated from currently interconnecting or proximate areas at either the local or regional level.

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- **reduce the extent of an ecological community:**

Cumberland Plain Woodland occurs throughout the driest part of the Sydney Basin. Before European settlement, it was extensive across the Cumberland Plain, western Sydney. It is considered that less than 6 per cent of its original extent remains due to major clearing and development in these areas. The majority of the remaining community occurs in scattered and isolated areas of western Sydney. The study area is not at or near the limit of the distribution of this community.

The project is expected to clear approximately 0.02 hectares of poor quality regenerating Cumberland Plain Woodland within the study area. The area to be cleared is minimal and would mainly remove the regenerating understorey species blackthorn (*Bursaria spinosa*), and associated groundcovers. The project is not expected to impact the adjacent higher quality woodland to the north of the study area. Therefore, the project will not significantly reduce the area of Cumberland Plain Woodland.

In accordance with condition 2.24 of the Project Approval, the retained CPW vegetation on-site will be regenerated and managed in accordance with a vegetation management plan.

- **fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines;**

The area of Cumberland Plain Woodland to be cleared consists only of regenerating understorey and canopy species of the CEEC and will not impact on surrounding mature areas of the community. It is not considered that the required clearing for the project will further fragment Cumberland Plain Woodland in the area.

- **adversely affect habitat critical to the survival of an ecological community;**

There is no critical habitat listed for Cumberland Plain Woodland. The study area is not considered to be important for the long term maintenance of the community. Therefore, the proposed modifications would not adversely affect habitat critical to the survival of this community.

- **modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns;**

The project is not likely to adversely modify or destroy abiotic factors necessary for the survival of this community.

-
- **cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting;**

The small area (approximately 0.02 hectares) to be removed for the proposed modifications consists of regenerating understorey species. The construction of the project would have no impact on large eucalypts characteristic of the community that occur immediately north of the study area. It is unlikely that the project will cause a substantial change in the species composition of this community, nor will it cause a decline or loss of functionally important species within this CEEC.

- **cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:**
 - **assisting invasive species, that are harmful to the listed ecological community, to become established; or**
 - **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community; or**

The Cumberland Plain Woodland CEEC that has been identified in the study area is regenerating with a presence of exotic groundcovers and is relatively disturbed. Previously recommended mitigation measures (Biosis 2005) included a Vegetation Management Plan that addresses weed management within the woodland habitats within the project site. The implementation of weed management measures in accordance with consent condition 2.24 of the Project Approval is likely to reduce the impact of invasive weeds within Cumberland Plain Woodland within the study area.

- **interfere with the recovery of an ecological community.**

The project is expected to impact on approximately 0.02 hectares of the CEEC within the study area. Due to this minimal amount it is unlikely that this project will interfere with the recovery of this CEEC.

Conclusion

The proposed modification, which involves the disturbance of an additional approximate 0.02 hectares of Cumberland Plain Woodland for the project within the study area, is not expected to result in the substantial alteration to habitat such that Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest CEEC is significantly impacted.

Migratory Species

The following EPBC Act listed migratory species are considered in this assessment:

- satin flycatcher (*Myiagra cyanoleuca*); and
- Latham's Snipe (*Gallinago hardwickii*).

An assessment in accordance with the DEWHA principal significant impact guidelines is provided below for these species.

An area of *important habitat* is:

- **habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or**
- **habitat that is of critical importance to the species at particular life-cycle stages; and/or**
- **habitat utilised by a migratory species which is at the limit of the species range; and/or**
- **habitat within an area where the species is declining.**

The two species were not recorded during the field surveys, however they have potential to occur within the study area. The study area is not considered to comprise *important habitat* for the listed migratory species, based on the DEWHA criteria described above.

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- **substantially modify (including fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species;**

The proposed modifications in the study area will require disturbance of a very small area of potential habitat for migratory species, approximately 0.09 hectares. Large areas of similar habitats are present within the surrounding local reserves.

Given the small area of potential habitat to be removed, the highly mobile nature of these species, and the significant area of habitat within the locality, the proposed modifications would not substantially modify, destroy or isolate an area of *important habitat* for a migratory species.

- **result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or**

There are very low numbers of invasive species within the study area. The species of most potential to become invasive is African lovegrass (*Eragrostis curvula*). The construction of the proposed modifications is not likely to result in a significant increase in the extent of this species. Recommendations have been made to undertake weed management as part of a Vegetation Management Plan (Biosis 2005) to ensure that no invasive species become established to the detriment of vulnerable species. The study area is not considered to comprise *important habitat* for the listed migratory species.

-
- **seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species**

The construction of the proposed modifications will require the disturbance of a small area of potential migratory species habitat, approximately 0.09 hectares. The study area is not considered to comprise *important habitat* for the listed migratory species. The disturbance of the very small area of habitat will not interfere substantially with the lifecycle of an ecologically significant proportion of the population of these migratory species.

Conclusion

The proposed modifications to the Regional Distribution Centre will not result in a significant impact on recorded or potential EPBC Act listed threatened species or migratory species.

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