



ACS Environmental  
Pty Ltd

**ECOLOGICAL ASSESSMENT**

**FOR**

**PROPOSED DEVELOPMENT**

**AT**

**LOURDES RETIREMENT VILLAGE**

**AND**

**NURSING HOME,**

**95 STANHOPE STREET, KILLARA**

Prepared for:

**STOCKLANDS**  
**c/o A SCALES**  
**NATURALLY TREES**

Revised June 2021

# ***ACS Environmental P/L***

Flora and Fauna Surveys, Biodiversity Impact Assessment & Bushfire

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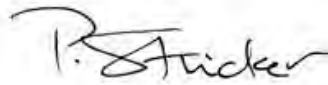
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## **Consultants experience**

The directors of 'Actinotus Consultancy Services (ACS) – Environmental P/L' (formerly Actinotus Environmental Consultants) have collectively worked in the area of biodiversity impact and bushfire hazard assessment services for a period of greater than 20 years. They also have over 30 years of experience in scientific research (ecological, genetic) and teaching in biological science.

The principals of the former 'Actinotus Environmental Consultants' have completed the NSW Consulting Planners Bushfire Training Course organised by the Planning Institute of Australia NSW Division for planning consultants and allied professionals relating to the implementation of 'Planning for Bushfire Protection', in June 2003.

<b>CONTENTS</b>	<b>page No.</b>
<b>EXECUTIVE SUMMARY</b>	vii
<b>ACRONYMS AND GLOSSARY</b>	viii
<b>1 INTRODUCTION</b>	1
1.1 <i>Proposed development</i>	1
1.2 <i>Study methodology</i>	4
<b>2 EXISTING ENVIRONMENT</b>	6
2.1 <i>Topography, geology and soils</i>	6
2.2 <i>Existing vegetation</i>	6
2.3 <i>Fauna species recorded on site</i>	6
2.4 <i>Historical vegetation distribution</i>	7
<b>3 ASSESSMENT OF STATUS OF INDIVIDUAL TREES ON SITE</b>	9
3.1 <i>Mapping of vegetation by OEH (2013)</i>	9
3.2 <i>Ground-truthing and assessment</i>	10
3.3 <i>Recommendations</i>	14
<b>4 THREATENED SPECIES ASSESSMENT</b>	15
4.1 <i>Plant community</i>	15
4.2 <i>Flora and fauna species of conservation significance</i>	15
<b>5 CONCLUSIONS</b>	21
<b>6 REFERENCES &amp; LITERATURE REVIEWED</b>	23

FIGURES	page No
1	Indicates the area of study at the Lourdes Retirement Village and Nursing Home at 95 Stanhope Street, Killara (outlined in red font) (from SIX maps 2021). Note that the study area also includes the patch of wooded vegetation occurring within the northern section of the Lourdes property along Stanhope Street as indicated by the bright red outline
2	Schematic representation of the Lower Ground Site Plan of the feasibility study of the upgraded Lourdes Retirement Village redevelopment proposal (from indicative plans by Plus Architecture 2021)
3	Indicates an aerial image of the area of study at the Lourdes Retirement Village and Nursing Home at 95 Stanhope Street, Killara taken in 1943 (outlined in red font) (from SIX maps 2021) showing extensive clearing at the crest section of the landscape at that time
4	Mapping by DPIE (2021) of vegetation communities within and surrounding the area of the Lourdes Retirement Village and Nursing Home precinct. Relevant assemblages include those shaded in <b>light green</b> along First Avenue and Stanhope Street and patches to the south-west of this patch: <b>PCT 1281; S_WSF09</b> (Sydney Turpentine Ironbark Forest) (STIF); <b>olive green: PCT 1776; S_DSF04</b> (Coastal Enriched Sandstone Dry Forest); <b>dark green: PCT 1841; S_DSF09</b> (Coastal Sandstone Gully Forest); <b>green: PCT 1782; S_DSF10</b> (Hornsby Enriched Sandstone Exposed Woodland); <b>aqua green: PCT 1841; S_WSF02</b> (Coastal Enriched Sandstone Moist Forest) and <b>light grey: PCT 0; Natives and Exotics</b> (either remnant trees or landscaped individuals)
5	Indicating approximate locations of 21 individuals of locally-occurring indigenous tree species within the subject site at the Lourdes Retirement Village, 95 Stanhope Street, Killara
6	Location of occurrences of five most commonly sighted threatened flora species occurring within a 5km radius of the study area (DPIE 2021), none of which have been recorded for the subject site
7	Records for 5 of the most commonly sighted threatened fauna species in the locality of the Lourdes Retirement Village at Stanhope Street, Killara

## **TABLES**

1	Attributes of 22 individuals of indigenous trees that may require removal for the development	4
2	Common fauna expected or that may occur on or nearby the site	7
3	Details the likely origin and status of the 22 individuals of locally-occurring indigenous trees occurring within the subject site.	11
4	Details of 16 flora species of conservation significance recorded within 5km of subject site	16
5	Records of 34 threatened fauna species recorded over the previous 20 years within a 5km radius of the subject site at 95 Stanhope Street, Killara	18

## EXECUTIVE SUMMARY

‘ACS (Actinotus Consultancy Services) – Environmental’ were commissioned by *Naturally Trees* on behalf of Stockland to undertake an ecological assessment of vegetation and undertake a biodiversity survey on an area of developed, landscaped land at the Lourdes Retirement Village and Nursing Home at 95 Stanhope Street, Killara.

The subject site has been extensively modified in relation to natural vegetation structure and floristics, the site currently containing existing independent living units and other retirement and nursing home facilities in an area of managed curtilage with formal garden beds and landscaped areas of planted and established trees.

Established trees have been planted mainly along the surrounding boundaries of internal roadways and grassy garden areas and include locally-occurring and non-locally occurring indigenous species as well as exotic ornamental species, the tree assemblages and locations comprehensively documented in the amended arboricultural report by Scales (2021).

Principal locally-occurring indigenous trees observed at the site include Turpentine, Red Bloodwood, Sydney Red Gum, Old Man Banksia, Sweet Pittosporum and Broad-leaved Scribbly Gum (Scales 2021).

This ecological assessment has concluded that a small copse of two Turpentine trees and one individual of Sweet Pittosporum (Tree Numbers 44, 45 & 46 in Scales 2021) may have been derived from genotypic sources of these tree species that occurring in a former distribution of Sydney Turpentine Ironbark Forest (STIF) (Figures 4 & 4). However, this small group of trees are not component of a structured and floristically diverse assemblage of STIF, occurring in a managed and landscaped habitat, and it is concluded that their proposed removal can be compensated for by landscaped plantings of several saplings of Turpentine, derived from local provenance, in suitable areas of the redevelopment.

In relation to locally-occurring indigenous trees occurring within the garden beds or other landscaped areas within the subject site, this vegetation does not contain any threatened flora species or threatened ecological communities and it is considered that any proposed redevelopment of the site will have no impact on any species or ecological community in relation to the requirements of Section 5A (s.5A) of the *Environmental Planning & Assessment Act 1979*.

All of the locally-occurring indigenous trees proposed for removal to facilitate the development are mostly landscaped plantings and occur commonly in surrounding local parks and reserves such as Soldiers Memorial Park and Garigal National Park. These species include Sydney Red Gum, Blackbutt, Red Bloodwood, Broad-leaved Scribbly Gum, Rough-barked Apple and Forest Oak (Tables 1 & 3). As such, their removal would not incur a significant loss to the cohort of trees

in the vicinity. It is recommended however to utilise these species in any landscape plan that is prepared for the development as they provide valuable nectar, roosting and nesting resources for many bird species as well as arboreal mammals and the Grey-headed Flying Fox.

All individuals of trees observed appeared insufficiently mature to have developed hollows in relation to nesting, sheltering and breeding habitat for avian species, arboreal mammals or microchiropterans. No hollows or spouts were evident on any of the individual trees observed.

An assessment of species of flora and fauna recorded within 5km of the site and listed under the EPBC Act and the TSC Act as threatened, found that habitat for these species does not occur at the highly modified and landscaped site. Though some threatened fauna species such as the Powerful Owl, Grey-headed Flying Fox and Large Bentwing Bat may occasionally forage in the vicinity of the subject site, it is considered that none would be significantly compromised or impacted by the proposed redevelopment of the site.

As there are no threatened species or populations occurring at the subject site, and not likely to be impacted by the proposed redevelopment, it is not considered necessary to undertake any further assessment of significance or refer the proposal to the Director General of The Department of Planning, Industry and Environment or to the Commonwealth Department of the Agriculture, Water and Environment.

## **ABBREVIATIONS**

BC Act - Biodiversity Conservation Act

CEEC – Critically Endangered Ecological Community

DAWE – Commonwealth Department of Agriculture, Water and Environment

DPIE - Department of Planning, Industry and Environment

EEC – Endangered Ecological Community

EPA Act – Environment Protection Act

EPBC Act – Environment Protection and Biodiversity Conservation Act

NPWS – State National Parks and Wildlife Service

OEH – Office of the Environment and Heritage

RoTAP – Rare and Threatened Australian Plants

STIF - Sydney Turpentine Ironbark Forest

TSC Act – Threatened Species Conservation Act



## INTRODUCTION

### 1.1 *Proposed redevelopment*

'ACS (Actinotus Consultancy Services) – Environmental' were commissioned by *Naturally Trees* on behalf of Stockland to undertake an ecological assessment of vegetation and undertake a biodiversity survey within the grounds of the Lourdes Retirement Village and Nursing Home at 95 Stanhope Street, Killara in relation to environmental legislation provided by the BC Act 2016 and EPBC Act 1999.

Figure 1 indicates the area of study at the Lourdes Retirement Village and Nursing Home at 95 Stanhope Street, Killara.

The proposed development is to demolish a number of single and double storey buildings at the site to be replaced by a number of multi-storey buildings, with the retention of the single storey chapel. The plans of the upgraded development are shown in detail in the amended arboricultural report by Scales (2021). A list of 394 trees has been prepared by Scales (2021) indicating the species of tree, the attributes of each individual and its status as to removal or retention.

A schematic overlay from Plus Architecture (2021) indicates the proposed Lower Ground 1 Site Plan (Figure 2) and site plans for all 7 levels should be consulted in the Lourdes Retirement Village Feasibility Study prepared by Plus Architecture (2021).



**Figure 1** - Indicates the area of study at the Lourdes Retirement Village and Nursing Home at 95 Stanhope Street, Killara (outlined in red font) (from SIX maps 2021).



## PLAN - LOWER GROUND 1



LOURDES RETIREMENT VILLAGE  
FEASIBILITY

JOB NO. 20076  
DATE 23/04/2021  
SCALE 1:1000



**Figure 2** - Schematic representation of the Lower Ground Site Plan of the feasibility study of the upgraded Lourdes Retirement Village redevelopment proposal (from indicative plans by Plus Architecture 2021)

## 1.2 Study methodology

A comprehensive survey was undertaken on foot to identify the location of a total of 22 indigenous trees that may be required to be removed and that may or may not be considered remnant and to undertake an ecological assessment of the landscaped and vegetated areas of the site.

Attributes of these individuals of indigenous 21 trees that may require removal are listed in Table 1.

NUMBER	TREE SPECIES	HEIGHT (m)	CROWN (m)	DBH (mm)	COMMENT	LOCATION - MAP SHEET NO. (Scales 2016)
44	TURPENTINE	10	6	350	MATURE-LOPPED	GRASS - 1
45	PITTOSPORUM	5	5	250	MATURE	GRASS - 1
46	TURPENTINE	12	10	400	MATURE	GRASS - 1
67	BLACKBUTT	20	20	600	MATURE	GARDEN BED - 1
78	BLACKBUTT	12	6	300	MATURE	ROAD CUTTING - 1
79	SYDNEY RED GUM	14	7	350	MATURE	ROAD CUTTING - 1, 4
80	SYDNEY RED GUM	14	7	350	MATURE	ROAD CUTTING - 1, 4
131	RED BLOODWOOD	16	9	350	MATURE	GARDEN BED - 4
138	SYDNEY RED GUM	10	10	450	MATURE	GARDEN BED - 4
139	FOREST OAK	10	6	300	MATURE	GARDEN BED - 5
144	SCRIBBLY GUM ( <i>Eucalyptus haemastoma</i> )	8	6	300	MATURE	GARDEN BED - 5
218	RED BLOODWOOD	20	14	400	MATURE	GARDEN BED - 5
244	ROUGH-BARKED APPLE	22	16	600	MATURE	GRASS - 5
245	SYDNEY RED GUM	16	14	500	MATURE	GARDEN BED - 5
253	SCRIBBLY GUM ( <i>Eucalyptus haemastoma</i> )	9	12	700	MATURE - CAMBIUM DAMAGE	GARDEN BED - 5
256	RED BLOODWOOD	20	14	500	MATURE	GARDEN BED - 2
291	RED BLOODWOOD	18	12	400	MATURE	GARDEN BED - 2
326	BLACKBUTT	24	16	600	MATURE	GRASS - 2
327	RED BLOODWOOD	14	9	300	MATURE	GARDEN BED - 2
328	BLUE GUM	20	12	350	MATURE	GARDEN BED - 2
329	RED BLOODWOOD	18	12	400	OVER-MATURE BORERS	GARDEN BED - 2
360	BLACKBUTT	28	26	1000	MATURE	GARDEN BED - 2

**Table 1** - Attributes of 22 individuals of indigenous trees that may require removal for the development

Currently existing information on 'Threatened Flora of the Locality', defined as a 5km radius within and around the site, was accessed from the DPIE Bionet Atlas of NSW Wildlife (May 2021) and the Department of the Agriculture, Water and Environment (DAWE) Protected Matters Environmental Reporting Tool (May 2021) databases.

The survey included an assessment of the presence, or likelihood of occurrence, of any threatened (endangered, vulnerable), rare (RoTAP) or regionally or locally significant species, or plant community, occurring on the site.

Specific details relating to floristic and fauna habitat survey and assessment are documented in following sections of this report.

## **2 EXISTING ENVIRONMENT**

### **2.1 Topography, geology and soils**

The topography of the subject land slopes from a hillcrest gently to the south-east over gradients of from 2 - 4°.

The local underlying geology of the subject area occurs across the boundaries of the Ashfield Shale Series of the Wianamatta Group of Shales (Herbert 1983) and Hawkesbury Sandstone (Herbert 1983).

The Soil Landscape type in the north-western section of the site is the 'residual 'Lucas Heights' Soil landscape Series that is characterised by gently undulating crests and ridges on plateau surfaces of the Mittagong Formation where rock outcropping is usually absent. (Chapman & Murphy 1989). The remaining sections of the site occur on Hawkesbury Sandstone sediments where the colluvial 'Hawkesbury' Soil Landscape Series is characterised by rolling to steep hills on Hawkesbury Sandstone including rock outcropping and steep sideslopes with rocky benches, broken scarps and boulders (Chapman & Murphy 1989).

### **2.2 Existing vegetation**

The site currently contains existing independent living units and other retirement and nursing home facilities in an area of managed curtilage with formal garden beds and landscaped areas of planted and established trees (Figure 1).

Established trees have been planted mainly along the surrounding boundaries of internal roadways and grassy garden areas and include locally-occurring and non-locally occurring indigenous species as well as exotic ornamental species, the tree assemblages and locations comprehensively documented in the arboricultural report by Scales (2021).

Principal locally-occurring indigenous trees observed at the site include Turpentine, Red Bloodwood, Sydney Red Gum, Old Man Banksia, Sweet Pittosporum and Broad-leaved Scribbly Gum (Scales 2021).

### **2.3 Fauna species recorded on site**

Weather conditions at the original time of survey included cool temperatures to 19° with overcast, cloudy skies with fairly constant drizzle punctuated by intermittent very heavy downpours.

The only species recorded during the site visit were the Noisy Minor, Magpie and Red Wattle Bird with small garden skinks observed under leaf litter in some garden beds. Other common avifauna

likely to occur at the site however include Currawong, Magpie Lark, Little Wattle Bird, Spotted Turtle Dove and Indian Myna (Table 2).

No hollows suitable for nesting by birds or small arboreal mammals were evident in any of the trees. No Ringtail Possum dreys were evident in any of the trees or shrubs. Scratch marks were observed on an individual of Scribbly Gum (Tree No. 253) apparently from Brush-tail Possum activity. Table 2 lists all common fauna species considered to have potential to occur at the site.

AVIFAUNA	SCIENTIFIC NAME	COMMON NAME
	<i>Streptopelia chinensis</i>	Spotted Turtle-Dove *
	<i>Gymnorhina tibicen</i>	Australian Magpie
	<i>Strepera graculina</i>	Pied Currawong
	<i>Corvus coronoides</i>	Australian Raven
	<i>Cacatua galerita</i>	Sulphur-crested Cockatoo
	<i>Trichoglossus haematodus</i>	Rainbow Lorikeet
	<i>Platycercus elegans</i>	Crimson Rosella
	<i>Manorina melanocephala</i>	Noisy Miner
	<i>Acridotheres tritis</i>	Common Myna *
REPTILES	SCIENTIFIC NAME	COMMON NAME
	<i>Lampropholis delicata</i>	Grass Skink
	<i>Lampropholis guichenoti</i>	Garden skink
MAMMALS	SCIENTIFIC NAME	COMMON NAME
	<i>Pteropus poliocephalus</i>	Grey Headed Flying Fox
	<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum
	<i>Trichosurus vulpecula</i>	Common Brushtail Possum

Legend: \* - Introduced species

**Table 2** - Common fauna expected or that may occur on or nearby the subject site

## 2.4 Historical vegetation distribution

Figure 3 is an image of aerial photography taken in 1943 that indicates that the hillcrest at the subject site had been extensively cleared at that time. The hillslopes facing to the south, south-east and east contained an open structured low woodland vegetation occurring on shallow skeletal and lithosol soils.

Unformed tracks are also evident around the hillslope, some of which have eventually been upgraded to form present day internal roads at the Lourdes Village including landscaped planting of trees affording visual amenity to the facility (Figures 1 & 3).

Some built structures were present at the north-west corner of the study area in 1943 where the current office and recreational facilities now occur (Figures 1 & 3).





**Figure 3** - Indicates an aerial image of the area of study at the Lourdes Retirement Village and Nursing Home at 95 Stanhope Street, Killara taken in 1943 (outlined in red font) (from SIX maps 2021) showing extensive clearing at the crest section of the landscape at that time.



### 3 ASSESSMENT OF STATUS OF INDIVIDUAL TREES ON SITE

The likely origin of a total of 22 locally-occurring indigenous trees described in Table 1 that may be required to be removed and that may or may not be considered remnant was assessed by ground-truthing and examination of aerial photography and vegetation mapping by DPIE (2021).

#### 3.1 Mapping of vegetation by DPIE (2021)

Figure 4 indicates the current distribution of vegetation communities occurring at the Lourdes Retirement Village and near vicinity.



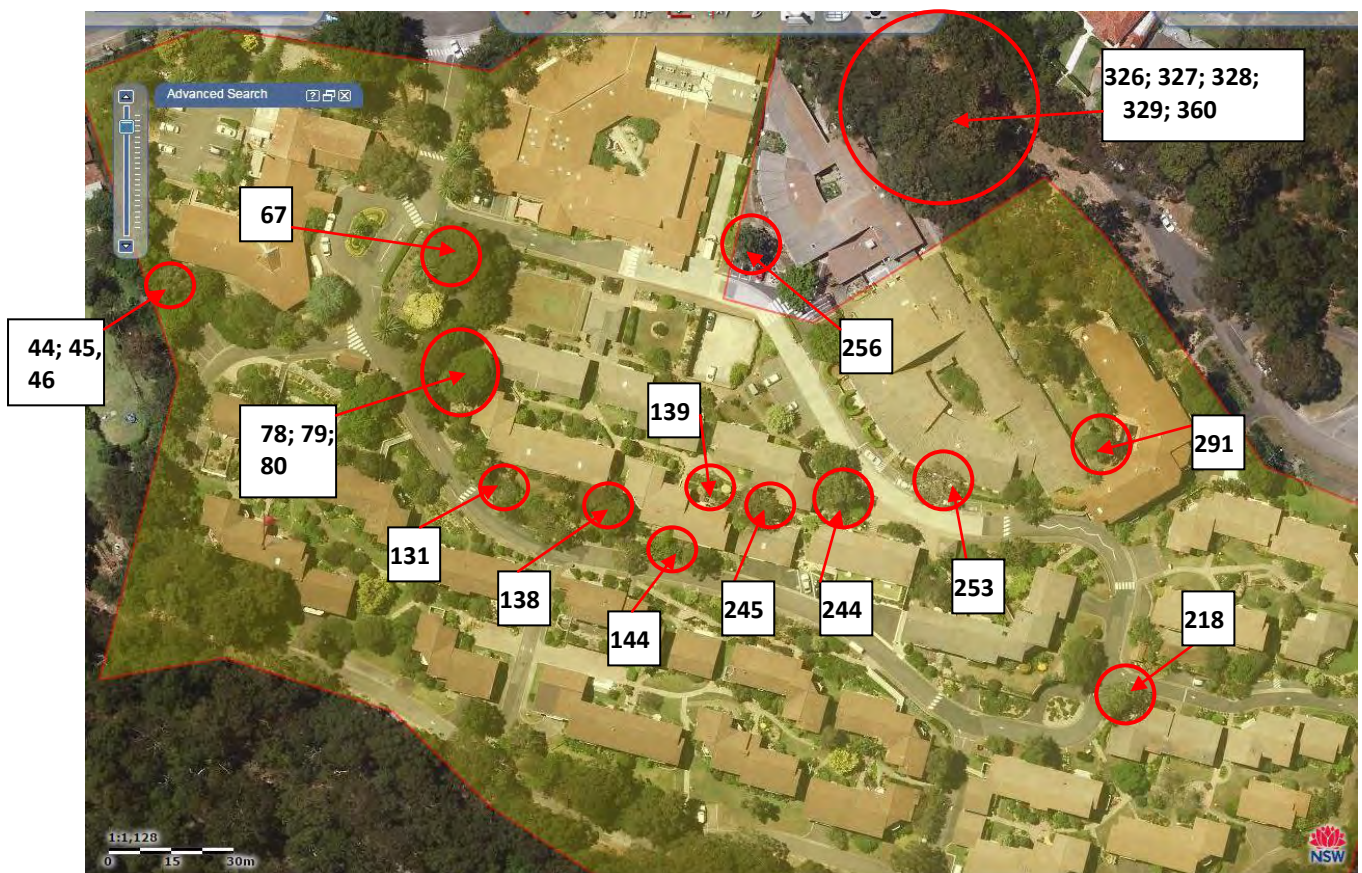
**Figure 4** - Mapping by DPIE (2021) of vegetation communities within and surrounding the area of the Lourdes Retirement Village and Nursing Home precinct. Relevant assemblages include those shaded in **light green** along First Avenue and Stanhope Street and patches to the south-west of this patch: **PCT 1281; S\_WSF09** (Sydney Turpentine Ironbark Forest) (STIF); **olive green: PCT 1776; S\_DSF04** (Coastal Enriched Sandstone Dry Forest); **dark green: PCT 1841; S\_DSF09** (Coastal Sandstone Gully Forest); **green: PCT 1782; S\_DSF10** (Hornsby Enriched Sandstone Exposed Woodland); **aqua green: PCT 1841; S\_WSF02** (Coastal Enriched Sandstone Moist Forest) and **light grey: PCT 0; Natives and Exotics** (either remnant trees or landscaped individuals)

Ground-truthing stands of natural vegetation in nearby Soldiers Memorial Park confirms that the vegetation that originally occurred at the subject site would have included intergrades of Coastal Enriched Dry Forest and Hornsby Enriched Sandstone Exposed Woodland nearer the crests and upper slopes of the landforms with Coastal Sandstone Gully Forest occurring on steeper sidelopes and gullies in the vicinity.

Towards the upper slope-western section of the site, aligned with the edges of the Wianamatta Shale/Hawkesbury Sandstone stratification boundaries, areas of Sydney Turpentine Ironbark Forest vegetation would likely have occurred.

### 3.2 Ground-truthing and assessment

All of the relevant 22 individuals of locally-occurring indigenous trees established on the subject site were located and observed in relation to their likely origin and condition and presence or otherwise of hollows or other habitat features in relation to fauna (Table 3). Figure 5 indicates the approximate location of these 22 individuals in relation to the network of internal roads and building facilities at the Lourdes Retirement Village.



**Figure 5** - Indicating approximate locations of 22 individuals of locally-occurring indigenous tree species within the subject site at the Lourdes Retirement Village, 95 Stanhope Street, Killara

TREE NUMBER	TREE SPECIES	LOCATION - MAP SHEET NO. (Scales 2016)	LOCATION AND ASSESSMENT
44	TURPENTINE	GRASS - 1	Mapped by DPIE (2021) as potential component of STIF (Figure 4), occurs in managed grassy area. Lopped central leader, 70% foliage. Appears to contain borers.
45	PITTOSPORUM	GRASS - 1	Mapped by DPIE (2021) as potential component of STIF (Figure 4), occurs in managed grassy area.
46	TURPENTINE	GRASS - 1	Mapped by DPIE (2021) as component of STIF (Figure 4), occurs in managed grassy area. 80% foliage cover, tree to 10m tall.
67	BLACKBUTT	GARDEN BED - 1	Appears to have been planted in garden bed
78	BLACKBUTT	ROAD CUTTING - 1	Maybe occurs as natural establishment from seedling
79	SYDNEY RED GUM	ROAD CUTTING - 1, 4	Maybe occurs as natural establishment from seedling
80	SYDNEY RED GUM	ROAD CUTTING - 1, 4	Maybe occurs as natural establishment from seedling
131	RED BLOODWOOD	GARDEN BED - 4	Appears to have been planted in garden bed
138	SYDNEY RED GUM	GARDEN BED - 4	Appears to have been planted in garden bed
139	FOREST OAK	GARDEN BED - 5	Female individual. Appears to have been planted in garden bed
144	SCRIBBLY GUM ( <i>Eucalyptus haemastoma</i> )	GARDEN BED - 5	Appears to have been planted in garden bed. Occurs naturally in Memorial Soldiers Park
218	RED BLOODWOOD	GARDEN BED - 5	Appears to have been planted in garden bed
244	ROUGH-BARKED APPLE	GRASS - 5	Appears to have been planted in garden bed
245	SYDNEY RED GUM	GARDEN BED - 5	Appears to have been planted in garden bed.
253	SCRIBBLY GUM ( <i>Eucalyptus haemastoma</i> )	GARDEN BED - 5	Appears to have been planted in garden bed. Occurs naturally in Memorial Soldiers Park. Scratch marks from Brush-tail Possum
256	RED BLOODWOOD	GARDEN BED - 2	Planted. Flowering at present. Source of nectar for nectivorous bird species
291	RED BLOODWOOD	GARDEN BED - 2	Planted. Flowering at present. Source of nectar for nectivorous bird species
326	BLACKBUTT	GRASS - 2	Planted in a landscape plan outside Lourdes site forming open woodland
327	RED BLOODWOOD	GARDEN BED - 2	Planted in a landscape plan outside Lourdes site forming open woodland
328	BLUE GUM	GARDEN BED - 2	Planted in a landscape plan outside Lourdes site forming open woodland
329	RED BLOODWOOD	GARDEN BED - 2	Planted in a landscape plan outside Lourdes site forming open woodland
360	BLACKBUTT	GARDEN BED - 2	Planted in a landscape plan outside Lourdes site forming open woodland

**Table 3** - Details the likely origin and status of the 21 individuals of locally-occurring indigenous trees occurring within the subject site.



All of the trees observed in this assessment occur within managed curtilage with no natural shrub or ground cover. None of the trees were sufficiently mature to have formed any hollows which may provide shelter and breeding resources for birds and arboreal mammals.

In summary the following conclusions were made regarding the ecological value or significance of the 22 locally-occurring native trees occurring within the subject site:

- i) Tree Numbers 44, 45 & 46: Two individuals of Turpentine established in association with an individual of Sweet Pittosporum. May be remnant in the form of seedling regeneration of a former distribution of STIF that occurred at the location before clearing in association with shale-based soils. However, these individuals occur in a managed, mown grassy landscape in an ornamental landscaped setting and their removal for construction of an internal road as part of the redevelopment is considered not to impact significantly on any patches of more structured and floristically diverse assemblages of STIF that may occur in the locality.

It is recommended however to utilise these species in any landscape plan that is prepared for the development as they provide valuable nectar and roosting resources for many bird species as well as arboreal mammals.

- ii) Tree Number 67: Single individual of Blackbutt planted in a landscape plan in a managed garden. Removal would not be considered significant as this is a common species that occurs in the locality.
- iii) Tree Numbers 78; 79 & 80: These individuals comprising one Blackbutt and two Sydney Red Gums occur along an internal road cutting on shallow soils overlying sandstone bedrock. It is possible that seedlings of these species have established at this location, their growth limited by the shallow soils in which they have established. These species occur commonly in natural bushland in neighbouring parks and removal would not incur a significant loss to the cohort of trees in the vicinity. It is recommended however to utilise these species in any landscape plan that is prepared for the development as they provide valuable nectar and roosting resources for many bird species as well as arboreal mammals.
- iv) Tree Numbers 131 & 138: These trees planted in a landscape plan include an individual of Red Bloodwood and one of Sydney Red Gum. These species occur commonly in natural bushland in neighbouring parks and removal would not incur a significant loss to the cohort of trees in the vicinity. It is recommended to utilise these species in any landscape plan that is prepared for the development as they provide valuable nectar and roosting resources for many bird species as well as arboreal mammals.

- v) Tree Number 139: A mature individual of Forest Oak planted in a landscape plan. This species may have occurred in previous distributions of STIF in the area. The individual is a female plant providing fruiting cones for many species of parrot. It is recommended to replace this individual with up to 3 replacement saplings to enhance the feeding opportunities for species of parrot, including the Glossy Black Cockatoo, which may occasionally forage in the area.
- vi) Tree Numbers 144; 218; 244 & 245: Include individuals of Broad-leaved Scribbly Gum, Red Bloodwood, Rough-barked Apple and Sydney Red Gum, respectively, all planted in a landscape plan in various locations of the subject site (Scales 2021). These species occur commonly in natural bushland in neighbouring parks and removal would not incur a significant loss to the cohort of trees in the vicinity. It is recommended to utilise these species in any landscape plan that is prepared for the development as they provide valuable nectar and roosting resources for many bird species as well as arboreal mammals.
- vii) Tree Number 253: Mature individual of Broad-leaved Scribbly Gum, planted close to an existing apartment and showing signs of cambial damage (Scales 2021). Scratch marks from Brushtail Possum are evident on the trunk confirming the presence of these arboreal mammals at the site.
- viii) Tree Numbers 256 & 291: Two individuals of Red Bloodwood planted in a landscape plan in proximity to established apartment residences. The individuals are in flower and provide important foraging resources for nectivorous birds, arboreal mammals as well as the Grey-headed Flying Fox. These species occur commonly in natural bushland in neighbouring parks and removal would not incur a significant loss to the cohort of trees in the vicinity. It is recommended to utilise these species in any landscape plan that is prepared for the development.
- ix) Tree Numbers 326; 327; 328; 329 & 360: These individuals include 2 Blackbutt Trees, 2 Red Bloodwood trees and one individual of Blue Gum that is unusually elongated in height but with narrow trunk diameter and small crown (Scales 2021). All of these individuals have been planted in a landscape plan with mulched ground surface at the northern section of the study area that appears not to be included within the Lourdes Retirement Village precinct boundaries (Figure 1). Most of these individuals would incur damage due to proposed construction in the vicinity of their TPZ's (Tree Protection Zones) and would be significantly impacted by the development.

### 3.3 Recommendations

- Tree Numbers 44 & 46 are two individuals of Turpentine established in association with an individual of Sweet Pittosporum. These individuals may have derived from genotypic seed sources of a former distribution of the EEC 'STIF' that occurred at the location in association with shale-based soils before clearing. However, these individuals currently occur in a managed grassy landscape in an ornamental garden setting and are isolated from any patches of well structured and floristically diverse assemblages of STIF in the locality. It is considered that the loss of these three individuals for the construction of a major internal road would be adequately compensated for by the replacement planting of up to 4 saplings of Turpentine in suitable locations within the complex, these saplings derived from local provenance obtained from a local nursery. Sweet Pittosporum is a common ubiquitous small tree species occurring across a wide variety of habitats, particularly where birds disperse the berries from fruiting trees.
- All of the other locally-occurring indigenous trees proposed for removal to facilitate the development are mostly landscaped plantings and occur commonly in surrounding local parks and reserves such as Soldiers Memorial Park and Garigal National Park. These species include Sydney Red Gum, Blackbutt, Red Bloodwood, Broad-leaved Scribbly Gum, Rough-barked Apple and Forest Oak (Tables 1 & 3). As such, their removal would not incur a significant loss to the cohort of trees in the vicinity. It is recommended however to utilise these species in any landscape plan that is prepared for the development as they provide valuable nectar and roosting resources for many bird species as well as arboreal mammals and the Grey-headed Flying Fox.

## 4 THREATENED SPECIES ASSESSMENT

### 4.1 Plant community

There are no extensive naturally occurring or reconstructed ecological communities occurring on site (Figure 4). An isolated group of small trees including two individuals of Turpentine and one of Sweet Pittosporum occurring at the western section of the subject land (Figure 5) may have derived from genotypic material from a former distribution of Sydney Turpentine Ironbark Forest that would have been aligned with the edges of the Wianamatta Shale/Hawkesbury Sandstone stratification boundaries (Figure 4.)

However, this small copse of trees occurs within the footprint of a major internal road designed for the current redevelopment (Figure 2 and Scales 2021). As such, it is considered that, as these individuals do not form part of an integral community, and can be replaced by landscaped plantings as part of the redevelopment (see Section 3.3), the loss of these individuals would be adequately compensated for by this mitigation measure.

Ground-truthing stands of natural vegetation in nearby Soldiers Memorial Park confirms that the vegetation that originally occurred at the subject site would have included intergrades of Coastal Enriched Dry Forest and Hornsby Enriched Sandstone Exposed Woodland nearer the crests and upper slopes of the landforms with Coastal Sandstone Gully Forest occurring on steeper sidelopes and gullies in the vicinity (OEH 2016).

The current vegetation that occurs within the subject site, that is proposed for removal, is mostly characterised by DPIE (2021) and confirmed by ground-truthing to be 'Natives and Exotics' (either remnant trees or landscaped individuals) (Scales 2021).

### 4.2 Flora and fauna species of conservation significance

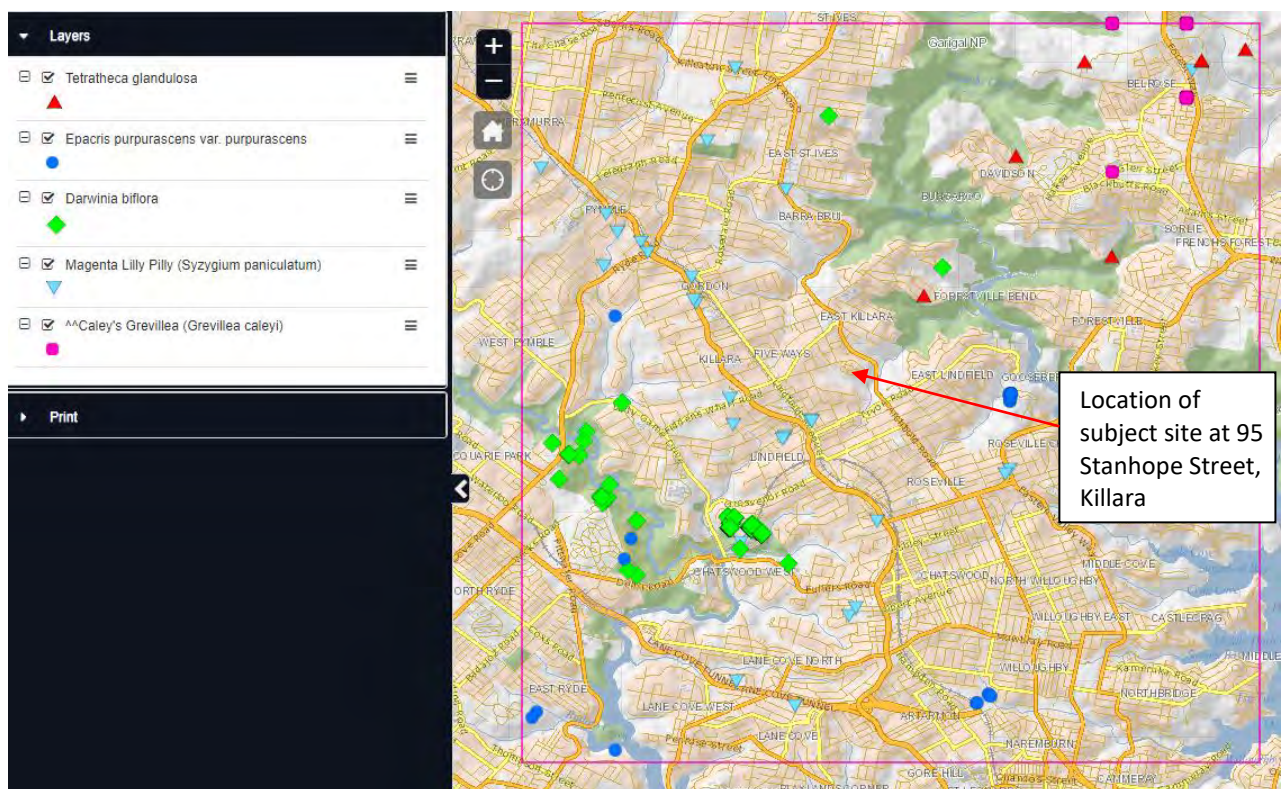
DPIE Bionet Atlas of NSW Wildlife (2021) records for an area of 5km radius around the subject site indicate that eleven (16) plant species of conservation significance have been recorded within the last 20 years. Table 4 lists these 16 species as follows:

Family	Common name	Scientific name	NSW status	Comm. status	No. of records
Dilleniaceae	Julian's Hibbertia	<i>Hibbertia spanantha</i>	E4A	CE	2
Elaeocarpaceae		<i>Tetratheca glandulosa</i>	V		7
Ericaceae		<i>Epacris purpurascens</i> var. <i>purpurascens</i>	V		25
Haloragaceae		<i>Haloragodendron lucasii</i>	E1	E	3
Malvaceae		<i>Lasiopetalum joyceae</i>	V	V	1
Myrtaceae	Netted Bottle Brush	<i>Callistemon linearifolius</i>	V		2

Family	Common name	Scientific name	NSW status	Comm. status	No. of records
		<i>Darwinia biflora</i>	V	V	168
	Camfield's Stringybark	<i>Eucalyptus camfieldii</i>	V	V	4
		<i>Leptospermum deanei</i>	V	V	5
	Deane's Paperbark	<i>Melaleuca deanei</i>	V	V	2
	Scrub Turpentine	<i>Rhodamnia rubescens</i>	E4A		2
	Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	E1	V	27
Orchidaceae	Bauer's Midge Orchid	<i>Genoplesium baueri</i>	E1	E	2
	Angus's Onion Orchid	<i>Microtis angusii</i>	E1	E	8
Proteaceae	Caley's Grevillea	<i>Grevillea caleyi</i>	E4A	CE	95
	Juniper-leaved Grevillea	<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	V		1

**Table 4** - Details of 16 flora species of conservation significance recorded within 5km of subject site

Figure 6 indicates the locations of records of the 5 of the most sighted threatened flora species within 5km of the study site.



**Figure 6** - Location of occurrences of five most commonly sighted threatened flora species occurring within a 5km radius of the study area (DPIE 2021), none of which have been recorded for the subject site.



Figure 6 indicates that none of the sighted threatened flora species occurs within the Lourdes Retirement Village precinct, the closest record being of Glandular Pink-bell that occurs about 1.4km to the north-east near Soldiers Memorial Park (Figure 6).

Most of the threatened species records occur in association with nearby reserves and National Parks such as Soldiers Memorial Park, Garigal National Park and Lane Cove National Park (Figure 6).

One record for Small-flowered Grevillea occurs in Lane Cove National Park near Ryde Road.

Records for Magenta Lilly Pilly are those for planted, landscaped individuals occurring in residential gardens, the individuals procured from nurseries, the species naturally occurring in littoral rainforest assemblages near the coast.

### **Assessment**

The subject area at the Lourdes Retirement Village at 95 Stanhope street, Killara, occurs within managed curtilage with no natural vegetation distribution occurring at the site. No threatened flora species are expected to occur at the site and none were located. No further assessment is considered necessary.

DPIE Bionet Atlas of NSW Wildlife (2021) records for an area of 5km radius around the subject site indicate that 34 threatened fauna have been recorded within the last 20 years.

Table 5 indicates the species of threatened fauna recorded including threatened status and number of records over the last 20 years.

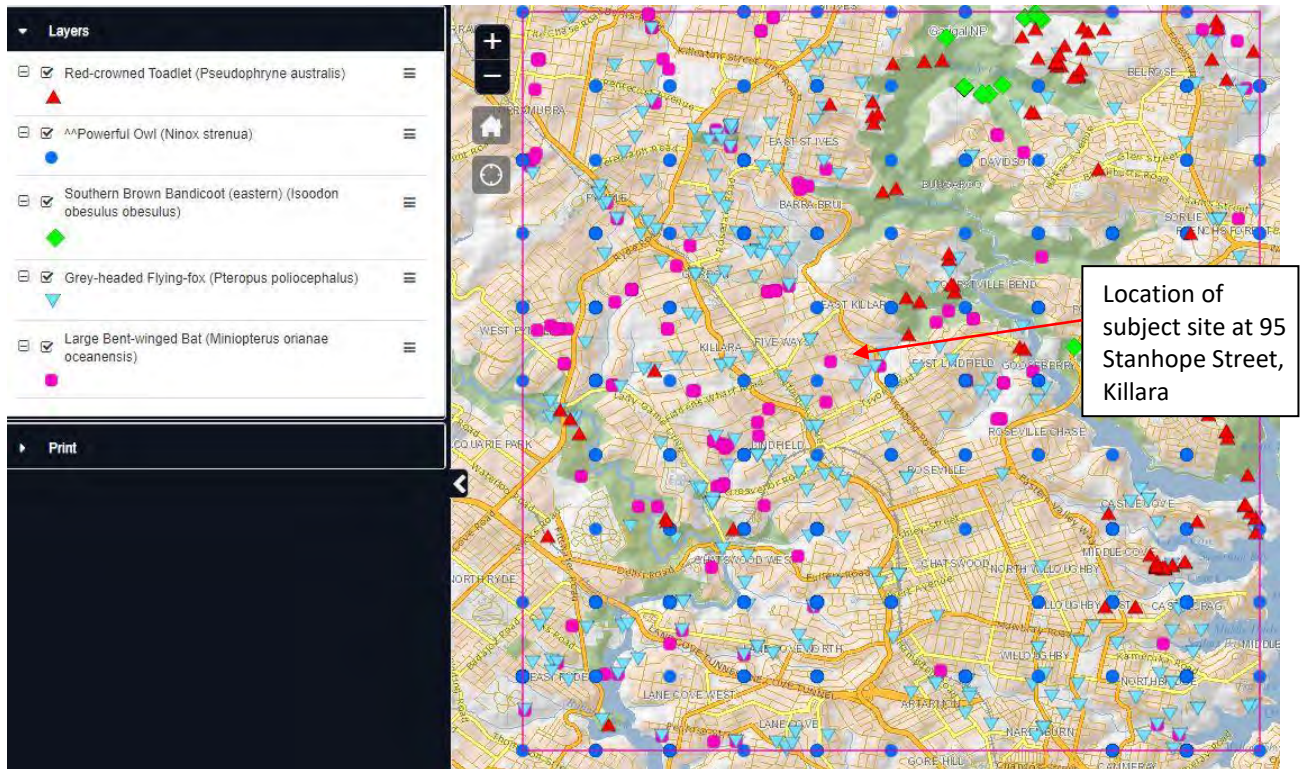
Family	Common name	Scientific name	NSW status	Comm. status	No. of records
<b>Amphibia</b> <b>Myobatrachidae</b>	Red-crowned Toadlet	<i>Pseudophryne australis</i>	V		110
<b>Limnodynastidae</b>	Giant Burrowing Frog	<i>Heleioporus australiacus</i>	V	V	2
<b>Reptilia</b> <b>Varanidae</b>	Rosenberg's Goanna	<i>Varanus rosenbergi</i>	V		23
<b>Aves</b> <b>Columbidae</b>	Rose-crowned Fruit-Dove	<i>Ptilinopus regina</i>	V		1
<b>Apodidae</b>	White-throated Needletail	<i>Hirundapus caudacutus</i>		V,C,J,K	12
<b>Ciconiidae</b>	Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	E1		1
<b>Ardeidae</b>	Australasian Bittern	<i>Botaurus poiciloptilus</i>	E1	E	1
	Black Bittern	<i>Ixobrychus flavicollis</i>	V		7
<b>Accipitridae</b>	White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	V		36
	Little Eagle	<i>Hieraaetus morphnoides</i>	V		1

Family	Common name	Scientific name	NSW status	Comm. status	No. of records
<b>Accipitridae</b>	Square-tailed Kite	<i>Lophoictinia isura</i>	V		10
<b>Cacatuidae</b>	Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	V		1
	Glossy Black-Cockatoo	<i>Calyptorhynchus lathamii</i>	V		16
<b>Psittacidae</b>	Little Lorikeet	<i>Glossopsitta pusilla</i>	V		3
	Swift Parrot	<i>Lathamus discolor</i>	E1	CE	14
<b>Strigidae</b>	Barking Owl	<i>Ninox connivens</i>	V		9
	Powerful Owl	<i>Ninox strenua</i>	V		650
<b>Tytonidae</b>	Sooty Owl	<i>Tyto tenebricosa</i>	V		1
<b>Neosittidae</b>	Varied Sittella	<i>Daphoenositta chrysoptera</i>	V		2
<b>Artamidae</b>	Dusky Woodswallow	<i>Artamus cyanopterus cyanopterus</i>	V		1
<b>Mammalia Dasyuridae</b>	Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	V	E	4
<b>Peramelidae</b>	Southern Brown Bandicoot (eastern)	<i>Isodon obesulus obesulus</i>	E1	E	80
<b>Phascolarctidae</b>	Koala	<i>Phascolarctos cinereus</i>	V	V	2
<b>Burramyidae</b>	Eastern Pygmy-possum	<i>Cercartetus nanus</i>	V		47
<b>Pteropodidae</b>	Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	V	V	642
<b>Emballonuridae</b>	Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	V		9
<b>Molossidae</b>	Eastern Coastal Free-tailed Bat	<i>Micronomus norfolkensis</i>	V		15
<b>Vespertilionidae</b>	Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	V	V	1
	Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	V		8
	Southern Myotis	<i>Myotis macropus</i>	V		31
	Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	V		9
<b>Miniopteridae</b>	Little Bent-winged Bat	<i>Miniopterus australis</i>	V		44
	Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	V		123
<b>Muridae</b>	New Holland Mouse	<i>Pseudomys novaehollandiae</i>		V	4

**Table 5** - Records of 34 threatened fauna species recorded over the previous 20 years within a 5km radius of the subject site at 95 Stanhope Street, Killara.

The site represents unsuitable habitat for most of these threatened fauna species, though locations of sightings were examined for a total of 26 threatened fauna species where potential habitat may be considered to occur. The subject site containing managed curtilage is suboptimal at best for most of these species although some avian species and Flying Foxes may feed on nectar from flowering eucalypts on occasion and insect-foraging bats such as the Large Bentwing Bat may occur above the canopies.

Figure 7 indicate the locations of 5 of the most commonly sighted threatened species of fauna recorded in the vicinity of 95 Stanhope Street, Killara over the previous 20 years.



**Figure 7** - Records for 5 of the most commonly sighted threatened fauna species in the locality of the Lourdes Retirement Village at Stanhope Street, Killara.

### **Assessment**

Many mobile fauna species that have been recorded in high numbers in the vicinity of the subject site include the Little Bentwing Bat, Southern Myotis or Fishing Bat, Eastern Pygmy Possum, Rosenbergs Goanna, Spotted Tail Quoll and Southern Brown Bandicoot. These fauna all occur in natural bushland associated with Garigal National Park and do not occur or forage in the vicinity of the managed subject land.

One species, the Gang-gang Cockatoo, occurs in low frequency well to the west of the subject site.

Three species, the Powerful Owl, Grey-headed Flying Fox and Large Bentwing Bat, have been recorded in close proximity to the subject site at 95 Stanhope Street, Killara (Figure 7).

**The Powerful Owl** has a very large foraging range and preys on arboreal mammals such as the Brushtail Possum and Ringtail Possum. These prey mammals are common and occur in high numbers in natural bushland at Soldiers Memorial Park and Garigal National Park, and as such the loss of a small number of trees from the tree community at the Lourdes Retirement Village

is not considered to contribute a significant habitat for prey for this species. As such, no further assessment is considered necessary.

**The Grey-headed Flying Fox** feeds on the nectar of blossoms of eucalypts and foraging is seasonal in relation to flowering times of particular eucalypt species. Extensive stands of eucalypts occur in nearby parks including Soldiers Memorial Park and Garigal National Park and the loss of a small number of indigenous tree species at the subject site is not considered to affect the foraging behaviour of the Grey-headed Flying Fox, populations of which have an encampment in the nearby suburb of Gordon. As such, no further assessment is considered necessary.

### **Large Bentwing Bat**

Previous recordings of bat sonographs over an extensive range of areas in the Sydney Metropolitan Region by ACS Environmental P/L have indicated that this microbat species forages over a wide range of habitats for insects above a tree canopy. As such, records for this species occur consistently across the 5km range of habitat as shown in Figure 7 and it is considered that the loss of a small number of indigenous locally-occurring trees will not impact on the viability of the populations of this bat species in the locality nor on potential numbers of the species. Mitigation of this small loss of trees would occur in the appropriate replacement of the numbers and species of tree in a landscape plan for the proposed development. As such, no further assessment is considered necessary.

### **Conclusion**

None of the documented threatened flora or fauna species are likely to occur in the highly modified managed curtilage habitat of the subject site and it is considered that any avifauna, Flying Foxes or microchiropteran bat species overflying or foraging in the area will not be significantly impacted by the development as there are extensive parks including Garigal National Park with a high cover of mature trees occurring in close proximity in the local area.

## 5 CONCLUSIONS

The subject site has been extensively modified in relation to natural vegetation structure and floristics, the site currently containing existing independent living units and other retirement and nursing home facilities in an area of managed curtilage with formal garden beds and landscaped areas of planted and established trees.

Established trees have been planted mainly along the surrounding boundaries of internal roadways and grassy garden areas and include locally-occurring and non-locally occurring indigenous species as well as exotic ornamental species, the tree assemblages and locations comprehensively documented in the amended arboricultural report by Scales (2021).

No trees occurring at the subject site were observed to contain hollows or spouts that would provide sheltering or breeding habitat for any avian species, arboreal mammals or microbats.

Principal locally-occurring indigenous trees observed at the site include Turpentine, Red Bloodwood, Sydney Red Gum, Old Man Banksia, Sweet Pittosporum and Broad-leaved Scribbly Gum (Scales 2017).

This ecological assessment has concluded that a small copse of two Turpentine trees and one individual of Sweet Pittosporum (Tree Numbers 44, 45 & 46 in Scales 2021) may have been derived from genotypes of these tree species that occurring in a former distribution of Sydney Turpentine Ironbark Forest (STIF) (Figure 4). However, this small group of trees are not component of a structured and floristically diverse assemblage of STIF and it is concluded that their proposed removal can be compensated for by landscaped plantings of several saplings of Turpentine, derived from local provenance, in suitable areas of the redevelopment.

In relation to locally-occurring indigenous trees occurring within the garden beds or other landscaped areas within the subject site, this vegetation does not contain any threatened flora species or threatened ecological communities and it is considered that any proposed redevelopment of the site will have no significant impact on any species or ecological community in relation to the requirements of Section 5A (s.5A) of the *Environmental Planning & Assessment Act 1979*.

All of the locally-occurring indigenous trees proposed for removal to facilitate the development are mostly landscaped plantings and occur commonly in surrounding local parks and reserves such as Soldiers Memorial Park and Garigal National Park. These species include Sydney Red Gum, Blackbutt, Red Bloodwood, Broad-leaved Scribbly Gum, Rough-barked Apple and Forest Oak (Tables 1 & 3). As such, their removal would not incur a significant loss to the cohort of trees in the locality. It is recommended however to utilise these species in any landscape plan that is

prepared for the development as they provide valuable nectar, roosting and nesting resources for many bird species as well as arboreal mammals and the Grey-headed Flying Fox.

An assessment of species of flora and fauna recorded within 5km of the site and listed under the EPBC Act and the TSC Act as threatened, found that habitat for these species does not occur at the highly modified and landscaped site. Though some threatened fauna species such as the Powerful Owl, Grey-headed Flying Fox and Large Bentwing Bat may occasionally forage in the vicinity of the subject site, it is considered that none would be impacted in relation to viability of populations or numbers of individuals, by any proposed redevelopment of the site.

As there are no threatened species, ecological communities or populations occurring at the subject site, it is considered not necessary to undertake any further assessment of significance or refer the proposal to the Director General of the DPIE or to the Commonwealth Department of the Agriculture, Water and Environment.

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