ACS Environmental Pty Ltd

FLORA SURVEYS

AND PRELIMINARY

BIODIVERSITY IMPACT ASSESSMENT

FOR PROPOSED DEVELOPMENT

OF

AGED CARE FACILITY

AT 18 RANDWICK CLOSE, CASULA,

PREPARED FOR:

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The principal of 'ACS Environmental P/L has worked in the area of floristic and faunal impact assessment services for a period of greater than 20 years. He also has over 30 years of experience in scientific research (ecological) and teaching in biological science.

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GLOSSARY AND ACRONYMS

BAM - Biodiversity Assessment Method (2017) - supports the BC Act (2016).

BC Act - *Biodiversity Conservation Act (2016)* - legislation enacted in August 2017

BDAR - Biodiversity Development Assessment Report

CEEC - Critically Endangered Ecological Community

DAWE - Commonwealth Department of Agriculture, Water and Environment

DPIE - Department of Planning, Industry and Environment

E (threatened species status) - Endangered species

EEC - Endangered Ecological Community as listed by the BC Act and EPBC Act

EPBC Act - Environmental Protection & Biodiversity Conservation Act (1999). Enacted to protect and manage nationally and internationally (migratory) flora, fauna and ecological communities, defined in the Act as matters of national environmental significance (NES)

Habitat - areas occupied, either territorially, periodically or occasionally, by a species, population or ecological community

KTP - Key threatening process, a process that threatens the survival, life cycle, abundance or potential evolutionary development of native species, populations or ecological communities (Dept of Environment and Conservation 2004). KTP's are listed under the BC Act and the EPBC Act.

Migratory species - listed under the EPBC Act and relating to international agreements to which Australia is a signatory. Includes the Japan-Australia Migratory Bird Agreement (JAMBA), Chine-Australia Migratory Bird Agreement (CAMBA) Republic of Korea Migratory Bird Agreement (ROKAMBA)

OEH - State Office of Environment and Heritage

PCT - Plant Community Type identified as such using the Bionet Vegetation Classification system (OEH 2018)

RoTAP - Rare or Threatened Australian Plants

Threatened species, populations or ecological communities - Entities listed by the BC Act and EPBC Act as 'Vulnerable to decreasing population growth in time', Endangered as population growth decreasing rapidly leading to eventual extinction' or 'Critically Endangered, a more extreme rate of population decrease than the former'.

V (threatened species status) - Vulnerable

INTRODUCTION

1.1 Background and proposed development

In May 2020, ACS Environmental c/- Naturally Trees was commissioned by Nick Winberg, Director, Centurion Project Management to survey for flora and undertake a preliminary biodiversity impact assessment for the proposed development of an Aged Care Facility at 18 Randwick Close, Casula.

Liverpool Council have conducted a preliminary assessment and requires more information to enable assessment of the development application. Issues identified/additional information required by Council as stated on 9th April included the following:

' Vegetation onsite, that is proposed to be removed, has been mapped as part of a Threatened Ecological Community under the Biodiversity Conservation Act 2016. Accordingly, a Biodiversity Development Assessment Report (BDAR) is required to be prepared and submitted with the DA, prepared by a Biodiversity Assessment Method (BAM) accredited person'.

This report identifies the vegetation occurring onsite and qualifies its status in relation to the Biodiversity Conservation Act (2016).

1.2 Mapping

Figure 1 is an aerial image showing the subject land and indicating distinct vegetated areas occurring throughout the property.

The land currently appears to have been largely cleared of most naturally occurring native vegetation structure with linear rows of planted small trees/shrubs and isolated copses (patches) of small trees The cleared areas are dominated by exotic herbaceous grass and a low frequency of herbaceous weed species (Figure 1).

Figure 2 is a depiction of the proposed development at the subject land.

Figure 3 is a schematic depiction of the subject area indicating the location of specific individuals of trees (from Scales 2020).

Figure 4 is a depiction of the occurrence of a Critically Endangered Ecological Community (EEC) described as 'Cumberland Plain Woodland', as occurring within and in the vicinity of the subject site, the mapping derived from Liverpool Council's GIS department (2020).

Figure 1 - Aerial image of subject land at 18 Randwick Close, Casula in relation to surrounding development (SIXmaps DPIE 2020)

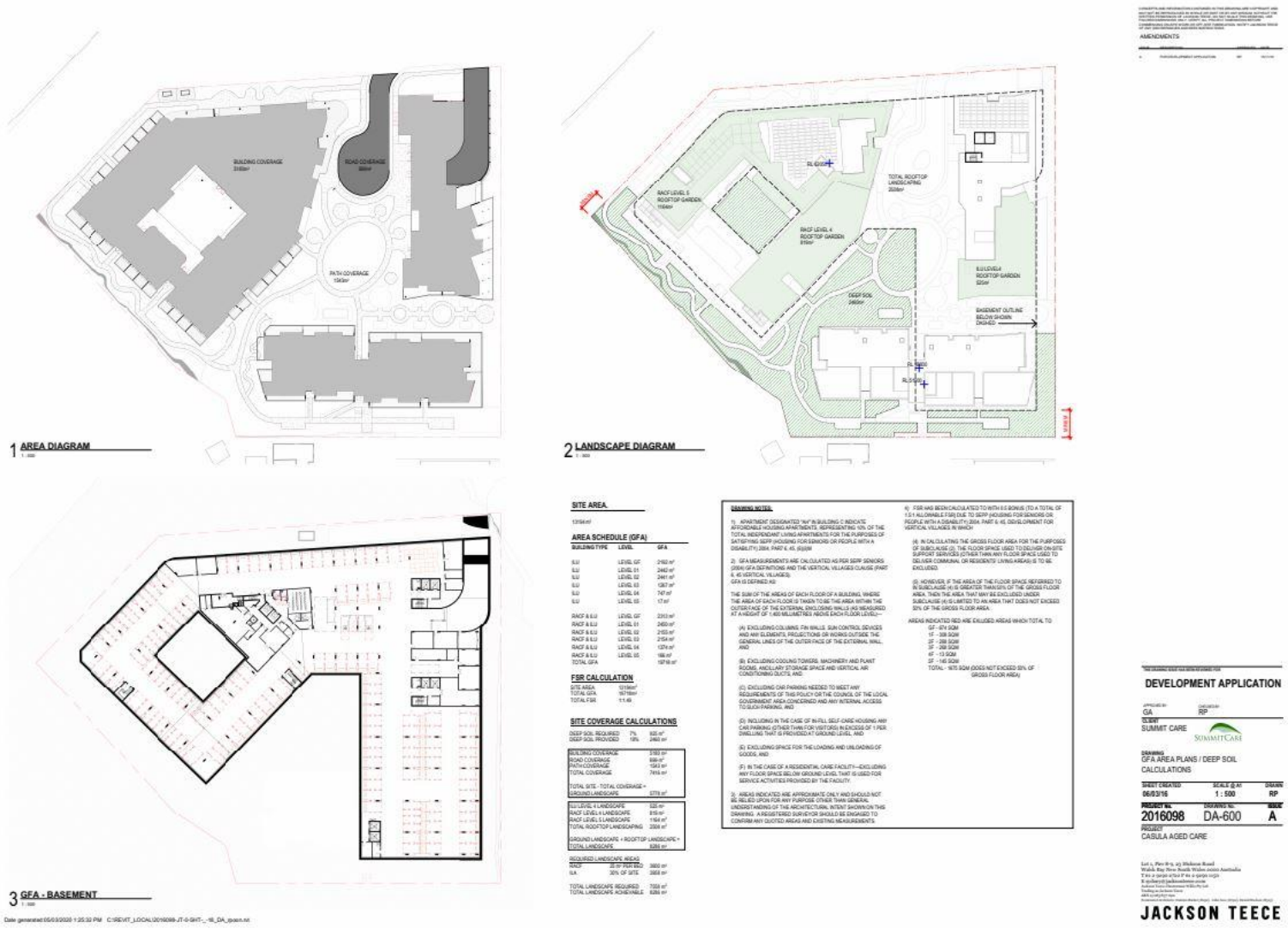

Figure 2 - Schematic Gross Floor Area (GFA) plans for proposed Seniors Housing Development at 18 Randwick Close, Casula (Courtesy Jackson Teece 2016)

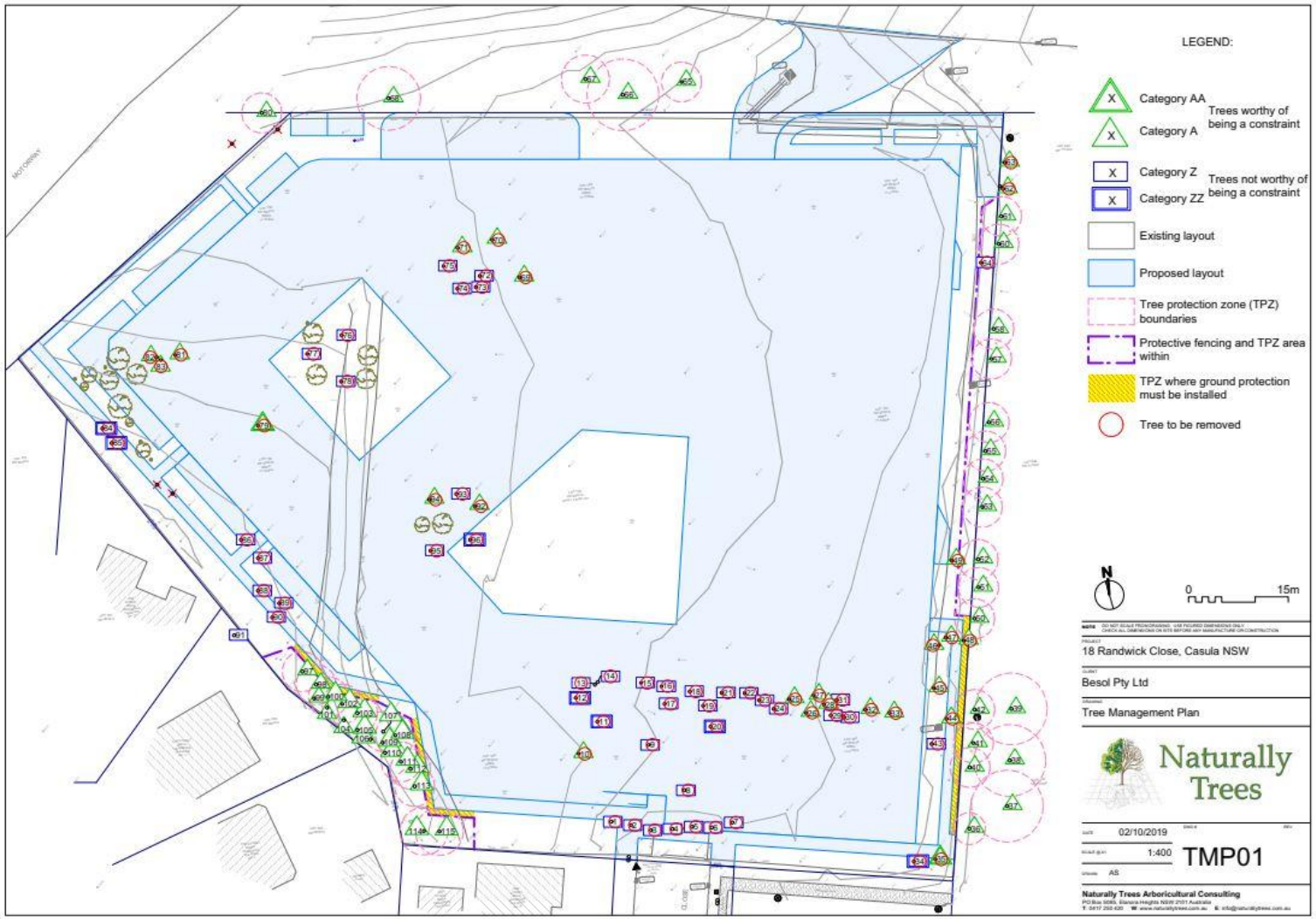

Figure 3 - Schematic plan showing location of trees within subject property (detail available from Scales 2019)

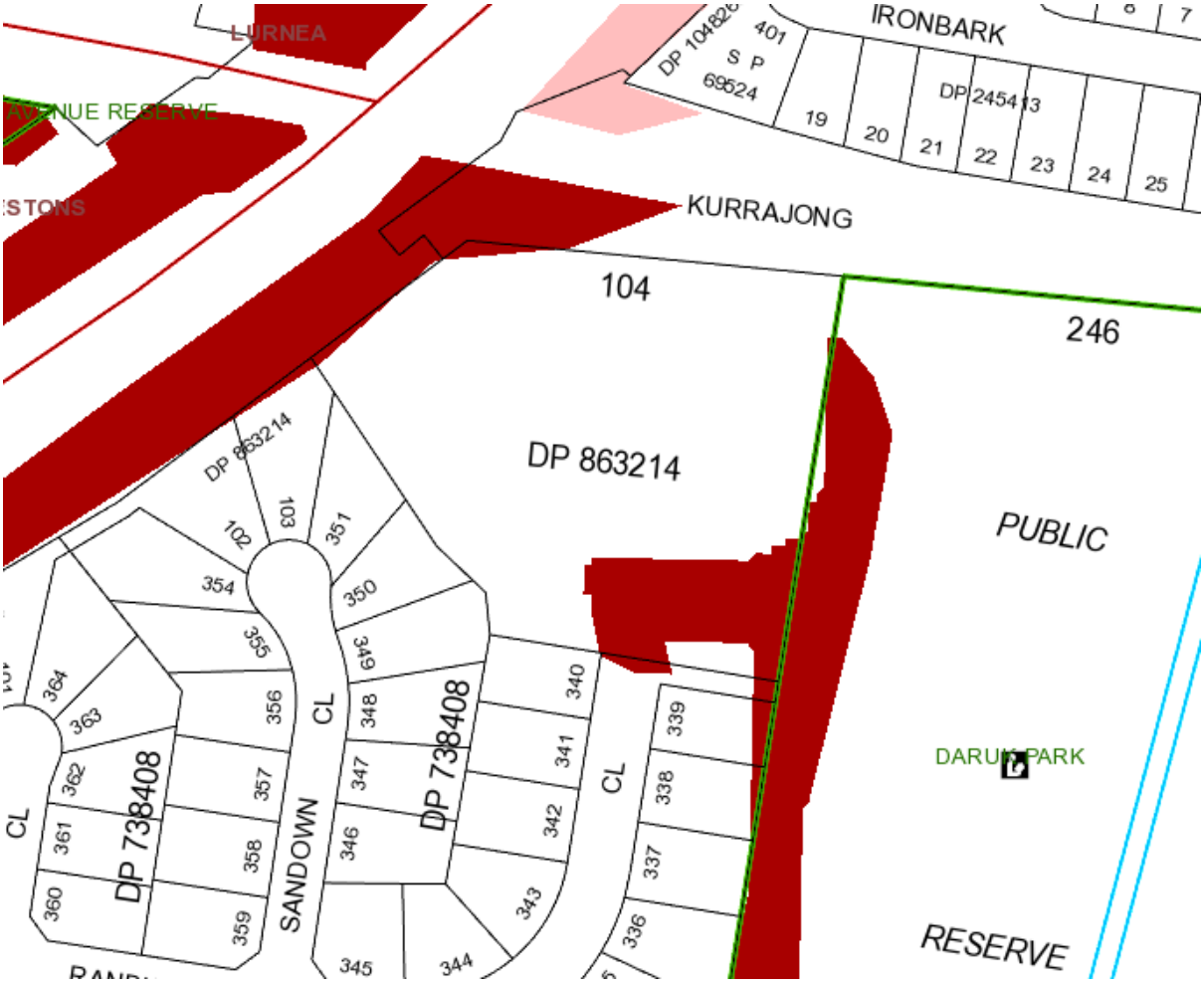

Figure 4 - Mapping of distribution of Critically Endangered Ecological Community (CEEC) Cumberland Plain Woodland (dark red shading) within and in surrounds of the subject site (from Liverpool Council GIS Mapping Dept 2020).

2 EXISTING ENVIRONMENT

2.1 Geology

The local substrate geology of the subject area occurs within an extensive distribution of the Bringelly Shale component of Wianamatta Shale (Jones & Clarke 1991).

2.2 Existing vegetation

The subject land has been largely cleared of natural vegetation including canopy trees, understorey and ground stratum vegetation.

Rows of planted trees and tall shrubs are located along fencelines and within the southern section of the subject site (Figures 1 & 3). Isolated copses (patches) of bushland occur within the central and north-western sections of the site (Figures 1 & 3).

3 ASSESSMENT OF VEGETATION DISTRIBUTIONS

3.1 Mapping

Figure 5 indicates vegetation mapping by DPIE (2020) for the subject area

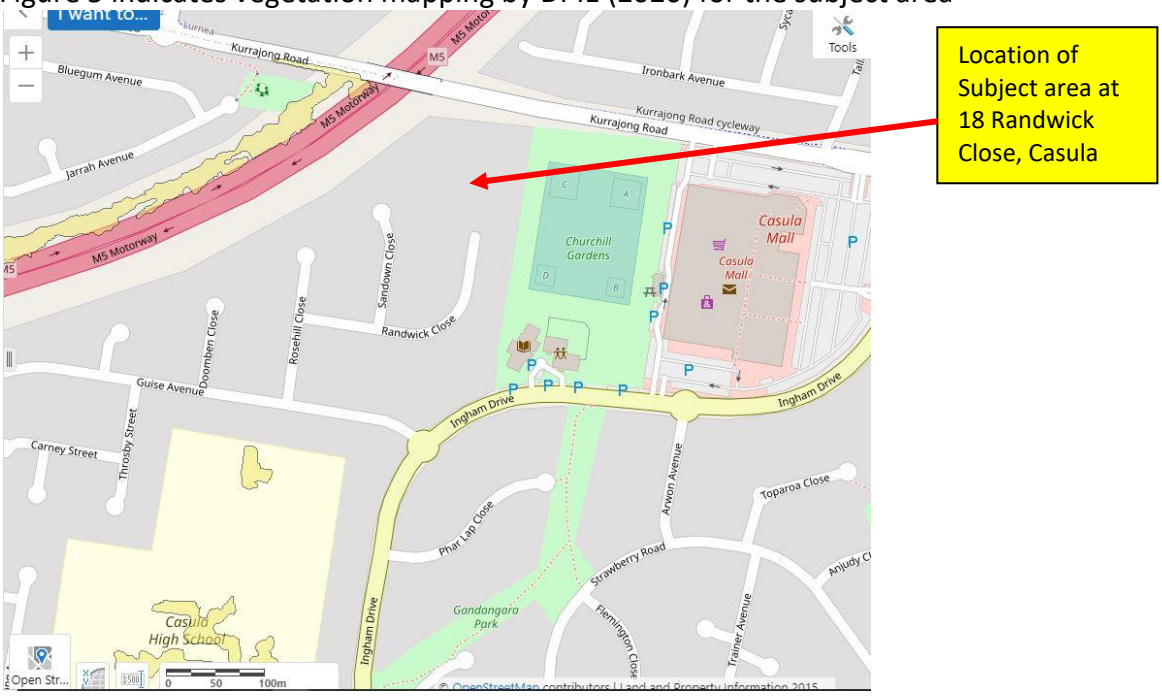

Figure 5 - Vegetation mapping by DPIE (2020) for the subject area.

Figure 5 indicates that there is no vegetation of significance occurring at the subject site at 18 Randwick Close, Casula.

Figure 6 indicates delineated areas of distinct tree/shrub vegetation distributions occurring at the subject site.

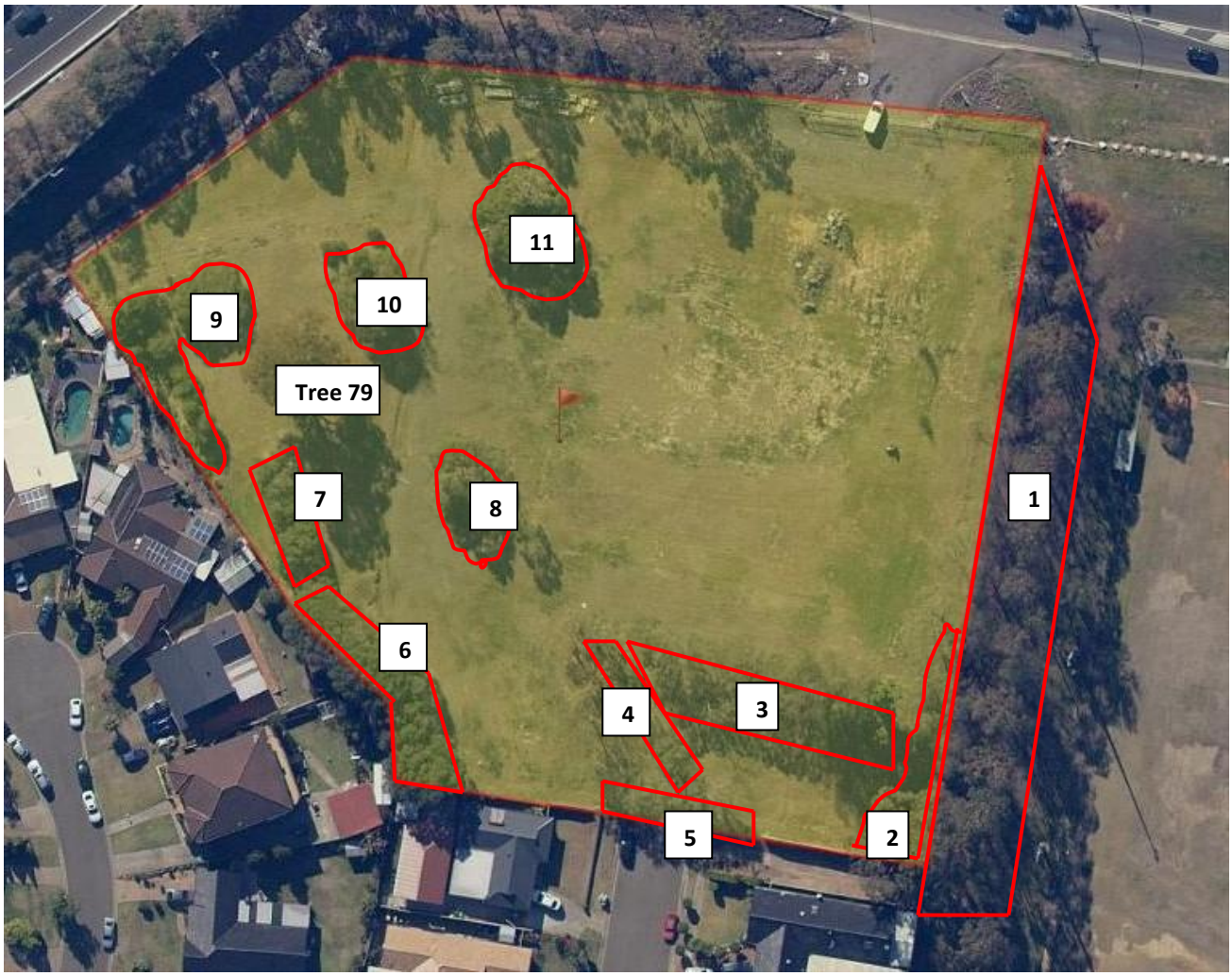

Figure 6 - Discrete bands or clumps of small tree/shrub dominated vegetation occurring at the subject site at 18 Randwick Close Casula; 11 distinct patches are identified and a single remnant individual of Broad-leaved Ironbark (tree no. 79 from Scales 2010) (image from SIXmaps DPIE 2020).

3.2 Description and status of patches of vegetation

There are 11 distinct patches of small tree/shrub of various floristic composition recognised the subject site (Figure 6).

The patches of canopy vegetation occur within an exotic grassland comprised largely of Kikuyu (Figure 6).

Table 1 summarises the floristic composition of each of these discrete patches of vegetation and assesses the legislative status of each patch.

Table 1 - Floristic composition, description and legislative status of discrete patches of vegetation identified in Figure 6

PATCH OF VEGETATION IDENTIFIED FROM FIGURE 6	FLORISTIC COMPOSITION	NATURAL HABITAT OF COMPONENT SPECIES	ORIGIN OF FLORISTIC COMPOSITION	COMMENT AND LEGISLATIVE CONTEXT
1	Occurs outside subject property. Consists of two rows of trees. The row aligned alongside the fenceline consists of Swamp Oak (*Casuarina glauca*) to 14m tall and spaced at about 3m apart; the parallel row to the east of the former consists of alternating individuals of Swamp Oak and Grey Box (*Eucalyptus moluccana*) to 18m tall and similarly spaced.	**Swamp Oak** on the Cumberland Plain occurs naturally on riverflats along or near streams, in slightly saline environments (OEH 2016). **Grey Box** occurs on the Cumberland Plain in moist well-drained undulating landscapes with clay soil or subsoil (Fairley & Moore 2010).	Two parallel rows of trees of similar age, apparently planted at the western edge of Daruk Park, Casula, as a screen	Rows of trees, including mostly Swamp Oak, that have been planted in non-natural habitat. Planted rows of trees do not constitute a natural or reconstructed occurrence of significant vegetation types
2	Small area of vegetation includes 2 individuals of Lemon-scented Gum (*Corymbia citriodora*) to 24m talland individuals of Black Tea-tree (*Melaleuca bracteata*) to 9m tall.	**Lemon-scented Gum** is currently included within the species **Spotted Gum** (*Corymbia maculata*). The species naturally occurs from Coffs Harbour to disjunct areas in Queensland **Black Tea-tree** is a species of Melaleuca with black hard-furrowed bark that naturally occurs along watercourses on heavier soils (Harden 2020)	Patch of trees has been planted at south-east corner of land and along partial length of south-eastern fenceline of subject land	Planted rows of non-locally occurring trees and shrubs do not constitute a natural or reconstructed occurrence of significant vegetation types
3	Row of small trees including Swamp Oak to 12m tall at its eastern end and Black Tea-tree to 8m tall along most of the remaining length.	**Swamp Oak** on the Cumberland Plain occurs naturally on riverflats along or near streams, in slightly saline environments (OEH 2016). **Black Tea-tree** is a species of Melaleuca with black hard-furrowed bark that naturally occurs along watercourses on heavier soils (Harden 2020)	Row of small trees has been planted at the south-east section of the subject site forming a low screen	Planted rows of non-locally occurring trees and shrubs do not constitute a natural or reconstructed occurrence of significant vegetation types

PATCH OF VEGETATION IDENTIFIED FROM FIGURE 6	FLORISTIC COMPOSITION	NATURAL HABITAT OF COMPONENT SPECIES	ORIGIN OF FLORISTIC COMPOSITION	COMMENT AND LEGISLATIVE CONTEXT
4	Row of species including two dead individuals that appear to have been Tallow wood, small individual of Wreath Wattle and alternating individuals of Weeping Bottlebrush and Black Tea-tree to 6m tall and including a small individual of Lemon-scented Bottlebrush	**Black Tea-tree** is a species of Melaleuca with black hard-furrowed bark that naturally occurs along watercourses on heavier soils (Harden 2020) **Weeping Bottlebrush** naturally occurs north of Gloucester on granite or sandstone-derived substrates (Harden 2020)	Row of small trees has been planted at the south-east section of the subject site forming a low open screen	Planted rows of non-locally occurring trees and shrubs do not constitute a natural or reconstructed occurrence of significant vegetation types
5	Row of Weeping Bottlebrush to 6m tall	**Weeping Bottlebrush** naturally occurs north of Gloucester on granite or sandstone-derived substrates (Harden 2020)	Row of small trees has been planted along the fenceline at the south-east section of the subject site forming a low open screen	Planted rows of non-locally occurring trees and shrubs do not constitute a natural or reconstructed occurrence of significant vegetation types
6	Rows of mostly Black Tea-tree to 9m tall	**Black Tea-tree** is a species of Melaleuca with black hard-furrowed bark that naturally occurs along watercourses on heavier soils (Harden 2020)	Row of small trees has been planted along the fenceline at the southern section of the subject site forming a low open screen	Planted rows of non-locally occurring trees and shrubs do not constitute a natural or reconstructed occurrence of significant vegetation types
7	Row of Weeping Bottlebrush to 4m tall in south-western section of subject site	**Weeping Bottlebrush** naturally occurs north of Gloucester on granite or sandstone-derived substrates (Harden 2020)	Row of small trees has been planted along the fenceline at the south-east section of the subject site forming a low open screen	Planted rows of non-locally occurring trees and shrubs do not constitute a natural or reconstructed occurrence of significant vegetation types

PATCH OF VEGETATION IDENTIFIED FROM FIGURE 6	FLORISTIC COMPOSITION	NATURAL HABITAT OF COMPONENT SPECIES	ORIGIN OF FLORISTIC COMPOSITION	COMMENT AND LEGISLATIVE CONTEXT
8	Copse of low trees from 4 - 14m tall including Lemon-scented Gum, Lemon-scented Bottlebrush and 2 individuals of Snow-in-summer (*Melaleuca linariifolia*)	**Snow-in-summer** occurs in heath and dry sclerophyll forest in moist or swampy ground (Harden 2020), near swamps on heavier soils (Fairley & Moore 2010).	Copse of trees planted in central section of property (Figure 6)	Copse of trees including non-locally occurring species and species where habitat is unsuitable, do not constitute significant vegetation.
9	Row of alternating Willow-leaved Bottlebrush (*Callistemon salignus*) and Black Tea-tree to 7m tall in western section of subject site.	**Willow-leaved Bottlebrush** occurs mostly in low-lying river flats and damp creek banks, rarely in dry areas (Fairley & Moore 2020; Harden 2020)	Row of small trees planted along the fenceline at the western section of the subject site forming a low open screen	Planted rows of non-locally occurring trees and shrubs and those occurring in unsuitable habitat do not constitute a natural or reconstructed occurrence of significant vegetation types
10	Copse of low trees from 5 - 10m tall including mature Swamp Oak and regenerating saplings, Black Tea-tree and individuals of Snow-in-summer (*Melaleuca linariifolia*)	All individuals of these species have been planted to for a shade amenity, none of which occur naturally in this habitat.	Copse of trees planted in north-western section of property for shade amenity (Figure 6)	Copse of trees including non-locally occurring species and species where habitat is unsuitable, do not constitute significant vegetation.
11	Copse of low trees to 7m tall including Willow-leaved Bottlebrush, Black Tea-tree and individuals of Snow-in-summer (*Melaleuca linariifolia*)	All individuals of these species have been planted to for a shade amenity, none of which occur naturally in this habitat.	Copse of trees planted in north-western section of property for shade amenity (Figure 6)	Copse of trees including non-locally occurring species and species where habitat is unsuitable, do not constitute significant vegetation.
TREE NO. 79	Mature individual of Red Ironbark or Broad-leaved Ironbark (*Eucalyptus fibrosa*) to 24m tall	Mature individual appears as remnant tree from a previous natural distribution of Cumberland Shale Hills Woodland that occurred on the subject land	Appears as natural remnant	Likely remnant of former natural distribution. Recommend to landscape development using species such as this ironbark as well as Grey Box and Forest Red Gum (*Eucalyptus tereticornis*)

3.3 Assessment of stands of retained vegetation at subject site

3.3.1 Description and assessment of stands of retained vegetation at subject site

Area 1 - Rows of trees comprising area 1 in Figure 6 include mostly Swamp Oak which do not naturally occur in habitats on crests, naturally occur in swamp riverflat or creek edge habitats. These occur in regular planted rows, the more eastern row including alternating individuals of Grey Box and Swamp Oak (Figure 7).

Figure 7 - Regular planted rows of Swamp Oak, the Swamp Oak in the row to the RHS alternating with Grey Box.

Assessment - These rows of trees mostly do not constitute a natural patch of locally-occurring vegetation and the mapping indicated in Figure 4 for this patch of vegetation as 'Cumberland Plain Woodland' appears erroneous. Individuals of Grey Box, however, would occur naturally in this habitat and could be retained.

Area 2 - This complement of trees including the partial row of Black Tea-tree alongside the fenceline within the south-eastern section of the subject land, do not naturally occur in this locality (Figure 8) (Table 1).

Figure 8 - Regular planted rows of Swamp Oak, the Swamp Oak in the row to the RHS alternating with Grey Box.

Assessment - This row of small trees does not constitute a natural patch of locally-occurring vegetation and the mapping indicated in Figure 4 for this patch of vegetation as 'Cumberland Plain Woodland' appears erroneous.

Area 3 - This complement of trees incorporating a row of regularly spaced Swamp Oak and mostly Black Tea-tree in the south-eastern section of the subject land, do not naturally occur in this locality or in this habitat (Figure 9) (Table 1).

Figure 9 - Regular planted row of Black Tea-tree in Area 3 in Figure 6, not occurring locally

Assessment - This row of small trees does not constitute a natural patch of locally-occurring vegetation and the mapping indicated in Figure 4 for this patch of vegetation as 'Cumberland Plain Woodland' appears erroneous.

Areas 4 & 5 - This complement of trees incorporating rows of regularly spaced Weeping Bottlebrush and some Black Tea-tree in the south-eastern section of the subject land, do not naturally occur in this locality or in this habitat (Figure 10) (Table 1).

Figure 10 - Shrubs of Weeping Bottlebrush occurring in Area 5 in Figure 6.

Assessment - This row of small trees does not constitute a natural patch of locally-occurring vegetation and the mapping indicated in Figure 4 for this patch of vegetation and that occurring in area 4 (Figure 6) as 'Cumberland Plain Woodland' appears erroneous.

Areas 6 - 11 - Rows of trees occurring along the fenceline on the south-western boundary of the subject land include regularly spaced individuals of Weeping Bottlebrush, Black Tea-tree and Willow-leaved Bottlebrush in the south-eastern section of the subject land (Figure 11), these individuals not naturally occurring in this locality or in this habitat (Figure 11) (Table 1).

Copses of low trees occurring in isolated patches in central and north-western sections of the subject site include individuals of Swamp Oak, Snow-in-summer, Black Tea-tree and Willow-leaved Bottlebrush (Figure 12), these individuals not naturally occurring in this locality or in this habitat (Figure 12) (Table 1).

Assessment - These rows and copses of small trees do not constitute natural patches of locally-occurring vegetation and no further assessment is required.

Figure 11 - Planted row of Black Tea-tree and Willow-leaved Bottlebrush occurring in Area 9 in Figure 6.

Figure 12 - Planted isolated copse of Snow-in-summer, Black Tea-tree and Willow-leaved Bottlebrush occurring in Area 11 in Figure 6.

3.3.2 Conclusions of assessment of patches of vegetation at 18 Randwick Close, Casula

1. Mapping by DPIE (2020) does not indicate any natural vegetation occurring t the subject site.

2. The patches of vegetation mapped by Liverpool GIS department (Figure 4) are not considered to represent natural assemblages or reconstructed variants of Cumberland Plain Woodland. The Council letter which states that ' Vegetation onsite, that is proposed to be removed, has been mapped as part of a Threatened Ecological Community under the Biodiversity Conservation Act 2016' appears erroneous. Rather these patches of vegetation, which appear to have been planted in regular rows, include species which either do not occur in the Sydney region or where suitable habitat does not occur (Figures 7, 8, 9 & 10).

3. As such, it is considered that a BDAR is not required for this development and is not required to be included or submitted with the DA

4. There are no threatened species of flora or endangered ecological communities occurring at the subject site. As such, a 5-part test of significance to impacts of development is not considered to be required.

5. Mature individual of Red Ironbark (or Broad-leaved Ironbark) (Tree No. 79 in Scales 2019) appears to be a remnant individual of a former distribution of Cumberland Plain Woodland occurs at the north-western area within the subject site (Figure 13). It would be recommended to utilise canopy species such as Red Ironbark, Grey Box and Forest Red Gum where possible in relation to landscape plans for the proposed development.

Figure 13 - Mature remnant individual of Red Ironbark (*Eucalyptus fibrosa*) evident at LHS of image

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