

THREATENED SPECIES ASSESSMENT

**PROPOSED DEVELOPMENT
LOTS 391 & 392 DP 816195 & LOT 38 DP 7033
NORTHCOTE ROAD
HORNSBY**

**MAY 2010
(REF 10048)**

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PREFACE

This Threatened Species Assessment Report has been prepared by *Conacher Environmental Group* to identify the flora and fauna characteristics of land within Lots 391 & 392 DP 816195 & Lot 38 DP 7033, Northcote Road, Hornsby.

This report provides an assessment of existing habitats and the potential for the proposed activity to significantly impact on threatened species according to the provisions of Section 5(A) of the *Environmental Planning and Assessment (EP&A) Act 1979* and the *Threatened Species Conservation Act 1995*.

PROJECT TEAM

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1. BACKGROUND

This report provides an assessment of the potential for threatened species to occur on the subject site and provides an assessment to determine whether or not a Species Impact Statement should be prepared for development according to the provisions of Section 5(A) of the *Environmental Planning & Assessment Act 1979* (EP&A Act), the *Threatened Species Conservation Act 1995* (TSC Act).

The proposed development is for a medical facility which will provide day surgery facilities and medical consulting rooms. The proposed development will require the demolition of the existing buildings on the site and the construction of multi-level private medical hospital with basement levels for car parking and an elevated pedestrian walkway from Palmerston Road. Supporting retail and ancillary support services and associated site landscaping and infrastructure upgrades will also be required.

1.1 Site Details

The planning and cadastral details of the subject site are provided in Table 1.1.

TABLE 1.1 SITE DETAILS	
Location	Lots 391 & 392 DP 816195 & Lot 38 DP 7033, Northcote Road, Hornsby
Area	Approximately 3187m ²
Topographic Map	Hornsby 1:25 000
Grid Reference	324920E 6269270N
Local Government Area	Hornsby
Zoning	Residential AM Low Density – Medical Support
Existing Land Use	Medical facility
Proposed Development	Redeveloped medical facility

2. THREATENED SPECIES, POPULATONS AND ECOLOGICAL COMMUNITIES

2.1 Threatened Species

A search of the Atlas of NSW Wildlife (NPWS 2010) was undertaken to identify records of threatened flora and fauna species located within 10km of the site. This enabled the preparation of a list of threatened flora and fauna species that could possibly occur within the habitats found on the site. Details on these species are provided in Table 2.1 and 2.2.

TABLE 2.1 THREATENED FLORA SPECIES OF THE AREA				
Species	TSC Act	EPBC Act	Growth Form and Habitat Requirements	Comments
<i>Acacia bynoeana</i>	E	V	Erect or spreading shrub to 0.3 m high growing in heath and dry sclerophyll open forest on sandy soils. Often associated with disturbed areas such as roadsides.	No suitable habitat present.
<i>Acacia gordonii</i>	E	E	Erect spreading shrub 0.5-1.5 m high. Occurs in dry sclerophyll forest and heaths amongst or within rock platforms on sandstone outcrops.	No suitable habitat present.

TABLE 2.1 THREATENED FLORA SPECIES OF THE AREA				
Species	TSC Act	EPBC Act	Growth Form and Habitat Requirements	Comments
<i>Acacia pubescens</i>	V	V	Spreading shrub 1-4 m high growing in open sclerophyll forest and woodlands on clay soils.	No suitable habitat present.
<i>Ancistrachne maidenii</i>	V	-	Decumbent grass. Grows in sandstone-derived soils. Distribution limits Berowra Waters, Brooklyn and Wisemans Ferry	No suitable habitat present.
<i>Caladenia tessellata</i>	E	V	Terrestrial orchid. Generally found in grassy sclerophyll woodland on clay loam or sandy soils, to low woodland with stony soil.	No suitable habitat present.
<i>Callistemon linearifolius</i>	V	-	Shrub to 4m high. Grows in dry Sclerophyll Forest on the coast and adjacent ranges.	No suitable habitat present.
<i>Cryptostylis hunteriana</i>	V	V	Saprophytic orchid. Grows in swamp heath on sandy soils or Scribbly Gum Woodland.	No suitable habitat present.
<i>Darwinia biflora</i>	V	V	Erect or spreading shrub to 80cm high. Associated with habitats where weathered shale capped ridges intergrade with Hawkesbury Sandstone, where soils have a higher clay content. Cheltenham to Hawkesbury River.	No suitable habitat present.
<i>Darwinia peduncularis</i>	V	-	Associated with Open Forest and Woodlands on rocky hillsides. Locally this species has been recorded on sandy soils on upper slope, bench and gully topographies and on creek banks (Benson & Howell 1994).	No suitable habitat present.
<i>Deyeuxia appressa</i>	E	E	Erect perennial to 1.5m high, found on wet ground in the Hornsby area. Mainly known from open forests.	No suitable habitat present.
<i>Diuris bracteata</i>	E	-	Orchid known only from previous collection at Gladesville before 1889. Has since been collected in Sydney Basin Bioregion. Prefers Dry Sclerophyll Woodland and flowers in September.	No suitable habitat present.
<i>Epacris purpurascens</i> var. <i>purpurascens</i>	V	-	Occurs in Sydney Sandstone Gully Forest and scrub with periodically poorly drained clay soil on sandstone or shale.	No suitable habitat present.
<i>Eucalyptus camfieldii</i>	V	V	Stringybark to 10 m high. Grows on coastal shrub heath and woodlands on sandy soils derived from alluviums and Hawkesbury sandstone.	No suitable habitat present.
<i>Eucalyptus nicholii</i>	V	V	Tree to 18m high, grows in grassy or sclerophyll woodland on shallow relatively infertile soils on shales and slates; a member of the peppermints.	No suitable habitat present.
<i>Eucalyptus scoparia</i>	E	V	A smooth-barked eucalypt found on well drained granitic hilltops as scattered individuals in open forest and woodland.	No suitable habitat present.

TABLE 2.1 THREATENED FLORA SPECIES OF THE AREA				
Species	TSC Act	EPBC Act	Growth Form and Habitat Requirements	Comments
<i>Galium australe</i>	V	-	A straggling and inter-twining herb with weak, hairy stems to 60 cm long. This species has been found in moist gullies of tall forest, <i>Eucalyptus tereticornis</i> forest, coastal Banksia shrubland, and <i>Allocasuarina nana</i> heathland. Widespread in Victoria and also found in South Australia and Tasmania. Rare in NSW.	No suitable habitat present.
<i>Genoplesium baueri</i>	V	-	An orchid which prefers sparse sclerophyll forest and moss gardens over sandstone. Flowers from December to March.	No suitable habitat present.
<i>Genoplesium plumosum</i>	E		Originally collected at Kurnell in 1947; presumably it also occurred south of there, but it is now only known from two areas - the village of Tallong and a site in Morton National Park. Occurs exclusively in heathland and grows on very shallow soils or within mosses on sandstone conglomerate shelves.	No suitable habitat present.
<i>Grammitis stenophylla</i>	E	-	An ancient fern with small and simple leaflets with clumps of spores on the upper two-thirds of the leaf. Grows on rocks or trees in moist eucalypt forest or rainforest.	No suitable habitat present.
<i>Grevillea caleyi</i>	E	E	Associated with open forest to woodland habitats on clayey soil of lateritic sandstone ridgetops.	No suitable habitat present.
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	V	V	Occurs in heathy woodland associations on skeletal sandy soils over massive sandstones. This plant may have an affinity with disturbance margins such as trail and road verges where soils are suitable and the availability of light due to clearing has promoted its growth. Flowering is from August to November.	No suitable habitat present.
<i>Grevillea shiressii</i>	V	V	Shrub 2-5 m high. Flowers mainly spring. Grows along creek banks in wet sclerophyll forest. Sandy soil on Hawkesbury sandstone. Restricted to the Gosford area. CC.	No suitable habitat present.
<i>Haloragodendron lucasii</i>	E	E	Straggling shrub 1 to 1.5m high. Associated with Low woodland on sheltered slopes near creeks on moist loamy sand on benches below small sandstone cliff lines, with continuous seepage.	No suitable habitat present.
<i>Hibbertia puberula</i>	E		Has not been seen for over 40 years. Early records of this species are from the Hawkesbury River area and Frenchs Forest in northern Sydney, South Coogee in eastern Sydney, the Hacking River area in southern Sydney, and the Blue Mountains. Flowering time is October to November. Occurs on sandy soil often associated with sandstone.	No suitable habitat present.

TABLE 2.1 THREATENED FLORA SPECIES OF THE AREA				
Species	TSC Act	EPBC Act	Growth Form and Habitat Requirements	Comments
<i>Hibbertia superans</i>	E	-	Small spreading shrub to 0.3 m high. Grows on sandstone, usually in or near SSTF. Distribution limits N - Glenorie S – Kellyville disjunct Mt Boss.	No suitable habitat present.
<i>Lasiopetalum joyceae</i>	V	V	Associated with heath on lateritic to shaley ridgetops on the Hornsby Plateau south of the Hawkesbury River.	No suitable habitat present.
<i>Leptospermum deanei</i>	V	V	Associated with woodland on lower slopes or near creeks on sandy alluvial or sandy soils.	No suitable habitat present.
<i>Leucopogon fletcheri</i> ssp. <i>fletcheri</i>	E	-	Shrub to 1.8 m high growing in woodland on clay lateritic soils on flat or gentle sloping terrain.	No suitable habitat present.
<i>Melaleuca biconvexa</i>	V	V	Tall shrub. Grows in wetlands adjoining perennial streams and on the banks of those streams, generally within the geological series known as the Terrigal Formation.	No suitable habitat present.
<i>Melaleuca deanei</i>	V	V	Shrub to 3 m high. Grows in heath on sandstone.	No suitable habitat present.
<i>Persoonia hirsuta</i>	E	E	Spreading to decumbent shrub with young branchlets moderately to densely hairy. Found on sandy soils in dry sclerophyll open forest, woodland and heath on sandstone.	No suitable habitat present.
<i>Persoonia mollis</i> ssp. <i>maxima</i>	E	E	Occurs in sheltered aspects of deep gullies or on the steep upper hillsides of narrow gullies on Hawkesbury Sandstone. These habitats support relatively moist, tall forest vegetation communities, often with warm temperate rainforest influences.	No suitable habitat present.
<i>Persoonia nutans</i>	E	E	Erect to spreading shrub. Grows in dry sclerophyll forest and woodland on laterite and alluvial sands. Distribution limits Cumberland Plain.	No suitable habitat present.
<i>Pimelea curviflora</i> var. <i>curviflora</i>	V	V	A small much branched shrub with hairy stems and small red to yellow flowers. Grows in sclerophyll forest and shrubland and is restricted to coastal areas around Sydney on sandstone.	No suitable habitat present.
<i>Prostanthera marifolia</i>	CE	E	Low straggling shrub to 1m. Grows in sclerophyll forest and woodland, usually near the coast, in sandy loamy soils, on sandstone; Mangrove Mt. and Sydney districts.	No suitable habitat present.
<i>Pterostylis nigricans</i>	V	-	Autumn-flowering ground orchid that grows from a tuber in coastal heathlands with Heath Banksia and lower growing heath.	No suitable habitat present.
<i>Syzygium paniculatum</i>	V	V	Small tree. Subtropical and littoral rainforest on sandy soil.	No suitable habitat present.
<i>Tetratheca glandulosa</i>	V	V	Spreading shrub to 0.2 m high. Sandy or rocky heath or scrub. Distribution limits N - Mangrove Mountain S - Sydney.	No suitable habitat present.
Ext = Extinct PExt = Presumed Extinct CE = Critically Endangered Species E = Endangered Species V = Vulnerable Species				

TABLE 2.2 THREATENED FAUNA SPECIES OF THE AREA				
Common Name Scientific Name	TSC Act	EPBC Act	Preferred Habitat	Comments
Giant Burrowing Frog <i>Heleioporus australiacus</i>	V	V	Inhabits open forests and riparian forests along non-perennial streams, digging burrows into sandy creek banks.	No suitable habitat present.
Red-crowned Toadlet <i>Pseudophryne australis</i>	V	-	Prefers sandstone areas, breeds in grass and debris beside non-perennial creeks or gutters. Individuals can also be found under logs and rocks in non breeding periods.	No suitable habitat present.
Green and Golden Bell Frog <i>Litoria aurea</i>	E	V	Prefers the edges of permanent water, streams, swamps, creeks, lagoons, farm dams and ornamental ponds. Often found under debris.	No suitable habitat present.
Rosenberg's Goanna <i>Varanus rosenbergi</i>	V	-	Hawkesbury sandstone outcrop specialist. Inhabits woodlands, dry open forests and heathland sheltering in burrows, hollow logs, rock crevices and outcrops.	No suitable habitat present.
Little Eagle <i>Hieraaetus morphnoides</i>	V	-	Inhabits a variety of habitats including woodland open forest, partially cleared areas, along watercourses and around wetlands.	No suitable habitat present.
Grey Falcon <i>Falco hypoleucos</i>	V		Occurs over mainly inland drainage systems of open plains and lightly timbered country including the acacia scrub, spinifex and tussock grasslands.	No suitable habitat present.
Osprey <i>Pandion haliaetus</i>	V	-	Utilises waterbodies including coastal waters, inlets, lakes, estuaries and offshore islands with a dead tree for perching and feeding.	No suitable habitat present.
Australasian Bittern <i>Botaurus poiciloptilus</i>	V		Inhabits shallow freshwater or brackish wetlands with tall dense beds of reeds, sedges or rush species and swamp edges.	No suitable habitat present.
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	V	-	Prefers wetter forests and woodlands from sea level to > 2000m on Divide, timbered foothills and valleys, timbered watercourses, coastal scrubs, farmlands and suburban gardens.	No suitable habitat present.
Glossy Black-cockatoo <i>Calyptorhynchus lathami</i>	V	-	Open forests with <i>Allocasuarina</i> species and hollows for nesting.	No suitable habitat present.
Superb Fruit-Dove <i>Ptilinopus superbus</i>	V	-	Rainforests, adjacent mangroves, eucalypt forests, scrublands with native fruits.	No suitable habitat present.
Sooty Oystercatcher <i>Haematopus fuliginosus</i>	V	-	Exclusively coastal in distribution foraging along rocky coastlines and estuaries.	No suitable habitat present.
Pied Oystercatcher <i>Haematopus longirostris</i>	V	-	Inhabits coastal beaches and estuarine flats. Distribution Limit N-Tweed Heads S-South of Eden.	No suitable habitat present.
Little Lorikeet (<i>Glossopsitta pusilla</i>)	V	-	Found in forests, woodlands, large trees in open country, timbered watercourses and street trees.	No suitable habitat present.

TABLE 2.2 THREATENED FAUNA SPECIES OF THE AREA				
Common Name Scientific Name	TSC Act	EPBC Act	Preferred Habitat	Comments
Swift Parrot <i>Lathamus discolor</i>	E	E	Inhabits eucalypt forests and woodlands with winter flowering eucalypts.	No suitable habitat present.
Turquoise Parrot <i>Neophema pulchella</i>	V	-	Inhabits coastal scrubland, open forest and timbered grassland, especially ecotones between dry hardwood forests and grasslands.	No suitable habitat present.
Superb Parrot <i>Polytelis swainsonii</i>	V	V	Inhabits open woodland and riverine forests of inland NSW.	No suitable habitat present.
Barking Owl <i>Ninox connivens</i>	V	-	Inhabits principally woodlands but also open forests and partially cleared land and utilises hollows for nesting.	No suitable habitat present.
Sooty Owl <i>Tyto tenebricosa</i>	V	-	Tall, dense, wet forests containing trees with very large hollows.	No suitable habitat present.
Powerful Owl <i>Ninox strenua</i>	V	-	Forests containing mature trees for shelter or breeding & densely vegetated gullies for roosting.	No suitable habitat present.
Masked Owl <i>Tyto novaehollandiae</i>	V	-	Open forest & woodlands with cleared areas for hunting and hollow trees or dense vegetation for roosting.	No suitable habitat present.
Black-chinned Honeyeater <i>Melithreptus gularis gularis</i>	V	-	Found in woodlands containing box-ironbark associations and River Red Gums, also drier coastal woodlands of the Cumberland Plain and Hunter Richmond and Clarence.	No suitable habitat present.
Regent Honeyeater <i>Xanthomyza phrygia</i>	E	E	Temperate eucalypt woodland and open forest including forest edges wooded farmland and urban areas with mature eucalypts.	No suitable habitat present.
Diamond Firetail <i>Stagonopleura guttata</i>	V	-	Found in Eucalypt woodlands, forests and mallee where there is grassy understorey west of the Great Div. also drier coastal woodlands of the Cumberland Plain and Hunter Richmond and Clarence River Valleys.	No suitable habitat present.
Grey-crowned Babbler <i>Pomatostomus temporalis temporalis</i>	V	-	Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Also found in farmland habitats with isolated trees.	No suitable habitat present.
Varied Sittella <i>Daphoenositta chrysoptera</i>	V	-	Prefers open eucalypt woodlands and forests, mallee, inland acacia, coastal tee-tree scrubs, parks and gardens.	No suitable habitat present.
Scarlet Robin <i>Petroica boodang</i>	V	-	Dry eucalypt forest and woodlands with open understorey during breeding season, dispersing during autumn–winter into open habitats including urban areas.	No suitable habitat present.
Pink Robin <i>Petroica rodinogaster</i>	V	-	Found in dense gullies, rainforests and open forests, dispersing into drier more open habitats in winter.	No suitable habitat present.
Flame Robin <i>Petroica phoenicea</i>	V		Upland moist Eucalypt forests and woodlands during breeding season, disperses to open lowland habitats during winter.	No suitable habitat present.
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	V	V	Dry and moist open forests containing rock caves, hollow logs or hollow trees for shelter.	No suitable habitat present.
Koala <i>Phascolarctos cinereus</i>	V	-	Inhabits both wet & dry eucalypt forests on high nutrient soils containing preferred feed trees.	No suitable habitat present.

TABLE 2.2 THREATENED FAUNA SPECIES OF THE AREA				
Common Name Scientific Name	TSC Act	EPBC Act	Preferred Habitat	Comments
Eastern Pygmy Possum <i>Cercatus nanus</i>	V	-	Found in a variety of habitats from rainforest through open forest to heath. Feeds on insects but also gathers pollen from banksias, eucalypts and bottlebrushes. Nests in banksias and myrtaceous shrubs.	No suitable habitat present.
Southern Brown Bandicoot <i>Isodon obesulus</i>	E		Utilises a range of habitats containing thick ground cover - open forest, woodland, heath, cleared land, urbanised areas and regenerating bushland.	No suitable habitat present.
Grey-headed Flying-fox <i>Pteropus poliocephalus</i>	V	V	Found in a variety of habitats including rainforest, mangroves, paperbark swamp, wet and dry open forest and cultivated areas. Forms camps commonly found in gullies and in vegetation with a dense canopy.	Suitable habitat present.
Yellow-bellied Sheath-tail-bat <i>Saccolaimus flaviventris</i>	V	-	Rainforests, sclerophyll forests and woodlands.	Suitable habitat present.
Eastern Freetail-bat <i>Mormopterus norfolkensis</i>	V	-	Inhabits open forests and woodlands foraging above the canopy and along the edge of forests. Roosts in tree hollows, under bark and buildings.	Suitable habitat present.
Southern Myotis <i>Myotis macropus</i>	V	-	Roosts in caves, mines, tunnels, buildings, tree hollows and under bridges. Forages over open water.	No suitable habitat present.
Greater Broad-nosed Bat <i>Scoteanax rueppellii</i>	V	-	Moist river and creek systems especially tree lined creeks.	Suitable habitat present.
Eastern Bentwing-bat <i>Miniopterus schreibersii</i>	V	-	Prefers areas where there are caves, old mines, old buildings, storm water drains and well timbered areas.	Suitable habitat present.
Large-eared Pied Bat <i>Chalinolobus dwyeri</i>	V	V	Warm-temperate to subtropical dry sclerophyll forest and woodland. Roosts in caves, tunnels and tree hollows in colonies of up to 30 animals.	Suitable habitat present.
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i>	V	-	Recorded roosting in caves, old buildings and tree hollows.	Suitable habitat present.
V = Vulnerable species E = Endangered species				

No threatened flora or fauna species were observed within the subject site.

The threatened flora and fauna species which are considered to have suitable habitat within the subject site will be assessed under the 7 part test of significance in Section 5 of this report.

2.2 Endangered Populations

The endangered populations known to occur within the local government area are:

- *Darwinia fascicularis* subsp.*oligantha* in the Baulkham Hills and Hornsby Local Government Areas;
- Tadgell's Bluebell *Wahlenbergia multicaulis* Benth., in the local government areas of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield;
- Gang-gang Cockatoo, *Callocephalon fimbriatum* (Grant), population in the Hornsby and Ku-ring-gai Local Government Areas.

These species were not observed and suitable habitat for these species was not observed on the subject site. It is therefore considered that no endangered population is present on the subject site.

2.3 Threatened Ecological Communities

Details regarding the habitat attributes and indicative species for the threatened ecological communities known to occur in the local government area are provided in Table 2.3.

TABLE 2.3 THREATENED ECOLOGICAL COMMUNITIES OF THE AREA				
Name	TSC Act	EPBC Act	Habitat Requirements	Comments
Blue Gum High Forest in the Sydney Basin Bioregion (BGHF)	CEEC	CEEC	Geology / Soils: Deep Wianamatta Shale derived soils. Topography: Ridgelines (high rainfall) Characteristic Species: The canopy is dominated by one or more of the following: <i>Eucalyptus saligna</i> <i>Eucalyptus pilularis</i> . <i>Allocasuarina torulosa</i> and <i>Angophora costata</i> .	Not observed during surveys.
Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions	EEC		Geology / Soils: frequently inundated tidal estuarine alluvial soils. Topography: Low lying estuarine areas with occasional inundation by seawater. Characteristic Species: Variable, includes species such as <i>Baumea juncea</i> , <i>Isolepis nodosa</i> , <i>Juncus kraussii</i> , <i>Samolus repens</i> , <i>Sarcocornia quinqueflora</i> , <i>Selliera radicans</i> , <i>Sporobolus virginicus</i> , <i>Suaeda australis</i> , <i>Triglochin striata</i> and <i>Zoysia macrantha</i> .	Not observed during surveys.
Duffys Forest ecological community in the Sydney Basin Bioregion (DF)	EEC		Geology / Soils: Hawkesbury sandstone geology, typically in association with laterite soils and soils derived from shale and laminite lenses. Topography: Ridge tops, plateaus, upper slopes and occasionally mid slopes. Characteristic Species: <i>Eucalyptus sieberi</i> , <i>E. capitellata</i> , <i>E. haemastoma</i> , <i>Angophora costata</i> and <i>Corymbia gummifera</i> .	Not observed during surveys.

TABLE 2.3 THREATENED ECOLOGICAL COMMUNITIES OF THE AREA				
Name	TSC Act	EPBC Act	Habitat Requirements	Comments
River Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	EEC		Geology / Soils: Silts, clay-loams and sandy loams Topography: Periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains. Characteristic Species: <i>Eucalyptus tereticornis</i> , <i>E. amplifolia</i> , <i>Angophora floribunda</i> , <i>Angophora subvelutina</i> , <i>Eucalyptus baueriana</i> , <i>E. botryoides</i> and <i>E. elata</i>	Not observed during surveys.
Shale /Sandstone Transition Forest in the Sydney Basin Bioregion (SSTF)	EEC	EEC	Geology / Soils: Areas transitional between the clay soils derived from the Wianamatta Shale and the sandy soils derived from Hawkesbury Sandstone. Topography: Plateaux and hillsides and at the margins of shale caps over sandstone. Characteristic Species: <i>Eucalyptus punctata</i> , <i>E. resinifera</i> , <i>E. globoidea</i> , <i>E. eugenioides</i> , <i>E. sparsifolia</i> , <i>E. aniculate</i> , <i>E. fibrosa</i> , <i>E. crebra</i> .	Not observed during surveys.
Swamp Oak Floodplain Forest (SOFF)	EEC		Geology / Soils: Alluvial soils of fluvial or estuarine origin, with significant salinity. Topography: Flood plains in areas with saline soils and flats adjoining estuaries. Characteristic Species: <i>Casuarina glauca</i> .	Not observed during surveys.
Swamp Sclerophyll Forest on Coastal Floodplains (SSFCF)	EEC		Geology / Soils: Waterlogged or periodically inundated humic clay loams and sandy loams. Topography: Alluvial flats and drainage lines of coastal floodplains. Characteristic Species: includes species such as <i>Eucalyptus robusta</i> , <i>Melaleuca quinquenervia</i> and <i>eucalyptus botryoides</i> .	Not observed during surveys.
Sydney Turpentine-Ironbark Forest	EEC	CEEC	Geology / Soils: Fertile shale-influenced soils derived from Wianamatta Shale, or shale layers within Hawkesbury Sandstone. Topography: Plateau and hillsides and on the margins of shale capping over sandstone. Characteristic Species: The canopy is dominated by one or more of the following: <i>Syncarpia glomulifera</i> , <i>Eucalyptus punctata</i> , <i>Eucalyptus paniculata</i> and <i>Eucalyptus eugenoides</i> , <i>Eucalyptus resinifera</i> .	Not observed during surveys.
CEEC = Critically Endangered Ecological Community EEC = Endangered Ecological Community VEEC = Vulnerable Ecological Community				

No threatened ecological communities were observed within the subject site.

3. SURVEY DETAILS

3.1 Flora

A field survey which consisted of foot traverses within vegetated areas was conducted according to Cropper (1993) to identify the occurrence of flora species and the extent and location of vegetation communities present across the subject site. Searches were undertaken within suitable habitat for threatened flora species within the subject site.

The flora survey was undertaken on 17 May 2010.

3.2 Fauna

Due to the high level of disturbance to fauna habitats and relatively small size of the subject site, a reduced level of fauna survey was undertaken.

Surveys involved searches for key signs of threatened fauna occupation. The methods that were utilised consisted of:

- Habitat searches;
- Diurnal amphibian, reptile and bird survey; and
- Hollow bearing tree assessment.

Fauna survey duration and weather details were as follows:

Diurnal Surveys:

- 17/04/10: 1430-1500, 8/8 cloud, no wind, 18⁰C, no rain.

4. FLORA AND FAUNA CHARACTERISTICS

4.1 Flora Characteristics

The vegetation of the site consists of Landscaped Garden vegetation. A description of this vegetation community is provided below.

LANDSCAPED GARDEN

Structure:

Trees: To 20m in height with a 10% PFC.

Shrubs: To 2m in height with a 5% PFC.

Groundlayer: To 0.5m high with 5% PFC.

Floristics:

(Main Species Present)

Trees: *Alnus acuminata* (Evergreen Alder), *Robinia pseudoacacia* (False Acacia).

Shrubs: *Murraya paniculata* (Mock orange).

Groundlayer: *Agapanthus praecox* subsp. *orientalis* (African Lily), *Stenotaphrum secundatum* (Buffalo Grass), *Pennisetum clandestinum* (Kikuyu Grass).

Exotics: All of the dominant species within this community are exotic species.

Classification:

This vegetation community is highly disturbed and is considered to not correspond to any locally occurring native vegetation community.

Variation:

There is variation within this community with regard to the distribution of species.

Disturbance:

The subject site has been extensively cleared and developed.

Weed Invasion:

Non endemic and exotic species are dominant within all layers of this vegetation community.

Location and Distribution:

This vegetation community occurs within the landscaped areas of the subject site.

4.2 Fauna Characteristics

Limited fauna habitats are present on the site. These consist of:

- Flower, nectar and seed producing trees and shrubs;

The vegetation within the subject site consists of Landscaped Gardens. The subject site is likely to be utilised predominantly by species which are able to exploit highly disturbed habitats.

The flower and nectar producing tree and shrub species within the site provide a foraging resource for bird, arboreal mammal and bat species. The understory provides a limited foraging resource and shelter for reptiles. No hollow bearing trees were observed within the subject site.

4.3 Fauna Observed

No threatened fauna species were observed within the subject site during surveys. All species observed are considered to be relatively common within the local area.

5 ASSESSMENTS AND CONCLUSIONS

5.1 Environment Protection & Biodiversity Conservation Act (1999) Assessment

The *Environment Protection and Biodiversity Conservation Act*, (1999) requires that Commonwealth approval be obtained for certain actions. The Act provides an assessment and approvals systems for actions that have a significant impact on matters of National Environment Significance (NES). These may include:-

- Wetlands protected by international treaty (the Ramsar Convention);
- Nationally listed threatened species and ecological communities;
- Nationally listed migratory species.

Actions are projects, developments, undertakings, activities, series of activities or alteration of any of these. An action that needs Commonwealth approval is known as a controlled action. A controlled action needs approval where the Commonwealth decides the action would have a significant effect on a NES matter.

Where a proposed activity is located in an area identified to be of NES, or such that it is likely to significantly affect threatened species, ecological communities, migratory species or their habitats, the matter needs to be referred to the Department of the Environment, Water, Heritage and Arts (DEWHA).

No threatened flora or fauna species listed within the *EP&BC Act* (1999) were observed within the subject site.

No migratory fauna species listed within the *EP&BC Act* (1999) were observed within the subject site.

No Endangered Ecological Communities (EECs) listed within the *EP&BC Act* (1999) were observed within the subject site.

It is considered that the proposed action does not constitute a matter of National Environmental Significance and a referral of this project to the Department of the Environment, Water, Heritage and Arts is not required as the proposed action is not likely to impact on a significant population of nationally listed threatened or migratory species or on any nationally listed endangered ecological community.

5.2 Assessment of Impact on Threatened Species

As identified in Section 5(A) of the *EP&A Act* 1979 the following matters need to be addressed to determine whether or not a significant effect on threatened species, populations or ecological communities or their habitats is likely to result from the proposed development.

- a) ***In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,***

FLORA

It is considered that there is no suitable habitat contained within the subject site for threatened flora species.

FAUNA

In relation to threatened fauna species with suitable habitat present the following assessments are provided.

Grey-headed Flying-fox (*Pteropus poliocephalus*)

The Grey-headed Flying-fox inhabits a wide range of habitats including rainforest, mangroves, paperbark forests, wet and dry sclerophyll forests and cultivated areas. This species roosts in camps, which may contain tens of thousands of individuals. Camps are commonly formed in gullies, typically not far from water and usually in vegetation with a dense canopy (Tidemann 1995).

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)

The Yellow-bellied Sheathtail-bat inhabits a wide variety of habitats from wet and dry sclerophyll forest, to open woodland, shrubland, mallee, grassland and desert. They fly fast and straight usually over the canopy, and lower over open spaces and at forest edges. This species roosts in large tree hollows (Churchill 2009).

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Eastern Freetail-bat (*Mormopterus norfolkensis*)

The Eastern Freetail-bat utilize dry eucalypt forest and woodland on the coastal side of the Great Dividing Range. They show a preference for open spaces in woodland or forest, and are more active in the upper slopes of forest areas rather than in riparian zones. They also forage over large waterways. This species roosts in hollow trees (usually in hollow spouts), under exfoliating bark and in various man made structures (Churchill 2009).

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Greater Broad-nosed Bat (*Scoteanax rueppellii*)

A wide variety of habitats are utilized by this species including moist gullies in mature coastal forest, rainforest, open woodland, Melaleuca swamp woodland, wet and dry sclerophyll forest, cleared areas with remnant trees and tree-lined creeks in open areas. The Greater Broad-nosed Bat forages about 5m from the edge of isolated trees, forest remnants or along forest crowns with a slow direct flight pattern. This species is known to roost in tree hollows, cracks and fissures in trunks and dead branches, under exfoliating bark, as well as in man made structures including roofs of old buildings (Churchill 2009).

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Eastern Bentwing-bat (*Miniopterus schreibersii*)

Preferred habitats for this species include rainforest, wet and dry sclerophyll forest, open woodland, Melaleuca forests and open grassland. The Eastern Bentwing-bat forages high in forested areas from just above canopy height to many times canopy height. In more open areas such as grasslands, flight may be within a few metres of

the ground. Eastern Bentwing-bats are cave dwellers, but will also roost in man made structures such as road culverts and mines (Churchill 2009).

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Large-eared Pied Bat (*Chalinolobus dwyeri*)

The Large-eared Pied Bat forages for insects below the forest canopy. During the day these bats may roost in caves, mine tunnels and the abandoned nests of Fairy. The Large-eared Pied Bat may also utilize tree hollows. The Large-eared Pied Bat is mainly found in drier habitat including dry sclerophyll and woodland, east and west of the Great Dividing Ranges (Churchill 2009).

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)

The Eastern False Pipistrelle inhabits wet sclerophyll forest, open forest, rainforest and coastal mallee. They generally prefer tall and wet forests where the trees are more than 20 metres high and the understorey is dense. This species predominantly roosts in hollow trunks of eucalypts, however have also been reported to roost in caves and old buildings (Churchill 2009).

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

- b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,***

No flora or fauna specimens or suitable habitats for flora or fauna specimens, belonging to any endangered population were observed within the subject site.

Therefore the proposed action will not have an adverse effect on the life cycle of any species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

- c) *In the case of a critically endangered or endangered ecological community, whether the action proposed:***

- i. *Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***

No endangered ecological communities were observed within the subject site during surveys. Therefore the proposed action is not likely to have an adverse effect on the

extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

ii. *Is likely to substantially and adversely modify the composition such that its local occurrence is likely to be placed at risk of extinction,*

No endangered ecological communities were observed within the subject site during surveys. Therefore the proposed action is not likely to substantially and adversely modify the composition such that its local occurrence is likely to be placed at risk of extinction.

d) *In relation to the habitat of threatened species, populations or ecological community:*

i. *The extent to which habitat is likely to be removed or modified as a result of the action proposed, and*

The proposed development will require the removal of all of the vegetation within the subject site.

ii. *Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and*

The subject site has been developed and is surrounded by other developed areas. It is therefore considered that an area of habitat is not likely to become fragmented or isolated from other areas of habitat as a result of the proposed action.

iii. *The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality*

The subject site consists of landscaped gardens which are likely to only be of value to fauna species which are able to exploit man made habitats.

It is therefore considered that the habitat to be removed, modified, fragmented or isolated by the proposal is not important to the long-term survival of threatened species, populations or ecological communities in the locality.

e) *Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),*

The subject site has not been classed as critical habitat within the provisions of the *Threatened Species Conservation Act* (1995). Therefore it is considered that the proposed action will not have an adverse effect on critical habitat (either directly or indirectly).

f) *Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,*

There is a recovery plan for the Grey-headed Flying Fox, which has suitable foraging habitat contained within the subject site.

The proposed development is not inconsistent with the broader objectives or actions of this Recovery Plan.

- g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.**

The proposed action does not constitute and is not part of a key threatening process and is not likely to result in the operation of, or increase the impact of, a key threatening process.

5.3 State Environmental Planning Policies

SEPP 14 - Coastal Wetlands

The subject site is not included within an area mapped as a wetland in SEPP 14.

SEPP 26 - Littoral Rainforest

The subject site is not included within an area mapped as a littoral rainforest in SEPP 26.

SEPP 44 - Koala Habitat Assessment

The subject site does not have an area of more than one hectare, therefore the provisions of SEPP 44 do not apply.

5.4 Specific Local Government Area Assessment

It is considered that no specific local government area assessments apply to the subject site.

5.5 Conclusions

Based on the detailed field survey and information provided in this report it is concluded that:

- i. No threatened flora or fauna species were observed within the subject site;
- ii. No endangered populations or ecological communities were observed within the subject site;
- iii. The proposed development is not likely to have a significant effect on threatened species, populations or ecological communities or their habitats;
- iv. A Species Impact Statement is not required for the proposed development;
- v. A referral to the Department of the Environment, Water, Heritage and the Arts (DEWHA) is considered unnecessary.

6. REFERENCES

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