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SUMMARY OF CONSERVATION VALUES AND DEVELOPMENT CONSTRAINTS - LOT 2 DP 1057347 NORTHERN ROAD, CRANEBROOK (PENRITH LGA)

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EXECUTIVE SUMMARY

There are considerable constraints to development at the subject site. In addition to high general levels of biodiversity (flora and fauna), there are three endangered communities (EEC's) and nine threatened species present distributed across the area. The populations of three of the threatened plants are among the largest recorded for these species. Our knowledge of the site is still poor and further study is likely to increase these values further. No areas of the site (of reasonable extent) are devoid of state significant vegetation or habitat for threatened species. The extent of one of the EEC's, Castlereagh Swamp Woodland (CSW), was significantly underestimated in the original Conacher Travers (2005) report. The extent of CSW and Cooks River/Castlereagh Ironbark Forest (CRCIF) present represents a significant proportion of the remaining areas of these poorly conserved communities. CSW present at the site, for example, comprises 10% of the remaining area of this community.

The site comprises the upper catchment area of Rickaby's Creek with drainage from the site critical to maintaining creek flow and function. The communities inter-grade over short distances in response to subtle changes in topography, soils and drainage, and the boundaries fluctuate with changes in soil moisture levels. This dynamic ecosystem is sustained by the flooding regime of Rickaby's Creek.

The site is an area of exceptional conservation significance in relation to threatened flora and fauna, high species richness, extensive wetland habitats, large size and connectivity. It is part of the proposed Cumberland Conservation Corridor. Such sites are extremely rare in western Sydney and warrant automatic protection as core biodiversity areas, the backbone of any reserve system. Disturbed areas are present at the site but most of these

contain a high proportion of native species and if protected and managed appropriately have the potential to regenerate to a structure and composition representative of the significant vegetation. Under the TSC Act these *seral* stages of the community are included as part of the EEC.

Loss of any part of the Site for development is inconsistent with the guiding principles of biodiversity conservation, particularly in relation to loss of biodiversity and Ecologically Sustainable Development (ESD). All parts of the Site are critical in terms of the biodiversity they support and the contribution they make to the overall functioning of the ecosystem of which they are part. Any proposal to re-zone and develop the western half of the Site, for example, will result in loss or modification of significant areas of EEC's and populations of three of the seven threatened plant species present. The loss of up to 50% of this part of the upper catchment area of Rickaby's Creek will have significant impacts on local hydrology and threaten the communities and species retained in the remainder of the site and downstream. The basic ecological processes underpinning sustainability of the Site will be seriously affected.

Protection and re-zoning of the entire site for conservation is the only option that will result in a good conservation outcome and ensure long-term sustainability of the present flooding regime and the significant vegetation and fauna habitat that depends on this both at the site and downstream.

1. INTRODUCTION

The former Commonwealth Australian Air Services land, the subject site, is bounded by the Northern Road, Vincent Road and Cranebrook Road and comprises an area of 181 ha. It is now privately owned and a proposal has been made to re-zone the site to allow future residential development.

There have been several snapshot studies undertaken in recent years to document the natural values of the site. These studies have established that the site has very high conservation significance. A summary of these values and a discussion relating to the constraints these pose to future development of the site is provided.

2. ECOLOGICAL VALUES

Several short-term studies (including Conacher Travers 2005) have been undertaken at the site for various purposes that have provided base-level documentation. A more complete understanding of the Site's biodiversity, which is largely dependant on the flooding of Rickaby's Creek, will require studies over several years to include both dry and wetter periods and all seasons. It is important to note, therefore, that actual levels of biodiversity are likely to be much higher than presently documented. Nevertheless, even with limited study it is clear that the Site has exceptional ecological values. Over 200 native plant species and over 70 native fauna species were recorded in the Conacher Travers (2005) study alone.

The site is located in the upper catchment area of Rickaby's Creek with the creek rising in the south-west of the site. The health and flooding regime of the creek is highly dependant on drainage from the site.

2.1 Vegetation communities

The Site contains a mosaic of vegetation communities that have developed on ancient alluvial soils associated with Rickabys Creek, within the Hawkesbury-Nepean catchment. The nature and extent of these communities on lower parts of the site is determined primarily by the flooding regime of the creek.

Four communities occur at the site, three of which are listed as Endangered Ecological Communities (EEC's) under the *Threatened Species Conservation Act 1995* (TSC Act) - see figure 1 for general distribution. The fourth community, Castlereagh Scribbly Gum Woodland is regionally significant with a restricted distribution on Tertiary alluvial soils in western Sydney and importantly contains habitat for several threatened flora species. Substantial

areas of Cooks River/Castlereagh Ironbark Forest (CRCIF) and Castlereagh Swamp Woodland (CSW) occur at the site representing a significant proportion of the remaining areas of these communities which are currently poorly reserved (see Table 1). CSW present at the Site, for example, comprises 10% of the remaining area of this community.

***It is noted that the area of CSW present at the Site was significantly underestimated in the Conacher Travers (2005) report.** This was likely due to much of this vegetation being in an early stage of regeneration at the time of the survey (after fire and slashing) and timing of the survey during drought conditions.

Table 1: Vegetation communities present at the Cranebrook site, approximate area and conservation status

Community	Status	Area at site (ha)	Remaining area (W.Syd)	Conservation areas
Castlereagh Ironbark Forest	EEC	55	1000 ha (8% of original area)	289 ha-Windsor Downs NR, Castlereagh NR
Castlereagh Swamp Woodland	EEC	60	600 ha (61% of original area)	116 ha -Windsor Downs NR, Kemps Creek NR
Shale Gravel Transition Forest	EEC	4	1720 ha (31% of original area)	233 ha-Windsor Downs NR, Kemps Creek NR
Castlereagh Scribbly Gum Woodland	REG	40	3000 ha (50% of original area)	Castlereagh NR

Cooks River/Castlereagh Ironbark Forest (CRCIF)

CIF is found in peripheral and higher parts of the site on more clayey soils and covers an area of approx. 55 ha. This extent includes patches of intact vegetation and regenerating areas (latter particularly in the south-east of the site). Very large populations of threatened species occur in this community - *Dillwynia tenuifolia*, *Micromyrtus minutiflora*, *Grevillea juniperina* subsp. *juniperina* and *Pultenaea parviflora*. This community intergrades with CSW.

Castlereagh Swamp Woodland (CSW)

CSW occurs across the lower parts of the site associated with the creek-line and covers an area of approx. 60 ha. It is most intact in the northern corner of the site with remaining areas in various stages of regeneration after fire, slashing and other disturbances. Species of CSW are dependant on periodic waterlogging of the soils and include many ephemeral grass-like plants and herbs that are only visible in wetter times.

Castlereagh Scribbly Gum Woodland (CSGW)

CSGW is found on higher parts of the northern section of the site associated with more sandy soils and covers an area of approx. 40ha. The woodland contains known habitat for several threatened species - *Persoonia nutans*, *Dillwynia tenuifolia*, *Pultenaea parviflora*, *Grevillea juniperina* subsp. *juniperina*, *Allocasuarina glaericola* and *Acacia bynoeana*. Inter-grading areas

between this community and CSW are present towards the creek. These inter-grading areas are considered to be part of the EEC.

Shale Gravel Transition Forest (SGTF)

A small area of SGTF occurs in the north-east of the site associated with higher land and clay soils. It intergrades with Ironbark Forest to the north and south, and with CSGW to the west. SGTF contains habitat for the threatened species *Dillwynia tenuifolia*, *Pultenaea parviflora* and *Grevillea juniperina* subsp. *juniperina*.

* Due to the low-lying nature of the site associated with Rickabys Creek there is a strong ephemeral wetland influence evident. Small patches of Freshwater Wetlands occur in the northern part of the site associated with the creek and a wetland on adjoining land, however, these areas are included within the Swamp Woodland community rather than separately for this study.

2.2 Threatened Plant Species

The site is of exceptional high conservation value in regard to the number of threatened species present and the size of these populations. The distribution of species can be seen in Figure 1 and other details are provided in Table 2. Figure 1 shows that the threatened species occur across the entire site. Four of the species present are listed as *endangered* i.e. have a high level of probability of becoming extinct if recovery actions are not undertaken. The populations of *Micromyrtus minutiflora*, *Dillwynia tenuifolia* and *Pultenaea parviflora* are likely to be among the largest known. Although the numbers of *Persoonia nutans*, *Allocasuarina glaericola* and *Acacia bynoeana* present are small this is typical for these endangered species and further survey is likely to record additional plants, particularly if regeneration is not stopped by further fire or slashing.

Table 2: Threatened plant species present at the Site

Species	Status	Habitat	Population size (estimates)
<i>Dillwynia tenuifolia</i>	V	CIF, CSGW, SGTF	12,000-22,000
<i>Micromyrtus minutiflora</i>	E	CIF, CSW	36,000-52,000
<i>Persoonia nutans</i>	E	CSGW	30
<i>Pultenaea parviflora</i>	V	CIF, CSGW, SGTF	8000-12,000
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	V	CIF, CSGW, SGTF	11,000-18,000
<i>Acacia bynoeana</i>	E	CSGW	3
<i>Allocasuarina glaericola</i>	E	CSGW	13

2.3 Threatened Fauna Species

The Conacher Travers (2005) report identified the presence of two threatened fauna species – Eastern Freetail Bat (*Mormopterus norfolkensis*) and Cumberland Plain Land Snail (*Meridolum corneovirens*). Although not discussed in detail in this report the site provides a very significant refuge for native fauna in view of the large size, connectivity and diversity of habitats.

3. CONSERVATION SIGNIFICANCE

The Site provides an exceptional opportunity for biodiversity conservation in western Sydney. The following key features are identified:

Endangered communities - the various communities inter-grade over short distances in response to subtle changes in topography, soils and drainage, the boundaries of which fluctuate with changes in rainfall and groundwater levels (boundaries identified on the aerial photograph, therefore, are not precise). The mosaic nature of the vegetation and shifting boundaries are representative of a dynamic ecosystem sustained by the flooding regime of Rickaby's Creek.

Wetlands – Freshwater wetland habitats are well represented at the Site associated with Rickaby's Creek and its floodplain. Such habitats are becoming increasingly rare. Conservation of these habitats requires protection of the creek-line and its catchment and flooding regime.

Threatened and rare species – the Site provides habitat for a high diversity of threatened species (national & state, and of regional significance).

High species richness – a diverse range of native flora and fauna species are recorded from the Site reflecting the diversity of habitats and conditions present. Further survey is likely to significantly increase this number over time.

Size of area – at 181 ha the size of the site is a highly important asset with few larger intact areas of native vegetation remaining in western Sydney. It is well acknowledged that larger sites are able to support higher levels of biodiversity and management is easier, less expensive and more effective.

Connectivity – the Site provides a vital connection between Castlereagh woodlands in the Londonderry area to the north (including Agnes Banks Nature Reserve) and the ADI site to the south. Protection of corridors and associated refuge areas is critical to the long-term integrity and viability of remnants and flora and fauna in these areas. Immediate threats include fire

and clearing with climate change becoming a significant longer-term threat. The site is part of the Cumberland Conservation Corridor as proposed by the Western Sydney Conservation Alliance and is to be funded by the newly elected government.

4. CONSERVATION OUTCOMES

The guiding principles for protection of high conservation sites include:

- ❑ Maintain or improve biodiversity values (i.e. there is no net impact on threatened species or native vegetation);
- ❑ Conserve biological diversity and promote ESD;
- ❑ Protect areas of high conservation value;
- ❑ Prevent the extinction of threatened species;
- ❑ Protect the long-term viability of local populations of a species, population or ecological community; and
- ❑ Protect aspects of the environment that are matters of national environmental significance.

The Cranebrook site provides an unrivalled opportunity to achieve such outcomes *in situ*.

How much needs to be protected?

All parts of the site are important in terms of the biodiversity they support (endangered communities and threatened species are distributed across the site) and the contribution they make to the overall functioning of the ecosystem of which they are part.

If part of the site is cleared and developed considerable loss of biodiversity values is likely to occur. Any proposal to re-zone and develop the western half of the Site, for example, will result in loss or modification of considerable areas of EEC's, particularly CSW and CRCIF, and populations of three of the seven threatened plant species present (*Persoonia nutans*, *Allocasuarina glauca*, *Acacia bynoeana*). The loss of up to 50% of the vegetated upper catchment area of Rickaby's Creek will have significant impacts on the local hydrology and is likely to threaten any vegetation retained in the remainder of the site. The basic ecological processes underpinning sustainability of the Site will be altered.

Several key threatening processes (KTP's as listed under the TSC Act) are likely to be activated or increased by development. Clearing will result in a direct and tangible loss of significant vegetation, however, the effect of other KTP's can be more subtle although have the potential for extensive loss and damage. In particular, *Alteration to the natural flow regimes of rivers and*

streams and their floodplains and wetlands has the potential for considerable irreversible loss and change at the site. The replacement of native vegetation with hard surfaces and changes to surface and subsurface water flows are likely to threaten the ecological processes that currently sustain the natural values of the site and downstream. Changes to the frequency and extent of flooding will alter the composition and extent of the EEC's, particularly Castlereagh Swamp Woodland.

Are disturbed areas worth protecting?

The site has been extensively disturbed by a range of activities including past land use, frequent fire, clearing, illegal access, weed invasion and dumping. To the untrained eye this may appear to have degraded some areas to the extent that conservation is no longer warranted. Closer inspection, however, will indicate that a good range of native species are present that are representative of the endangered communities. These areas may also contain regenerating plants of the threatened species. If protected and managed appropriately these areas have the ability to regenerate to a structure and composition representative of the significant vegetation. The vegetation communities present at the Site occur on relatively infertile soils and have an inherent level of resilience. Under the TSC Act these *seral* stages of the community are included as part of the EEC and warrant protection.

5. CONCLUSION

Protection and re-zoning of the entire site for conservation is the only option that will result in a good conservation outcome and ensure long-term sustainability of the present flooding regime and the significant vegetation and fauna habitat that depends on this both at the site and downstream. It is essential that any decision relating to rezoning of the site is based on good information and knowledge of the site with a thorough and transparent assessment of likely impacts and consequences provided.