

Ecological Review – W6A/W6B Refurbishment and Expansion Project

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Prepared for Macquarie University Property

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1.0 Introduction

This report provides a review of the potential impacts to native ecological values by from a refurbishment and extension of the W6A/W6B academic buildings at Macquarie University.

This forms a life-cycle upgrade to contemporary standards of these buildings, along with construction of new floor space and public realm.

The following analysis is made to determine the ecological values of site vegetation, as either a native remnant, or a potential fauna habitat.

2.0 Previous Ecological Studies

2.1 Native Vegetation of the Cumberland Plain

Mapping of the native vegetation of the Cumberland Plain and northwest Sydney Harbour catchment (NPWS, 2002) did not identify any of the subject site as containing native vegetation.

2.2 Urban Bushland in the Ryde LGA

City of Ryde Council commissioned surveys to map and classify the remnant native vegetation of Ryde local government area (Oculus, 2001). The survey collated information from existing vegetation mapping outputs and aerial photo interpretation.

Limited supplementary ecological survey work identified six native plant communities across the Ryde LGA. Three of these have national and state conservation significance. This report does not identify remnant or regenerating native vegetation patches in the subject site.

The Oculus report found that the endangered community 'Sydney Turpentine-Ironbark Forest' (STIF) was probably the most common native plant community in the Ryde LGA before European settlement. The report identifies several small and degraded remnants of STIF within a 1 km radius of the subject site.

2.3 Ryde Flora and Fauna Studies 2006 and 2008

Biosphere Environmental Consultants were commissioned by Council to conduct field surveys in bushland reserves of Ryde LGA in 2006 and 2008.

Each survey collected information on native and exotic plant species, vertebrate and invertebrate fauna. Rare and threatened plant species were located at various sites, and ground-truthing of mapped ecological Communities was undertaken.

These reports note that bird species with reliance on tree habitat remain abundant in Ryde LGA due to adequate habitat in bushland reserves and open space areas. In contrast, smaller birds with a reliance on mid-story vegetation (shrubs and bushy trees) were found to have declined significantly in local abundance.

Major impacts on biodiversity in Ryde LGA are summarised in the reports and include:

- invasive plant species
- poor creek water quality
- disturbed flow patterns and stream erosion in urban creeks
- feral animals, such as foxes, cats, dogs, rats and mice
- high density of native, predatory birds
- night-light pollution from street lights and house lights
- noise and movement disturbance
- edge effects

2.4 Macquarie University Preliminary Ecological Assessment 2006

The report *Macquarie University Preliminary Ecological Assessment* (EDAW, 2006) was commissioned to inform the review of the overall development planning for Macquarie University. The report was primarily based on:

- A review of existing background information and comment on potential development
- Constraints analysis, given legislative requirements
- Additional investigations to confirm existing data as required; and
- Identification and analysis on potential threatened species or ecological communities on the site and the constraints these would place on development.

The report highlights the provisions of the then *NSW Threatened Species Conservation Act 1995* (TSC Act) and *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), particularly the preparation of 7-part Tests (under Section 5A of the TSC Act) for any future development at the University that potentially impacts on threatened species, populations or communities.

Where a proposed activity is located in an area identified to be of national environmental significance, the matter needs the approval of the Federal Government Department of the Environment, Water, Heritage and the Arts.

Five areas of remnant native plant communities were identified over the University campus in the assessment, comprising three ecological communities (EDAW, 2006). EDAW's map of remnants is included as Appendix 1 of this report.

One of the ecological communities, Sydney Turpentine-Ironbark Forest (STIF) is listed as endangered under the TSC Act, and as critically endangered under the EPBC Act. Four stands of STIF are recorded in un-developed parts of the Campus in the assessment.

One stand of these STIF remnants is situated within the same precinct as the development area. Remnant 2 is situated on the margins of Mars Creek between the academic core and the campus sport and aquatic centre. This remnant is part of a campus-wide an ecological restoration program.

EDAW's report did not identify remnant vegetation in or contiguous with the zone of the proposed construction that is subject of this review.

3.0 SITE ASSESSMENT

3.1 General

The subject site is located at Macquarie Park, near a minor service roadway of Western Rd, and fronting onto pedestrian routes including the major spine route of Wallys Walk. Current land uses of the site are the road surfaces, adjacent footpaths, garden beds and areas of informal open space.

Vegetation at the site is mostly associated with the landscaped edges of the road and footpath network. Small patches of remnant native vegetation are found well beyond the northern end of the subject site.

The site is located within the valley of Mars Creek. The subject area is shown on Figure 1.

Figure 1. Air Photo Excerpt with Overlay of Subject Area



3.2 Soils

Chapman *et al* (1989) mapped the study area as comprising areas of the Glenorie and Lucas Heights Soil Landscapes. Soils of these landscapes are typically clay loams.

Ground-truthing of the area and reference to historic information on the development of the University indicate parts of the site have used imported soil materials for artificial hills.

Overall, modification of soil has been widespread along the landscaped margins of the road and car park areas, where the soil profile has been built up or levelled.

3.3 Topography and Drainage

The topography of the study area features gentle slopes falling in the direction of Mars Creek to the north. Local relief lies approximately between 45 above sea level (asl) along lower valley slopes, to 65m asl along upper slopes. The surrounding landscape is a series of broad low hills with moderate slopes draining to the north towards the Lane Cove River. Mars Creek is one of numerous urban-draining streams of the Lane Cove River catchment.

3.4 Flora

Plant species within the subject area comprise only of landscape trees. Tree information for areas affected by the proposed works is summarised in the following table, adapted from the tree audit report provided by Australian Tree Consultants. The potential significance of various species is reviewed below.

Botanical Name	Common Name	Quantity Affected
<i>Acer buergerianum</i>	Trident Maple	1
<i>Acer negundo</i>	Box Elder	18
<i>Acer palmatum</i>	Japanese Maple	1
<i>Catalpa bignonioides</i>	Indian Bean Tree	1
<i>Corymbia citrodora</i>	Lemon Scented Gum	5
<i>Eucalyptus grandis</i>	Flooded Gum	6
<i>Eucalyptus microcorys</i>	Tallowwood	5
<i>Ficus microcarpa</i> var. <i>hillii</i>	Hills Weeping Fig	2
<i>Firmiana simplex</i>	Chinese Parasol Tree	1
<i>Hibiscus</i> sp.	Hibiscus	1
<i>Liquidamber styraciflua</i>	Liquidambar	1
<i>Lophostemon confertus</i>	Brush Box	15
<i>Magnolia champaca</i>	Champac	1
<i>Melaleuca quinquenervia</i>	Broad Leaved Paperbark	3
<i>Melia azedarach</i>	White Cedar	1
<i>Populus deltoides</i>	Cottonwood	1
<i>Prunus blireana</i>	Flowering Cherry Plum	7
<i>Pyrus calleryana</i>	Callery Pear	1
<i>Prunus cerasifera</i>	Cherry Plum	1
<i>Robinia pseudoacacia</i> 'Frisia'	Golden Robinia	2
<i>Sapium sebiferum</i>	Chinese Tallow Tree	3
<i>Spiraea cantoniensis</i>	Queen of the Meadow	1
<i>Ulmus parvifolia</i>	Chinese Weeping Elm	7
	Total	85

None of these tree species is considered indicative of remnant native vegetation.

Historic aerial photography and early campus surveys were also assessed to ensure that no other ecological values are likely to persist on the site.

Figure 2 shows the site from air photos prior to and shortly after the establishment of the University.

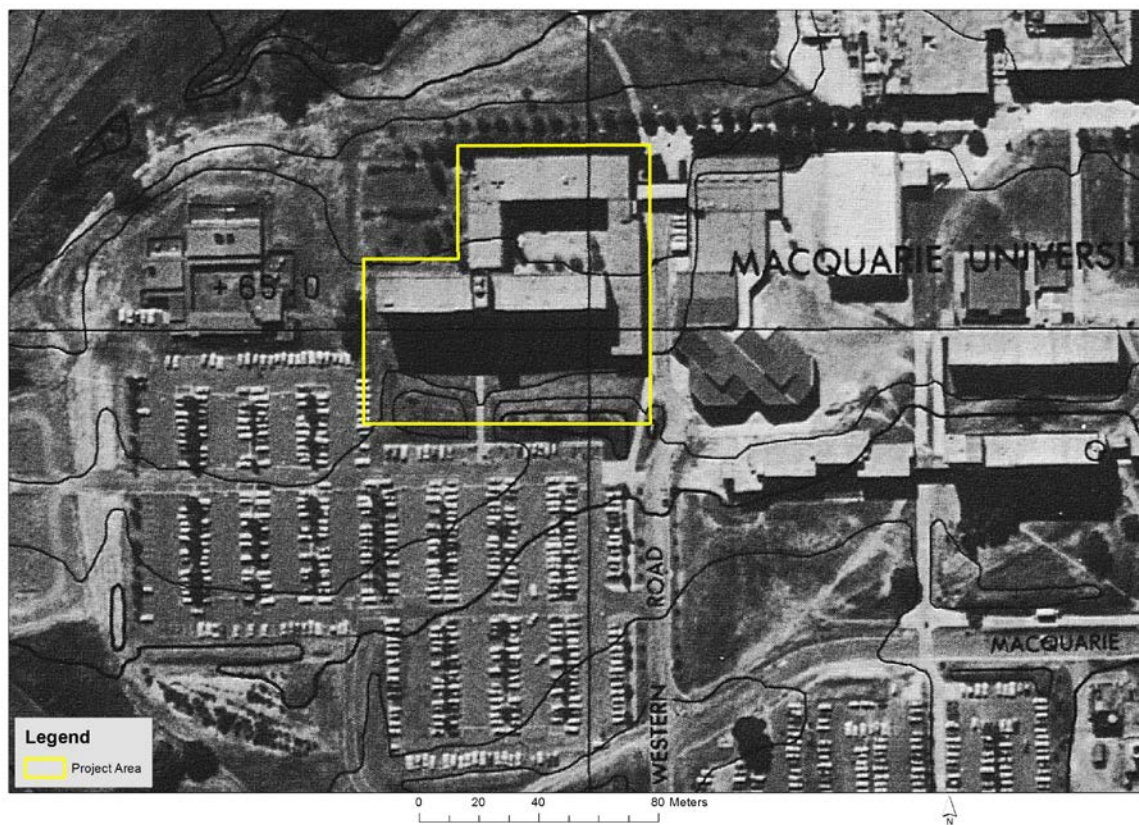
In the 1943 image (Figure 2a), the area is mainly a highly modified agricultural landscape.

Figure 2. Historic Air Photo images of the Subject Area

a. Subject site prior to development of the Campus (1940s)



b. Subject site in early development stage of the Campus (1970s)



In the 1970s orthophoto (Figure 2b), the site's present building and landscape array are apparent. All planted trees on site are at a juvenile stage.

Based on comparison of the above historic evidence with contemporary tree survey information, the construction works do not affect any sites of remnant native habitat.

3.5 Fauna Habitat

The main habitat types occurring in the subject area are mature to semi-mature canopy trees. Across the site and with the exception of EDAW's remnant 2 surrounding Mars Creek, most trees are not as yet of hollow-bearing age, but would form adequate habitat for forest and woodland bird species, bats and common tree-dwelling marsupials.

Due to its relative isolation from native bushland, and a lack of the full range of resources needed to support native species, the site overall would be considered of limited fauna habitat value.

Such habitat values as do exist should inform the development of any offset-planting strategy associated with the project.

3.6 Conclusion

The site is a highly modified environment, isolated from any nearby native remnant vegetation. The removal of eighty five planted landscape trees is found not to impact on the native vegetation values present within the University.

In accordance with the University's policies for replacement of trees designated for removal, it is proposed to offset any vegetation removed replanting at a rate to achieve a net increase in vegetation.

References

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Total Earth Care (2010a) Flora and Fauna Assessment, Lipman Properties Pty Ltd. Residential Development at 128 Herring Road Macquarie Park. Total Earth Care, North Narrabeen, NSW

Total Earth Care (2010b) Vegetation Community Mapping and Assessment Northwest Remnant, Macquarie University. Total Earth Care, North Narrabeen, NSW

Appendix 1. EDAW 2006 Vegetation Map

