Keystone Ecological Pty Ltd
ABN 13 099 456 149
PO Box 5095 Empire Bay NSW 2257
Telephone 1300 651 021
Email office@keystone-ecological.com.au
Web www.keystone-ecological.com.au

Mr Thomas Gould
Development Manager
Coronation Property
66 Wentworth Avenue
SURRY HILLS NSW 2010

By email: t.gould@coronation.com.au

3rd June 2024

RE: BDAR Waiver Application
Corner of Archer Street and Albert Avenue, Chatswood

Dear Thomas,

The Planning Secretary's Environmental Assessment Requirements (SEARS) for the proposed mixed use commercial and residential tower development at Archer Street and Albert Avenue Chatswood concept development proposal detail that Biodiversity issues need to be addressed by either the provision of a Biodiversity Development Assessment report (BDAR), or an application to waive that requirement (BDAR Waiver).

I have determined that the proposal will not impose any significant impacts on biodiversity values due to the highly modified nature of the site arising from a long history of profound disturbance, the absence of habitats for significant species of flora and fauna, and the metropolitan nature of the site and surrounding lands. Therefore, a BDAR need not be prepared and this BDAR Waiver report is provided in response to the SEARS. Please find following Tables 1 and 2 (and Appendices) in accordance with the relevant guidelines[1].

I trust that this is satisfactory for your requirements. Please do not hesitate to contact me if additional information or further clarification are required.

Yours sincerely,

Elizabeth Ashby
Principal Consultant, Keystone Ecological

[1] NSW Department of Planning, Industry and Environment (2019) *How to apply for a biodiversity development assessment report waiver for a Major Project Application*. Available at https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/developers/biodiversity-development-assessment-report-waiver

TABLE 1: Biodiversity development assessment report waiver request information requirements.	
Admin	**• Proponent name and contact details** Coronation Property c/- Mr Thomas Gould Development Manager Coronation Property Level 2, 66 Wentworth Avenue, SURRY HILLS, NSW 2010 t.gould@coronation.com.au **• Project ID** Concept development of demolition of existing dwellings and townhouses and construction of a mixed-use commercial and residential building. This BDAR Waiver Application has been prepared in response to the standard Planning Secretary's Environmental Assessment Requirements, specifically those detailed at Issue 11 Biodiversity. **• Name and ecological qualifications of person completing TABLE 2** Elizabeth Ashby, Principal Consultant of Keystone Ecological, Accredited Assessor in the Biodiversity Assessment Method (number 17045) – responsible for all aspects of the work. Ms Ashby's Curriculum Vitae is provided at Appendix 1.
Site details	**• Street address, Lot and DP, local government area.** 57-61 Archer Street (SP 81015) and 34 Albert Avenue (SP 101359) in Willoughby City LGA.

TABLE 1: Biodiversity development assessment report waiver request information requirements.	
	• Description of existing development site. The development site is located in the Chatswood CBD at 332128 E and 258845 N (GDA2020 MGA56), on the south eastern corner of Archer Street and Albert Avenue. The site comprises two lots, totalling 2,659 square metres in area, and each currently developed separately: o 57-61 Archer Street (SP 81015) contains a low-rise townhouse complex called "Peppercorn Terraces", made up of two three-storey buildings with basement car parking, and associated small landscaped gardens. Available aerial photography indicates that this complex was constructed between 2007 and 2009; and o 34 Albert Avenue (SP 101359) contains a house built in 1930 at the Albert Avenue frontage, and a duplex residence at the rear (34A and 34B) built in 2013, with frontage to Bertram Street. The immediate local area is a mixture of commercial and residential properties, including single level freestanding houses and apartment blocks, and commercial and . **• Location map.** A location map is provided in Figure 1 in Appendix 2 **• Site Map.** A recent aerial photograph showing detail of the subject site is provided in Figure 2 in Appendix 2.
Proposed development	**• Project Description** A concept application for demolition of the existing townhouses (57-61 Archer Street) and the duplex (34A and 34B Albert Avenue), and redevelopment for a mixed use development including residential apartments, commercial, and retail uses,

TABLE 1: Biodiversity development assessment report waiver request information requirements.	
	with basement parking and landscaped areas. The building at 34 Albert Avenue is to be repurposed as a commercial building. • **Proposed Site Plan.** Site plans showing the elements of the proposal are provided at Figures 3 and 4 in Appendix 2.

TABLE 2: Impacts of the proposed development on biodiversity values.			
Biodiversity value	**Meaning**	**Relevant**	**Details**
Vegetation abundance – 1.4(b) BC Regulation	Occurrence and abundance of vegetation at a particular site	Not applicable	The most recent State Vegetation Type Map (available at https://geo.seed.nsw.gov.au/Public_Viewer/index.html?viewer=Public_Viewer&locale=en-AU) shows that there is no native vegetation recognised in or near the subject site. The nearest incidence of native vegetation occurs over 600 metres to the north-north west. Two isolated patches of Plant Community Type (PCT) 3136 Blue Gum High Forest are mapped as part of Beauchamp Park and at the rear of Nicholson Street at the head of Scotts Creek. Otherwise, native vegetation occurs to the west on the other side of the Pacific Highway. A few isolated patches of PCT 3262 Sydney Turpentine Ironbark Forest and PCT 3136 Blue Gum High Forest occur on the ridge, but native vegetation occurs principally as a mosaic of mesic PCTs concentrated in the gullies leading down to the Lane Cove River. This mapping is reproduced at Figure 5 in Appendix 2.

TABLE 2: Impacts of the proposed development on biodiversity values.			
Biodiversity value	**Meaning**	**Relevant**	**Details**
			The site is currently dominated by built form, with the vegetation on site being confined to recently-planted gardens, comprising strip plantings between the two townhouse buildings, and along the lots' boundaries. On the verges of both Archer Street and Albert Avenue, larger and more significant street trees have been planted. The trees and gardens on and immediately adjacent to the development site have been detailed in reports prepared by the Project Arborist.[2] The planted vegetation is a mixture of native species (some locally native) and exotic species. The distribution of the trees and plantings are shown in a plan at Figure 6, and illustrated in Google Street View photographs in Figures 7 to 11 in Appendix 2. The tree species (and their ecological values) are detailed in Table 1 in Appendix 3.
Vegetation Integrity 1.5(2)(a) BC Act	Degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state	Not applicable	Prior to European settlement, the site probably supported PCT 3136 Blue Gum High Forest, a Critically Endangered Ecological Community – see the modelled vegetation map reproduced at Figure 12 in Appendix 2. However, the only extant vegetation in the local area that is representative of this PCT now occurs as isolated small fragments, the closest being in Beauchamp Park, 600 metres to the north west.

[2] Arboricultural Development Impact Assessment, prepared by Elke Landscape Architect + Consulting Arborist + Horticulturist (revision C, dated 22nd November 2023.

TABLE 2: Impacts of the proposed development on biodiversity values.			
Biodiversity value	**Meaning**	**Relevant**	**Details**
			The site is now profoundly modified from its natural state. The tall trees (particularly Blue Gum, Blackbutt, and Turpentine) of the forests that originally occupied the broad shale ridges of the Hornsby Plateau were felled in the early days of the colony to build Sydney Town, with logs transported down the Lane Cove River. The rich shale-derived soils supported many small farms and orchards through the 1800s, and the opening of the northern railway line in the late 1800s facilitated commercial development in Chatswood and surrounds. By the mid 20th century, Chatswood was highly urbanised. The earliest available aerial photograph of the site dates from 1943 and shows four well established residences – three on the Archer Street frontage, and the older existing dwelling at number 34 Albert Avenue, within an urban matrix. The series of available historical aerial photographs[3] show woody vegetation in 1943 was confined to a few small garden trees at the rear of the blocks but by 1955, almost all of these trees had been cleared. By 1970, the street trees on Albert Avenue can be seen, and by 2005 the trees along Archer Street are well established. The Peppercorn Tree on the corner is not evident until the late 1980s. The site has therefore been cleared and developed as residential land for more than 80 years. It is now part of the Chatswood CBD

[3] NSW Spatial Services, available at https://www.spatial.nsw.gov.au/products_and_services/aerial_and_historical_imagery

TABLE 2: Impacts of the proposed development on biodiversity values.			
Biodiversity value	**Meaning**	**Relevant**	**Details**
			with surrounding lands containing many tower buildings and many more likely to be built in the future in accordance with the land zoning and the Chatswood CBD development strategy. The landform of the majority of the development site has been significantly altered by the excavation for the basement of Peppercorn Terraces. There is now no evidence of PCT 3136 on or near the site. The only natural features present in the local urban fabric are planted elements (gardens and street trees), with most being exotic species or native trees that are not locally native species (e.g. Brush Box from northern NSW) or popular horticultural forms of locally native species (such as Magenta Lilly Pilly). None of these are representative of the natural vegetation of this part of the Hornsby Plateau.
Habitat suitability 1.5(2)(b) BC Act	Degree to which the habitat needs of threatened species are present at a particular site	Not applicable	The Bionet wildlife database was interrogated to establish what threatened species are known from the local area. The threatened species recorded from within 1500 metres of the site and their habitat requirements are detailed in Table 2 (flora) and Table 3 (fauna) in Appendix 3. The highly modified nature of the site makes it unsuitable for the natural occurrence of any of the candidate threatened flora species.

TABLE 2: Impacts of the proposed development on biodiversity values.			
Biodiversity value	**Meaning**	**Relevant**	**Details**
			Similarly, the highly modified nature of the site makes it unsuitable for the natural occurrence for most of the candidate threatened fauna species known to occur in the local area. The site is within the foraging range of two highly mobile fauna species known from the local area – *Ninox strenua* Powerful Owl and *Pteropus poliocephalus* Grey-headed Flying-fox. The site does not provide suitable roosting or breeding habitat for either of these species. The favoured prey item of the Powerful Owl is the Ringtail Possum, and there is no habitat for this species on site. Other less favoured prey species may occur in the large canopies of the street trees, but the site is within an area of high activity that is not favourable to stealthy hunting. A number of the species of trees on and adjacent to the development site are known to to provide suitable foraging resources for the Grey-headed Flying-fox (see Table 1 in Appendix 3). However, of these, only 3 are known to be used in the Sydney region: • Blossom of *Melaleuca quinquenervia* Broad-leaved Paperbark. This is a large and mature tree, and this species is a good source of nectar, often provided in the otherwise lean winter months. The single large street tree will be retained.

TABLE 2: Impacts of the proposed development on biodiversity values.			
Biodiversity value	**Meaning**	**Relevant**	**Details**
			• Blossom and fruit of the *Phoenix canariensis* Canary Island Date Palm. The tree on site is small and probably not yet exploited by this species. Nevertheless, its removal is supported for biodiversity reasons as it is a serious hazard to Grey-headed Flying-foxes (thorns can tear the wings, fruit can get caught in the mouths of juveniles and prevent them from feeding). • The soft autumn fruits of *Syzygium paniculatum* Magenta Lilly Pilly are known to be eaten. Although the three planted trees will be removed, they would represent only a very small and insignificant component of potential foraging habitat for this highly mobile species. The site is also absent of prescribed matters such as karsts, caves, crevices, cliffs and other geological features of significance, rocks, habitat within human-made structures, and habitat within suitable non-native vegetation.
Threatened species abundance 1.4(a) BC Regulation	Occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site	Not applicable	The site has been profoundly altered and is almost entirely occupied by built form, hardstand, and planted gardens. Therefore it no longer potential habitat for the threatened ecological community Blue Gum High Forest (PCT 3136) that would otherwise occur in this location in its natural state. Three individuals of the threatened *Syzygium paniculatum* Magenta Lilly Pilly occur on site. Natural habitat for this species (being littoral rainforest or riverine rainforest) is absent from the site and surrounds. These individuals are all horticultural specimens of

TABLE 2: Impacts of the proposed development on biodiversity values.			
Biodiversity value	**Meaning**	**Relevant**	**Details**
			unknown provenance and hybrid status, and as such are considered in the National Recovery Plan not to serve conservation outcomes for this species. Thus, the removal of these horticultural specimens is not considered to impose an adverse impact on this species. The site is only 5.6 kilometres from a major camp of *Pteropus poliocephalus* Grey-headed Flying-foxes at Gordon, however there are few records from the CBD area and none from the subject site. Nevertheless, the tree likely to provide the best foraging opportunities – the Broad-leaved Paperbark street tree - will be retained and protected.
Habitat connectivity 1.4(c) BC Regulation	Degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range	Not applicable	The site is within a long-established highly-urbanised part of Chatswood. Habitat patches in the local area are highly fragmented, and isolated by hostile intervening development. The site is part of a broad ridge is bisected by a major transport corridor, making it generally unsuitable for the movement flora and fauna species. For example, the local study of microbat flyways demonstrated that they actively avoided the ridgetop and instead preferentially used the vegetated riparian habitats to move about the landscape. A large population of *Pteropus poliocephalus* Grey-headed Flying-fox occurs within a long-standing camp in nearby Gordon and individuals fly out from this camp at dusk in multiple directions to foraging grounds that may be up to at least 20 kilometres distant.

TABLE 2: Impacts of the proposed development on biodiversity values.			
Biodiversity value	**Meaning**	**Relevant**	**Details**
			However, the potential foraging habitat for this species in and around the subject site comprises only one or a few trees, and these are not strategically located such as to connect foraging and roosting habitat of this species.
Threatened species movement 1.4(d) BC Regulation	Degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle	Not applicable	The Grey-headed Flying-fox is the only species with the potential to use the foraging resources of the trees on site, and these are highly mobile species that travel tens of kilometres in a single night, and thousands of kilometres over a year seeking suitable forage and camp sites. This highly urbanised part of Chatswood would play little to no part in facilitating movement of this or other threatened species.
Flight path integrity 1.4(e) BC Regulation	Degree to which the flight paths of protected animals over a particular site are free from interference	Not applicable	The movements of *Pteropus poliocephalus* Grey-headed Flying-fox need to be considered. Individuals dispersing from the roosting camp in Gordon to foraging grounds may conceivably have some of their flight paths interrupted by a tall tower block within the air space between foraging and roosting habitat. However, the proposed building is within the highly urbanised Chatswood CBD that already contains many established tall buildings (see Figure 13 in Appendix 2). Notably, none of the 265 records in Bionet of deaths and injuries to this species within the local area are attributable to the presence of tall buildings. Instead, the listed hazards are power lines, motor vehicles, predators (such as the Powerful Owl), netting, and extreme heat. The local

TABLE 2: Impacts of the proposed development on biodiversity values.			
Biodiversity value	**Meaning**	**Relevant**	**Details**
			population is presumably already habituated to this cityscape, with established flight paths that avoid such conflicts, if such conflicts ever existed. It is therefore considered unlikely that an additional tower block within an already established area of other tower blocks will impose an adverse impact on the ability of this highly-mobile species to move through the landscape.
Water sustainability 1.4(f) BC Regulation	Degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site	Not applicable	The modelled probable extent of Groundwater Dependent Ecosystems (GDE) indicate that such vegetation is restricted to patches within Beauchamp Park and in the riparian corridors leading down to the Lane Cove River to the west and to Middle Harbour to the east (see Figure 14 in Appendix 2). The extent of High Ecological Value Aquatic Ecosystems (HEVAE) (see Figure 15 in Appendix 2) are also restricted to a small patch near the headwater of Swaines Creek, a tributary of the Lane Cove River on the western side of the highway. The subject site is not within this catchment. Given the distance from GDE and HEVAE, and the nature of intervening development, it is considered unlikely that any interruption to groundwater during excavation for this proposal will have a significant impact on sustaining those threatened communities.

APPENDIX 1

CURRICULUM VITAE – ELIZABETH ASHBY

ELIZABETH ASHBY

CURRENT POSITION

Principal Consultant and Director, Keystone Ecological Pty Ltd
Email: e.ashby@keystone-ecological.com.au

QUALIFICATIONS

Bachelor of Science
University of Sydney, 1983, Double major in Zoology and Botany
Master of Science (Preliminary),
University of Sydney, 1984, Distinction by coursework
Cert IV Workplace Assessment and Training,
North Sydney TAFE, 2002
BioBanking and Biocertification Assessor (Accreditation Number 0001)
Northern Sydney Institute of TAFE / Department of Environment and Climate Change, 2009 (Renewed 2015)
Accredited in the Biodiversity Assessment Method (Assessor Number 17045)
Muddy Boots Environmental Training August 2017 (Renewed 2021)

PROFESSIONAL AFFILIATIONS

Member and past President, Ecological Consultants Association of NSW
Scientific Member, Royal Zoological Society of New South Wales
Member, Australian Mammal Society

SPECIALISED COMPETENCE

- Ecological impact assessment and research
- Forest, woodland, heath and grassland flora
- Forest fauna
- Flora and fauna survey methodology
- Geographic information systems
- Biodiversity Assessment Method, BioBanking Assessment and Biocertification
- Project management
- Advocacy and expert evidence

I am a recognised authority on forest conservation issues and have refereed many papers for Australian scientific journals.

I have presented an invited lecture and workshop at the University of Canberra for students regarding the implementation of components of the *Environmental Planning and Assessment Act* relevant to threatened species, endangered populations and endangered ecological communities.

I have served on a scientific panel of invited experts regarding the conservation status of Cumberland Plain Woodland and associated vegetation communities for the (then) Commonwealth Department of Environment, Water, Heritage and the Arts.

I have served on a small working group, reporting to the Director-General of the (then) NSW Department of Conservation and Conservation, regarding the accreditation of ecological consultants, pursuant to the Threatened Species Legislation Amendment Act (2004).

EXPERIENCE IN LAND AND ENVIRONMENT COURT

I have provided written and oral expert evidence in the Land and Environment Court in a number of matters. My opinion has been sought on diverse questions such as:

- the structure of forest vegetation and its consequence on bushfire protection requirements
- the presence or otherwise of an endangered ecological community
- the likely impact of development on threatened entities
- rehabilitation management of foreshore wetland

PROFESSIONAL WORK HISTORY

Private Consultancy

Keystone Ecological Pty Ltd (2004–present) Principal Consultant responsible for a range of ecological reports incorporating flora and fauna surveys, assessment of conservation values, assessment of impacts, recommendation of mitigation measures and formulation of management plans.

Conacher Travers Pty Ltd Environmental Consultants (2002–2004) Senior Ecologist responsible for specialist input into a number of ecological impact assessments, recommendation of mitigation measures and formulation of management plans.

Public Authorities

Royal Botanic Gardens (1993–1999) Senior Technical Officer responsible for development of the Geographic Information System, data management, production of vegetation maps across NSW, preparation of scientific papers, contribution to research projects on vegetation determinants and conservation matters.

NSW National Parks and Wildlife Service (1983–1993) Technical Officer responsible for flora and fauna survey, research data collection and data management, preparation of scientific papers for projects across NSW.

PUBLICATIONS

Daniel Lunney, Elizabeth Ashby, Jan Grigg and Michael O'Connell (1986). Food availability and habitat selection of *Sminthopsis leucopus* (Gray) (Marsupialia:Dasyuridae) in logged forest on the south coast of New South Wales. *Australian Mammalogy* 9:105-110.

Daniel Lunney and Elizabeth Ashby (1987). Population changes in *Sminthopsis leucopus* (Gray) (Marsupialia:Dasyuridae), and other small mammal species, in forest regenerating from logging and fire near Bega, New South Wales. *Australian Wildlife Research* 14:275-284.

Daniel Lunney, Elizabeth Ashby, Jan Grigg and Michael O'Connell (1989). Diets of Scincid lizards *Lampropholis guichenoti* (Dumeril and Bibron) and *L. delicata* in Mumbulla State Forest on the south coast of New South Wales. *Australian Wildlife Research* 16:307-312.

Daniel Lunney, Barbara Triggs, Peggy Eby and Elizabeth Ashby (1990). Analysis of Scats of Dogs *Canis familiaris* and Foxes *Vulpes vulpes* (Canidae:Carnivora) in coastal forests near Bega, New South Wales. *Australian Wildlife Research* 17:61-68.

Elizabeth Ashby, Daniel Lunney, John Robertshaw and Robert Harden (1990). Distribution and status of bandicoots in New South Wales. Pp 43-50 in BANDICOOTS AND BILBIES, ed by J.H. Seebeck, P.R. Brown, R.L. Wallis and C.M. Kemper. Surrey Beatty and Sons, Sydney.

David Keith and Elizabeth Ashby (1992). Vascular plants of conservation significance in the south east forests of New South Wales. Occasional Paper No. 11, NSW National Parks and Wildlife Service, Sydney.

Marianne F. Porteners and Elizabeth M. Ashby (1996). Plants of Pooncarie and the Willandra Lakes. Royal Botanic Gardens, Sydney

Marianne F. Porteners, Elizabeth M. Ashby and John S. Benson (1997). The natural vegetation of the Pooncarie 1:250 000 map. *Cunninghamia* 5(1):39-231.

John Benson, Elizabeth Ashby and Marianne Porteners (1997). The native grasslands of the Riverine Plain, New South Wales. *Cunninghamia* 5(1):1-48.

J. S. Benson and E. M. Ashby (2000). Vegetation of the Guyra 1:100 000 map sheet, New England Bioregion, New South Wales *Cunninghamia* 6(3):511-872.

UNPUBLISHED REPORTS

Elizabeth Ashby and Daniel Lunney (1985). Review of nature conservation programmes: Dasyuridae. Unpublished report to NSW National Parks and Wildlife Service.

Elizabeth Ashby and Daniel Lunney (1985). Review of nature conservation programmes: Bandicoots. Unpublished report to NSW National Parks and Wildlife Service.

Elizabeth Ashby and Daniel Lunney (1985). Review of nature conservation programmes: Rodents. Unpublished report to NSW National Parks and Wildlife Service.

John Benson and Elizabeth Ashby (1998). Vegetation of the Guyra 1:100 000 map sheet. Unpublished report to the Australian Heritage Commission.

CONFERENCE PAPERS

Elizabeth Ashby (2006). Wildlife Corridor Requirements of Flora. *Ecological Consultants Association Annual Conference. 2006.*

Elizabeth Ashby (2013). Offsets – can they be effectively implemented to achieve the desired results? *Ecological Consultants Association Annual Conference, 2013*.

ENVIRONMENTAL ASSESSMENT PROJECT HISTORY

I have completed hundreds of impact assessments (including EIS and SIS) for all manner of proposed developments including large and small subdivisions, single dwellings, rezonings and industrial land development. Although this work stretches across a large number of council areas from Coffs Harbour to Moruya, it is primarily within the council areas of the Sydney basin and its fringes, the Central Coast and mid North Coast.

I have prepared scores of management plans for the rehabilitation of disturbed or cleared bushland and have been called upon by Councils to provide such work. State agencies have also engaged me to undertake flora and fauna survey of land in order to better inform its conservation management.

I have also been contracted to provide expert critique for submission to the Department of Planning regarding the North West Growth Centres and for a similar growth centre in the Port Macquarie area.

APPENDIX 2

FIGURES

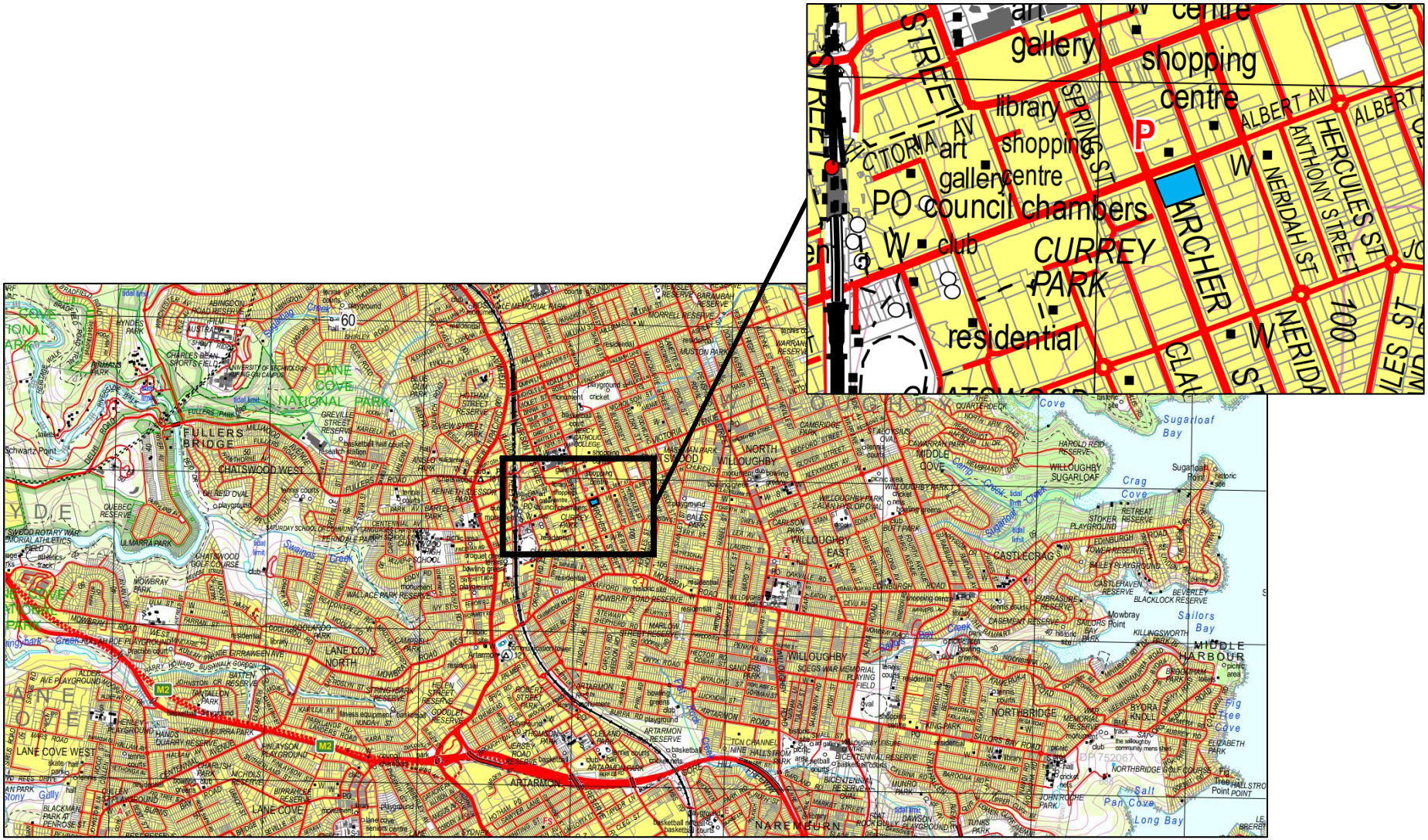

Figure 1: *Topographic map showing the location and landscape context of the site (blue polygon).*

Figure 2: *Close aerial photograph showing existing site conditions. Subject site outlined in red.*

Figure 3: *Proposal. A: ground floor footprint; B: whole tower concept.*

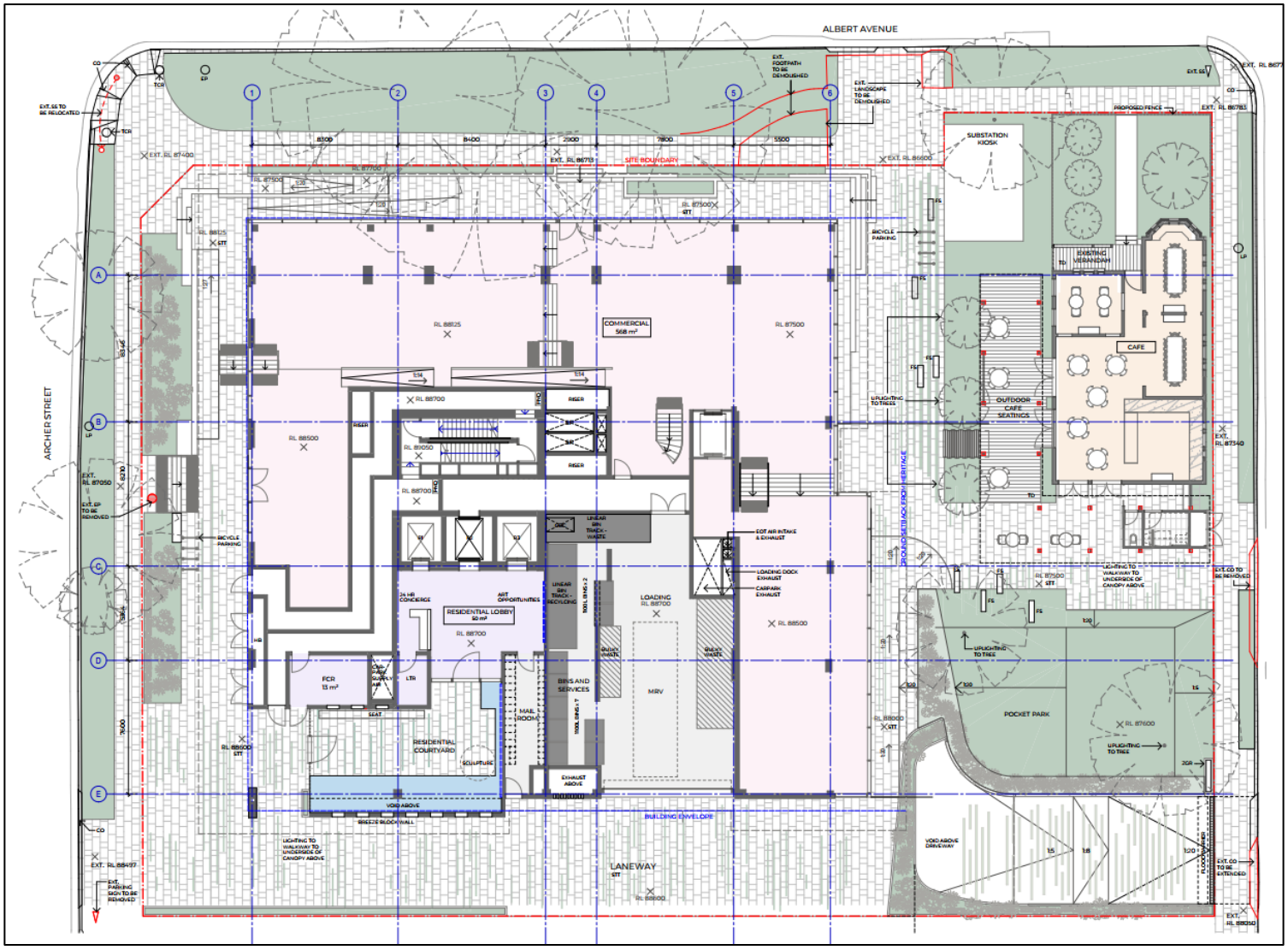

Figure 4: *Detailed ground floor concept plan.*

Figure 5: *Extant State Vegetation Type Map showing no vegetation on or near the subject site.*

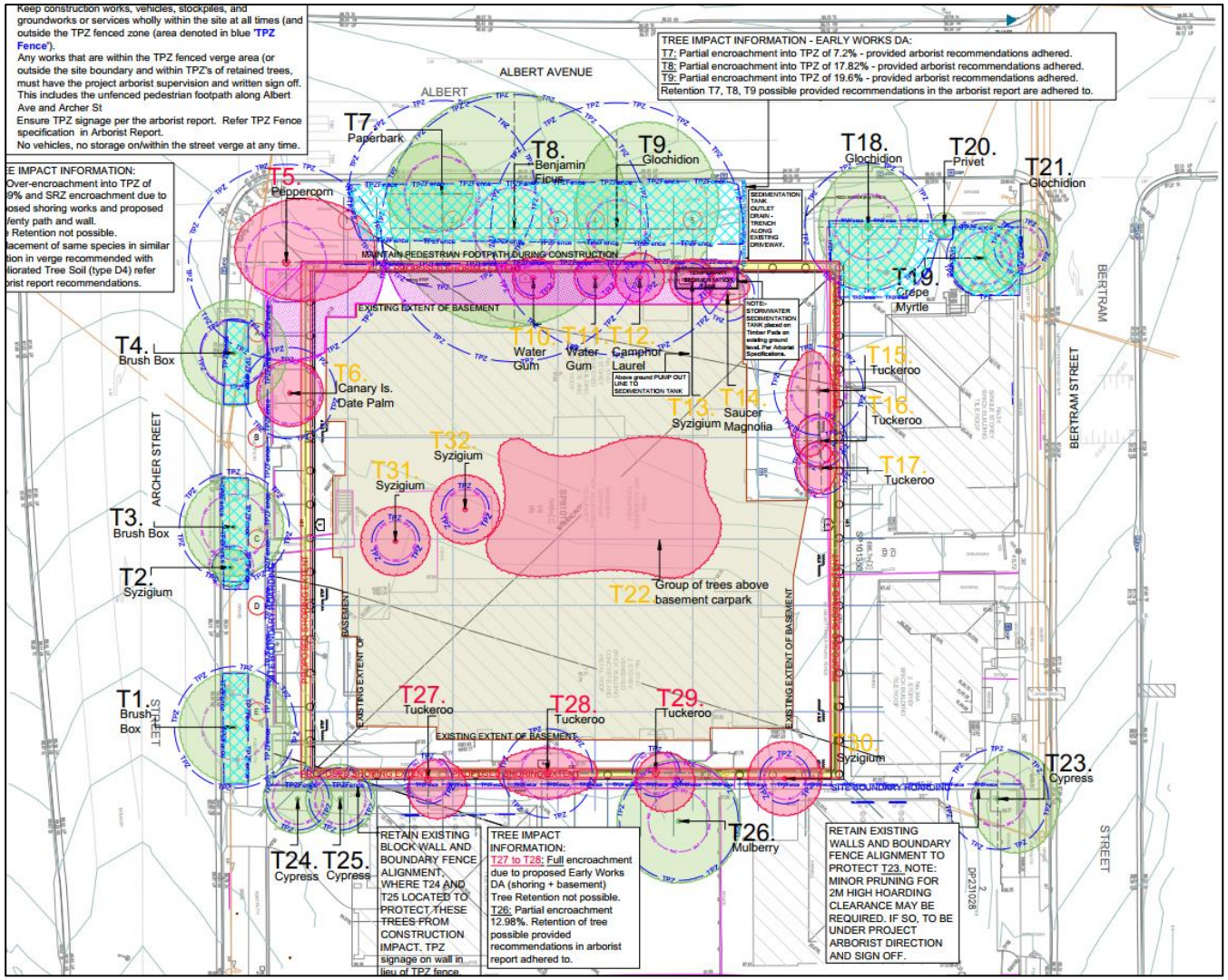

Figure 6: *Extract from the Arboricultural Impact Plan showing the distribution of the trees ands garden areas.*

Figure 7: *The eponymous Peppercorn Tree (tree 5) at the corner of the site and street trees planted in the verge along Archer Street and Albert Avenue.*

Figure 8: *Looking north along Archer Street showing street trees and formal gardens.*

Figure 9: *Looking east from Archer Street into the central garden planted over the basement of the townhouses, comprising a mix of native and exotic trees.*

Figure 9: *Looking west along Albert Avenue showing the mature street tree around which the footpath has been constructed.*

Figure 10: *The entry to the basement of the townhouses and the front yard of number 34 Albert Avenue.*

Figure 11: *Numbers 34A and 34B at the rear of number 34 Albert Avenue.*

Figure 12: *Modelled vegetation present in 1750, prior to European occupation. The site (red) is situated in a large expanse of PCT 3136 (pink) on the broad shale ridge.*

Figure 13: *Looking south across the Chatswood CBD skyline and the subject site (red arrow).*

Figure 14: *Probable extent of Groundwater Dependent Ecosystems (green and yellow). Subject site location indicated by red star.*

Figure 15: *Distribution of High Ecological Value Aquatic Ecosystems (bright green). Subject site location indicated by red star.*

APPENDIX 3

TABLES

TABLE 1: Trees recorded in and adjacent to the development site and fate (per the Project Arborist reports), their provenance, and potential value to fauna. Foraging values to Grey-headed Flying-foxes sourced from Ku-ring-gai Bat Conservation Society Inc (Sydney region), Australasian Bat Society Inc. (NSW), and research undertaken by Dr Pia Lentini of the University of Melbourne (Australia).

#	Species	Location	Provenance	Fate	Reason for removal	Height (m)	Specific value to fauna		
							Blossom	Fruit	Roost
1	*Lophostemon confertus* Brush Box	Archer Street street tree	Not locally native	Keep	NA	14	Nectar and pollen reportedly eaten by Grey-headed Flying-foxes in NSW.		Large street trees of this species often provide roost sites for Rainbow Lorikeets.
2	*Syzygium* sp. Lilly Pilly Might be *S. paniculatum*	Archer Street street tree	Unknown	Keep	NA	5		Unknown if this is one of the 4 species of Lilly Pilly known to be eaten by Grey-headed Flying-foxes in the Sydney region. King Parrots also eat Lilly Pilly fruits of various species.	
3	*Lophostemon confertus* Brush Box	Archer Street street tree	Not locally native	Keep	NA	17	Nectar and pollen reportedly eaten by Grey-headed Flying-foxes in NSW.		Large street trees of this species often provide roost sites for Rainbow Lorikeets.
4	*Lophostemon confertus* Brush Box	Archer Street street tree	Not locally native	Keep	NA	16	Nectar and pollen reportedly eaten by Grey-headed Flying-foxes in NSW.		Large street trees of this species often provide roost sites for Rainbow Lorikeets.
5	*Schinus areira* Peppercorn Tree	Archer Street street tree	Exotic	Remove	TPZ encroachment by footprint	13		Fruit reportedly eaten by Grey-headed Flying-foxes in Australia.	
6	*Phoenix canariensis* Canary Island Date Palm	Within subject site	Exotic	Remove, which is supported for biodiversity reasons. This species is a hazard to Grey-headed Flying-foxes	Condition	5	Nectar and pollen known to be eaten by Grey-headed Flying-foxes in the Sydney region as well as nectar-feeding birds such as Rainbow Lorikeets.	Fruit reportedly eaten by Grey-headed Flying-foxes in NSW.	Large specimens often provide roost sites for the introduced Indian Mynas.
7	*Melaleuca quinquenervia* Broad-leaved Paperbark	Albert Avenue street tree	Locally native	Keep	NA	12	Nectar and pollen known to be eaten		

#	Species	Location	Provenance	Fate	Reason for removal	Height (m)	Specific value to fauna		
							Blossom	Fruit	Roost
							by Grey-headed Flying-foxes in the Sydney region as well as nectar-feeding birds such as Rainbow Lorikeets.		
8	*Ficus benjamina* Weeping Fig	Albert Avenue street tree	Not locally native	Keep	NA	18		Fruit reportedly eaten by Grey-headed Flying-foxes in Australia.	Large canopy may be used for roosting by local birds such as Rainbow Lorikeets
9	*Glochidion ferdinandi* Cheese Tree	Albert Avenue street tree	Locally native	Keep	NA	11		Fruit eaten by King Parrots.	
10	*Tristaniopsis laurina* Water Gum	Within subject site	Locally native	Remove	Within footprint	5.5	Leaves of this species reportedly chewed on by Grey-headed Flying-foxes in Australia.		
11	*Tristaniopsis laurina* Water Gum	Within subject site	Locally native	Remove	Within footprint	5.5	Leaves of this species reportedly chewed on by Grey-headed Flying-foxes in Australia.		
12	*Cinnamomum camphora* Camphor Laurel	Within subject site	Exotic	Remove	Within footprint	6.5		Fruit reportedly eaten by Grey-headed Flying-foxes in Australia. Probably also eaten by Currawongs.	
13	*Syzygium* sp. Lilly Pilly	Within subject site	Unknown	Remove	Within footprint	6.5		Unknown if this is one of the 4 species of Lilly Pilly known to be eaten by Grey-headed Flying-foxes in the Sydney region. King Parrots also eat Lilly Pilly fruits of various species.	
14	*Magnolia acuminata* Saucer Magnolia	Within subject site	Exotic	Remove	Within footprint	9			
15	*Cupaniopsis anacardioides* Tuckeroo	Within subject site	Locally native	Remove	Within footprint	13		Fruit reportedly eaten by Grey-headed Flying-foxes in Australia.	
16	*Cupaniopsis anacardioides* Tuckeroo	Within subject site		Remove	Within footprint	10		Fruit reportedly eaten by Grey-headed Flying-foxes in Australia.	

#	Species	Location	Provenance	Fate	Reason for removal	Height (m)	Specific value to fauna		
							Blossom	Fruit	Roost
17	*Cupaniopsis anacardioides* Tuckeroo	Within subject site		Remove	Within footprint	10		Fruit reportedly eaten by Grey-headed Flying-foxes in Australia.	
18	*Glochidion ferdinandi* Cheese Tree	Within subject site	Locally native	Keep	NA	12			
19	*Lagerstroemia indica* Crepe Myrtle	Within subject site	Exotic	Keep	NA	6			
20a	*Ligustrum lucidum* Large-leaved Privet	Within subject site	Exotic	Keep	NA	3.5		Fruit reportedly eaten by Grey-headed Flying-foxes in NSW.	
20b	*Ligustrum lucidum* Large-leaved Privet	Within subject site	Exotic	Keep	NA	3.5		Fruit reportedly eaten by Grey-headed Flying-foxes in NSW.	
21	*Glochidion ferdinandi* Cheese Tree	Within subject site	Locally native	Keep	NA	7.5		Fruit eaten by King Parrots.	
22	Mix of juvenile to semi-mature garden trees including Murraya, Prunus, Citrus, Fig, Nandina, Lilly Pilly, and Camphor Laurel	Within subject site	Both exotic and native; planted and volunteer	Remove	Within footprint	4 to 7	Indeterminate foraging value, but size and interior location probably make these young trees unattractive to Grey-headed Flying-foxes.		
23	*Chamaecyparis lawsoniana* False Golden Cypress	Adjacent property	Exotic	Keep	NA	11			
24	*Chamaecyparis lawsoniana* False Golden Cypress	Adjacent property		Keep	NA	5			
25	*Chamaecyparis lawsoniana* False Golden Cypress	Adjacent property		Keep	NA	5			
26	*Morus rubra* Red Mulberry	Adjacent property		Keep	NA	10			
27	*Cupaniopsis anacardioides* Tuckeroo	Within subject site		Remove	Within footprint	7		Fruit reportedly eaten by Grey-headed Flying-foxes in Australia.	
28	*Cupaniopsis anacardioides* Tuckeroo	Within subject site		Remove	Within footprint	8		Fruit reportedly eaten by Grey-headed Flying-foxes in Australia.	
29	*Cupaniopsis anacardioides* Tuckeroo	Within subject site		Remove	Within footprint	7		Fruit reportedly eaten by Grey-headed Flying-foxes in Australia.	
30	*Syzygium paniculatum* Magenta Lilly Pilly	Within subject site		Remove	Within footprint	8		Fruit known to be eaten by Grey-headed	

#	Species	Location	Provenance	Fate	Reason for removal	Height (m)	Specific value to fauna		
							Blossom	Fruit	Roost
								Flying-foxes in the Sydney region and King Parrots.	
31	*Syzygium paniculatum* Magenta Lilly Pilly	Within subject site		Remove	Within footprint	6		Fruit known to be eaten by Grey-headed Flying-foxes in the Sydney region and King Parrots.	
32	*Syzygium paniculatum* Magenta Lilly Pilly	Within subject site		Remove	Within footprint	6		Fruit known to be eaten by Grey-headed Flying-foxes in the Sydney region and King Parrots.	

TABLE 2: Threatened flora species recorded within 1500 metres of the subject site.

Family	Species	Status		Habitat requirements	Occurrence commentary
		BC Act 2006	*EPBC Act 1999*		
Myrtaceae	*Eucalyptus camfieldii* Camfield's Stringybark	Vulnerable	Vulnerable	Occurs in poor coastal country on shallow sandy soils overlying Hawkesbury sandstone; in coastal heath mostly on exposed sandy ridges; and near the boundary of tall coastal heaths and low open woodland of the slightly more fertile inland areas.	Represented by 3 historical records dating from 1913, 1920, and 1951 from sandstone habitat in Northbridge. No potential habitat for this species occurs on or near the subject site. No potential impact will occur to this species as a result of the proposal.
Myrtaceae	*Syzygium paniculatum* Magenta Lilly Pilly	Endangered	Vulnerable	Occurs in littoral or riverside gallery rainforests. It occurs naturally in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. However, it has been a very popular horticultural planting for many decades that occasionally self seeds in urban bushland. The specimens in horticulture are often hybrids and are of unknown provenance.	Represented by 3 recent BioNet records of garden specimens. Specimens on site are planted, and from unknown provenance or taxonomic status. No potential natural habitat for this species occurs on or near the subject site, as it occurs naturally . In line with the National Recovery Plan, these horticultural specimens are dismissed from contributing to the conservation of the species, and therefore it is inappropriate to apply a Test of Significance to the removal of these garden plants..
Orchidaceae	*Caladenia tessellata*	Endangered	Vulnerable	Recorded from coastal heath.	Represented by 5 historical records dating from 1945. No potential habitat for this species occurs on or near the subject site. No potential impact will occur to this species as a result of the proposal.
Orchidaceae	*Genoplesium baueri*	Endangered	Endangered	Grows in sparse sclerophyll forest and moss gardens over sandstone. Occurs from Hunter Valley to Nowra district.	Represented by 2 historical records dating from 1918. No potential habitat for this species occurs on or near the subject site. No potential impact will occur to this species as a result of the proposal.
Orchidaceae	*Microtis angusii*	Endangered	Endangered	Currently only known from one site at Ingleside in the north of Sydney. Preferred habitat is difficult to define but seems to be associated with ridgetop lateritic soils distinct to the Duffys Forest EEC vegetation community.	Represented by 1 record dating from 2002, but as a sensitive species, its location is withheld. No potential habitat for this species occurs on or near the subject site. No potential impact will occur to this species as a result of the proposal.
Orchidaceae	*Sarcochilus hartmannii*	Vulnerable	Vulnerable	Found on steep narrow ridges and clefts in volcanic rock from 500-1,000 m ASL; or at the bases of fibrous trunks of trees. Known only from far north coast and south east Qld. Sydney records are historical.	Represented by 1 historical collection dating from 1940. No potential habitat for this species occurs on or near the subject site. No potential impact will occur to this species as a result of the proposal.

TABLE 3: Threatened fauna species recorded within 1500 metres of the subject site.

Group	Species	Status		Habitat requirements	Occurrence commentary
		BC Act 2006	*EPBC Act 1999*		
Birds	*Haliaeetus leucogaster* White-bellied Sea-eagle	Vulnerable	Migratory	Most commonly seen foraging over water bodies or near coastal waters; will occasionally forage over open country for carrion. Highly mobile and travels long distances. Nests and roosts high in trees in well timbered country.	Represented by 2 records dating from 1985 and 2001. As it is deemed a sensitive species, its location has been withheld, but the only area of potential habitat within the local area is Middle Harbour and associated riparian vegetation. No potential habitat for this species occurs on or near the subject site. No potential impact will occur to this species as a result of the proposal.
Birds	*Ptilinopus superbus* Superb Fruit-dove	Vulnerable	Not listed	Occurs in rainforest, foraging high in the canopy. Occasionally recorded foraging on fruit trees in other habitats. Nests in rainforest and edges of rainforest. Part of the population is migratory or nomadic, and they probably travel at night as indicated by records of birds flying into lighted windows and lighthouses. At least some of the population, particularly young birds, moves south through Sydney, especially in autumn. Identified conservation actions are all focused on retention and enhancement of rainforest and its constituent fruiting trees, particularly those that fruit in winter.	Represented by 1 record dating from 1992 of a bird that died after flying into a window. However, this record has a locational accuracy of +/- 10 km. No potential habitat for this species occurs on or near the subject site although it may occur within a migration flight path. The construction tall tower has the potential to pose a physical hazard to migrating individuals, however it is considered a very small risk due to the general absence of such incidents with the current skyline in the Chatswood CBD. Therefore, the CBD is not considered to occur within a flyway of this species. No potential impact will occur to this species as a result of the proposal.
Birds	*Calyptorhynchus lathami* Glossy Black-Cockatoo	Vulnerable	Vulnerable	Breeds in large hollow-bearing trees in forest and forages exclusively on *Allocasuarina* species.	Represented by 13 records dating from 1992 to 2021. As it is a sensitive species locations are withheld, but it is not a species of urban vegetation, being a shy species that forages in expanses of bushland. Local records are therefore likely to be from bushland areas such as in the Lane Cove River Valley. No potential habitat for this species occurs on or near the subject site. No potential impact will occur to this species as a result of the proposal.

Group	Species	Status		Habitat requirements	Occurrence commentary
		BC Act 2006	*EPBC Act 1999*		
Birds	*Ninox strenua* Powerful Owl	Vulnerable	Not listed	Usually roosts in dense vegetation and hunts for arboreal mammals, birds, and flying-foxes across large home ranges. It is thought that all available territories in the Sydney region are occupied. Breeds in large hollow trees usually located in gullies.	Represented by 28 records dating from 2000 to 2021. This period coincides with Birdlife Australia's Powerful Owl Project and its volunteer citizen scientists that have actively surveyed this species across Sydney, but particularly in its northern suburbs. As it is deemed a sensitive species, locations have been withheld, but it is a species with large home ranges and is known to forage in both vegetated and urbanised areas. However, the light, noise, and hyper activity of the Chatswood CBD are likely to deter foraging, particularly for a predator that relies on stealth. Also, the habitats within the site are generally very poor for Ringtail Possums, their preferred prey, and there are superior bushland habitats in the nearby vegetated gullies and river valleys. Therefore it is considered that potential habitat for this species is not provided on or near the subject site. No potential impact will occur to this species as a result of the proposal.
Birds	*Hirundapus caudacutus* White-throated Needletail	Not listed	Vulnerable, Migratory	Non-breeding population migrates from Asia in spring and departs autumn along either side of the Great Dividing Range. Most of its time spent feeding on the wing, high along storm fronts. Roosts infrequently in terrestrial habitats and terrestrial habitat largely irrelevant.	Represented by 6 records of birds flying overhead, dating from 1985 to 2001. No potential habitat for this species occurs on or near the subject site. No potential impact will occur to this species as a result of the proposal.
Birds	*Anthochaera phrygia* Regent Honeyeater	Critically Endangered	Critically Endangered	Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River She-oak. Occasionally non-breeding flocks forage in Swamp Mahogany and Spotted Gum forests on central and north coast and rarely on the south coast.	Represented by 3 historical records, dating from 1932, 1946, and 1966. The site is not within any mapped area of Important Habitat. No potential habitat for this species occurs on or near the subject site. No potential impact will occur to this species as a result of the proposal.
Mammals (bats)	*Pteropus poliocephalus* Grey-headed Flying-fox	Vulnerable	Vulnerable	Foraging habitat in flowering eucalypts, particularly winter-flowering species; camps in dense	Represented by 28 records, dated between 1991 and 2022. The majority of these records (23) are of dead or injured animals (from such encounters such as

Group	Species	Status		Habitat requirements	Occurrence commentary
		BC Act 2006	*EPBC Act 1999*		
				wet forest or rainforest gullies.	electrocution on power lines, collision with a car, owl attack, entanglement in netting). The relatively low number of records is surprising given the site's proximity to the substantial and long-term camp present in Gordon only 5.6 kilometres to the north, well within the foraging distance of this highly mobile species. The dearth of records indicates that the Chatswood CBD contains little habitat within it and probably does not occur within a major flyway. Potential foraging habitat for this species occurs in the tree species recorded on site (see Table 1), but those known to provide forage locally (e.g. Broad-leaved Paperbark) will be retained and protected. Individuals fly out each dusk from the camp to their foraging grounds (up to at least 20 kilometres distant), and so the presence of obstructions in its flyway (such as tall buildings) has the potential to interfere with their movement through the landscape. However, the proposed new building is within the CBD that is already occupied by many tall buildings (see Figure 13 in Appendix 2) to which the local population is undoubtedly already accustomed. No potential impact will occur to this species as a result of the proposal.
Mammals (microbats)	*Miniopterus orianae oceanensis* Large Bent-winged Bat	Vulnerable	Not listed	Roosts in caves and forages above tree canopies and over open ground.	Represented by 1 record dating from 2014, from ultrasonic calls recorded in bushland around Artarmon Reserve. This species is relatively tolerant of urban areas: it exploits artificial light for foraging and is known to use areas with high vehicle traffic and noise,[4] and known to roost in sandstone tunnel at Waverton and in a stormwater drain at Cremorne.[5] However, LGA-wide survey[6] established that the highly urbanised ridge

[4] Gonsalves, L. and Law, B. (2018) Seasonal activity patterns of bats in North Sydney, New South Wales: implications for urban bat monitoring programs. *Australian Mammalogy* 40:220-229

[5] Hoye, G. and Spence, J. (2004) The Large Bent-wing Bat *Miniopterus schreibersii* in urban environments: a survivor? Pp. 138-147 in *Urban Wildlife: more than meets the eye*, edited by Daniel Lunney and Shelley Burgin. Royal Zoological Society of NSW, Mosman, NSW, Australia

[6] White, A.W. (2011) Factors in the design of an urban microbat flyway. Pp. 464–470 in *The Biology and Conservation of Australasian Bats*, edited by Bradley Law, Peggy Eby, Daniel Lunney and Lindy Lumsden. Royal Zoological Society of NSW, Mosman, NSW, Australia

Group	Species	Status		Habitat requirements	Occurrence commentary
		BC Act 2006	*EPBC Act 1999*		
					habitat clustered along the highway and train line are rarely used by microbats, and that they instead prefer to forage in and move along corridor habitat associated with vegetated gullies, the Lane Cove River, and Middle Harbour. This is also consistent with the pattern of BioNet records, with only one recent record within 1500 metres of the subject site. No potential habitat for this species occurs on or near the subject site. No potential impact will occur to this species as a result of the proposal.