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Flora and Fauna Assessment

741-755 Great Western Highway, Werrington

Flora and Fauna Assessment

Prepared for: Statewide Planning Pty Ltd

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Acronym	Description
BC Act	NSW *Biodiversity Conservation Act 2016*
CEMP	Construction Environmental Management Plan
CPW	Cumberland Plain Woodland
DA	Development Application
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ha	Hectares
LGA	Local Government Area
masl	metres above sea level
MNES	Matters of National Environmental Significance
TEC	Threatened Ecological Community, listed as vulnerable, endangered or critically endangered under either the BC Act of the EPBC Act
WoNS	Weeds of National Significance
*	Denotes exotic species
†	Denotes both native and introduced species

1 Introduction

1.1 Purpose of report and legislative context

This Flora and Fauna Assessment has been undertaken for a proposed development at Lots 125, 126 and 127 // DP 1215199 (741-755 Great Western Highway, Werrington NSW). The purpose of this report is to identify and assess the flora and fauna within the study area, the ecological values and constraints that may affect the future development, and the significance of impacts of the current proposal on threatened biodiversity as listed in the NSW *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The legislative context in its entirety is provided in **Table 1.1**. The proposal is to be assessed under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and Section 18 of the EPBC Act.

Table 1.1: Legislative framework addressed in this report.

Instrument	Considerations	Context
Commonwealth		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Matters of National Environmental Significance	An action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.
State (New South Wales)		
Biosecurity Act 2015	Priority weeds	Describes the state and regional priorities for weeds in New South Wales.
Environmental Planning and Assessment Act 1979 (EP&A Act)	Part 4	Includes the planning framework for this proposed development.
Biodiversity Conservation Act 2016 (BC Act)	Part 7.3	Assessment of the potential for an action or activity to have a significant effect on threatened species, populations or ecological communities, or their habitats.
State Environmental Planning Policy (Koala Habitat Protection) - 2020	Koala Habitat Protection	Encourages the conservation and management of koala habitat to ensure populations remain in their present range and the trend of population decline is reversed
Local (Penrith City)		
Penrith City Local Environmental Plan 2010 (the LEP)	Clause 7.3	The objective of this clause is to protect, maintain and improve the diversity and condition of native vegetation and habitat.

1.2 Site description

1.2.1 Location

The site is located in the Penrith City Local Government Area (LGA) in western Sydney as shown in **Figure 1.1**.

1.2.2 Study area and subject site

The *Threatened Species Test of Significance Guidelines* (OEH 2018a) define the ***subject site*** as the area directly impacted upon by the proposal, and the ***study area*** is defined as the subject site and all areas that are indirectly impacted upon by the proposal. For the purposes of this report, the subject site and study area are the same, and constitute the entirety of Lots 125 and 126 // DP 1215199 (741-755 Great Western Highway, Werrington NSW). The site consists of disturbed, vacant land (**Figure 1.2**).

The Development Application (DA) applies to an area of 4.90 hectares of land zoned as R3 – Medium Density Residential. The study area consists of a single rectangular-shaped block in Werrington bordered by the St Charbel Boulevard to the north, the Great Western Highway to the south, a cleared vacant lot and the University of Western Sydney to the east and French Street to the west. An area of E2 – Environmental Conservation land exists along the impeded drainage area east of the site and this coincides with waterfront lands under the Water Management Act 2000 (WM Act).

1.3 Description of the proposed subdivision

The proposal is for the subdivision of the property into 134 residential lots including associated infrastructure and will require the entire removal of vegetation within the site.

The study area is identified as occurring on Vegetation Category 2 bushfire prone land and a Bushfire Assessment Report will be required in support of the DA. Based on the lack of vegetation currently located within mapped bushfire prone land and the future land use of the area, bushfire asset protection zones (APZ) are unlikely apply to this site and APZs have not been considered as part of the subject site.

1.4 Determining NSW offsetting thresholds

The *Biodiversity Conservation Regulation 2017* sets out native vegetation clearing threshold levels for when the Biodiversity Offset Scheme (BOS) will be triggered, and if these thresholds are exceeded, the BOS applies. The area threshold varies depending on:

- the minimum lot size as shown in the Lot Size Maps made of the relevant LEP, or
- actual lot size, where there is no minimum lot size provided for the relevant land under the LEP.

Details of the threshold limits are provided in **Table 1.2**

Table 1.2: Native vegetation clearing thresholds that trigger the BOS

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	1 ha or more
1000 ha or more	2 ha or more

The threshold has two elements:

1. whether the impacts occur on an area mapped on the Biodiversity Values Map (BVM) published by the Minister for the Environment, and
2. whether the amount of native vegetation being cleared exceeds a threshold size (as per Table 1.2).

The first threshold does not apply as the previously mapped Cumberland Plain Woodland on the site was subject to a formal application to the NSW Department of Planning, Industry and the Environment (DPIE) to review the BVM, based on the absence of the mapped Biodiversity Value Critically Endangered Ecological Community – Cumberland Plain Woodland and the current condition of vegetation on the site. On 4 December 2020, DPIE made a determination that the BVM would be amended to remove 1.72 ha of Biodiversity Values mapping, including all areas on or adjacent to the subject site, and this determination is provided in **Appendix C**.

The second threshold does not apply as the site contains only previously cleared and disturbed vegetation, which is not commensurate with a native vegetation community. Two mature Grey Box (*Eucalyptus moluccana*) are located within the subject site at the frontage of French Street, however, an arborist assessment has determined that one of these trees is dying/ declining and will require removal while the other is also in decline but is recommended for retention (Urban Arbor 2020). The native vegetation clearing threshold of 0.5 ha applicable to the site will not be exceeded.

On this basis, neither threshold triggers the BOS.

An assessment of the significance of the impact of the proposal on threatened biodiversity, as listed on the BC Act and EPBC Act, must be conducted where potentially affected. Assessments of the significance of impacts is intended to provide standardised and transparent consideration of threatened species, ecological communities, and their habitats, throughout the development assessment process.

In the context of a EP&A Act Part 4 development (not including major projects), if the assessment of the impacts indicates that there is likely to be a significant effect on threatened biodiversity, the proponent must carry out a BAM assessment in NSW and/or a Referral to the Commonwealth Department of Environment under the EPBC Act.

Figure 1.1: Location of the site in a regional context.

Figure 1.2: The subject site and study area.

2 Methods

2.1 Literature and database review

A site-specific literature and database review was undertaken prior to field survey and report preparation. This included desktop analysis of aerial photography and regional scale information from the following sources:

- NSW Planning Viewer (NSW DPIE 2020a)
- SIX Maps (NSW LPI 2020)
- NearMap (2020)
- Atlas of NSW Wildlife (DPIE 2020b)
- EPBC Protected Matters Search Tool (DoEE 2020)
- *The native vegetation of the Cumberland Plain, western Sydney: systematic classification and field identification of communities* (Tozer 2003)

Polices and Guidelines relating to the proposal:

- *Threatened Species Test of Significance Guidelines* (OEH 2018a)
- *Threatened Species Survey and Assessment Guidelines* (OEH 2018b)
- SEPP (Koala Habitat Protection) 2020

2.2 Assessment of likelihood of occurrence for threatened biodiversity

The likelihood of occurrence of threatened biota, as listed on the BC Act and/or the EPBC Act, was assessed by:

- Species records on the Atlas of NSW Wildlife (DPIE 2020c) within five kilometres of the study area
- Species predicted within five kilometres of the study area on the EPBC Protected Matters Search Tool
- Review of location and date of recent (less than five years) and historical (5-20 years) records,
- Review of available habitat within the study area and surrounding areas,
- Review of the scientific literature pertaining to each species and population, and
- Applying expert knowledge of each species.

The potential for threatened biodiversity to occur was then considered and the necessity for targeted field surveys was determined. Following field survey and a review of the available habitat within the study area, the potential for threatened species to utilise the site was classified according to the following system:

- **Recent record** - Species has been recorded in the study area within the past 5 years.
- **High** - Species has previously been recorded in the study area (>5 years ago) or in proximity to (for mobile species), and/or habitat is present that is likely to be used by a local population.
- **Moderate** - Suitable habitat for a species is present onsite but no evidence of a species detected and relatively high numbers of recent records (5-20 years) in the locality or species highly mobile.

- **Low** - Suitable habitat species for a species is present onsite but limited or highly degraded, no evidence of a species detected and relatively low number of recent records in the locality.
- **Not present** - suitable habitat for the species is not present onsite or adequate survey has determined species does not occur in the study area.

The assessment of likelihood of occurrence is provided in table-form in **Appendix A**.

2.3 Field survey

A field survey was undertaken on 15th December 2020 by Dr John Gollan (Ecologist). This survey included a flora and fauna habitat-based assessment, an assessment of the type and condition of the vegetation of the site and incidental observations of flora and fauna (threatened or otherwise). Weather conditions during the site assessment were warm and windy, with light rainfall (**Table 2.1**).

Table 2.1: Daily weather observations from Penrith (Bureau of Meteorology 2020).

Date	Temp (°C)		Rainfall (mm)	Max wind gust	
	Min	Max		Direction	Speed (km/h)
15/12/2020	18.4	25.5	3.4	ENE	30

2.3.1 Plant communities and flora

Field survey involved traversing the study area whilst recording all visible plant species and identifying potential habitat for threatened flora (**Figure 3.4**).

Field survey was undertaken to validate vegetation mapping of Tozer (2003) and OEH (2016) to prescribe a Plant Community Type (PCT). PCTs were checked against described Threatened Ecological Communities (TEC) listed under either the NSW BC act or the Commonwealth EPBC Act.

As described in **Section 1.4**, Cumberland Plain Woodland that was previously mapped on site and the BVM layer has been reviewed and is now excluded from consideration on the subject site (**Appendix C**).

2.3.2 Fauna and fauna habitat

Opportunistic fauna survey was undertaken which included visual observations of fauna utilising the site or adjacent areas, along with searches for signs of direct and indirect occupancy, for instance scats, owl pellets, fur, bones, tracks, bark scratches, foliage chew marks and gnawed fruits of plants. Fauna habitat searches were conducted for potential foraging, roosting, breeding or nesting habitat of nocturnal and diurnal species. This includes inspection for the presence of habitat features such as tree hollows, stags, bird nests, possum dreys, decorticating bark, rock shelters, rock outcrops/crevices, mature / old growth trees, food trees (*Banksia* spp., *Allocasuarina* spp., and winter-flowering eucalypts), culverts, dens, dams, riparian areas and refuge habitats of man-made structures.

Literature accessed for flora and fauna identification and nomenclature were:

- *Flora of NSW* (Harden 1990-2002)

- Flora of NSW Updates provided in PlantNET (RBGDT 2020)
- World Flora Online (2020)
- Birds – Menkhorst et al (2017)
- Birdlife Australia Online (2020)
- Mammals - Van Dyck and Strahan (2008)
- Reptiles and amphibians – Cogger (2014)

2.3.3 Survey limitations

The flora survey aimed to record as many species as possible. However, a definitive list of the flora within the study area cannot be gathered without systematic traverses or floristic plots and survey across a number of seasons. Additional species would be recorded during a longer survey over various seasons. Given these limitations, the techniques used in this investigation were considered adequate to gather the data necessary to validate the possible PCTs and vegetation condition in the study area, and also assess the likelihood of occurrence of any threatened flora.

All flora recorded were identified to species and sub-species level where possible, however, for some species identification remained conservatively at the genus level when reproductive or other diagnostic material useful for full identification was lacking at the time of survey.

A fauna survey following *Threatened Species Survey and Assessment Guidelines* (OEH 2018b) was not undertaken, however opportunistic observations, indirect observations (tracks and scats) and the habitat-based assessment as described above, was considered sufficient to determine the likelihood of occurrence of threatened and migratory fauna.

3 Results

3.1 Literature and database review

3.1.1 Threatened and migratory species

A search of the relevant databases and literature identified 36 threatened or migratory species, as listed on the BC Act and the EPBC Act, within five kilometres of the study area and compiled into **Appendix A**. This included 10 threatened flora species and 26 threatened or migratory fauna species, including one invertebrate, one amphibian, 14 birds, 10 mammals (**Figure 3.1**).

No threatened fauna have been previously recorded within the study area but those that would have potential habitat on the site and with multiple records close to the study area include Cumberland Plain Land Snail, Glossy Black-cockatoo, Grey-headed Flying Fox and several microbat species.

The site seems to be in a data gap for threatened flora but it was assumed, based on the numerous records within five kilometres and experience of the locality, that potential habitat existed for the threatened species *Grevillea juniperina* ssp. *juniperina*, *Marsdenia viridiflora* ssp. *viridiflora* and *Pimelea spicata*.

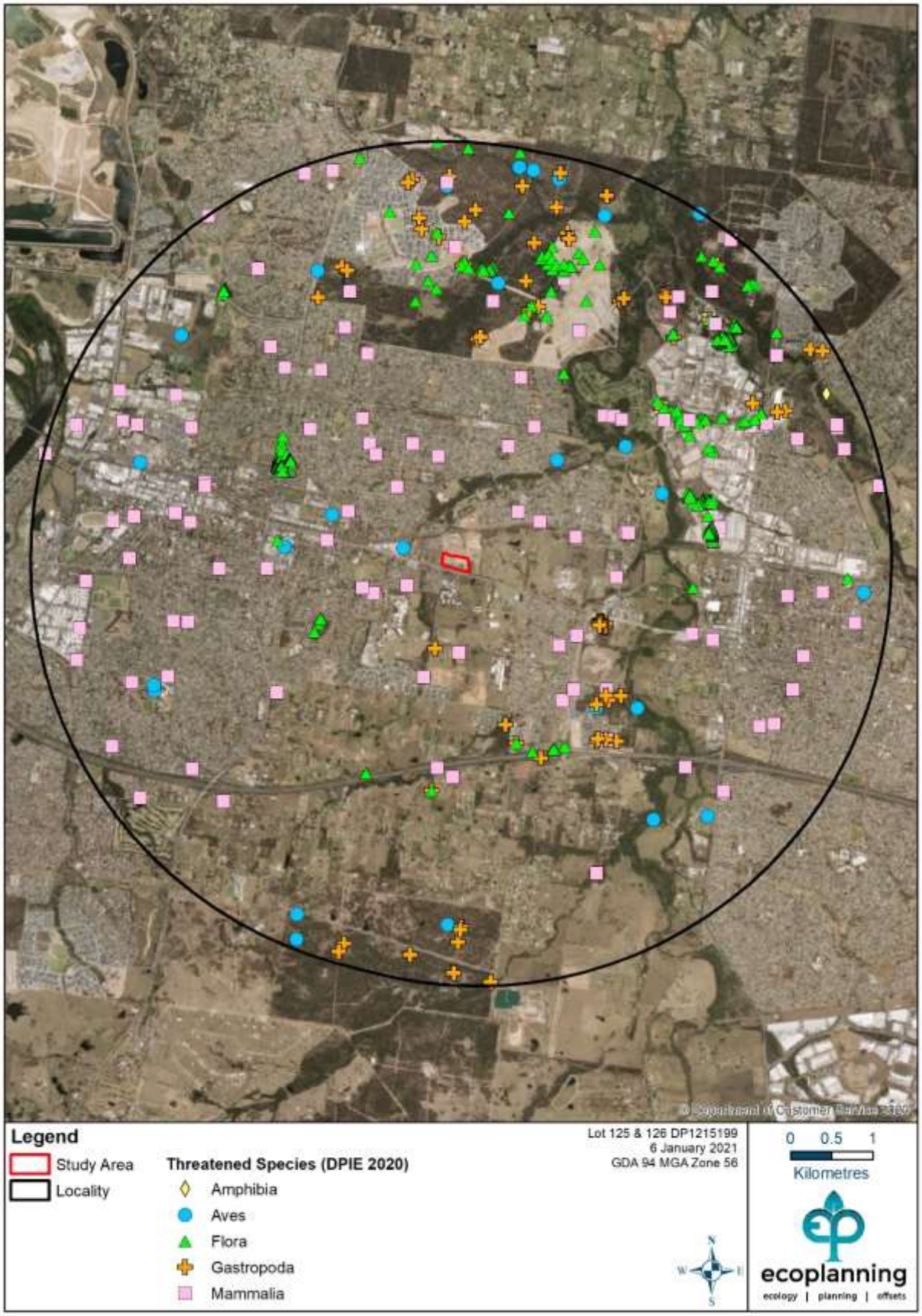

Figure 3.1: Threatened species (DPIE 2020)

3.1.2 State Environmental Planning Policy (Koala Habitat Protection) 2020

State Environmental Planning Policy (Koala Habitat Protection) 2020 responds to the NSW Government's decision to revert to operations under the former SEPP 44 while a new policy is developed in 2021.

Land to which the SEPP (Koala Habitat Protection) 2020 applies is:

1. Land to which the Policy applies (Local Government Areas listed in Schedule 1 of the SEPP); and
2. Land to which a development application has been made; and
3. Land that, whether or not the development application applies to the whole, or only part, of the land –
    i. that has an area of at more than 1 ha or more (excluding National Parks and State Forests), or
    ii. Land that has together with adjoining land that is in the same ownership, an area of more than 1 ha (including adjoining land within the same ownership),

The study area is in the Penrith City LGA which is not listed in Schedule 1 of SEPP (Koala Habitat Protection) 2020. The SEPP (Koala Habitat Protection) 2020 does not apply.

Despite the presence of two isolated Grey Box on the site and that the site would have historically been within the range of the koala, the species has not recently been recorded within five kilometres of the study area and is considered unlikely to inhabit the locality.

3.1.3 Vegetation mapping and threatened ecological communities

Shale Plains Woodland was mapped by Tozer (2003) as being present on the site which is commensurate with the critically endangered ecological community (CEEC) Cumberland Plain Woodland (CPW). CPW is listed as critically endangered under both the BC Act and EPBC Acts. This vegetation unit aligns to NSW PCT 849 Grey Box – Forest Red Gum grassy woodland on flats (**Figure 3.2**).

As discussed in **Section 1.4**, the DPIE Biodiversity Values Map (BVM) had previously mapped this occurrence of CPW on the site and this occurrence was formally removed from the BVM by DPIE, with notification provided on 4 December 2004 (**Appendix C**).

Figure 3.2: Vegetation mapping of the Study Area (DPIE 2015)

3.1.4 Water Management Act 2000

The Natural Resources Access Regulator (NRAR) administers the NSW *Water Management Act 2000* (WM Act) and is required to assess the impact of any activity proposed for waterfront land (called a controlled activity) to minimise the potential harm done to waterfront land as a result of the work. Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary. A controlled activity approval from the NRAR must be obtained before commencing the controlled activity within this portion of the study area. NRAR also recommends a vegetated riparian zone (VRZ) width based on watercourse order as classified under the Strahler System of ordering watercourses (**Table 3.1**). Accordingly, a 20 m wide VRZ will be implemented for this proposal and this is mapped in **Figure 3.3**.

Table 3.1: Recommended riparian corridor widths (NRAR 2018)

Watercourse type	VRZ width (each side of watercourse)	Total RC width
1st order	10 metres	20 metres + channel width
2nd order	20 metres	40 metres + channel width
3rd order	30 metres	60 metres + channel width
4th order and greater (includes estuaries, wetlands and parts of rivers influence by tidal waters)	40 metres	80 metres + channel width

Figure 3.3: 20 metre buffer (40 metre wide corridor) required for a VRZ around the second order stream on the site

3.2 Field survey

Field survey tracks and photo-points are illustrated in **Figure 3.4**. The main habitat features observed on site are illustrated in **Figure 3.5**.

3.2.1 Vegetation and flora

The vegetation within the study area was validated on-site during the field survey and was assessed as being in a highly disturbed and modified state and is unlikely to constitute an indigenous vegetation type. The site was dominated by exotic shrubs, forbs, exotic perennial grasses, horticultural plantings and escapees.

The only indigenous vegetation on the subject site included two mature Grey Box in the west of the site. Cumberland Plain Woodland was not detected confirming the approved modification to the BVM layer by DPIE (**Appendix C**).

A total of 48 plant species were identified in the study area during the field survey, of which 10 were native species and 37 were either planted or invasive exotic species (**Appendix B**). No threatened flora were recorded in the study area during the field survey and it is considered unlikely that any threatened flora would be reliant on the study area as habitat (**Appendix A**).

Table 3.2 lists the three priority weeds for the Greater Sydney control area (of which Penrith City LGA is a part), that were detected on-site (NSW *Biosecurity Act 2015*); African olive (*Olea europaea* ssp. *cuspidata*), African boxthorn (*Lycium ferocissimum*) and blackberry (*Rubus fruticosus* spp. agg). African boxthorn and blackberry are also Weeds of National Significance (WoNS) as agreed by all Australian governments.

Table 3.2: Priority weeds and Weeds of National Significance (WoNS).

Common name	Scientific name	WoNS[1]	Duty
African olive	*Olea europaea ssp. cuspidata*	N	**Regional Recommended Measure** An exclusion zone is established for all lands in Blue Mountains City Council local government area and in Penrith local government area west of the Nepean River. The remainder of the region is classified as the core infestation area.
African boxthorn	*Lycium ferocissimum*	Y	**Prohibition on dealings** *Must not be imported into the State or sold*
Blackberry	*Rubus fruticosus spp. agg.*	Y	**Prohibition on dealings** *Must not be imported into the State or sold* All species in the *Rubus fruiticosus* species aggregate have this requirement, except for the varietals Black Satin, Chehalem, Chester Thornless, Dirksen Thornless, Loch Ness, Murrindindi, Silvan, Smooth Stem, and Thornfree

[1] http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html

Figure 3.4: Survey effort

3.3 Site photographs

The following photographs of the site are cross-referenced to the photo-numbers in **Figure 3.4**.

Plate 3.1. Internal track with adjacent exotic perennial pasture (photo-point 1)

Plate 3.2. Exotic shrubland above impeded drainage with mixed indigenous and exotic herbaceous cover (photo-point 2)

Plate 3.3. View to the west from Lot 127 looking into the site. Exotic shrubland, exotic perennial grasses and artificial spoil mounds

3.3.1 Fauna and fauna habitat

Galah and Welcome Swallow, were recorded within or were heard calling from nearby the study area during this assessment (**Appendix B**). Two exotic species were also recorded; Common Myna and Feral Cat (*Felis catus*).

No threatened fauna were recorded within the study area during field survey. As stated in **Section 2.3.3**, surveys were limited to opportunistic diurnal observations, indirect observations (tracks, scats and other traces) and a habitat-based assessment.

The fauna habitat values within the study area are generally limited, as most of the study area comprises exotic vegetation, rubbish piles and debris. Habitat features relevant to each fauna group with potential to occur are identified in **Table 3.3**.

Table 3.3: Key fauna habitat features present across the study area.

Habitat features	Fauna species
Native canopy trees (two trees)	Arboreal mammals, birds and bats
Shrubs	Arboreal and ground mammals, birds
Vegetated ground cover	Ground mammals, reptiles, amphibians
Artificial waste material and piled aggregates	Ground mammals, reptiles, amphibians

The entirety of the study area has been recently cleared, impacted through the installation of underground services and is now dominated by exotic plant species in the ground layer. Habitat features within the study area include two mature Grey Box (trees) and scattered shrubs that may offer foraging and roosting habitat, and a dense ground layer that may offer also offer foraging and refuge habitat for ground-dwelling fauna (**Table 3.3**).

Some artificial habitats were present on-site including spoil mounds from builder's rubble and other waste. The stream at the eastern end of the site is impeded by an artificial dam but this has created some habitat value.

No hollow-bearing trees were identified within the study area and as such, the study area does not provide suitable roosting or nesting habitat for hollow-dependent species. Similarly, no large stick nests were observed within the study area, therefore, it does not represent breeding habitat for threatened raptors such as *Lophoictinia isura* (Square-tailed Kite).

Likelihood of occurrence of threatened fauna was assessed according to the schema described in **Section 2.2** and this assessment is provided in table-form in **Appendix A**. It is considered unlikely that any threatened fauna would be reliant on the study area as habitat.

Figure 3.5: Field validated vegetation (Ecoplanning)

4 Impact assessment

This section outlines the anticipated direct and indirect impacts of the proposed development and on the ecological values of the study area and subject site. Amelioration measures are also proposed.

4.1 Direct impacts

Direct impacts associated with the proposed development include the clearing of vegetation and loss of fauna habitat within the subject site.

4.1.1 Vegetation clearing

Impacts on native vegetation are likely to be negligible as the only two mature native trees on the site are in decline and are not likely to survive even if not cleared. An arborist report prepared for the site recommends one of these trees for removal while the other may be retained (Urban Arbor 2020). Other than these mature trees, the vegetation of the site is highly modified and dominated by exotic species.

No threatened flora were detected on site and none are likely to be present.

4.1.2 Loss of fauna habitat

The proposed subdivision will require the removal of vegetation that is highly modified and has limited habitat value. Some micro-habitats are present in the form of spoil mounds and builder's rubble but these are not habitat for threatened fauna. The two mature trees do not contain hollows or significant peeling bark or fissures which could provide habitat.

No threatened fauna were detected on site and none are likely to be present.

4.2 Indirect impacts

It is difficult to quantify indirect impacts of the proposed subdivision, but these may include impacts such as noise, erosion and runoff that may be associated with the construction phase of the project.

Indirect impacts will be ameliorated through the measures described in **Section 4.3**.

4.3 Avoidance and mitigation

The following avoidance and mitigation measures are recommended to minimise potential impacts on the site and adjoining areas:

- Contractors and staff will be inducted to the site and informed of all mitigation measures that must be observed.
- Any exotic biomass cleared within the subject site will be removed and disposed of at an approved facility. This includes the removal of all environmental weeds.
- A Construction Environmental Management Plan (CEMP) or similar documents will be implemented to address indirect impacts including noise, sediment and erosion control, and oil/fuel/chemical storage/spill management, which may arise during construction works to minimise impacts to downslope environments within and east of the study area.

- Erosion and sediment control measures will be established before work begins and maintained in effective working order throughout the duration of the works, and until the subject site has been stabilised to prevent off-site transport of eroded sediments.
- Proposed landscaping works will include species from locally sourced stock.

4.3.1 Pre-clearance protocols

No hollow-bearing or stag trees, bird nests or possum dreys were identified for removal within the subject site. As such, it is not necessary for an ecologist to be present onsite during the removal of the native and other vegetation proposed for removal. Several non-threatened fauna such as birds and reptiles are likely to be present in the study area. Appropriate pre-clearance protocols will be included as a component of CEMP, including contact details of local WIRES representatives in the unlikely event that fauna are found residing in the vegetation to be removed or have been injured.

4.3.2 Erosion and Sedimentation Control Plan

To avoid potential indirect offsite impact during construction, an appropriate Erosion and Sedimentation Control Plan (ESCP) or similar document is recommended following best practice protocols, such as those detailed in Landcom (2004).

All control measures will be established before work begins, maintained throughout the works and kept in place until the impact area has been stabilised. Any areas of bare soil created as part of the proposed works will be stabilised as soon as practicable to avoid off-site transport of eroded sediments.

4.4 Legislative context and assessment

Due to the highly modified nature of the site and lack of threatened species habitat, this assessment concludes that threatened biodiversity, as listed on the EPBC Act and BC Acts, are unlikely to be significantly affected by the proposal. Further, it is considered unlikely that the proposal will contravene any of the provisions of Clause 7.3 of the Penrith City LEP 2010.

An assessments of the significance under the *Matters of National Environmental Significance Significant impact guidelines 1.1* (EPBC Act) or a 5-Part test (BC Act) of the impacts of the proposal on threatened biodiversity are not considered necessary.

5 Conclusion and recommendations

This report was undertaken for a proposed development at Lots 125 and 126 // DP 1215199 (741-755 Great Western Highway, Werrington NSW). The purpose of this report is to identify and assess the flora and fauna within the study area, the ecological values and constraints that may affect the future development, and the significance of impacts of the current proposal on threatened biodiversity.

Planning instruments considered include:

- NSW *Biodiversity Conservation Act 2017*
- NSW *Environmental Planning and Assessment Act 1979*
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
- NSW *Water Management Act 2000*
- State Environmental Planning Policy (Koala Habitat Protection) – 2020
- Penrith City Local Environmental Plan 2010

The proposal is for the subdivision of the property into 134 Lots and will require the entire removal of vegetation within the site.

Cumberland Plain Woodland that had been previously identified on the site in the DPIE Biodiversity Values Map (BVM) was subject to a formal application to DPIE to review the BVM, based on the absence of and condition of native vegetation on the site. On 4 December 2020, DPIE made a determination that the BVM would be amended to remove the mapped areas affecting the site and this determination is provided in **Appendix C**.

No threatened flora or fauna were recorded in the study area during the field survey and it is considered unlikely that any threatened flora or fauna would be reliant on the study area as habitat.

Threatened biodiversity, as listed on the EPBC Act and BC Acts, are unlikely to be significantly affected by the proposal. Further, it is considered unlikely that the proposal will contravene any of the provisions of Clause 7.3 of the Penrith City LEP 2010 and the site is unlikely to be potential or core koala habitat. Biodiversity offsetting is not triggered.

A range of on-site mitigation measures will be implemented before, during and after construction to ensure any potential impacts of the proposal are reduced and minimised.

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Appendix A Species likelihood of occurrence

The potential for each threatened species, population and/or migratory species to occur was then considered and the necessity for targeted field surveys was determined. Following field surveys and review of available habitat within the Subject site, the potential for species to utilise the site and be affected directly or indirectly by the proposal were considered as either:

- **Recent record** - species has been recorded in the study area within the past 5 years
- **High** - species has previously been recorded in the study area (<5 years ago) or in proximity (for mobile species), and/or habitat is present that is likely to utilised by a local population
- **Moderate** - suitable habitat for a species is present onsite but no evidence of a species detected and relatively high number of recent records (5-20 years) in the locality or species is highly mobile
- **Low** - suitable habitat for a species is present onsite but limited or highly degraded, no evidence of a species detected and relatively low number of recent records in the locality
- **Not present** - suitable habitat for the species is not present onsite or adequate survey has determined species does not occur in the study area.

Scientific Name (Common Name)	Legal Status	No. of records	Closest record and date	Most recent and proximity	Likelihood of occurrence	
					Before (survey)	After (survey)
KINGDOM: Animalia; CLASS: Amphibia						
Litoria aurea (Green and Golden Bell Frog)	BC Act = E1 EPBC Act = V	1	4.7 km (21/05/2012)	4.7 km (21/05/2012)	Low	Low
KINGDOM: Animalia; CLASS: Aves						
Anthochaera phrygia (Regent Honeyeater)	BC Act = E4 EPBC Act = CE	1	4.7 km (02/06/2019)	4.7 km (02/06/2019)	Low	Low
Artamus cyanopterus cyanopterus (Dusky Woodswallow)	BC Act = V	2	1.4 km (01/02/2005)	2.5 km (20/06/2007)	Low	Low
Calyptorhynchus lathami (Glossy Black-Cockatoo)	BC Act = V	1	0.5 km (25/07/2001)	0.5 km (25/07/2001)	Low	Low
Chthonicola sagittata (Speckled Warbler)	BC Act = V	6	3.3 km (04/07/2008)	4.5 km (18/04/2017)	Low	Low
Daphoenositta chrysoptera (Varied Sittella)	BC Act = V	4	2.2 km (20/06/2007)	5 km (08/07/2017)	Low	Low
Ephippiorhynchus asiaticus (Black-necked Stork)	BC Act = E1	1	2.4 km (10/05/2006)	2.4 km (10/05/2006)	Low	Low
Glossopsitta pusilla (Little Lorikeet)	BC Act = V	1	1.4 km (11/11/2013)	1.4 km (11/11/2013)	Low	Low
Haliaeetus leucogaster (White-bellied Sea-Eagle)	BC Act = V	1	4.2 km (16/06/2019)	4.2 km (16/06/2019)	Low	Low

Scientific Name (Common Name)	Legal Status	No. of records	Closest record and date	Most recent and proximity	Likelihood of occurrence	
					Before (survey)	After (survey)
Hieraaetus morphnoides (Little Eagle)	BC Act = V	1	4.1 km (12/04/2013)	4.1 km (12/04/2013)	Low	Low
Ixobrychus flavicollis (Black Bittern)	BC Act = V	2	3.7 km (15/06/2016)	3.7 km (15/06/2016)	Low	Low
Lathamus discolor (Swift Parrot)	BC Act = E1 EPBC Act = CE	10	1.4 km (31/08/2019)	1.4 km (31/08/2019)	Low	Low
Lophoictinia isura (Square-tailed Kite)	BC Act = V	2	3.7 km (19/02/2017)	3.7 km (19/02/2017)	Low	Low
Ninox strenua (Powerful Owl)	BC Act = V	4	1.5 km (05/07/2015)	1.5 km (05/07/2015)	Low	Low
Tyto tenebricosa (Sooty Owl)	BC Act = V	1	4.8 km (14/08/2007)	4.8 km (14/08/2007)	Low	Low
KINGDOM: Animalia; CLASS: Gastropoda						
Meridolum corneovirens (Cumberland Plain Land Snail)	BC Act = E1	87	1 km (29/03/2005)	3.6 km (27/08/2020)	Moderate	Low
KINGDOM: Animalia; CLASS: Mammalia						
Dasyurus maculatus (Spotted-tailed Quoll)	BC Act = V EPBC Act = E	1	2.2 km (30/06/2006)	2.2 km (30/06/2006)	Low	Low
Falsistrellus tasmaniensis (Eastern False Pipistrelle)	BC Act = V	3	2.8 km (03/02/2015)	3.1 km (04/03/2015)	Low	Low

Scientific Name (Common Name)	Legal Status	No. of records	Closest record and date	Most recent and proximity	Likelihood of occurrence	
					Before (survey)	After (survey)
Micronomus norfolkensis (Eastern Coastal Free-tailed Bat)	BC Act = V	9	1 km (26/05/2011)	4 km (09/05/2018)	Low	Low
Miniopterus australis (Little Bent-winged Bat)	BC Act = V	1	4.4 km (04/10/2017)	4.4 km (04/10/2017)	Low	Low
Miniopterus orianae oceanensis (Large Bent-winged Bat)	BC Act = V	20	0.9 km (11/08/2018)	0.9 km (11/08/2018)	Moderate	Low
Myotis macropus (Southern Myotis)	BC Act = V	8	1.4 km (01/02/2005)	4.4 km (04/10/2017)	Low	Low
Petaurus australis (Yellow-bellied Glider)	BC Act = V	1	3.4 km (26/09/2018)	3.4 km (26/09/2018)	Low	Low
Pteropus poliocephalus (Grey-headed Flying-fox)	BC Act = V EPBC Act = V	129	0.5 km (27/07/2015)	4.2 km (18/04/2019)	Moderate	Low
Saccolaimus flaviventris (Yellow-bellied Sheathtail-bat)	BC Act = V	1	3 km (12/03/2008)	3 km (12/03/2008)	Low	Low
Scoteanax rueppellii (Greater Broad-nosed Bat)	BC Act = V	2	3 km (12/03/2008)	3 km (12/03/2008)	Low	Low
KINGDOM: Plantae						
Acacia pubescens (Downy wattle)	BC Act = V EPBC Act = V	1	2.7 km (12/07/2018)	2.7 km (12/07/2018)	Low	Low
Allocasuarina glareicola	BC Act = E1 EPBC Act = E	1	4.5 km (20/08/2018)	4.5 km (20/08/2018)	Low	Low

Scientific Name (Common Name)	Legal Status	No. of records	Closest record and date	Most recent and proximity	Likelihood of occurrence	
					Before (survey)	After (survey)
Dillwynia tenuifolia	BC Act = V	18	3.1 km (17/09/2018)	2.6 km (06/07/2004)	Low	Low
Grevillea juniperina subsp. *Juniperina* (Juniper-leaved *Grevillea*)	BC Act = V	538	2.7 km (29/01/2019)	2.1 km (05/07/2004)	Moderate	Low
Marsdenia viridiflora subsp. *viridiflora* (Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas)	BC Act = E2	680	2.2 km (15/06/2020)	1.6 km (14/05/2020)	Moderate	Low
Micromyrtus minutiflora	BC Act = E1 EPBC Act = V	1	4.5 km (30/07/2004)	4.5 km (30/07/2004)	Low	Low
Persoonia nutans (Nodding geebung)	BC Act = E1 EPBC Act = E	1	2.7 km (12/07/2018)	2.7 km (12/07/2018)	Low	Low
Pimelea spicata (Spiked rice-flower)	BC Act = E1 EPBC Act = E	66	4.1 km (17/09/2020)	2.2 km (20/05/2020)	Low	Low
Pultenaea parviflora	BC Act = E1 EPBC Act = V	12	3.1 km (17/09/2018)	2.7 km (12/07/2018)	Low	Low
Syzygium paniculatum (Magenta lilly pilly)	BC Act = E1 EPBC Act = V	1	2 km (01/02/2018)	2 km (01/02/2018)	Low	Low

Appendix B Flora and fauna species inventories

Flora

Species	Common name	Native/Exotic	Family
Acacia mearnsii	Black wattle	Native	Fabaceae
Bidens pilosa	Cobbler's pegs	Exotic	Asteraceae
Casuarina cunninghamiana	River oak	Native	Casuarinaceae
Cenchrus clandestinus	Kikuyu grass	Exotic	Poaceae
Centaurium spp.		Exotic	Gentianaceae
Centella asiatica	Indian pennywort	Native	Apiaceae
Chenopodium album	Fat hen	Exotic	Chenopodiaceae
Chloris gayana	Rhodes grass	Exotic	Poaceae
Chondrilla spp.		Exotic	Asteraceae
Conyza bonariensis	Flaxleaf fleabane	Exotic	Asteraceae
Cynodon dactylon	Common couch	Native	Poaceae
Cyperus eragrostis	Umbrella sedge	Exotic	Cyperaceae
Dichanthium sericeum	Queensland bluegrass	Native	Poaceae
Eleocharis sphacelata	Tall spike rush	Native	Cyperaceae
Eucalyptus moluccana	Grey Box	Native	Myrtaceae
Gomphrena celosioides	Gomphrena weed	Exotic	Amaranthaceae
Heliotropium amplexicaule	Blue heliotrope	Exotic	Boraginaceae
Hypericum perforatum	St John's wort	Exotic	Clusiaceae
Hypochaeris radicata	Catsear	Exotic	Asteraceae
Juncus acutus subsp. acutus	Sharp rush	Exotic	Juncaceae
Juncus spp.	A rush	Native	Juncaceae
Lactuca serriola	Prickly lettuce	Exotic	Asteraceae
Lepidium africanum	Common peppercress	Exotic	Brassicaceae
Ligustrum lucidum	Large-leaved privet	Exotic	Oleaceae

Species	Common name	Native/Exotic	Family
Ligustrum sinense	Small-leaved privet	Exotic	Oleaceae
Lycium ferocissimum	African boxthorn	Exotic	Solanaceae
Medicago spp.	A medic	Exotic	Fabaceae
Melia azedarach	White cedar	Native	Meliaceae
Nerium oleander	Oleander	Exotic	Apocynaceae
Nothoscordum borbonicum	Onion weed	Exotic	Alliaceae
Olea europaea subsp. cuspidata	African olive	Exotic	Oleaceae
Paspalum dilatatum	Paspalum	Exotic	Poaceae
Persicaria spp.	Knotweed	Native	Polygonaceae
Plantago lanceolata	Lamb's tongues	Exotic	Plantaginaceae
Platanus spp.		Exotic	Platanaceae
Ricinus communis	Castor oil plant	Exotic	Euphorbiaceae
Rubus fruticosus sp. agg.	Blackberry complex	Exotic	Rosaceae
Rumex crispus	Curled dock	Exotic	Polygonaceae
Senna pendula var. glabrata		Exotic	Fabaceae
Setaria parviflora		Exotic	Poaceae
Sida rhombifolia	Paddy's lucerne	Exotic	Malvaceae
Solanum linnaeanum	Apple of Sodom	Exotic	Solanaceae
Sonchus oleraceus	Common sowthistle	Exotic	Asteraceae
Trifolium repens	White clover	Exotic	Fabaceae
Typha latifolia		Exotic	Typhaceae
Verbena bonariensis	Purpletop	Exotic	Verbenaceae
Vitis spp.		Exotic	Vitaceae

Fauna

Common name	Species	Native/Exotic	Family
Galah	*Eolophus roseicapilla*	Native	Cacatuidae
Welcome Swallow	*Hirundo neoxena*	Native	Hirundinidae
Common Myna	*Acridotheres tristis*	Exotic	Sturnidae
Feral Cat	*Felis catus*	Exotic	Felidae

Appendix C BVM review determination

Application No: 00022272

Mr Chris Demian
PO Box 411
Parramatta NSW 2124

Dear Mr Demian

Biodiversity Values Map – Map Review Determination – Application 00022272

Your request for a Biodiversity Values Map (BV Map) Review in relation to your landholding at 741 – 755 Great Western Highway, Werrington has been determined by the Director, Remote Sensing and Landscape Science, NSW Department of Planning, Industry and Environment on 3 December 2020.

A determination has been made to remove areas from the BV Map. The Notice of Determination and associated maps are enclosed.

Amendments to the BV Map will only come into force when the updated BV Map is published on the online viewer. These updates are scheduled to be published at the end of January 2021, please check the viewer to ensure your map review updates have been completed. The BV Map can be viewed on the Biodiversity Values Map and Threshold (BMAT) Tool webpage.

If you have any questions regarding this determination, please contact me on 02 6360 9000 or at map.review@environment.nsw.gov.au.

Yours sincerely,

Glenn Harpley

Glenn Harpley
Senior Team Leader – Map Review
Remote Sensing and Landscape Science Branch
NSW Department of Planning, Industry and Environment

Locked Bag 6010 Orange NSW 2800
Level 2, 105 Prince Street Orange NSW 2800
(02) 6360 9000
www.dpie.nsw.gov.au

NSW Planning, Industry and Environment

Map Review Notice of Determination No: 00022272

Landholding: Lots: 127, 126, 125 Deposited Plan: 1215199

A determination was made on 3 December 2020 to amend some of your landholding on the NSW Biodiversity Values (BV) Map. The maps attached to this Notice of Determination show changes that will be made on the BV Map.

Any amendments to the BV Map will only come into force when the updated BV Map is published in the online viewer.

The following table explains what is shown on each map.

Application:
Case Number: 00022272 **Applicant Name:** Bret Stewart / Chris Demian
Map 1: Biodiversity Values Map (Before review)
Map 1 shows the BV Map before review and the area nominated for review in the Map Review application.
Map 2: Biodiversity Values Map (After review)
Map 2 shows the BV Map for the landholding after this review has occurred. The mapped Biodiversity Value Critically Endangered Ecological Community – Cumberland Plain Woodland was assessed by a Department of Planning, Industry and Environment Threatened Species Officer. The review determined that Cumberland Plain Woodland is no longer present on this site as it has been previously cleared. The Department has determined to remove 1.72ha of Biodiversity Values mapping. The amendment will not become effective until the change is published on the Biodiversity Values Map and Threshold (BMAT) Tool. It is anticipated that the next update of the BV map will be published at the end of January, please check your property on the online viewer. The BV Map published on the Department's website is subject to regular updates and must be checked before making decisions that rely on the content of the map. For more information about the map go to the BV Map webpage.

The BV Map identifies land with high biodiversity value particularly sensitive to impacts from development and clearing as defined under the *Biodiversity Conservation Regulation 2017.* The map is prepared by the Department of Planning, Industry and Environment under Part 7 of the *Biodiversity Conservation Act 2016.*

9645600 9645800 9646000 9646200

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9645600 9645800 9646000 9646200

Legend

- Property
- Biodiversity Values

Map 1: Biodiversity Values - Before review

741 - 755 Great Western Highway, Werrington NSW 2747

Brett Stewart / Chris Demian

N

20 0 20 40 60 80 100 Metres

1:2,000 at A3

GDA 1994 New South Wales Lambert

Data sources: Base imagery data supplied by © NSW Department of Finance, Services & Innovation

Prepared by: Sarah Keir

Date prepared: 25/11/2020

Positional variances between data sources used for the map may occur due to differences in scale, date or method of collection.

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Version: 1, Version Date: 31/05/2021

9645600 9645800 9646000 9646200

4437200

4437000

9645600 9645800 9646000 9646200

Legend

Property

Map 2: Biodiversity Values - After review

741 - 755 Great Western Highway, Werrington NSW 2747

Brett Stewart / Chris Demian

N

20 0 20 40 60 80 100 Metres

1:2,000 at A3

GDA 1994 New South Wales Lambert

Data sources: Base imagery data supplied by © NSW Department of Finance, Services & Innovation

Prepared by: Sarah Keir

Date prepared: 25/11/2020

Positional variances between data sources used for the map may occur due to differences in scale, date or method of collection.

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