Flora Assessment Report

Junior Motorcycle Training, Education and Riding Complex

Redmayne Road, Horsley Park

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Preface

This Flora Assessment Report had been prepared by *Toolijooa Environmental Restoration* to identify the flora characteristics of land at 63-107 Redmayne Road, Horsley Park – Lot 6 DP 1021711, Lot 113 DP 13905 and Lot DP 13905.

This report provides an assessment of existing habitats and the potential of the proposed activity to significantly impact upon threatened flora species according to the provisions of Section 5A of the *Environmental Planning and Assessment Act* 1979 and the *Threatened Species Conservation Act* 1995.

Project Team

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Introduction and Background

Introduction

This Flora Assessment Report has been prepared by *Toolijooa Environmental Restoration* to identify the flora characteristics of land at 63-107 Redmayne Road, Horsley Park – Lot 6 DP 1021711, Lot 113 DP 13905 and Lot DP 13905 - to determine whether there is likely to be a significant effect on threatened flora species, populations or ecological communities, or their habitats according to the provisions of Section 5A of the *Environmental Planning and Assessment Act* 1979 and the *Threatened Species Conservation Act* 1995.

Site Description

The subject site comprises an abandoned semi-rural property located within the western Sydney local government area of Fairfield in the suburb of Horsley Park. The site is bounded to its west by the Westlink M7 Motorway, to its east by an adjacent occupied semi-rural property, to its north by market gardens and to its south by Redmayne Road (see Fig. 1). The site has previously been utilised as a mixed use farm that undertook market gardening, chicken farming and sheep grazing and still contains farm infrastructure including wire fencing and sheds from these operations.

The site is situated within Sydney's Cumberland Plain which forms the Cumberland sub-region of the Sydney Basin Bioregion of New South Wales. Soils at the site consist of deep structured red clay loams derived from shales of the Wianamatta Group that are characteristic of the plain (DEC 2009). According to NPWS (2002), native vegetation at the site consists of Shale Plains Woodland, a component of the greater Cumberland Plain Woodland complex.

Proposed Development

The development proposes to utilise the land as the Western Sydney Junior Motorcycle Training, Education and Riding Complex (see Fig. 2). Works to establish the facility will include:

Riding Tracks

- Clearing of ground cover over an area of:
  - 200-2000m by 2m wide for a 50cc motorcycle track, within an overall area of approximately 8200m^2;
  - 200-2000m by 4m wide for an 80cc motorcycle track within an overall area of approximately 14000m^2; and
  - 12-16 fields measuring 30m by 30m for use as events areas and 60m by 10m for the accelerate and brake track within an overall area of approximately 10200m^2 at the north-eastern corner of the site.

  These works will require the removal of ground cover and low and dangerous branches only.

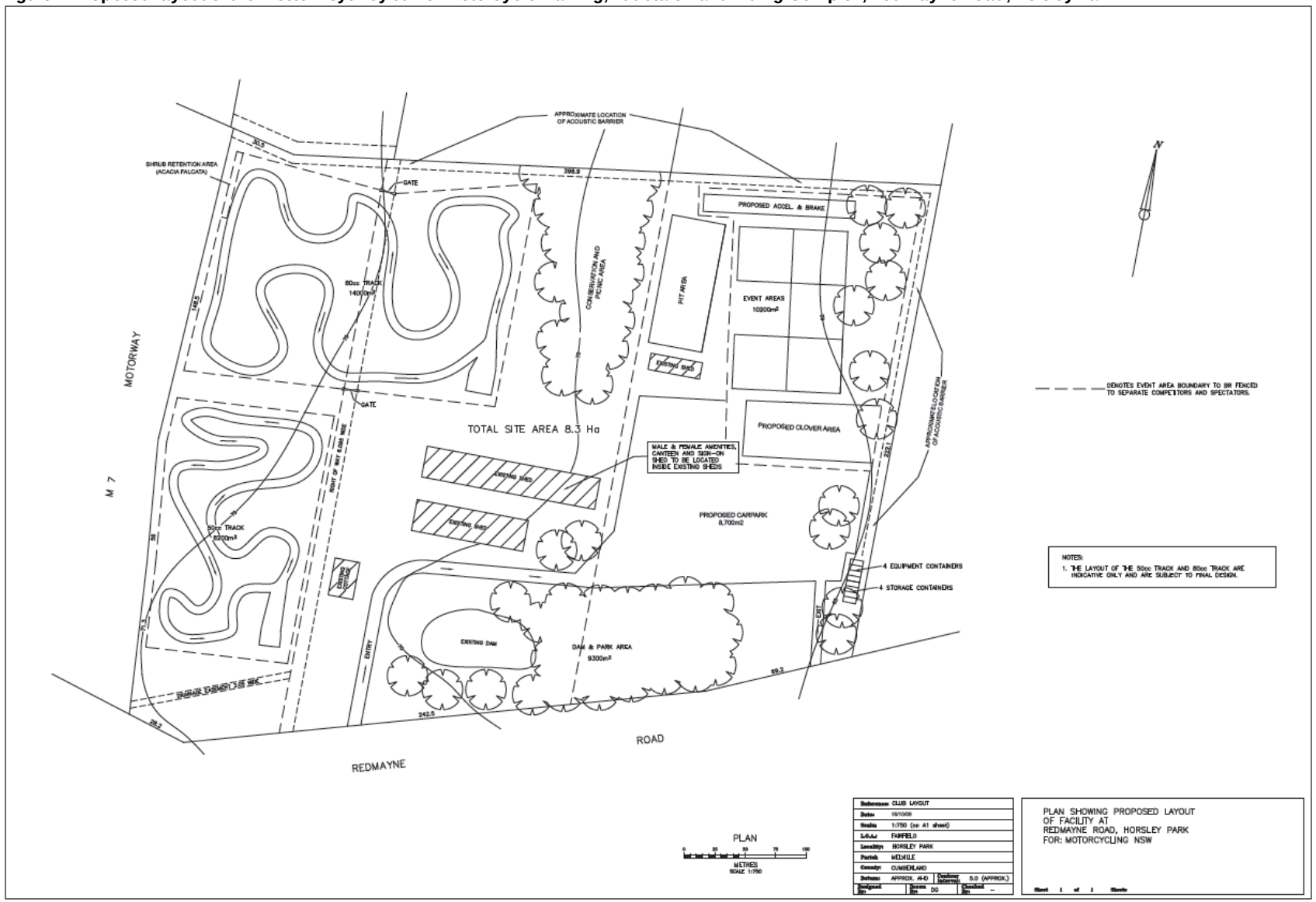
Portable Facilities

- Installation of portable amenities, sheds and canteen facilities to accommodate riders, as follows:
  - 1 Ladies amenities block with 4 toilets 2500w x 6000L x 2700H,
  - 1 Men's amenities block with 4 toilets 2500w x 6000L x 2700H,
  - 1 canteen block 2500w x 6000L x 2700H with awning 2500W x 6000L,
  - 1 sign-on shed 2500w x 6000L x 2700H,
  - 4 Equipment containers 2500w x 6000L x 2700H,
  - 4 storage containers 2500w x 6000L x 2700H,

  The male and female amenities, canteen and sign-on shed will be located inside the largest of the existing sheds.

Figure 1. Property boundary, 63-107 Redmayne Road, Horsley Park. Property boundary delineated by red line.

Figure 2. Proposed layout of the Western Sydney Junior Motorcycle Training, Eductaion and Riding Complex, Redmayne Road, Horsley Park.



Acoustic Treatment

- Subject to consultation with a qualified arborist for any works within the Root Protection Zone (RPZ) of any tree (as established by *Australian Standard 4970/2009 Protection of Trees on Construction Sites*) who will investigate any undue impacts upon surrounding native trees, a 4m high acoustic barrier will be erected on the northern and eastern perimeter of the site (as required by the *Noise Assessment Report* by Acoustics Dynamics). The acoustic barrier may consist of a dirt mound topped with acoustic walling, or an acoustic fence. Any footprint of a mound would be approximately 4m wide. Along the western half of the northern boundary the acoustic wall will be constructed at the boundary edge as no trees or other native vegetation are present in this area (see Fig. 3). Along the eastern half of the northern boundary and the eastern property boundary itself, native trees occur throughout. Along the northern boundary the acoustic wall will follow a predominately cleared existing vehicle access trail in order to preclude the requirement for removal of this strip of trees (See Fig. 4, 5, 6). This will require the removal of two native trees – one *Eucalyptus maculata* and one *Eucalyptus moluccana* (see Fig. 4). Both trees to be removed are relatively recent regrowth. These works will also isolate the 3-4m of fenceline remnant area from the remainder of the remnant. Along the eastern property boundary, the acoustic wall will lie inside (to the west of) the tree-line.
- Works within the RPZ of any tree will require consultation with a qualified arborist to discuss the location of any footings or dirt mound. Acoustic fencing will be adopted if it is found that building a dirt mound along the access trail will result in detrimental impacts upon mature native trees adjacent to the trail (see Figs. 4, 5, 6). Similarly the acoustic barrier along the eastern boundary will require advice of any arborist for any works within the RPZ of any tree.
- Placement of containers (see Portable Facilities) on the eastern boundary adjacent to the adjoining dwelling, to act as a noise barrier in addition to providing secure storage. It is intended the containers will be painted to be sympathetic to the rural setting.

Fencing

- Fencing of the perimeter of the site and event areas to ensure riders and spectators are separated in accordance with the Track Licensing Guidelines set by Motorcycling NSW, NSW Sport and Recreation and the NSW Police. The acoustic barrier may form part of the required fencing.
- Fencing around a Shrub Retention Area in the site's north-west corner (see Fig. 2, Fig. 7, 8) to ensure preservation of this remnant stand of native vegetation.

Car Park and Pit Area

- Mowing of an access road and car parking area of approximately 8700m^2 east of the existing chicken sheds and a Pit Area of approximately 4000m^2 east of the northern Conservation / Passive Recreation Area (see below). These activities will be provided on the existing ground cover and no further works will be required. All vehicles entering the car park will do so by the existing vehicle access located at the western end of the property, approximately 100m east of the Westlink M7. All vehicles exiting the site will do so by the existing vehicle access located adjacent to the eastern property boundary.

  It appears that the access road and car parking area avoid the RPZ of any tree. A recommendation requiring that car parking, access areas and events areas must not be located within the Root Protection Zone of any tree unless authorised by a qualified arborist is included.

Conservation / Passive Recreation Areas

- In addition to the above works, two portions of the site will be retained and set aside as conservation / family picnic / passive recreation areas:
  - An approximately 9300m^2 area along the southern boundary of the property that includes a dam and degraded remnant of Shale Plains Woodland will be set aside as conservation / park area,

- An approximately 4400m^2 area of remnant Shale Plains Woodland lying at the centre of the site, adjacent to the northern property boundary, will be set aside as a conservation / picnic area.

- Several approximately 10-20m^2 mown patches will be maintained within the northern remnant to provide an appropriate and desirable open space picnic area for visitors to the site. Temporary tables and seating may also be introduced to the areas.
- Fallen wood will be retained throughout the Conservation / Passive Recreation areas as fauna habitat. However, sharp and protruding limbs and roots will be removed in order to maintain the site in a safe condition (see Fig. 9, 10).

The more intact northern remnant area forms the principal concern of this Flora Assessment Report and associated Assessment of Significance with regard to the impact of the proposed development (see Fig. 11).

Previous Surveys and Reports

No known surveys or reports specific to the subject site have previously been undertaken.

Figures 3, 4, 5, 6. Photos of access track / proposed lie of the dirt mound wall along the northern property boundary.

Figure 3. Photo taken at northern boundary, facing west.

Figure 4. Photo taken at northern boundary, facing east (northernmost ,1 of 3).

Figure 5. Photo taken at northern boundary, facing east (central, 2 of 3).

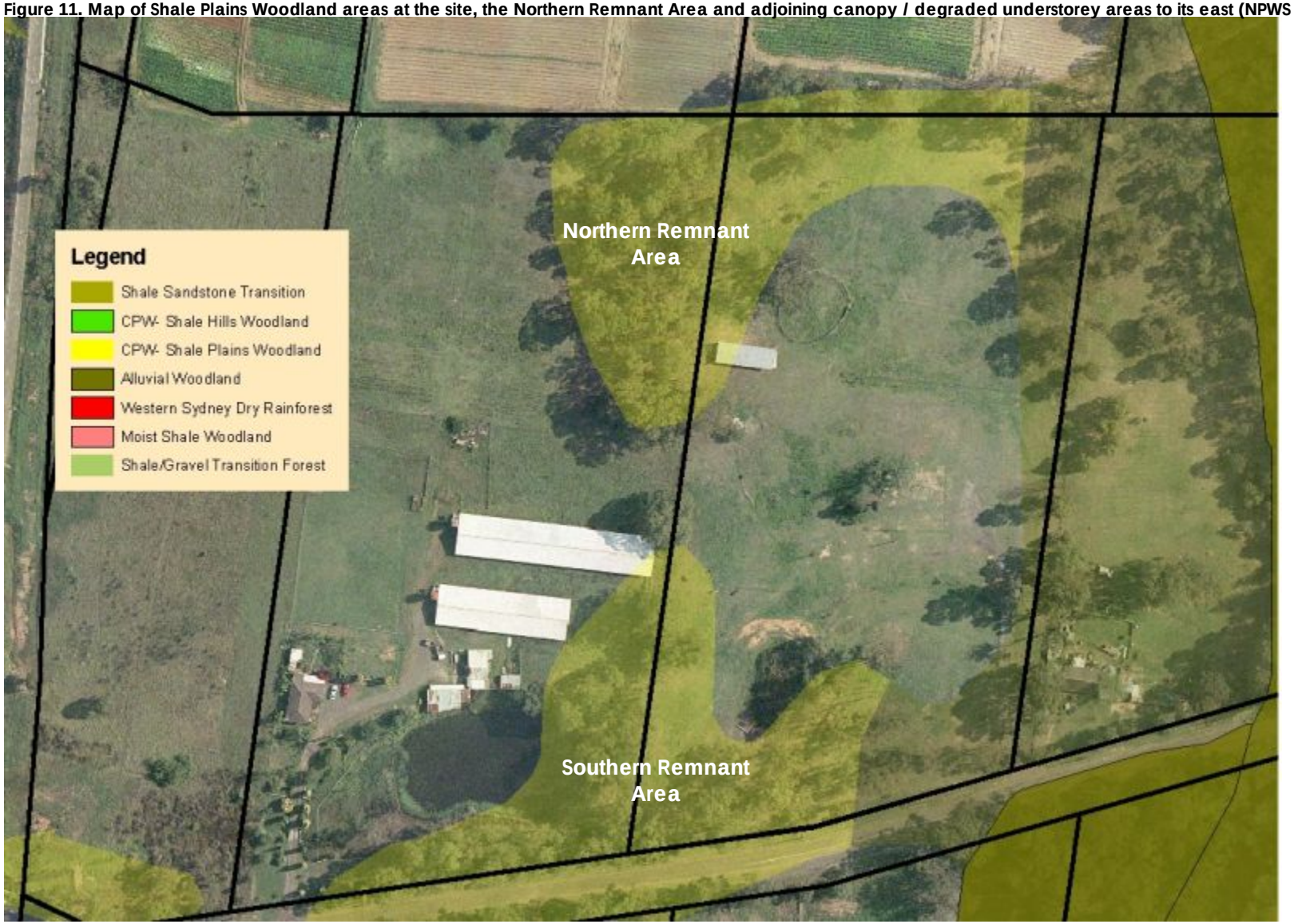
Figure 6. Photo taken at northern boundary, facing east (southernmost, 3 of 3).

Figure 7. *Acacia falcata* shrub retention area. Photo facing west.

Figure 8. *A. falcata* shrub retention area and associated native groundcovers.

Figure 9 and 10. Protruding limbs and roots of fallen logs within Conservation / Passive Recreation Area will be removed in order to maintain the site in a safe condition.

Figure 11. Map of Shale Plains Woodland areas at the site, the Northern Remnant Area and adjoining canopy / degraded understorey areas to its east (NPWS 2002).



Flora Characteristics

Threatened Flora Species

A search of the Atlas of NSW Wildlife (NPWS 2009) was undertaken to identify records of threatened flora species located within 10km of the site. Table 1 shows the six threatened flora species, as listed under Schedules 1 and 2 of the *TSC Act* (1995), that were identified by the search:

Table 1. Threatened flora species of the area.

Species	TSC Act	EPBC Act	Growth Form and Habitat Requirements	Comments
Cynanchum elegans	E	E	Climber or twiner. Highly variable form. Usually occurs on edge of dry rainforest vegetation. Associated vegetation types include *Eucalyptus tereticornis* and *E. maculata* aligned open forest and woodland. Flowering Aug-May. Restricted to eastern NSW – Brunswick Heads to Gerroa, as far west as Merriwa in upper Hunter River valley.	Suitable habitat present. Not observed during surveys.
Marsdenia viridiflora subsp. Viridiflora	E	-	Climber with twining stems to 4m high. Grows in vine thickets and open shale woodland. North from Razorback Ranges.	Suitable habitat present. Not observed during surveys.
Acacia pubescens	V	V	Spreading shrub, 1-4m high. Occurs in a variety of open woodland and forest communities, on alluviums, shales and the intergrade between shales and sandstones. Flowering Aug-Oct. Dist. concentrated around Bankstown-Fairfield-Rookwood and Pitt Town area.	Suitable habitat present. Not observed during surveys.
Pterostylis saxicola	E	E	Ground orchid. Deciduous. Most commonly found growing in small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines. Associated with schlerophyll forest or woodland on shale/sandstone transition or shale soils. Flowering Oct-Dec - varies with climatic conditions. Restricted to western Sydney b/w Frenchmans Reach to Picton. Few known populations.	No suitable habitat present.
Persoonia nutans	E	E	Erect to spreading shrub to 2.5m high. Peak flowering Dec-Jan. Confined to aeolian and alluvial sediments in a range of woodland schlerophyll and woodland communties. Restricted to western Sydney Cumberland Plain, b/w Richmond and Macquarie Fields.	Suitable habitat not present.
Pimelea spicata	E	E	Shrub to 50cm tall, may be erect or prostrate. Found on well-structured clay soils. Associated with Grey Box *Eucalyptus moluccana* and Ironbark. Previously widespread on the Cumberland Plain.	Suitable habitat present. Not observed during surveys.

The threatened flora species which are considered to have suitable habitat within the subject area were assessed under the 7-part test of significance in the Assessment and Conclusions section of this report.

Threatened Flora Populations

A search of the Atlas of NSW Wildlife (NPWS 2009) was undertaken to identify records of threatened flora populations located within 10km of the site. Table 2 shows the species, as listed under Schedules 1 and 2 of the *TSC Act* (1995), that were identified by the search:

Table 2. Threatened flora populations of the area.

Species	TSC Act	EPBC Act	Growth Form and Habitat Requirements	Comments
Marsdenia viridiflora subsp. Viridiflora	E	-	Climber with twining stems to 4m high. Grows in vine thickets and open shale woodland. North from Razorback Ranges.	Suitable habitat present. Not observed during surveys.

The threatened flora populations which are considered to have suitable habitat within the subject area were assessed under the 7-part test of significance in the Assessment and Conclusions section of this report.

Endangered Ecological Communities

According to NPWS (2002) native vegetation at the site consists predominately of Shale Plains Woodland, a component of the greater Cumberland Plain Woodland complex (see Fig. 11). Alluvial woodland is also shown to occur along the eastern boundary of the site, however, following field inspections, this distinction is considered extremely marginal (see Fig. 11). The principal conservation significance along this eastern boundary lies with the canopy trees (*Eucalyptus tereticornis* and *E. moluccanna*) and this area will be considered an extension of the Shale Plains Woodland EEC for the purposes of this assessment.

Cumberland Plain Woodland

Cumberland Plain Woodland is listed as an Endangered Ecological Community under the NSW *Threatened Species Conservation Act* 1995 and Commonwealth *Environmental Protection and Biodiversity Conservation Act* 1999. Prior to European settlement this vegetation community was the most widespread across the Cumberland Plain, with its pre-1750 extent estimated to be approximately 125,446ha (NPWS 2002a). Due to its gentle undulating topography, grassy understory and relatively fertile soils the region became the focus of Sydney's early agricultural production and, subsequently, expanding urban development (DEC 2005). By 2002, only 8.8% (11,055ha) of the of the pre-1750 extent of Cumberland Plain Woodland was estimated to remain intact / in good condition, while a further 13.7% (17,125ha) remained in a highly disturbed condition including as scattered trees across the landscape (NPWS 2002a). Of the remaining areas of intact Cumberland Plain Woodland, only 880ha is protected in conservation reserves, this representing 0.7% of the original extent of the community (NPWS 2002a, DEC 2005).

Biodiversity of the Cumberland Plain is presently amongst the most threatened in NSW (DEC 2005). The Cumberland Plain Woodland ecological community now exists as a highly fragmented and variously altered/degraded network of predominately small remnants (<79ha) throughout its original range (Tozer 2003). While these small remnants are generally more susceptible to weed invasion and impacts from adjoining land, many still contain a high diversity of native species (Tozer 2003). Furthermore, a high proportion of rare species occur throughout these remnant areas (Tozer 2003). Further clearing of Cumberland Plain Woodland remnants is thus likely to lead to localised loss of species as well as overall loss of floristic diversity across remnants due to the cumulative impact of clearing and degradation (Benson & Howell 2002, Tozer 2003). All Cumberland Plain Woodland remnants can thus be considered as having high conservation value and the protection, management and restoration of small remnants is a critical component in the overall conservation management of this ecological community (Doherty 1998, DECC 2005). The importance of all remaining CPW remnants is further reflected in the inclusion of disturbed areas which "contain components of the indigenous native species sufficient to re-establish the characteristic native understorey" and "…regrowth that is likely to achieve a near natural structure

or is a seral stage towards that structure" (Endangered Species Scientific Subcommittee 2000), within the *EPBCAct* 1999 definition of the community.

Vegetation Survey Methodology

Field survey of the site, and specifically the northern remnant area, was undertaken on 14 October 2009. The survey consisted of foot traverses within the remnant area and surrounds to identify the occurrence of flora species and the extent and location of vegetation communities. Specimens of plants not readily identified in the field were collected for identification. Determination of species composition as well as structural descriptions of the vegetation according to Specht *et al* (1995) were carried out.

Cryptic and seasonal species and non-flowering grasses may have been under-sampled due to the short window of time allowed for flora survey. However, given the low impact of the development upon vegetation communities of conservation significance, this was considered as satisfactory.

Vegetation Community Descriptions

Agricultural Old Fields / Non-Remnant Areas

With the exception of the two designated Conservation / Passive Recreation Areas (see Fig. 2 and 11) and scattered remnant shrubs and trees, Shale Plains Woodland has been completely removed from the site during historical agricultural development. Vegetation within the predominant developed areas has been heavily altered and is currently comprised of overgrown agricultural old fields dominated by a variety of exotic annual and perennial herbaceous species. Some hardy and ruderal native species are also scattered throughout the groundlayer, although at low densities.

Original soils in these developed areas have, by-and-large, also been substantially disturbed and altered following agricultural improvements and usage, significantly undermining the potential for Shale Plains Woodland to naturally regenerate in these areas under restoration works.

Comprehensive survey of these areas was not undertaken as they are considered to be absent of conservation significance.

Table 3. Agricultural Old Field / Non-Remnant Area structure and floristics outline.

Trees	
Structure	Absent, with the exception of a few remnant trees running along the southern end of the central fence line.
Floristics	*Eucalyptus tereticornis* (Forest Red Gum)
Shrubs	
Structure	Absent with the exception of a small remnant native shrub pocket at the north-western corner of the site. To 3.5m high, 10-15% Projected Foliage Cover (PFC).
Floristics	Native sp: *Acacia falcata*
Groundlayer	
Structure	Dense groundcovers and tall herbaceous species to 1.5m high with 70-100% PFC.
Floristics (dominant species)	Native sp: *Bothriochloa macra* (Red-leg Grass), *Elymus scaber* (Common Wheatgrass), *Microlaena stipoides* (Weeping Grass) Exotic sp: *Avena fatua* (Wild Oats), *Briza subaristata*, *Bromus carthaticus* (Prairie Grass), *Cirsium vulgare* (Spear Thistle), *Cynodon dactylon* (Counch), *Lolium perenne* (Perennial Ryegrass), *Paspalum dilatatum* (Plantago), *Pennisetum clandestinum* (Kikuyu), *Plantago lanceolata* (Plantain), *Rubus sp.* (Blackberry), *Senecio madagascariensis* (Fireweed), *Sida rhombifolia* (Paddy's Lucerne), *Taraxacum officinale* (Dandelion), *Verbena bonariensis* (Purple Top).

The small pocket of *Acacia falcata* contains an understorey dominated by *Microlaena stipoides* (Weeping Grass). This area will be retained and fenced off so as to exclude site works and damage during usage of the facility.

Shale Plains Woodland / Northern Remnant Area

The more intact northern remnant area forms the principal concern of this Flora Assessment Report and associated Assessment of Significance with regard to the impact of the proposed development.

The approximately 4400m^2 area comprising the Northern Remnant Area is shown in Figure 2 and 11. The remnant is presently in a degraded but moderate condition. Exotic species occur throughout, however, are dominant only around the edges of the remnant and also within an access track that splits the remnant approximately 3-4m from the northern property boundary. *Lolium perenne* is the dominant species within the access track area. Overall, the age-structure of remnant canopy trees is relatively young, however, a few older individuals are also present. Core sections of the remnant contain a good diversity of native species within the ground-layer. The native shrub layer is sparse and presently consists of only two species. With the exception of the compacted access track, the soil profile is largely intact throughout the remnant and, overall, there is excellent potential for its restoration and enhancement with a relatively low level of management input. Fallen dead wood lies throughout the remnant as well as several standing dead trees.

The Northern Remnant Area is adjoined to its east by a degraded Cumberland Plan Woodland remnant that runs along the northern and eastern boundaries of the property. The principal conservation significance within this eastern arm lies with the canopy trees. Understorey within this section still contains a moderate to high cover of native species, however, has been substantially simplified in comparison to the core remnant area and is largely dominated by *Microlaena stipoides* (Weeping Grass). A native shrub layer is absent. Despite this, restoration potential still exists within the eastern area.

Table 4. Shale Plains Woodland / Northern Remnant Area structure and floristics description.

Trees	
Structure	5 to 18 metres high with a variable 10 to 30% Projected Foliage Cover (PFC).
Floristics	Native sp: *Eucalyptus moluccana* (Grey Box), *Eucalyptus maculata* (Spotted Gum), *Eucalyptus tereticornis* (Forest Red Gum)
Shrubs	
Structure	Scattered native and exotic species. To 2m high. 5% PFC.
Floristics	Native sp: *Acacia falcata*, *Bursaria spinosa* (Blackthorn). Exotic sp: *Ligustrum lucidum* (Large-leaved Privet), *Ligustrum sinense* (Small-leaved Privet), *Lycium ferocissimum* (African Boxthorn), *Solanum pseudocapsicum* (Jerusalem Cherry).
Groundlayer	
Structure	Dense groundcovers to 0.5m high with 70-90% PFC.
Floristics	Native sp: *Asperula conferta*, *Atriplex semibaccata*, *Austrodanthonia richardsonii*, *Brunoniella australis*, *Carex inversa*, *Chloris ventricosa*, *Dianella longifolia var. longifolia*, *Dichelachne micrantha*, *Dichondra repens*, *Einadia hastata*, *Einadia trigonis*, *Elymus scaber*, *Eragrostis leptostachya*, *Glycine clandestina*, *Hardenbergia violacea*, *Juncus* sp., *Microlaena stipoides*, *Paspalidium* sp., *Pratia pupurascens*, *Rumex brownii*, *Solanum prinophyllum*. Exotic sp: *Anagallis arvensis* (Scarlet Pimpernel), *Araujia sericifera* (Moth Vine), *Asparagus asparagoides* (Bridal Creeper), *Avena fatua* (Wild Oats), *Bidens pilosa* (Cobblers Peg), *Bromus carthaticus* (Prairie Grass), *Cirsium vulgare* (Spear Thistle), *Cynodon dactylon* (Counch), *Ehrharta erecta* (Panic Veldtgrass), *Lolium perenne* (Perennial Ryegrass), *Malva* sp., *Paspalum dilatatum* (Paspalum), *Pennisetum*

	clandestinum (Kikuyu), *Plantago lanceolata* (Plantain), *Rubus sp.* (Blackberry), *Rumex crispus*, *Senecio madagascariensis* (Fireweed), *Sida rhombifolia* (Paddy's Lucerne), *Solanum nigrum* (Blackberry Nightshade), *Sonchus oleraceus* (Common Sowthistle), *Taraxacum officinale* (Dandelion), *Verbena bonariensis* (Purpletop).

Shale Plains Woodland – Southern Remnant Area

The less intact southern remnant is approximately 9300m^2 in area (see Fig. 11, 2). Overall, the remnant is in a degraded and weed infested condition, with a reduced remnant canopy and understorey cover compared to the northern remnant. Native species composition has also been substantially simplified compared to the northern remnant. The exotic species listed as occurring within the northern remnant also occur throughout the southern remnant. Large patches of the groundlayer within the southern remnant are dominated by invasive exotic species, in particular *Pennisetum clandestinum* (Kikuyu) and *Paspalum dilatatum* (Paspalum) while exotic shrubs also have a considerably higher cover than the northern remnant. In particular, *Ligustrum lucidum* (Large-leaved Privet) forms a dense thicket at the centre of the area. Topography in this area has been significantly altered with the creation of a dam and other excavations to the east of the dam.

The principal conservation significance within the southern remnant lies with the canopy trees. The southern remnant is being retained for passive recreation and no construction, development or other alterations will occur within the area. Accordingly, the southern remnant did not form a principal concern of this assessment.

Regional Context and Connectivity

The remnant area as a whole is a small, highly fragmented piece of Shale Plain Woodland. Little connectivity presently exists between the remnant and nearby bushland.

Assessments and Conclusions

Assessment of Impact on Threatened Species

As identified in Section 5A of the *EP&A Act* 1979 the following matters need to be addressed to determine whether or not a significant effect on threatened species, populations or ecological communities or their habitats is likely to result from the proposed development.

a) In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

No threatened species were observed on site during flora surveys.

Despite the presence of potential habitat for a number of threatened plant species within the subject site it is considered that the proposal is unlikely to have an adverse effect on the life cycle of any species such that viable local populations are place at risk of extinction.

b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No species that constitute an endangered population were observed on site during flora surveys.

Despite the presence of potential habitat for a species that constitutes an endangered population within the subject site it is considered that the proposal is unlikely to have an adverse effect on the life cycle of a species that constitutes an endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

Of the Cumberland Plain Woodland that occurs on the subject site, a total of two young constituent canopy trees will be removed in the course of construction and establishment works. These trees do not contain hollows for fauna habitat and occur within an otherwise highly disturbed and altered portion of the Cumberland Plain Woodland remnant.

It is considered that the proposed development is not likely to have an adverse effect on the extent of the Cumberland Plain Woodland ecological community such that its local occurrence is likely to be placed at risk of extinction.

ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Of the Cumberland Plain Woodland that occurs on the subject site, a total of two young constituent canopy trees would be removed in the course of construction of the eastern section of the dirt mound acoustic wall. These trees do not contain hollows for fauna habitat and occur within an otherwise highly disturbed and altered portion of the Cumberland Plain Woodland remnant.

Usage of the northern Cumberland Plain Woodland remnant as a picnic / passive recreation area is considered to be extremely low impact.

The proposed development is not likely to substantially and adversely modify the composition of the Cumberland Plain Woodland remnant such that the local occurrence of this Endangered Ecological Community is likely to be placed at risk of extinction.

d) in relation to the habitat of a threatened species, population or ecological community

i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

Of the Cumberland Plain Woodland that occurs on the subject site, a total of two young constituent canopy trees would be removed in the course of construction of the eastern section of the dirt mound acoustic wall. These trees do not contain hollows for fauna habitat and occur within an otherwise highly disturbed and altered portion of the Cumberland Plain Woodland remnant.

Usage of the northern Cumberland Plain Woodland remnant as a picnic / passive recreation area is considered to be extremely low impact.

ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

In its current state, the subject remnant ecological community is already highly fragmented and isolated from other areas of similar habitat. Construction of the proposed dirt mound acoustic wall along the existing access track will result in the physical separation of an approximately 150m^2 area of simplified and degraded Cumberland Plain Woodland from the adjoining remnant area. Groundlayer vegetation within the access track is currently in very poor condition and dominated by exotic species.

iii) The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The area of Cumberland Plain Woodland that will be fragmented by the proposed installation of a dirt mound acoustic barrier is not considered important. Fragmentation will not impact upon the condition of the remnant or fragmented area. It is considered that fragmentation of this area will not impact upon the long-term survival of the subject Cumberland Plain Woodland remnant.

e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

The subject site has not been classed as critical habitat within the provisions of the *Threatened Species Conservation Act* (1995). Therefore it is considered that the proposed development will not have an adverse effect on critical habitat (either directly or indirectly).

f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

There is presently no recovery plan or threat abatement plan for the Cumberland Plain Woodland ecological community.

g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of Native Vegetation, *Loss of Hollow-Bearing Trees* and *Removal of Dead Wood and Dead Trees* are Key Threatening Processes.

The proposal would result in the removal of two Cumberland Plain Woodland trees in the course of construction of the eastern section of the dirt mound acoustic wall. Removal of these

trees is not considered to place the local community at risk of extinction and the Cumberland Plain Woodland habitat being retained will be more than sufficient for future canopy species recruitment. In reference to the potential loss of hollow-bearing trees, these trees do not contain hollows for fauna habitat.

The subject remnant area also contains standing dead trees and dead wood through its area. The development does not propose removal of any standing dead trees. Similarly, fallen dead wood will be retained within the subject remnant area.

Environment Protection & Biodiversity Conservation Act 1999

Cumberland Plain Woodland is listed as Endangered within the *EPBC Act* (1999). In accordance with the above assessment, it is not considered that the proposed development will have a significant impact upon this community.

Conclusions

Based on the flora survey and information provided in this report it is concluded that:

- A threatened ecological community occurs at the subject site.
- No threatened threatened flora species were observed within the subject site.
- No Endangered Populations were observed within the subject site.
- The proposed development is not likely to have a significant effect on threatened flora species, populations or ecological communities or their habitats.
- A Species Impact Statement is not required for the proposed development.
- A referral to the Department of the Environment, Water, Heritage and the Arts (DEWHA) is considered unnecessary.

Further Recommendations

The following recommendations relating to the development and operations of the facility should be adopted in order to ensure optimal environmental outcomes for the project:

- Remnant areas should be cleared fenced / demarked, whether fencing / demarcation is temporary or permanent, *prior* to commencement of construction works. Boundaries of this fencing / demarcation should be determined in conjunction with a qualified ecologist as native understory communities extend beyond the drip-line of remnant canopy trees and may not be obvious to the untrained eye.
- That consultation is sought from a qualified ecologist with regards to management of the Conservation / Passive Recreation Areas. This would include hazard reduction measures and the most appropriate areas to be mowed for use as picnic areas, in order to minimise impact upon the native understory vegetation community.
- Numerous native trees are becoming ring-barked due to wire fencing wrapped around their trunks (see Fig. 12). If not removed, the affected trees will die. It is recommended that native trees are protected from ring-barking by removal of all old fencing wire from tree trunks.
- All activities, such as car parking areas, associated access roads, acoustic walls and events areas should not be located within the Root Protection Zone of any tree as identified by *AS 4970-2009 Protection of Trees on Construction Sites* unless authorised by a qualified arborist, in order to avoid impacting the RPZ and subsequent damage to trees.

Figure 12 a and b. Native trees ring-barked by fencing wire.

References

Benson, D and Howell, J. (2002) Cumberland Plain Woodland ecology then and now: interpretations and implications from the work of Robert Brown and others. *Cunninghamia* **7**(4): 631-650.

Doherty, M (1998) The conservation value of regrowth native plant communities: a review, final report, (a report prepared for the New South Wales Scientific Committee), CSIRO Division of Wildlife and Ecology, Canberra.

NSW National Parks and Wildlife Service (2009), Atlas of NSW Wildlife website: http://wildlifeatlas.nationalparks.nsw.gov.au/wildlifeatlas/watlas.jsp

NSW National Parks and Wildlife Service (2002). Native Vegetation of the Cumberland Plain, 1:25000 map sheet. Map 7 0f 16 – Fairfield LGA & Liverpool LGA (Eastern Section). NSW NPWS, Hurstville.

NSW National Parks and Wildlife Service (2002a) *Interpretation Guidelines for the Native Vegetation Maps of the Cumberland Plain, Western Sydney*, *Final Edition* NSW NPWS, Hurstville, viewed 10 May 2007, http://www.nationalparks.nsw.gov.au/PDFs/cumb_plain_mapping_interpguidelines.pdf.

Department of Environment and Conservation (NSW) (2009) NSW Natural Resource Atlas website: http://www.nratlas.nsw.gov.au/

Department of Environment and Conservation (NSW) (2005). *Recovering Bushland on the Cumberland Plain: Best Practice guidelines for the management and restoration of bushland*. Department of Environment and Conservation (NSW), Sydney.

Specht, R. L., Specht, A., Whelan, M. B. and Hegarty, E.E. (1995). Conservation Atlas of Plant Communities in Australia. Southern Cross University Press, Lismore.

Tozer, Mark. (2003). The native vegetation of the Cumberland Plain, western Sydney: systematic classification and field identification of communities. *Cunninghamia* **8**(1): 1-75.