Environmental

Services

Flora and Fauna Assessment

Proposed Illawarra International Health Precinct

Lot 22 DP 607750 and Lot 4 DP 258024

Huntley Road, Huntley

NSW Department of Planning

February 2009

Our Reference: E3080025

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for

La Vie Developments Pty Ltd

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EXECUTIVE SUMMARY

This report has identified and described the biological environment of Lot 22 DP 607750 & Lot 4 DP 258024, Huntley Road, Huntley. The report has assessed the potential impacts on flora and fauna, including threatened and migratory species, endangered populations and threatened communities, or their habitats, of the proposal to develop a major hospital and health care precinct.

The development application will be assessed pursuant to Part 3A of the *NSW Environmental Planning and Assessment Act 1979* (*EP&A Act*) and will be determined by the Minister for Planning, so the Director General's Environmental Assessment Requirements were considered in preparing this report.

The existing environment was described in detail from a literature review and from data gathered during fieldwork by BES in January 2009. Flora and fauna surveys resulted in the detection of 43 flora species, including 34 exotic species, and nine fauna species. One vegetation community, Improved Pasture with Occasional Native Trees was identified in the study area.

No other threatened species, populations, communities or migratory species listed on the schedules of the *NSW Threatened Species Conservation Act 1995,* or on the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999,* were detected within the study area, nor are any considered likely to occur there regularly or be dependent upon the habitats there.

The impacts of the proposal on matters if national environmental significance, including RAMSAR wetlands, threatened species, endangered populations, threatened ecological communities, and migratory species listed on the *Commonwealth Environment Protection & Biodiversity Conservation Act 1999* were assessed under the administrative guidelines produced by Environment Australia. This assessment concluded that there is unlikely to be a significant impact on matters of national environmental significance resulting from the proposal, and that a referral to the Commonwealth Environment Minister is not required for the proposal.

An assessment pursuant to *NSW State Environmental Planning Policy No 44 – Koala Habitat Protection* was carried out, which concluded that the study area did not contain core Koala habitat and that a Plan of Management for Koala habitat was not required.

The extent, magnitude and significance of the impacts of the proposal on threatened species, populations and ecological communities listed on the *TSC Act* and *FM Act* were assessed in accordance with the Draft Guidelines for Threatened Species Assessment (Department of Environment and Conservation, Department of Planning, 2005) and it was concluded that:

- the proposal will maintain or improve biodiversity values;
- the proposal will not reduce the long-term viability of local populations of threatened species, populations or ecological communities;
- the proposal will not accelerate the extinction of threatened species, populations or ecological communities; and
- will not affect critical habitat.

1. INTRODUCTION

1.1 Background

This report has been prepared by Bushfire and Environmental Services (BES) at the request of La Vie Developments Services, to accompany a Major Project application (MP08_0156) to the Department of Planning for a proposed hospital and health care precinct at Lot 22 DP 607750 & Lot 4 DP 258024, Huntley Road, Huntley (hereafter referred to as the subject land).

The subject land comprises approximately 10.5 ha of freehold land situated to the immediate west of the existing residential area of the suburb of Penrose. The subject land has long been cleared and used for grazing. The location of the subject land is shown in Figure 1 (Appendix A).

The development application will be assessed pursuant to Part 3A of the *NSW Environmental Planning and Assessment Act 1979* (*EP&A Act*) and will be determined by the Minister for Planning.

This report is the outcome of desktop studies and flora and fauna survey work undertaken by BES for this proposal during January 2008.

1.2 The Proposal

1.2.1 Description

The proposal involves the staged development of a major private hospital and healthcare precinct as shown in Figure 2 (Appendix A). The proposal will affect the entirety of the subject land.

1.2.2 Direct and Indirect Impacts

The following direct impacts on flora and fauna are anticipated from the proposal:

a) the removal of a few isolated remnant and regrowth native trees;

b) Excavation of some earth material;

c) Compaction and covering of soil within areas to be filled, concreted and/or bitumen sealed; and

d) Death or injury to native and introduced flora and fauna inhabiting the areas to be cleared and excavated for the proposal.

The following indirect impacts on flora and fauna are anticipated from the proposal:

a) Excavation for the under-grounding of services;

b) Minor changes to drainage characteristics resulting from the management of stormwater; and

c) Increased potential for discharges of sediments into receiving waters during construction of the proposal.

1.3 The Study Area

The study area for the purposes of this report is those areas that will be affected directly or indirectly by the proposal which is considered to comprise the entirety of the subject land.

The locality for the purposes of this report is the land within a 10 km x 10 km grid centred on the study area.

1.4 Aim and Objectives

The aim of this investigation was to assess the ecological impact of the proposal on the flora, fauna and habitats of the study area.

The objectives of this investigation were:

a) to identify and describe the flora species and vegetation communities present in the study area and their conservation significance;

b) to identify and describe the fauna habitats present in the study area and their condition;

c) to identify the fauna species which are present or likely to occur in the study area, and their conservation significance;

d) to evaluate and assess the magnitude, extent and significance of the impacts associated with the proposal in the context of the conservation importance of the flora, fauna, habitats and other environmental features to be affected;

e) to describe and justify measures to avoid, mitigate and/or offset any adverse effects of the proposal on flora, fauna, habitats and other environmental features of conservation importance;

f) to demonstrate and justify how the proposal meets the key thresholds identified in the Draft Guidelines For Threatened Species Assessment (Department of Environment and Conservation, DOP, 2005);

g) to address the Environmental Assessment Requirements of the Director-General of the DOP regarding flora and fauna issues;

h) to determine whether the proposal involves an action that has, will have, or is likely to have, a significant impact on a matter of national environmental significance under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*; and

i) to make recommendations regarding any environmental management and impact mitigation/amelioration measures, which can be implemented to limit the effects of the proposal on vegetation, fauna, habitats, and other environmental features as necessary.

1.5 Environmental Assessment Requirements

A preliminary application has been successfully lodged with the DOP and the Director General's Environmental Assessment Requirements pertaining to biodiversity provided in correspondence from the department dated 1 October 2008.

Consequently, the following biodiversity issues raised by the DOP will be addressed by this report:

a) assess and address any impacts of the development on flora and fauna, including potential indirect impacts such as water quality, and the management of these.

1.6 Certification

The contents of this report are certified by Ryan Smithers, Senior Ecologist / Project Officer – Environmental Services Division of BES, to comply with the *Draft Guidelines for Threatened Species Assessment* (Department of Environment and Conservation, DOP, 2005).

2. METHODOLOGY

2.1 Review of Existing Data

A review of relevant information was undertaken prior to the commencement of field studies, which involved:

a) reviewing available literature including relevant flora and fauna studies, legislation, environmental planning instruments, topographic maps, aerial photographs and draft plans pertaining to the proposal;

b) searching the Atlas of NSW Wildlife for threatened flora and threatened fauna species recorded in the locality; and

c) searching the Commonwealth Environment Protection & Biodiversity Conservation Act Protected Matters Search Tool for matters of national environmental significance recorded in the locality.

The data gathered during the field studies and from the review of literature were analysed and interpreted in accordance with the provisions of legislation and planning controls pertaining to flora and fauna.

2.2 Flora Survey Methods

A botanical survey was conducted in the study area by BES on 5 January 2009.

Community Identification and Floristic Audit

The Random Meander technique documented by Cropper (1993) was used across the study area and immediate surrounds, to document the flora species present and the location and extent of vegetation communities.

The vegetation was surveyed at all levels present: the canopy (trees), middle canopy (trees), understorey (shrubs), and groundcover plants (plants less then one metre in height). A general description of the vegetation was then prepared. This technique was used to classify the vegetation communities. The vegetation was assessed according to the structural classifications in Specht (1970), with characteristic and dominant plant species being identified and recorded. The boundaries of vegetation communities in the study area were marked onto a survey plan.

Targeted Searches

Specific searches for plant species of conservation significance known from the locality were conducted using the Random Meander method targeting areas of potential or suitable habitat. This method was used to search for *Chorizema parviflorum*, and *Lespedeza juncea* subsp*. sericea.*

Limitations

The floristic audit undertaken detected as many species as possible and provides a comprehensive but not definitive species list. More species would probably be detected during longer surveys over various seasons. Nevertheless, the techniques used in this investigation are considered adequate to gather the data necessary for the assessment of the effects of the proposal on flora species.

Nomenclature

Most of the plant species names in this report are the current names published in the Flora of NSW (Harden 1990-2000). The taxonomic names have been supplemented with common names obtained from various sources. The scientific and conservation significance of individual plant species was established with reference to Briggs and Leigh (1996) and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* in the national context, the *NSW Threatened Species Conservation Act 1995* in the state context, and after and PlantNET (accessed January 2009) in the regional context.

Flora Survey Effort

The flora survey effort employed a total of 4 person-hours as documented in Table 1.

Table 1: Flora survey effort employed over the study area.

DATE	METHOD	EFFORT	TARGET SPECIES
5 January 2009	Random meander and targeted threatened flora surveys	3 person-hour	All flora species including *Chorizema parviflorum* and *Lespedeza juncea* subsp. *sericea*
	Vegetation plots	1 person-hour	All flora species
TOTAL FLORA SURVEY EFFORT		**4 person-hours**	

2.3 Fauna Survey Methods

Field investigations for fauna were conducted in the study area by BES on 5 January 2009.

Opportunistic Diurnal Surveys

Opportunistic fauna surveys involved observations of animal activity, habitat surveys and searches for indirect evidence of fauna.

Diurnal mammal searches were conducted in areas of potential habitat across the study area, with emphasis on searches for scats, tracks, burrows, diggings and scratchings. Specific bird, reptile and amphibian searches were conducted across the study area involving both visual and aural detection of species.

Specific searches were conducted for habitats or resources of relevance for those threatened fauna species known from the general region, or species, which might be anticipated to occur given the vegetation communities and habitats present. Opportunistic records of all fauna species observed were maintained throughout the survey period, and an inventory was compiled of all species recorded during the current investigations.

Habitat Analysis

A description of the fauna habitats in the study area was prepared because the type of habitat in an area influences which animals occur there, as well as diversity and abundance. This habitat assessment also has an important role in predicting threatened fauna likely to occur in an area. The information collected usually includes the type of vegetation present, the presence/absence of rock outcrops, tree hollows, dams, ponds, streams, foraging substrates and other features likely to attract threatened fauna.

Limitations

The results of fauna surveys can be optimised by conducting investigations over a long period to compensate for the effect of unfavourable weather, seasonal changes and climatic variation. In general, the longer the survey the more species will be detected. Results can also be improved by using a wide range of techniques, since some species are more likely to be detected by a particular method. Such techniques include pitfall trapping, hair tubing and harp trapping. However, surveys are subject to constraints that determine the amount of time allocated, the methods used and the timing of the work. Thus, the results should be viewed in the light of these limitations. The fauna detected in current survey work are a guide to the native fauna present, but are by no means a definitive list of the species occurring in the study area. Nevertheless, the techniques used in this investigation are considered adequate to gather the data necessary for the assessment of the effects of the proposal on fauna species.

Nomenclature

The nomenclature in this report is based on the Mammals of Australia (Strahan 1995), Australian Bats (Churchill 1998), The Taxonomy and Species of Birds of Australia and its Territories (Christidis & Boles 1994) and Reptiles and Amphibians of Australia (Cogger 1996).

Survey Effort

The fauna survey effort employed a total of 4 person-hours as documented in Table 2.

Table 2: Fauna survey effort employed over the study area.

DATE	METHOD	EFFORT	TARGET SPECIES
5 January 2009	Diurnal habitat search and opportunistic fauna survey	4 person-hour	All species
		4 PERSON HOURS	

3. THE EXISTING ENVIRONMENT

3.1 Topography, Geology, and Soils

The study area lies at an altitude of between 30 m and 48 m Australian Height Datum and comprises gently sloping land. Elevation rises to the central parts of the study area and consequently aspect is variable.

The study area is underlain by Budgong Sandstone, which comprises tuffaceous sandstone. The Kiama 1:100,000 Soil Landscapes Sheet (Hazelton 1992) indicates that the study area supports the Shellharbour soil landscape which comprises deep Praire Soils on crests, lower-slopes and drainage plains with Brown Krasnozems on mid-slopes.

There are no drainage lines within the study area which is in the catchment of Mullet Creek.

3.2 Disturbances

The study area is heavily disturbed with the original native vegetation having long been cleared for grazing and replaced by improved pasture. There are one or two remnant mature trees and a few regrowth native trees and shrubs scattered predominately in the western parts of the study area. The groundcover in the study area is dominated by common exotic pasture grasses, herbs and weeds and continues to be grazed.

The study area is also traversed by the 132 overhead powerline and a natural gas easement.

3.3 Flora

The study area supports one vegetation community, Improved Pasture with Occasional Native Trees, which covers the entirety of the study area as shown in Figure 3 (Appendix A).

3.3.1 Improved Pasture with Occasional Native Trees

The study area has long been used for grazing and has been pasture improved. Given the historic landuses, the vegetation within the subject site is characterised by exotic pasture grasses, herbs and weeds with a few remnant and regrowth individuals of Prickly-leaved Paperbark *Melaleuca stypheliodes,* Swamp Oak *Casuarina glauca*, and a few scattered shrubs of Lantana *Lantana camara*, Black Wattle *Acacia mearnsii*, Small-leaved Privet *Ligustrum sinense* and Wild Tobacco Bush *Solanum mauritanum*, mainly along fenclines.

The most common exotic pasture grasses, herbs and weeds include *Briza subaristata*, Kikuyu *Pennisetum clandestinum*, Paspalum *Paspalum dilatatum*, Slender Pigeon Grass *Setaria parviflora*, a rat's tail grass *Sporobolis* sp, Fireweed *Senecio madagascariensis*, Veined Verbena *Verbena rigida*, Slender Centuary *Centaurium tenuiflorum*, Dandelion *Taraxacum officinale*, White Clover *Trifolium repens*, Lamb's Tongue *Plantago lanceolata*, Paddy's Lucerne *Sida rhombifolia*, Fennel *Foeniculum vulgare*, Slender Celery *Cyclospermum leptophyllum*, Scarlet Pimpernel *Anagalis*

arvensis, Rye Grass *Lolium perenne,* Rhodes Grass *Chloris gayana*, Couch *Cynodon dactylon*, Cocksfoot *Dactylis glomerata*, Flatweed *Hypochaeris radicata*, Fleabane *Conyza bonariensis*, Spear Thistle *Cirsium vulgare*, Curled Dock *Rumex crispus a* Cudweed *Gamochaeta sp.* and Blackberry *Rubus ulmifolius*.

There are a few of the hardier and cosmopolitan native groundcovers such as Bergalia Tussock *Carex longebrachiata,* Common Rush *Juncus usitatus*, Red-leg Grass *Bothriochloa macra*, Native Bluebell *Wahlenbergia gracilis* and Indian Pennywort *Centella asiatica* in places, however native species are uncommon and do not dominant anywhere within the study area.

3.3.2 Flora Species

A total of 43 flora species were identified within the study area by BES, including 34 exotic species and nine native species, and these are listed in Table 3.

Table 3: Flora species recorded in the study area (* denotes an introduced species)

SCIENTIFIC NAME	COMMON NAME
Acacia mearnsii	Black Wattle
*Anagalis arvensis**	Scarlet Pimpernel
*Araujia hortorum**	Moth Vine
*Axonopus fissifolius**	Narrow-leaved Carpet Grass
Bothriochloa macra	Red-leg Grass
*Briza subaristata**	--
*Canna indica**	Indian Shot
Carex longebrachiata	Bergalia Tussock
Casuarina glauca	Swamp Oak
*Centaurium tenuiflorum**	Slender Centaury
Centella asiatica	Asian Pennywort
*Chloris gayana**	Rhodes Grass
*Cirsium vulgare**	Spear Thistle
Conyza sp.*	A Fleabane
*Cyclospermum leptophyllum**	Slender Celery
*Cynodon dactylon**	Couch
*Dactylis glomerata**	Cocksfoot
*Eragrostis curvula**	African Love Grass
*Foeniculum vulgare**	Fennel
Gamochaeta sp.*	Cudweed
Hardenbergia violacea	Twining Pea

*Hypochaeris radicata**	Flatweed
Juncus usitatus	Common Rush
*Lantana camara**	Lantana
*Ligustrum sinense**	Small-leaved Privet
*Lolium perenne**	Perennial Rye Grass
Medicago sp.*	A medic
Melaleuca styphelioides	Prickly-leaved Paperbark
*Paspalum dilatatum**	Paspalum
*Pennisetum clandestinum**	Kikuyu
*Plantago lanceolata**	Lamb's Tongue
*Rubus ulmifolius**	Blackberry
*Rumex crispus**	Curled Dock
*Senecio madagascariensis**	Fireweed
*Setaria parviflora**	Slender Pidgeon Grass
*Sida rhombifolia**	Paddy's Lucerne
*Solanum mauritanium**	Wild Tobacco Bush
Sporobolus sp.*	A parramatta grass
*Taraxacum officinale**	Dandelion
*Thunbergia alata**	Black-eyed Susan
*Trifolium repens**	Clover
*Verbena rigida**	Veined Verbena
Wahlenbergia gracilis	Native Bluebell

3.4. Fauna

3.4.1 Fauna Habitats

The fauna habitats present in the study area are limited as a result of the level of disturbance, and are those generally associated with occasional remnant trees and introduced grasslands.

The study area contains foraging resources in the form of:

- a small amount of blossom associated with the scattered paperbarks;
- a few fleshy fruit-bearing plants i.e. Lantana and Privet;
- a reasonable abundance of seed and herbage for granivores and herbivores in association with the grassy groundcover; and
- a few flowering wattles.

The foraging resources within the study area are insignificant relative to the abundance of similar resources in the locality and would be utilised primarily by a range of common native and exotic fauna such as the common birds species listed in Table 4.

The foraging substrate provided by the exotic pastures would also include a range of insects and other invertebrates, common reptiles and amphibians that are likely to provide occasional foraging habitat for common native water birds such as the Masked Lapwing *Vanellus miles,* and White-faced Heron *Ardea novaehollandiae.* However, waterbirds that forage in swampy water-covered ground are unlikely to forage in the study area regularly given the absence of such habitats. The study area provides negligible resources for nectarvors and frugivores.

There are no hollow-bearing trees within the study area so there is no potential breeding, denning or roosting habitat for hollow dependent fauna. There is a small amount of shelter for terrestrial mammals, amphibians and reptiles in the grassy groundcover however the foraging and shelter resources are generally very limited. The few remnant trees within the study area do not provide good roosting or nesting habitat for birds, given their exposed location, and no raptor or waterbird nests were observed within the study area. There are no rock or water habitats within the study area, which limits the habitat for common amphibians and reptiles.

Connections between the habitats within the study area and those elsewhere in the locality are generally poor as a result of the surrounding residential and rural development and the roads which abut the property boundaries. The study area is not part of any recognised fauna linkage such as the Yallah-Calderwood Corridor.

3.4.2 Fauna Species

Opportunistic observations during the survey period resulted in the detection of nine faunal species occurring the study area and these are listed in Table 4.

Table 4: Fauna species recorded during this study (*denotes introduced species)

CATEGORY	COMMON NAME	SCIENTIFIC NAME	DETECTION METHOD
Mammals	Horse*	*Equus caballus**	Observed
Birds	Black-faced Cuckoo-shrike	*Corocina novaehollandiae*	Observed
	Indian Mynah*	*Acridotheres tristis*	Observed
	Laughing Kookaburra	*Dacelo novaeguineae*	Call recognition
	Magpie Lark	*Grallina cyanoleuca*	Call recognition
	Australian Magpie	*Gymnorhina tibicen*	Observed
	Skylark	*Alauda arvensis*	Observed
	Sulphur Crested Cockatoo	*Cacatua pastinator*	Call recognition
	Superb Fairy-wren	*Malurus cyaneus*	Call recognition

4. CONSERVATION SIGNIFICANCE

The *NSW Threatened Species Conservation Act 1995* (*TSC Act*) and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*) provide for the listing of threatened flora and fauna species. The *EPBC Act* also provides for the listing of migratory species. The *NSW Fisheries Management Act 1994* (*FM Act*) provides for the listing of threatened fish species and marine vegetation.

The *TSC Act* classifies threatened flora and fauna species as Endangered (Schedule 1, Part 1), Vulnerable (Schedule 2), or Presumed Extinct (Schedule 1, Part 4). Records of these species may be obtained by searching the Atlas of NSW Wildlife.

The *EPBC Act* classifies threatened flora and fauna species as Extinct, Critically Endangered, Endangered or Vulnerable. An indication of the threatened and migratory species likely to be encountered in a locality may be obtained by using the *EBPC Act* Protected Matters Search Tool. Both of these databases were searched for records of threatened flora, threatened fauna and migratory species within an area of 10 km x 10 km centred on the study area. The *FM Act* classifies threatened fish and marine vegetation as Endangered, Vulnerable, or Presumed Extinct. An indication of the species likely to be encountered in a locality may be obtained by reviewing the recommendations for threatened species listed on the schedules of the *FM Act*.

4.1 Threatened Flora

The outcome of database searches for threatened flora is shown in Table 5 below with the status of each species listed as endangered (E) or Vulnerable (V). Additional threatened flora known from the locality that are associated with habitats similar to those in the study area or immediate surrounds are also discussed in Table 5. The potential for each of these species to occur in the study area and the importance of the habitats to be affected by the proposal are discussed in Table 5 and a decision made regarding the need or otherwise for further assessment in this report.

Table 5: Threatened flora species recorded or potentially occurring in the locality.

THREATENED FLORA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
Caladenia tessellata Thick-lipped Spider-orchid	E	V	This terrestrial orchid favours low open forest with a heathy or sometimes grassy understorey on clay loam or sandy soils. The species is not known from the Wollongong local government area, which suggests the likelihood of the species occurring on the study area is low. There is no suitable habitat for the species within the study area and it would not occur there.	No

THREATENED FLORA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
Cryptostylis hunteriana Leafless Tongue Orchid	V	V	This terrestrial orchid is known from swamp-heath and open forest on sandy soils in coastal districts. The species is associated with heathlands and dry shrubby woodlands, which do not occur in the study area. Suitable habitat is not available for this species within the study area and it would not occur there.	No
Daphnandra sp. *Illawarra* Illawarra Socketwood	E	E	This medium sized rainforest tree is restricted to the Illawarra and is known from 36 locations between Scarborough and Broughton Vale. The species occupies rocky hillsides on soils derived from volcanic or fertile sedimentary rocks and is associated primarily with subtropical rainforest but also occurs in warm temperate rainforests with subtropical elements and is occasionally found in moist eucalypt forest. The study area does not provide habitat for the species and it does not occur there.	No
Irenepharsus trypherus Delicate Cress	E	E	This species has been recorded at the bases of cliffs near waterfalls amongst rainforest vegetation particularly subtropical rainforest and is also associated with rocky and unstable upper-slopes of ridge systems extending south and east from the Illawarra Escarpment. The main distributional range of the species extends from Marshall Mount to Lake Yarrunga. The study area does not provide suitable habitat for the species and it does not occur there.	No
Pterostylis gibbosa Illawarra Greenhood	E	E	This species is found in woodlands and open forest dominated by Forest Red Gum and Paperbarks on poorly drained soils with a grassy groundcover. The species is known to occur to the south of the study are in the Yallah-Albion Park area. The study area is too highly disturbed to provide potential habitat for the species and it would not occur there.	No
Solanum celatum	E	-	This species is found in rainforest clearings and the understorey of wet Eucalyptus forest. The species is thought to occur from Wollongong to Nowra and west to Bungonia. The species is very rare with the majority of records prior to 1960. However the species has been recorded recently by BES at a number of sites in the Illawarra including at Mount Brown to the east of the study area. However, the study area is too highly disturbed to provide potential habitat for the species and it would not occur there.	No

No threatened species were recorded by BES during the survey period despite good survey coverage and none are expected to occur there.

4.2 Threatened Fauna

The outcomes of database searches for threatened fauna and the review of recommendations for threatened species listed on the schedules of the *FM Act* are shown in Table 6 below with the status of each species listed as endangered (E) or Vulnerable (V). The potential for each of these species to occur in the study area and the importance of the habitats to be affected by the proposal are discussed in Table 6 and a decision made regarding the need or otherwise for further assessment in this report. Marine and oceanic species have been omitted as they would not occur in the study area.

Table 6: Threatened fauna species recorded or likely to occur in the locality.

THREATENED FAUNA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
Mammals				
Eastern Bentwing-bat *Miniopterus schreibersii oceanensis*	V	V	The Eastern Bent-wing Bat has chocolate to reddish-brown fur on its back and slightly lighter coloured fur on its belly. It has a short snout and a high 'domed' head with short round ears. Eastern Bent-wing Bats occur along the east and north-west coasts of Australia. The species hunts in forested areas, catching moths and other flying insects above the tree tops. Caves are the primary roosting habitat for this species, which forms discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. At other times of the year, populations disperse within about 300 km range of maternity caves. No suitable breeding, maternity roosting or foraging habitat for this species occurs in the study area and it is highly unlikely that it would occur there.	No
Long-nosed Potoroo *Potorous tridactylus*	V	V	This species requires thick contiguous undergrowth where the soil is light and sandy. There is no suitable habitat for the species within the study area and it would not occur there. The nearest known population of the species occurs on the Budderoo Plateau to the south of the Wollongong LGA.	No
Southern Brown Bandicoot *Isoodon obesulus*	E	E	This species requires thick contiguous undergrowth where the soil is light and sandy. This species is sparsely distributed in disjunct populations and is not known to occur in the locality. There is no suitable habitat for the species within the study area and would not occur there.	No

THREATENED FAUNA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
Spotted-tailed Quoll *Dasyurus maculatus*	V	E	The species prefers moist forest types and is often associated with escarpments, although is known to occur in a wide range of habitats. The study area contains no suitable habitat and no resources of importance for this species. The species would not occur in the study area.	No
Birds				
Australian Painted Snipe *Rostratula australis*	E	V	This species is usually found in wetlands with areas of dense vegetation. There is no suitable habitat for the species in the study area and it would not occur there.	No
Black Bittern *Ixobrychus flavicollis*	V	-	This species is found in wetlands and associated creeks containing dense vegetation and in the Illawarra it is usually recorded in watercourses with either Swamp Oak or River Oak *Casuarina cunninghamiana*. There is no suitable habitat for the species in the study area and it would not occur there.	No
Freckled Duck *Stictonetta naevosa*	V	V	The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. The species may occur in coastal NSW during extensive inland droughts when wetlands in the Murray River basin provide important habitat. It prefers permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. No suitable habitat for this species occurs within the study area and it would not occur there.	No
Gang-gang Cockatoo *Callocephalon fimbriatum*	V	-	Gang-gang cockatoos live as pairs inhabiting woodlands of south-eastern Australia. The species feed on the seeds of eucalypts, acacias and occasionally fruits of plant species such as *Persoonia sp.* Nest sites are usually within medium sized hollows in living eucalypts. Egg-laying occurs from late spring to early summer with one or two young being raised per clutch. There are no foraging, roosting or breeding resources for the species within the study area and it would not occur there.	No

THREATENED FAUNA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
Glossy Black-cockatoo *Calyptorhynchus lathami*	V	-	The species is regarded as a scarce resident in the Illawarra region generally occurring on the southern or western margins of the LGA and very rarely below the escarpment. The species feeds predominantly on the cones of Casuarina species, however does not forage on Swamp Oak. There are no foraging, roosting or breeding resources for the species within the study area and it would not occur there.	No
Orange-bellied Parrot *Neophema chrysogaster*	E	CE	The species breeds in Tasmania and migrates in autumn to spend the winter on the mainland coast of south-eastern South Australia and southern Victoria. On the mainland, the Orange-bellied Parrot spends winter mostly within 3 km of the coast in sheltered coastal habitats including bays, lagoons, estuaries, coastal dunes and saltmarshes. Birds forage in low samphire herbland or taller coastal shrubland. There is no habitat for the species within the study area and it would not occur there.	No
Pink Robin *Petroica rodinogaster*	V	-	This species is associated with gullies in rainforests and eucalypt forests. The species breeds at higher altitudes over summer and partially migrates to lower altitudes during winter. The species is considered a rare visitor to the Wollongong LGA. There is no habitat for the species within the study area and it would not occur there.	No
Powerful Owl *Ninox strenua*	V	-	Preferred habitat for this species is forest containing large tree hollows for breeding and an abundance of arboreal mammals which are the species primary prey. The species is known from the locality and is likely to occur widely along the Illawarra Escarpment. There are no foraging, roosting or breeding resources for the species within the study area and it would not occur there.	No
Regent Honeyeater *Xanthomyza phrygia*	E	E	This migrant to the region forages in winter-flowering trees such as Woollybutt, and Swamp Mahogany but is also associated with coastal vegetation with an abundance of Banksia in the region. There is no habitat for the species within the study area and it would not occur there.	No

THREATENED FAUNA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
Sooty Owl *Tyto tenebricosa*	V	-	This species is typically associated with closed forests and tall wet open forest, but is known to also occur in a wider range of habitats. Pairs are thought to maintain permanent home ranges of between 200 and 800 ha. The species has been recorded in a number of areas on the Illawarra Escarpment. There are no foraging, roosting or breeding resources for the species within the study area and it would not occur there.	No
Swift Parrot *Lathamus discolor*	E	E	The Swift Parrot is small parrot about 25 cm long. It is bright green with red around the bill, throat and forehead. The red on its throat is edged with yellow. Its crown is blue-purple and it has bright red patches under the wings. The species breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. This migrant to the region often forages in winter-flowering trees such as Spotted Gum and Swamp Mahogany, which do not occur in the study area. There is no habitat for the species within the study area and it would not occur there.	No
Amphibians				
Giant Burrowing Frog *Heleioporus australiacus*	V	V	This species may be found in a range of habitats from forest to heath, usually in sandy soils and breeds in ephemeral ponds often underlain with sandstone, or within burrows. The species appears intolerant of clearing and poor water quality. Habitat modelling for the species in the Wollongong LGA predicts the upland swamps, heaths and woodland communities above the escarpment as the highest quality habitat. There is no suitable habitat for the species in the study area it would not occur there.	No
Green and Golden Bell Frog *Litoria aurea*	E	V	This species prefers permanent, unshaded water bodies containing emergent vegetation. The species is known from Woonona and Port Kembla within the Wollongong LGA. The species is now generally restricted to near coastal habitats. There is no suitable habitat in the study area and it would not occur there.	No

THREATENED FAUNA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
Littlejohn's Tree Frog *Litoria littlejohni*	V	V	The species is known predominantly from forested environments where it calls mainly in late winter and spring from elevated positions beside ponds and creeks. The species occurs adjacent to slow flowing unpolluted water. This species appears to occur at mid to high altitudes and there are no records in the Wollongong LGA below the escarpment. There is no suitable habitat in the study area and it would not occur there.	No
Stuttering Frog *Mixophyes balbus*	E	V	The species occurs in rainforest or wet sclerophyll forest and has suffered a major contraction of its range and abundance in recent times. In the Illawarra the species is now known only from Macquarie Pass. There is no suitable habitat for the species in the study area and it would not occur there.	No
Reptiles				
Broad-headed Snake *Hoplocephalus bungaroides*	E	V	This nocturnal species occurs on north-facing sandstone cliffs where there are pieces of rock sitting on the cliff substrate. It shelters in tree hollows during the hot summer months, emerging at night to hunt for small lizards. There is no suitable habitat within the study area and the species would not occur there.	No

The study area does not provide suitable habitat for any threatened fauna species are no threatened fauna are expected to occur within the study area regularly, nor be dependant upon the habitats there.

4.3 Migratory Species

The outcome of the database search for migratory species is shown in Table 7 below. The potential for each of these species to occur in the study area is discussed in Table 7 and a decision made regarding the need or otherwise for further assessment in this report. Marine and oceanic species and species associated exclusively with freshwater wetlands have been omitted as they would not occur in the study area.

Table 7: Migratory species recorded or likely to occur in the locality

SPECIES	OCCURRENCE OR POTENTIAL FOR MIGRATORY SPECIES TO OCCUR IN THE STUDY AREA	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
Black-faced Monarch *Monarcha melanopsis*	This migratory species is known to breed in damp forest types and forage in rainforest and eucalypt forest. There is no suitable habitat for the species in the study area and it would not occur there.	No
Orange-bellied Parrot *Neophema chrysogaster*	This migratory species breeds in the south-west of Tasmania and migrates in autumn to spend the winter on the coast of south-eastern South Australia and southern Victoria. Typical winter habitat is saltmarsh and strandline/foredune vegetation communities within 3 km of the coast. There is no suitable habitat for the species in the study area and it would not occur there.	No
Regent Honeyeater *Xanthomyza phrygia*	This migrant to the region forages in winter-flowering trees such as Spotted Gum, Woollybutt, and Swamp Mahogany. There is no suitable habitat for the species in the study area and it would not occur there.	No
Rainbow Bee-eater *Merops ornatus*	The Rainbow Bee-eater is potentially found throughout mainland Australia, although rarely recorded in the Illawarra. The species is found in open forests, woodlands, shrublands and cleared areas, usually near water. Nesting sites are made in tunnels in sandy banks. There is no suitable habitat for the species in the study area and it would not occur there.	No
Rufous Fantail *Rhipidura rufifrons*	This migratory species is known to utilise dense understorey in damp forests or beside rivers. There is no suitable habitat for the species in the study area and it would not occur there.	No
Satin Flycatcher *Myiagra cyanoleuca*	This species inhabits lowland eucalypt forests. There is no suitable habitat for the species in the study area and it would not occur there.	No
White-bellied Sea-eagle *Haliaeetus leucogaster*	This migratory species inhabits coastal environments such as islands, reefs, headlands, beaches, bays, estuaries, mangroves, inland swamps, lagoons, rivers and floodplains. There is no suitable habitat for the species in the study area and it would not occur there.	No
White-throated Needletail *Hirundapus caudacutus*	This migratory species is likely to occur above the study area from time to time feeding ahead of weather changes. However it would not roost or otherwise occur within the study area.	No

No listed migratory species were recorded in the study area during the survey period and the study area does not provide foraging, roosting or breeding habitat for any listed migratory species.

4.4 Endangered Populations

The *TSC Act* provides for the listing of endangered populations on Schedule 1, Part 2. There are two endangered plant populations found in the Wollongong LGA, *Chorizema parviflorum*, and *Lespedeza juncea* subsp*. sericea*. *Chorizema parviflorum* is known from the Yallah area and from one site at Wongawilli. *Lespedeza juncea* subsp. *sericea* occurs at one site approximately 650 m to the southeast of the study area within the Marshall Mount Road road reserve. The records of both species in the Illawarra are from low lying areas and the species are associated with the Illawarra Lowland Grassy Woodlands endangered ecological community.

Neither *Chorizema parviflorum* or *Lespedeza juncea* subsp*. sericea* were detected within the study area despite targeted searches throughout the study area and good survey coverage. The habitats within the study area are too highly disturbed to provide suitable habitat for these species, and the study area does not retain any connectivity with superior habitats that may provide habitat for them.

4.5 Threatened Ecological Communities

The *TSC Act* and *EPBC Act* provide for the listing of threatened ecological communities. The vegetation within the study area does not comprise any of the threatened ecological communities listed on the *TSC Act* or *EPBC Act.* The study area is likely to have once supported the Illawarra Lowlands Grassy Woodland endangered ecological community, which is listed on Schedule 1 Part 3 of the *TSC Act* (NSW Scientific Committee 1999), however the historic and ongoing disturbances within the study area have resulted in the extinction of the community within the study area.

4.6 Flora Species of Regional Conservation Significance

The study area does not support any flora species of regional conservation significance.

5. EVALUATION OF IMPACTS

5.1 Impacts on Flora

5.1.1 Vegetation Community Impacts

The proposal will not result in any direct or indirect impacts on native vegetation communities. The vegetation within the study area comprises improved grazing pastures with only a few remnant and regrowth trees of Prickly-leaved Paperbark and Swamp Oak. These individuals, and the vegetation within the study area, are of negligible conservation significance. Similar vegetation and associated habitats are widespread within the locality.

Under these circumstances the impacts of the proposal on vegetation are considered to be negligible.

5.1.2 Threatened Flora Species Impacts

The proposal will not impact on threatened flora species. No threatened flora species were recorded in the study area during the survey period despite good survey coverage and they are not expected to occur there.

The impacts of the proposal on threatened flora are negligible in this context.

5.1.3 Regionally Significant Flora Species Impacts

The proposal will not impact on regionally significant flora species. No regionally significant flora species were recorded in the study area during the survey period despite good survey coverage and they are not expected to occur there.

The impacts of the proposal on threatened flora are negligible in this context.

5.2 Impacts on Fauna

5.2.1 Fauna Habitat Impacts

The habitats in the study area are highly disturbed due to the history of clearing, grazing and pasture improvement which is likely to limit the use of these habitats to more mobile, disturbance tolerant fauna species. The canopy and understorey are almost non-existent and the groundcover is low and consists of introduced grasses and forbs, making these habitats generally unsuitable for ground-dwelling species due to the minimal groundcover shelter.

There are no hollow-bearing trees, rock or water habitats within the study area nor any other important resources for common native fauna or threatened fauna species.

The proposal will not sever habitat connectivity or any faunal linkages.

In summary, the proposal is highly unlikely to impose significant impacts on fauna habitats, given the context of the study area, the negligible conservation value of the habitats found there and the widespread presence of similar and superior fauna habitats in the locality.

5.2.2 Threatened Fauna Species Impacts

The study area does not provide any important foraging, breeding, roosting or denning habitats for any threatened fauna species and no threatened fauna species are expected to occur there, even on an irregular basis. No threatened fauna species would be dependent upon the habitats within the study area.

Under these circumstances, the impacts of the proposal on threatened fauna are expected to be negligible.

5.3 Impacts on Endangered Ecological Communities

The study area does not support and threatened or endangered ecological communities and as such the proposal will not impact on threatened or endangered ecological communities either directly or indirectly.

5.4 Impacts on Endangered Populations

The study area does not support and endangered populations and as such the proposal will not impact on endangered populations either directly or indirectly.

5.5 Impacts on Threatened Fish

The proposal will not impact any threatened fish or marine vegetation listed by the *NSW Fisheries Management Act 1994*.

5.6 Impacts on Habitat Connectivity

The study area does not provide vegetated linkages to nearby remnant vegetation and does not provide any important faunal linkages and as such the proposal will not have any adverse impacts on habitat connectivity or any faunal linkages.

5.7 Impacts on Koala Habitat (SEPP No. 44)

State Environmental Planning Policy No 44 – Koala Habitat Protection (SEPP No. 44) was gazetted by the NSW Government in 1995. The aims of SEPP No. 44 are:

> *"to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline."*

It requires a judgement to be made about whether the land in a study area is potential and/or core koala habitat based on the proportion of trees present that are listed as Koala Feed Tree Species in Schedule 2 of the policy and/or the presence of koalas. These listed feed trees must constitute at least 15 % of the total number of trees in the upper or lower strata of the tree component for the vegetation to be classified as *potential koala habitat*. *Core koala habitat* is land where there is a resident population of koalas including breeding females.

The policy requires the preparation of plans of management before development consent can be granted in relation to areas of *core koala habitat*, encourages the identification of areas of *core koala habitat*, and encourages the inclusion of areas of *core koala habitat* in environment protection zones.

The policy applies to this proposal because:

- the land is within the Wollongong Local Government Area;
- the land has an area of more than 1 ha; and
- a development application has been made for the proposal.

The study area does not contain tree species that are listed as koala feed trees on Schedule 2 of *SEPP No. 44* and thus, the study area does not contain *potential koala habitat*. There is no evidence of koalas occurring within the study area or surrounds.

The proposal will not impact on Koala habitat and a Plan of Management for Koala habitat is not required.

5.8 Impacts on Matters of NES (Commonwealth EPBC Act 1999)

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*) contains provisions to protect Commonwealth Land and matters of national environmental significance (NES) listed by the Act, including World Heritage properties, Ramsar wetlands, threatened species, migratory species, nuclear actions and the Commonwealth marine environment.

Under this Act a person may require assessment and/or approval from the Commonwealth Environment Minister if they are undertaking an action that has, will have, or is likely to have, a significant impact on a matter of national environmental significance.

Administrative guidelines have been produced to assist proponents in determining whether an action should be referred to the Commonwealth Environment Minister for a decision on whether approval is required.

The proposal involves construction works, which may constitute an action defined by the *EPBC Act*.

The study area does not provide suitable habitat for any matters of National Environmental Significance listed on the schedules of the *EPBC Act*. There are no Migratory Species, World Heritage Properties, Commonwealth Marine Areas, or Commonwealth Land to be affected by the proposal. No Ramsar Wetlands of National Importance occur within a 5 km radius of the proposal and none are expected to be affected by the proposal.

EPBC Act Conclusion

Following consideration of the administrative guidelines for determining significance for matters of national environmental significance that may occur in the study area, it is concluded that the proposal is unlikely to have a significant impact on any matter of national environmental significance. A referral to the Commonwealth Environment Minister is not required for the proposal.

6. IMPACT MITIGATION

6.1 Threatened Species, Populations and Ecological Communities

The extent, magnitude and significance of the impacts of the proposal on threatened species, populations and ecological communities listed on the *TSC Act*, *EPBC Act* and *FM Act* have been assessed in sections 4 and 5 of this report in relation to the conservation importance of the habitats likely to be affected by the proposal.

The assessment identified that the proposal is highly unlikely to have any adverse impacts on threatened species, populations and ecological communities listed on the *TSC Act*, *EPBC Act* and *FM Act*.

6.2 Other Components of Biodiversity

The extent, magnitude and significance of the impacts of the proposal on other components of biodiversity have been assessed in sections 4 and 5 of this report. The assessment identified that the proposal is highly unlikely to have any adverse impacts on biodiversity generally or specifically on any matters of conservation significance either directly or indirectly.

In this context, the impacts on vegetation communities, regionally significant flora species, fauna habitats, habitat connectivity, and matters of national environmental significance arising from the proposal are not considered significant and are in fact negligible.

The vegetation to be affected by the proposal is of negligible conservation significance, is not restricted to the study area, and is widespread in the locality.

The fauna habitats to be affected by the proposal are of low quality and are not restricted to the study area. There are limited foraging substrates and breeding resources that are likely to be utilised predominately by a range of common and widespread native and exotic fauna species. It is unlikely that any threatened fauna species would occur in the study area and they would not breed there or be dependent upon the habitats there.

The proposal will not sever habitat connectivity or any faunal linkages.

Notwithstanding these conclusions, a number of impact mitigation measures are proposed to minimise the potential for indirect impacts on flora and fauna and the environment generally, in association with the development and use of the proposed hospital and health care precinct.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

This report has identified and described the biological environment of Lot 22 DP 607750 & Lot 4 DP 258024, Huntley Road, Huntley. The report has assessed the potential impacts on flora and fauna, including threatened and migratory species, endangered populations and threatened communities, or their habitats, of the proposal to develop a major hospital and health care precinct.

The study area was found to comprise heavily disturbed habitats of negligible conservation significance.

Thus, with respect to the key thresholds for impact assessment identified in the Draft Guidelines for Threatened Species Assessment (DEC 2005) for development applications assessed under Part 3A of the *Environmental Planning and Assessment Act 1979* is concluded that:

a) The proposal avoids impacts on threatened ecological communities, species or populations.

b) The proposal includes actions to avoid and mitigate adverse impacts on biodiversity in general and to maintain or improve biodiversity values.

c) The proposal will not reduce the long-term viability of the local occurrence of any threatened ecological community, species or population.

d) The proposal will not accelerate the extinction of any threatened ecological community, species or population.

e) The proposal will not affect critical habitat as none is listed in the Wollongong local government area.

f) The study area does not contain any potential Koala habitat pursuant to *NSW State Environmental Planning Policy No 44 – Koala Habitat Protection*.

g) Following consideration of the administrative guidelines for determining significance under the *Commonwealth Environment Protection & Biodiversity Conservation Act 1999*, the proposal is unlikely to have a significant impact on matters of National Environmental Significance, and a referral to the Commonwealth Environment Minister is unlikely to be necessary.

7.2 Recommendations to Mitigate Impacts on Biodiversity Values

The proposal will incorporate the following measures to mitigate the impacts on threatened species, populations, ecological communities, migratory species or their habitats, and minimise the impacts of the proposal on the flora and fauna values of the study area in general.

Sediment Controls

1. Appropriate sediment control measures should be established before the commencement of work on the proposal and retained in place until all bare areas have been revegetated.

2. An Erosion and Sediment Control Plan should be prepared for the proposal in accordance with the Blue Book.

Drainage Management

3. The principles of Water Sensitive Design should be incorporated into the proposal. These principles include the provision of infiltration devices to collect surface runoff and the construction of gross pollutant traps where necessary.

Landscaping

4. No known environmental weeds or known invasive plant species will be planted within the study area in association with the proposal.

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APPENDIX A: FIGURES

Figure 1: Location of Lot 22 DP 607750 & Lot 4 DP 258024, Huntley Road, Huntley

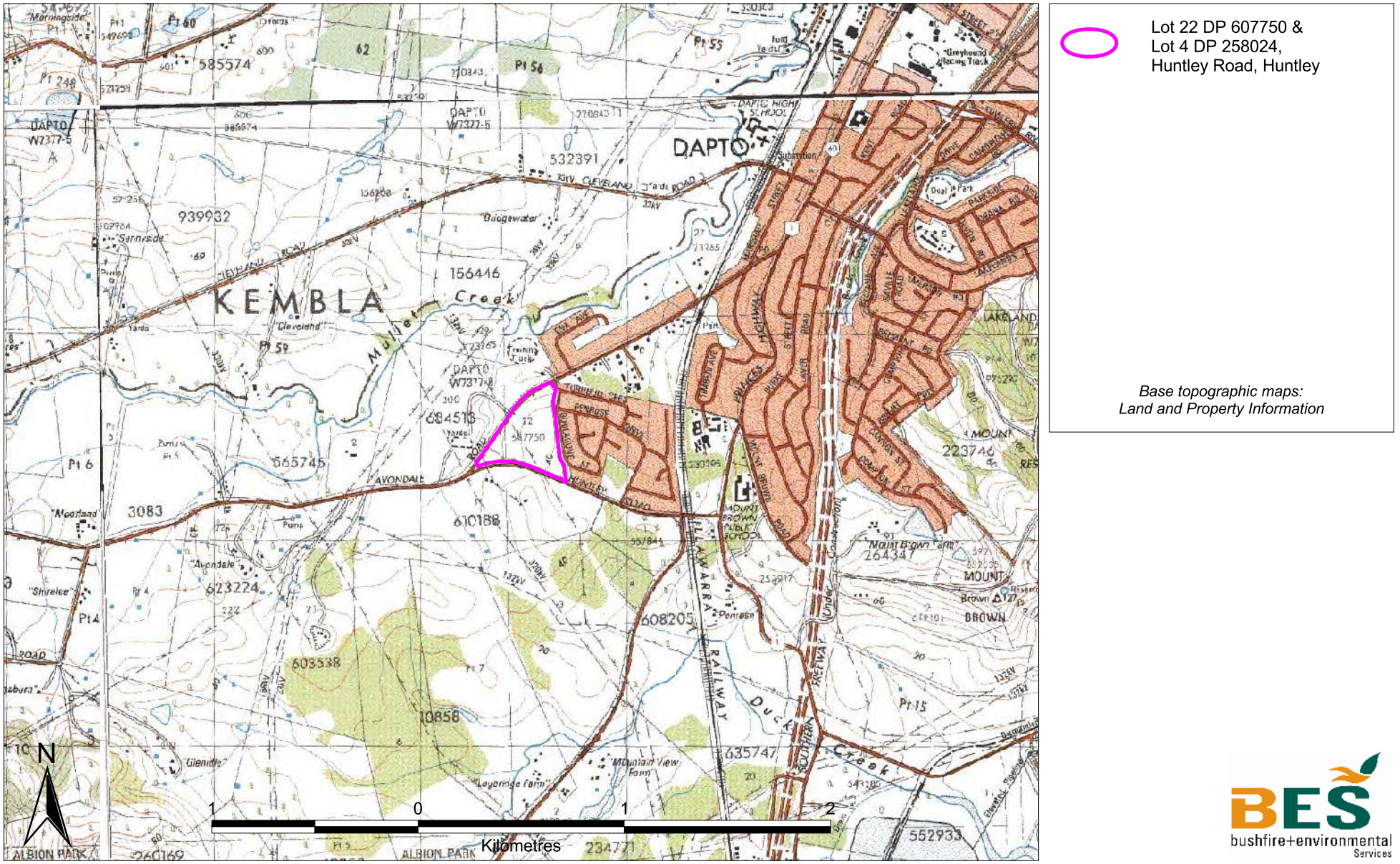

Figure 2: The proposal

1	ILLAWARRA INTERNATIONAL SPECIALIST AND SURGICENTRE INCLUDING 10 OVERNIGHT BEDS 2 ICU BEDS, INCLUDING AUGMENTATION OF SERVICES TO SITE	2 1/2 STOREYS
2	PATHOLOGY & RADIOLOGY UNITS	2 1/2 STOREYS
3	24 HRS MEDICAL CENTRE, PHARMACY & CASUALTY WITH 10 OVERNIGHT BEDS	2 1/2 STOREYS
4	STAND ALONE OBSTETRIC UNIT WITH 20 OVERNIGHT ONE-BED SUITES	2 1/2 STOREYS
5	ILLAWARRA INTERNATIONAL HOSPITAL WITH 310 OVERNIGHT BEDS	8 STOREYS
	RETAIL SHOPPING PLAZA	2 STOREYS
6	NURSES, RESIDENT MEDICAL OFFICERS & MEDICAL STUDENT ACCOMMODATION INTEGRAL WITH THE TERTIARY REFERRAL HOSPITAL EDUCATIONAL PROGRAMME	2 STOREYS
7	EDUCATION FACILITY WITH ASSOCIATED ACCOMMODATION FOR PATIENT'S RELATIVES & OUTPATIENT ACCOMMODATION WHILE UNDERGOING EXTENDED THERAPIES	2 STOREYS EASTERN END 5 STOREYS WESTERN END
8 A.	ILLAWARRA INTERNATIONAL AGED & DISABILITY CENTRE WITH 280 BEDS MAINLY HIGH CARE	2 STOREYS EASTERN END 3 STOREYS WESTERN END
B.	ACCOMMODATION FOR SENIORS	2 STOREYS

NOTE:

A MINIMUM OF 3.0M SETBACK HAS BEEN PROVIDED TO ALL BOUNDARIES WITH THE EXCEPTION OF THE RETAIL COMPONENT LOCATED AT THE AVONDALE ROAD AND HUNTLEY ROAD INTERSECTION.

2.5M SHAREWAY FOR PEDESTRIAN & CYCLEWAY HAS BEEN PROVIDED TO PERIMETER OF SITE.

MOTORCYCLE, BICYCLE & DISABLED PARKING TO BE DISTRIBUTED THROUGHOUT SITE.

CARPARKING TO BE DESIGNED IN ACCORDANCE WITH AS 2890.1.

imagescape is an architect corporation registered under the provisions of the NSW Architects Act 2003. Nominated architects are Christine Kelly registration no. 6000 and Stephen Phillips registration no. 4606

Consultant Team:

Amendment Issue:

No.	Description	Date

imagescape DESIGN STUDIOS

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C2.12 THE FUSION BUILDING
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Illawarra International Health Precinct
Cnr Huntley and Avondale Rd's
Huntley
LA VIE DEVELOPMENTS PTY LTD

Site Plan

Project number	LaVie04	SK02PL	
Date	16.07.2008		
Drawn by	VL	Scale	Plot stamp
Checked by	CK	1:1000@A1	16.07.2008 ISSUE B

Figure 3: Vegetation within the study area