FAIRFIELD SUSTAINABLE RESOURCE CENTRE

Widemere Road, Wetherill Park
SSD-8184 Proposed Expansion Project
Biodiversity Assessment Report

Prepared for:

Fairfield City Council

c/o DFP Planning Pty Ltd
PO Box 230
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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Fairfield City Council (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.12023-R01-v2.2	12 August 2020	Andrew Carty and Fiona Iolini	Jeremy Pepper	Jeremy Pepper

EXECUTIVE SUMMARY

Fairfield City Council is seeking project approval for expansion of the existing Fairfield Sustainable Resource Centre. The Project is a State Significant Development and requires consent under Part 4, Division 4.1 of the *NSW Environmental Planning and Assessment Act 1979*. As the project is State Significant, the Framework for Biodiversity Assessment applies, and a Biodiversity Assessment Report is required to support the project application. This Biodiversity Assessment Report has been prepared as a technical document to support the Environmental Impact Statement and according to the Framework for Biodiversity Assessment and the Secretary's Environmental Assessment Requirements.

The Fairfield Sustainable Resource Centre is a former landfill site and as such, much of the site has been historically cleared and is highly modified. Most of the site is absent of native vegetation and habitat for flora and fauna. However, a band of riparian forest lines the banks and adjoining floodplain of Prospect Creek along the northern margins of the Study Area. Two native plant communities: *Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain* (PCT 835) and *Coastal freshwater lagoons* (PCT 781) have been recorded within the Development Site. The areas of native vegetation predominately occur on riparian land along the northern boundary of the site, outside of the operational area of the resource centre. However, there are a few smaller patches of vegetation along the boundaries of the operational area, a small portion of which will require removal to facilitate construction of the proposal.

The areas of native vegetation to be cleared have been carefully considered and the potential impacts of the project are limited to areas that do not contain high biodiversity value. The impact footprint of vegetation clearing for the project is 0.22 hectares and is restricted to the regrowth riparian forest within the Canal Road gully. The vegetation in the gully is dominated by exotic species and do not represent areas of high conservation value.

This Biodiversity Assessment Report identifies several mitigation measures that are proposed to be implemented prior to, during and after development with the aim of preventing, minimising and managing impacts on the local environment. The existing site specific Operational Environmental Management Plan is to be updated to ensure the commitments within this report, statutory obligations and conditions of development consent are upheld.

The assessment has determined that a biodiversity offset is not required in accordance with the Framework for Biodiversity Assessment and the Biodiversity Offsets Policy for Major Projects. The disturbed nature of the native vegetation in the Development Footprint and a lack of roosting/breeding habitat for threatened species resulted in low site value scores (less than 17). Accordingly, removal of the vegetation within the Development Footprint does not generate an ecosystem credit requirement or require offsetting. Similarly, no species credits are generated for the proposed development.

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ABBREVIATIONS

Abbreviation	Description
AHD	Australian Height Datum
BAR	Biodiversity Assessment Report
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BC Regulation	*Biodiversity Conservation Regulation 2017* (NSW)
DAWE	Department of Agriculture, Water and the Environment (Commonwealth)
DPIE	Department of Planning, Industry and Environment (NSW)
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000* (NSW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
FBA	Framework for Biodiversity Assessment
GIS	Geographical Information System
ha	Hectares
IBRA	Interim Biogeographical Regionalisation for Australia
km	Kilometres
LGA	Local Government Area
LLS Act	*Local Land Services Act 2013* (NSW)
m	Metre
Microbat(s)	Microchiropteran Bats
MNES	Matters of National Environmental Significance
NSW	New South Wales
OEH	Office of Environment and Heritage (NSW)
PCT(s)	Plant Community Type
SEARs	Secretary's Environmental Assessment Requirements
SLR	SLR Consulting Australia Pty Ltd
SRC	The Fairfield Sustainable Resource Centre
SSD	State Significant Development
TEC(s)	Threatened Ecological Communities

1 INTRODUCTION

1.1 Background

SLR Consulting Australia (SLR) has been engaged by Fairfield City Council to prepare a Biodiversity Assessment Report (BAR) to accompany an application for the proposed expansion of the Fairfield Sustainable Resource Centre (SRC). The SRC is located on the corner of Widemere Road and Hassall Street in the suburb of Wetherill Park, NSW (**Figure 1**). The Development Site covers a total area of 29.7 hectares (ha) and comprises the following eight lots: Lot 1 DP 515773, Lot 34 DP 657040, Lot 35 DP 657040, Lot 37 DP 657040, Lot 100 DP 1220637, Lot 1 DP 620755, Lot 2 DP 620755 and Lot 1 DP 368374.

The Project is defined as a State Significant Development (SSD) pursuant to State Environmental Planning Policy (State and Regional Development) 2011, and requires consent under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Project State Environmental Assessment Requirements (SEARs) were issued in 2017 and then re-issued (unchanged) on 06 May 2019. The SEARs require the preparation of a biodiversity assessment in accordance with the Framework for Biodiversity Assessment (FBA) (OEH 2014).

The general location and features of the Development Site are displayed in **Figure 1** and **Figure 2**. The main active existing operations of the recycling plant are located within the large cleared area that occupies the south western portion of the site (i.e. the southern parts of Lot 1 DP 515773, Lot 34 DP 657040 and Lot 35 DP 3082). This area contains the site entrance, the weigh bridge, site office, pugmill and crusher. There are also some storage areas for materials on adjoining lots to the east and extending into the northern cleared parts of the western lots. Prospect Creek and associated riparian vegetation occur along the edges of the site's northern boundary.

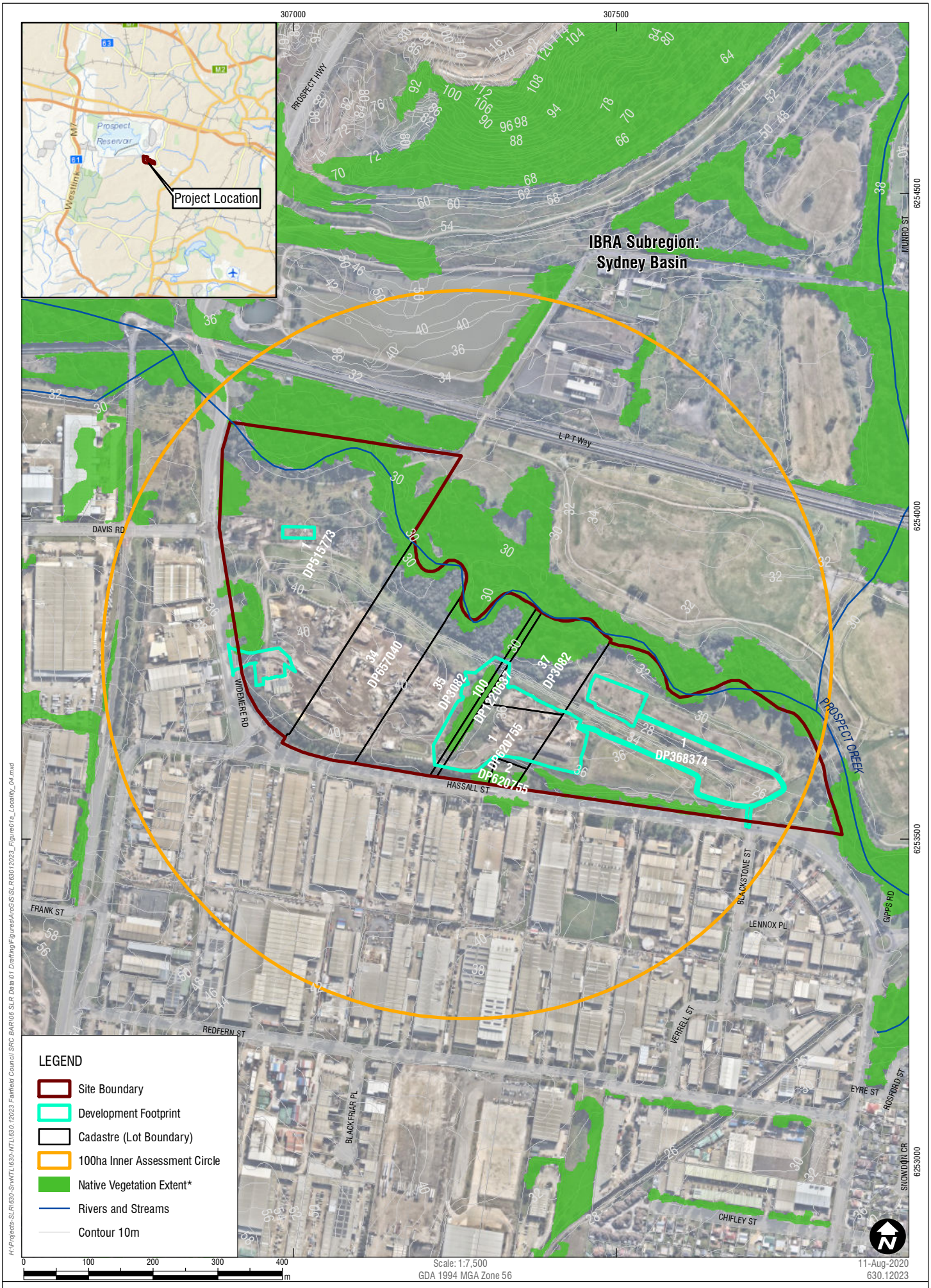
The site is within the Fairfield Local Government Area (LGA) and is zoned 'IN1 General Industrial', pursuant to *Fairfield Local Environmental Plan 2013*, with a small portion of 'RE1 Public Recreation' and a narrow band of 'E2 Environmental Conservation', along Prospect Creek at the northern boundary.

The recycling plant has been established above a former capped landfill. The facility has been operating since 1997 and processes in excess of 180,000 tonnes of material per annum. The SRC accepts waste tiles, bricks and asphalt which it uses to produce recycled materials such as road base, drainage aggregate and topsoil.

1.2 Proposed development

The proposed development is for an expansion of the SRC to increase its processing capacity to up to 550,000 tonnes of recyclable construction material per year. The Development Footprint includes three areas where works are proposed and covers a total of 2.93 hectares.

The proposed works will involve infilling a gully running north-south through the centre of the site, known locally as 'Canal Road' and infilling a small area of land to the south east of the gully, fronting Hassall Street. Filling of the gully will increase the operational efficiency of the site by creating a flat surface. Smoothing the surface of the site will also allow the SRC to expand its industrial activities on the site and provide an area that can conform easily to future developments. The project will also include expanding a paved carpark area, construction of a flood compensation area to the northeast of the gully and creation of two new sedimentation basins in the north and east of the facility.



*Source: Sydney Metro, OEH (2013)

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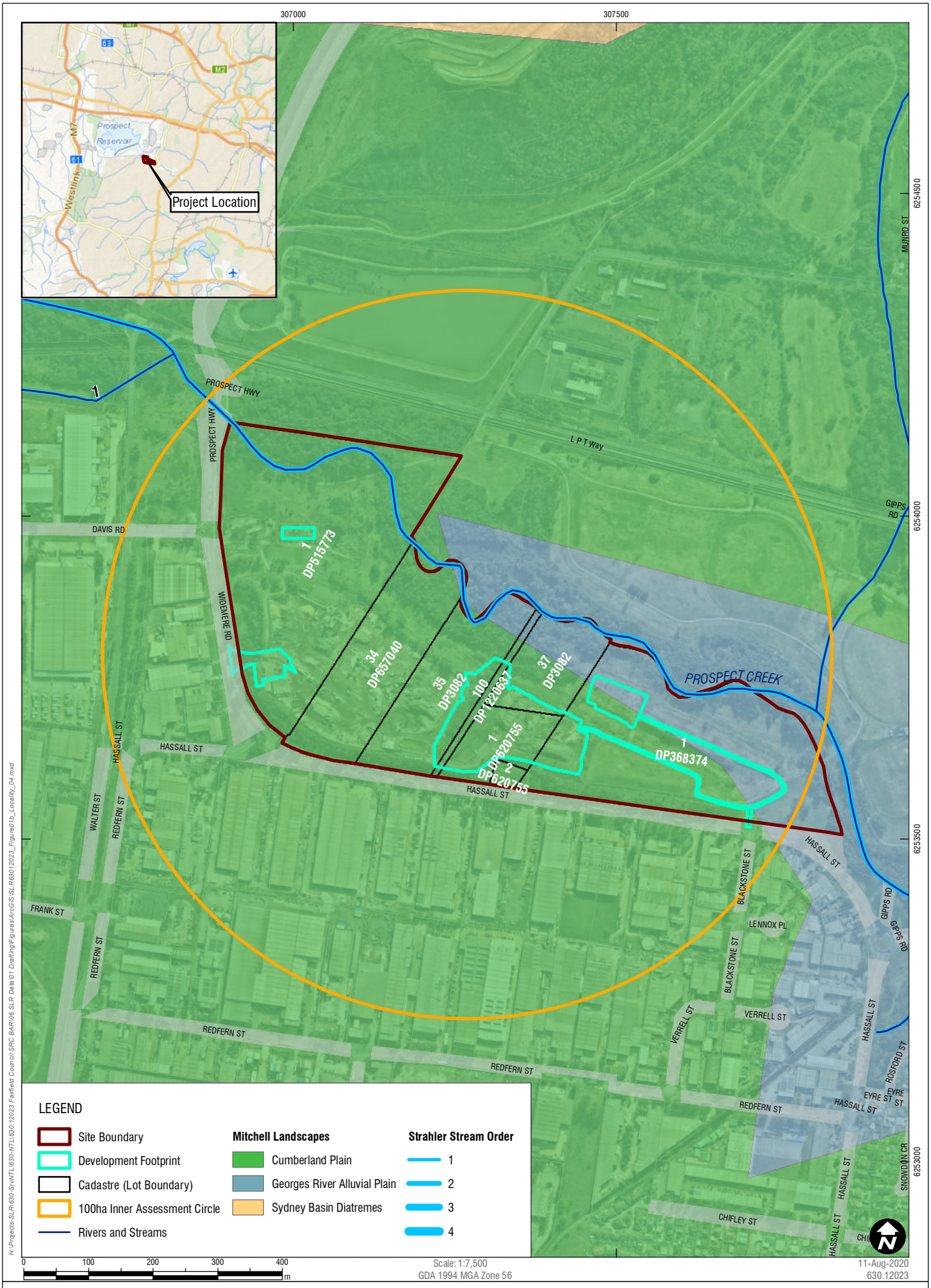
Site Map

FIGURE 1a



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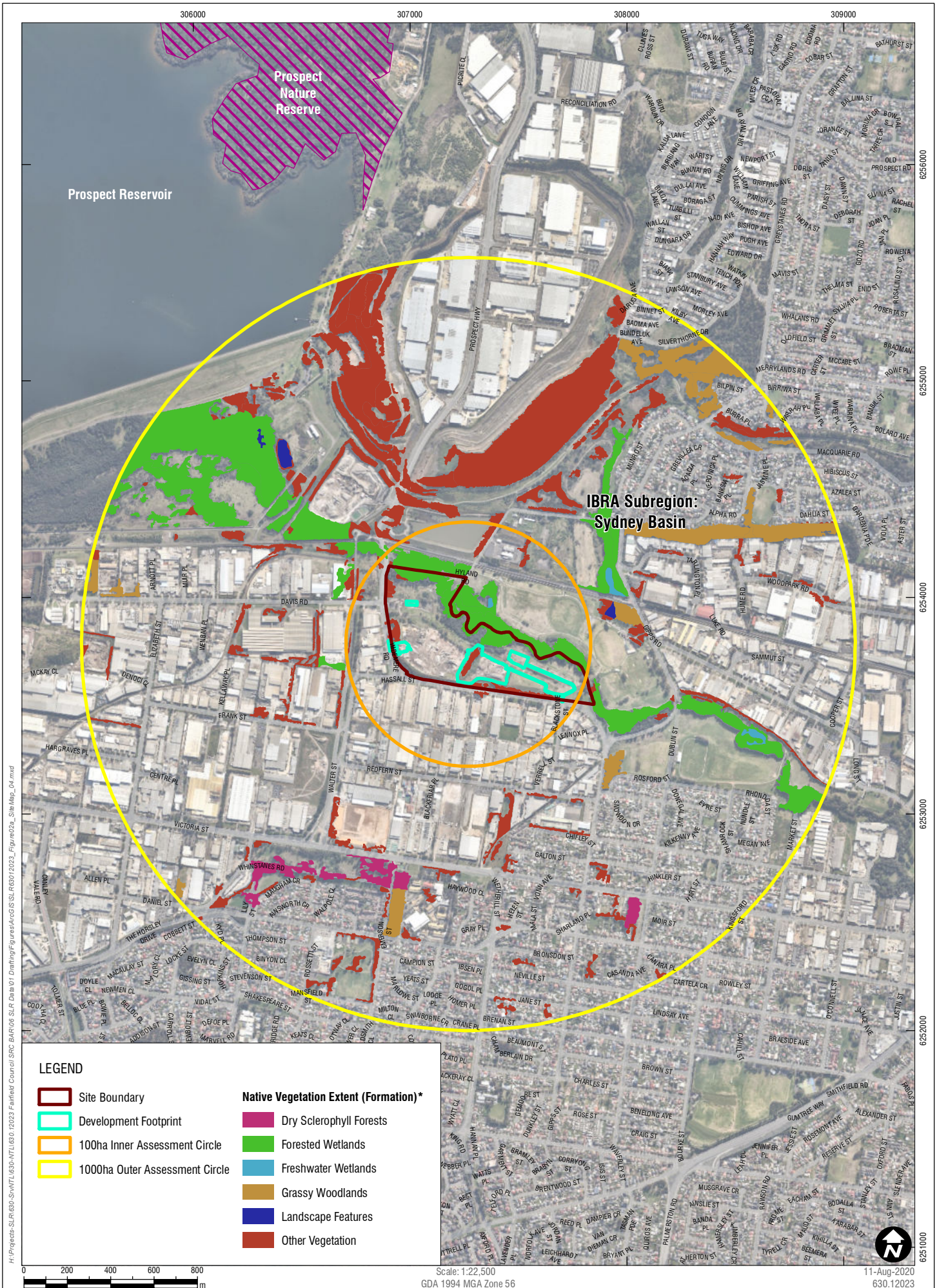
Site Map

FIGURE 1b



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Location Map

FIGURE 2a

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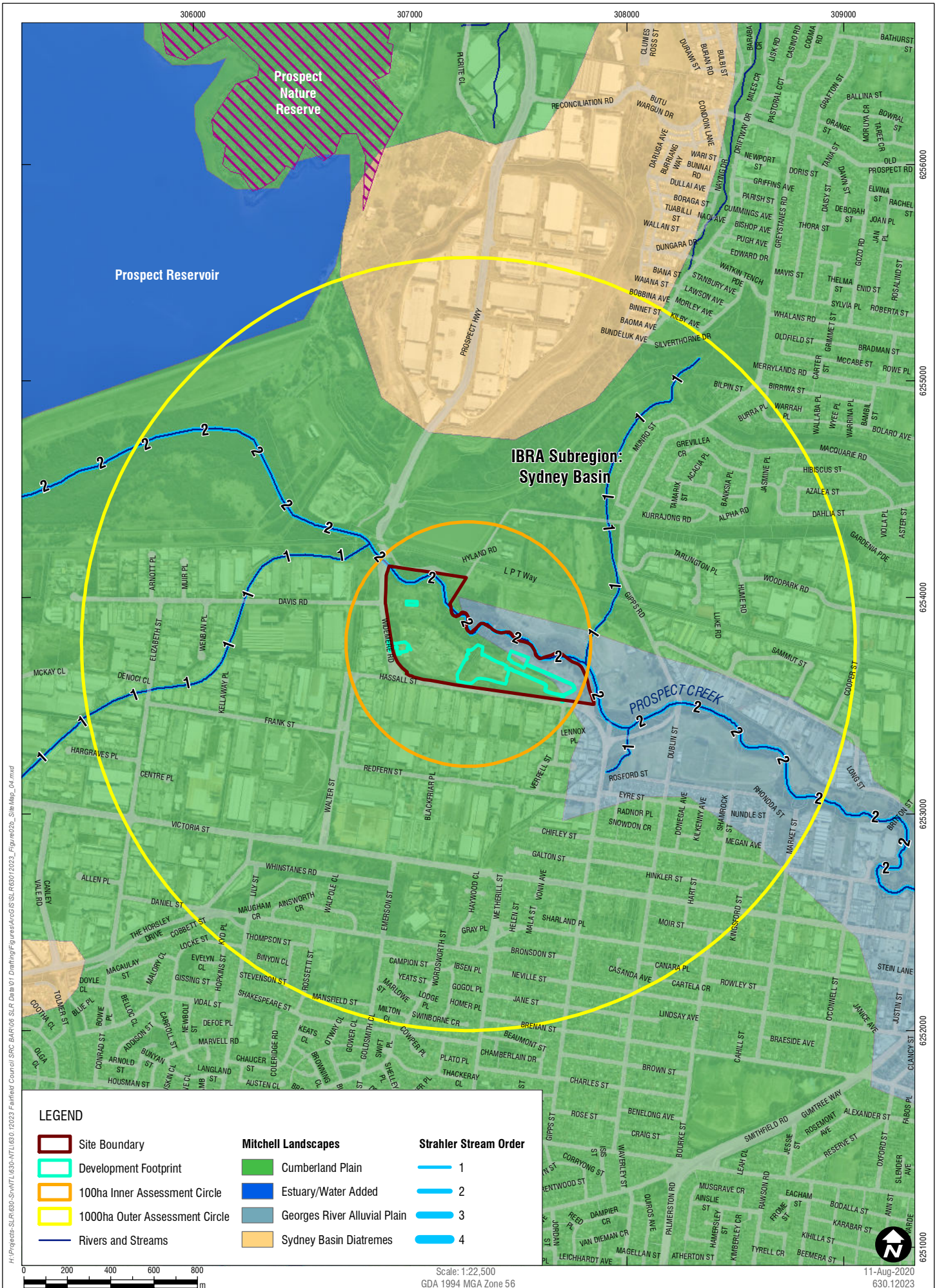

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Location Map

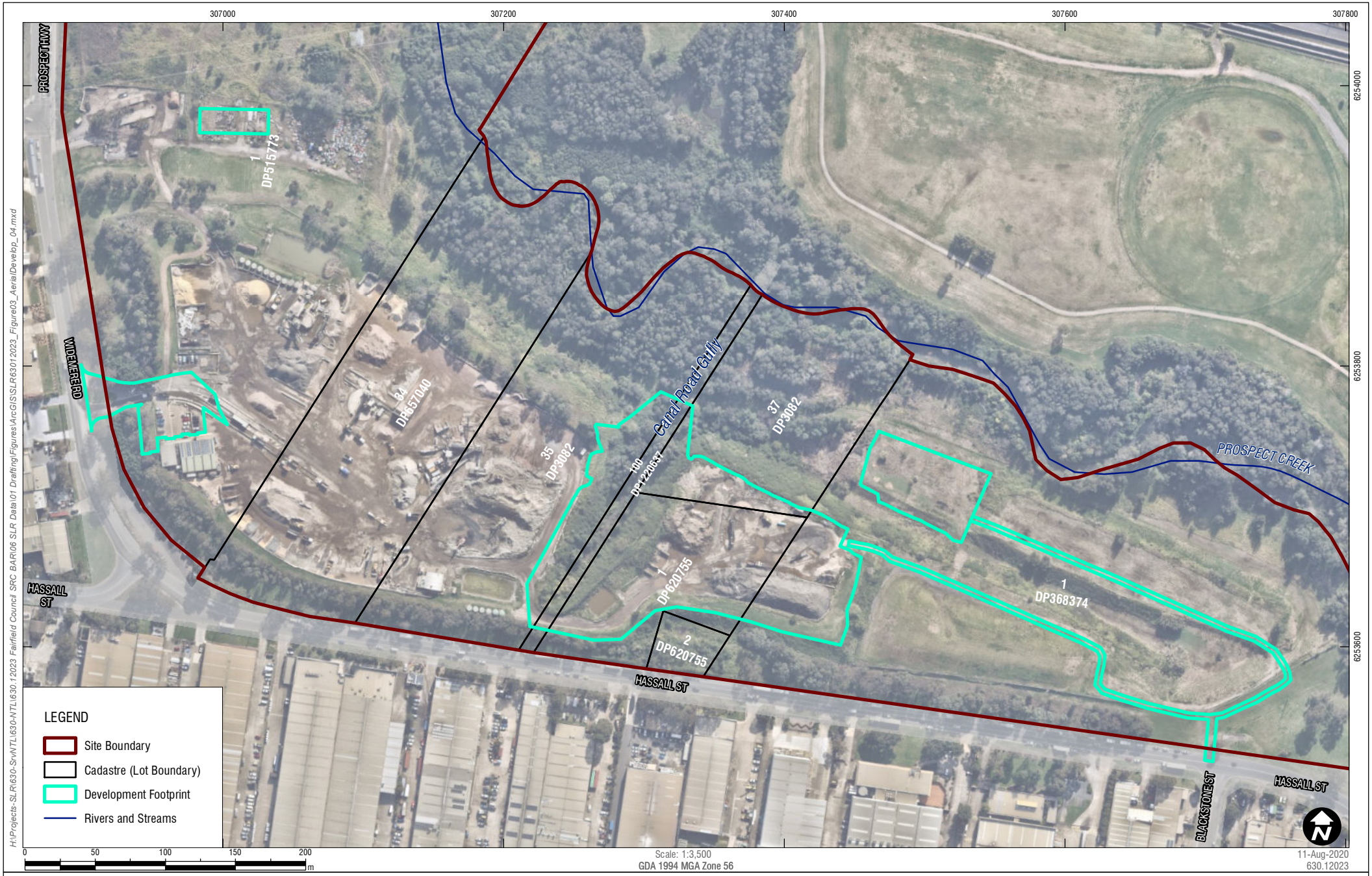
FIGURE 2b

Due to the history of clearing and land use within the site the Development Footprint is largely cleared of native vegetation and ecological features, however, a small area of native vegetation within the lower parts of the gully will require clearing to facilitate the expansion

Specifically, the proposed development will involve the following:

- Increased processing capacity of up to 550,000 tonnes of recycled construction materials per year.
- Importation of approximately 35, 280 m^3 metres of virgin excavated natural material for site fill.
- Site earthworks and grading to establish a level site, including construction of batters.
- Decommission of one stormwater sediment basin and construction of two additional stormwater sediment basins.
- Receiving, processing, recycling and storage of the following waste material, consistent with existing operations and EPA Licensing:
    - virgin excavated natural material;
    - building and demolition waste including roof tiles, clay bricks, concrete;
    - asphalt waste (including asphalt resulting from road construction and waterproofing); and
    - soil.
- Modifications to the main site entry and exit and car parking area to provide additional car parking spaces.
- Change site operating hours to the following:
    - receiving and loading of trucks – 24hrs/7 days;
    - crushing operations 5.00 am – 6.00 pm (Monday to Friday); and
    - pug mill operations 3.00 am – 4.00 pm (Monday to Friday);
- Oil, fuel and chemical storage facilities.
- Flood compensation area, located to minimise impacts to existing native vegetation.
- Vegetation and tree removal to facilitate the proposed works and replacement tree planting; and
- Associated infrastructure and services works.

The operational Development Footprint will be increased slightly from the existing footprint to include the proposed addition of a filled and levelled area across the Canal Road gully, as indicated in **Figure 3**.



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Development Footprint

FIGURE 3

1.3 Scope and aims of this report

1.3.1 Project SEARs

The SEARs relating to Fairfield SRC (SSD 8184) were re-issued in May 2019. The biodiversity issues are summarised in **Table 1,** including the location where each item is addressed in the BAR. A copy of the revised SEARS is provided in **Appendix A**.

Table 1 Re-issued SEARs relating to biodiversity

SEARs	Location in BAR
Key Issues – Flora and Fauna	
Flora and Fauna – including: • An assessment of the proposal under the Framework for Biodiversity Assessment (FBA) including an assessment of any potential impacts on aquatic and riparian vegetation and groundwater dependent ecosystems. • An assessment of impacts to the Western Sydney Parklands in accordance with relevant Office of Environment and Heritage guidelines and proposed mitigation measures.	Chapter 5, Chapter 6
OEH Requirement (SEARs letter attachment B)	
Biodiversity impacts related to the proposed development are to be assessed and documented in accordance with *Framework for Biodiversity Assessment,* unless otherwise agreed by OEH, by a person accredited in accordance with s142B(1) (c) of the *Threatened Species Conservation Act 1995*	Chapter 5, Chapter 6
Attachment B – Project Specific Environmental Assessment Requirements As the site is within 500 metres of the Western Sydney Parklands, the assessment of impacts must address the matters to be considered outlined in the *Guidelines for developing adjoining land and water managed by DECCW* (DECCW 2010) and include: • The nature of impacts, including direct and indirect impacts • The extent of the direct and indirect impacts • The duration of the direct and indirect impacts • The objectives of the reservation land • Measures proposed to prevent, control, abate, minimise and manage the direct and indirect impacts including and evaluation of the effectiveness and reliability of proposed measures • Residual impacts	Chapter 5, Chapter 6

1.3.2 Requirements of Biodiversity Assessment Reports

Tables 20 and 21 of the FBA set out the requirements for Stage 1 and Stage 2 of a biodiversity assessment report, respectively. These tables have been reproduced in **Appendix B,** with a reference column added to demonstrate where each item has been addressed in this BAR. **Appendix B** demonstrates that this BAR addresses the requirements (where relevant) of the FBA.

1.4 Information sources

The key information sources utilised in the assessment include:

- The OEH BioNet Atlas for previous records of threatened species from the locality.

- Protected Matters Search Tool located on the Department of the Environment website (DE 2014b) for matters of national environment significance (as listed under the EPBC Act) predicted to occur within the locality.
- The OEH Threatened Species Profile Database, for detailed information on threatened species of relevance to the site and the locality.
- GIS data on Interim Biogeographic Regionalisation for Australia (IBRA) regions and Mitchell Landscapes.
- Biobanking Credit Calculator, for lists of predicted ecosystem credit species and species credit species and for the Project credit requirements.
- Existing Environment Report Fairfield Sustainable Resource Centre (SLR Consulting 2012).
- OEH 2013a. The Native Vegetation of the Sydney Metropolitan Area. Office of Environment and Heritage, Sydney.
- OEH 2013b. Remnant Vegetation of the western Cumberland subregion. Office of Environment and Heritage, Sydney.
- Fairfield City Council 2013. Fairfield *Local Environmental Plan 2013*.
- Data collected during field surveys.

1.5 Methods summary

This BAR was prepared according to the steps and processes detailed in the FBA, with the key steps being:

- Desktop review – database searches to identify listed threatened biota (species, populations and communities) of potential relevance to the Study Area, initial GIS mapping and survey design.
- Field survey of the Study Area (see **Appendix C** for details).
- GIS mapping and data compilation.
- Using GIS and field survey results to complete the 'landscape assessment'.
- Identification of vegetation zones and use of FBA plot/transect data and GIS mapping to assess 'site value'.
- Applying the proposed Development Footprint in GIS to calculate vegetation removal.
- Application of the Credit Calculator, including identification of candidate threatened species and impact credit calculations.
- Preparation of the BAR and BOS.

Appendix C provides details of the field surveys, including methods, survey effort and weather conditions. The field surveys conducted as part of this BAR are as follows:

The purpose of the field surveys was to inspect the areas proposed for development and to collect the necessary floristic and habitat details for completion of the FBA assessment (including plot and transect data for site value score and targeted threatened species surveys). The survey design, including the location, number and set out of plot/transects, was completed according to Section 5 of the FBA.

Application of the BioBanking Credit Calculator was completed by Andrew Carty, Associate Ecologist, accredited under s.142B (1) (c) of the *Threatened Species Conservation Act 1995* (TSC Act) (assessor #087).

1.6 Definitions

Definitions used in this report are listed in **Table 2**.

Table 2 Common definitions used in the BAR

Term	Definition
Development Footprint	The area of land that will be directly affected by construction and operation of the proposal, as shown in **Figure 3**.
Development Site	The proposed SRC expansion area and associated infrastructure and ancillary works, as shown in **Figure 1** and **Figure 2**.
Locality	All land within 10 kilometres (km) of the Development Site.
Study Area	Area of land containing the Development Site and surrounding land that was subject to field surveys and desktop review.
Threatened Biota	Any threatened species, population or ecological community listed under the schedules of the BC Act. Also threatened species and ecological communities listed under the EPBC Act.

2 LANDSCAPE FEATURES

This chapter describes the landscape features of the Study Area and surrounds, in accordance with Section 4 of the FBA.

2.1 Overview

Relevant landscape features pertaining to the Study Area have been identified according to Chapter 4 of the FBA, including:

- IBRA regions and subregions;
- Mitchell landscapes;
- Native vegetation extent and any 'cleared areas' (noting any differences between mapped vegetation and aerial imagery);
- Rivers and streams; and
- Wetlands.

Relevant landscape features within the inner and outer assessment circles are displayed in the Site Map (**Figure 1**) and Location Map (**Figure 2**), as per Section 4 of the FBA.

2.2 IBRA bioregions and subregions

The Study Area lies in the Sydney Basin bioregion. The Sydney Basin bioregion is adjacent to NSW North Coast in the north, South East Corner bioregion in the south and the South Eastern Highlands bioregion in the west (OEH 2017a). The Sydney Basin bioregion lies on the east coast of NSW and covers an area approximately 4.5 % of the total area of NSW. The Sydney Basin Bioregion extends from just north of Batemans Bay in the south to Nelson Bay in the north and as far west as Mudgee. Within its boundaries lie the towns of Wollongong, Nowra, Newcastle, Cessnock, Muswellbrook and Blue Mountains towns such as Katoomba and Mt Victoria, as well as the city of Sydney (OEH 2017a).

The Study Area lies within Cumberland IBRA subregion, which OEH describes as "*being characterised by low rolling hills and wide valleys in a rain shadow area below the Blue Mountains*". The geology of the subregion is described by OEH as "*Triassic Wianamatta groups shales and sandstones. A downwarped block on the coastal side of the Lapstone monocline. Intruded by a small number of volcanic vents and partly covered by Tertiary river gravels and sands. Quaternary alluvium along the mains streams*" (OEH, 2017b).

OEH (2017b) describes soils in the subregion as being "*mainly red and yellow texture becoming harsher and sometimes affected by salt in tributary valley floors Pedal uniform red to brown clays on volcanics. Poor uniform stony soils, often with texture contrast profiles on older gravels, high quality loams on modern floodplain alluvium*" (OEH, 2017b).

The Cumberland subregion vegetation comprises "*Grey box, forest red gum, narrow-leaved ironbark woodland with some spotted gum on the shale hills. Hard-leaved scribbly gum, rough-barked apple and old man banksia on alluvial sands and gravels. Broad-leaved apple, cabbage gum and forest red gum with abundant swamp oak on river flats. Tall spike rush, and juncus with Parramatta red gum in lagoons and swamps*" (OEH, 2017b).

2.3 Mitchell landscapes

There are two Mitchell landscapes mapped within the Study Area comprising the Georges River Alluvial Plain including lower elevated floodplain areas around Prospect Creek with alluvial soils and the Cumberland Plain landscape which includes higher elevated area on shale-derived soils (see **Figure 1**). The Mitchell landscapes in the Study Area are summarised below in **Table 3**.

Table 3 Mitchell landscapes mapped within the site

Mitchell Landscape	% Cleared Value	Area within Site (ha)
Cumberland Plain	89	24.2
Georges River Alluvial Plain	93	5.7

2.4 Soils

NSW Soil and Land Information Systems Soil Profile Report describes the soils at the site as strong, light to dark brown clays with little to no recorded mottles. The consistency of the soil is slightly sticky and moderately weak as the soil crumbled under pressure. The soils recorded a pH between 6.0 and 7.0 (NSWSLIS, 2017). The Study Area has been mapped by Office of Environment and Heritage (OEH) as Australian Soil Classification (ASC) type Kurosol, Kurosol (natric) and Hydrosol. Kurosols are soils that have a strong texture contrast between the topsoil and subsoil horizons, contain strongly acidic subsoil and have moderate to moderately low inherent fertility.

2.5 Native vegetation extent

The extent of native vegetation within the outer assessment circle was calculated using the Sydney Metro vegetation mapping (OEH 2013a), Cumberland Plain mapping (OEH 2013b) and aerial photograph interpretation. Native vegetation extent within the outer assessment circle is mapped in terms of formations (after Keith 2004) using OEH (2013a) data in **Figure 2**, with mapped area listed in **Table 4**.

Table 4 Native vegetation extent (by formation) within outer (1,000 ha) circle

Native Vegetation Extent (Formation#)	Native Vegetation Extent (ha)
Castlereagh Shale-Gravel Transition Forest	5
Coastal Freshwater Wetland	1
Cumberland River-flat Forest	18
Cumberland Shale Plains Woodland	19
Cumberland Swamp Oak Riparian Forest	37
Total Native Vegetation	**80**

Vegetation formations are as per definitions of Keith (2004) and as mapped by OEH (2013a).

2.6 Topography

The topography of the SRC is generally flat, with notable exceptions being the gully of Canal Road and a steep embankment that runs parallel to parts of Prospect Creek within the site. There are some gentle slopes with south facing aspects towards the southern boundary which have (apparently) been modified due to previous industrial activities. The highest point of the site, which is located within the SRC area of industrial works, is approximately 49 m. The elevation of the Development Site varies between approximately 35 m and 40 m.

2.7 Rivers and streams

There are no significant waterbodies on the Development Site. Prospect Creek, a second order stream, is the only significant waterbody within the Study Area. Prospect Creek and associated riparian vegetation extends from the south eastern corner of Prospect Reservoir and traverses the northern boundary of the study area providing a link between the Study Area and the vegetation around Prospect Reservoir. Prospect Reservoir is a major waterbody that is located approximately two km to the northwest of the Development Site. The reservoir is responsible for supplying the Sydney region with clean drinking water.

2.8 Wetlands and estuarine areas

There are several small wetlands within the Study Area outside of the proposal footprint. These wetland areas are associated with the floodplain of Prospect Creek. Larger wetlands in the locality include Prospect Reservoir to the west upstream of the Study Area and Lake Moore to the south east of the Study Area. Downstream of the site Prospect Creek drains to the estuarine wetland habitats associated with the Georges River.

2.9 Biodiversity corridors and links

The site is predominantly cleared and disturbed due to a history of agriculture and other development, and therefore habitat connectivity is limited to riparian habitats along Prospect Creek, with only small, isolated pockets of remnant native vegetation or areas of planted vegetation in other sections of the Study Area.

Riparian vegetation along Prospect Creek has been identified as a regional corridor (OEH 2015). Vegetation in this area is generally dominated by Swamp Oak *Casuarina glauca* including occasional scattered eucalypt species which is generally without native understorey or ground layer vegetation as a result of previous disturbance. This corridor is likely to assist movements of highly mobile species such as birds, flying mammals and macropods, as well as other smaller fauna species particularly aquatic species associated with Prospect Creek. Scattered remnant and planted trees throughout the site could also assist fauna movement for birds and bats.

There are no State or regional biodiversity corridors or links mapped within or adjacent to the Study Area.

2.10 Landscape value

In relation to a site based development, landscape attributes to be assessed are native vegetation cover, vegetation connectivity and patch size. These attributes are discussed below.

2.10.1 Native woody vegetation cover

The percentage of native vegetation cover within the outer assessment circle is in 6-10 % class and within the inner assessment circle it is within the 11-15 % class. Considering the proposal will not require substantial clearing of habitat, there will be no change to the percentage of native cover classes within the outer and inner assessment circles before and after the proposed development. Consequently, percentage native vegetation cover score in the Credit Calculator is 0.

2.10.2 Connectivity

Connectivity score was calculated according to the FBA. Impacts to connectivity will be largely avoided by the proposal, with potential impacts limited to areas of riparian forest in a highly disturbed condition. The proposed construction will avoid impacts to native vegetation in the riparian buffer within 20 metres of Prospect Creek, which is a second order stream. Therefore, there are no impacts to a State or regional biodiversity corridor or link and a site-based assessment of connectivity is required as outlined below.

The broadest connecting link from the site is to the east comprising riparian vegetation along Prospect Creek connecting to habitats downstream of the Study Area. This connecting link is approximately 50 metres wide, which falls within the greater than 30-100 metres category in the BioBanking Credit Calculator. This connecting link or any other connecting links will not be impacted by the proposal and so the same category has been assigned before and after the development. Therefore, a connectivity value of 0 is assigned in the Credit Calculator.

2.10.3 Patch size

Patch size is an area of native vegetation that occurs on the development site that is in moderate to good condition and extends to include adjacent areas of moderate to good condition native vegetation that are separated by gaps of less than 100 m (or ≤30 m for non-woody ecosystems). Patch size may extend onto adjoining land that is not part of the development site.

For the Fairfield SRC, patch size was calculated using GIS as 60 ha, which generates a patch size score of 9.

2.10.4 Landscape value score

In accordance with Section 4.2 of the FBA, the proposed development has a landscape score of 9 in the BioBanking Credit Calculator. This has been calculated based on the native vegetation cover before and after the development, connectivity value and patch size.

3 STUDY AREA

This chapter provides an overview of the key environmental features of the Study Area and Development Site.

Most of the Study Area has been historically cleared and used for landfill and more recently resource recovery. Consequently, much of the site supports modified largely bare soils and areas dominated by environmental weeds. The main part of the Development Footprint involves the filling and levelling of the existing Canal Road gully. The gully, which is (evidently) artificially formed by filling and earthworks on the surrounding land, forms a small intermittent tributary of Prospect Creek. The gully supports riparian vegetation that is dense and highly weed infested, with a small stand of emergent Swamp Oak *Casuarina glauca* (see **Photo 1**).

Photo 1 View of Canal Road Gully

Patches of remnant native vegetation, including forest and wetland areas, are limited to the floodplain adjoining Prospect Creek (**Photo 2**) and a minor drainage line on the southern boundary of the site. There are also extensive areas of rehabilitated habitat on the Prospect Creek floodplain. Native understorey and groundcovers are largely absent throughout much of these areas of native vegetation. Environmental weed species are widespread across the Study Area, with dense infestations in some places. There are also planted areas surrounding the site boundary and in the centre of the site comprising planted trees and shrubs, including a mix of non-local and local native species.

Photo 2 Riparian vegetation along Prospect Creek

The area proposed for the northern sediment basin (referred to as basin No.5) is located on a flat area of disturbed ground in the northern parts of the Development Site. The area contains a ground layer of exotic grasses (mainly Kikuyu and Buffalo Grass) with bare soils and disturbed ground.

No fauna habitats or resources of importance are present in this area. The vegetation present does not constitute a patch of native vegetation and so has not been included as a vegetation zone. Additionally, the area does not represent potential habitat for any threatened species. Accordingly, the area proposed for the stormwater basin does not require further assessment, in accordance with Section 9.5 of the FBA.

A selection of site photos is provided in **Appendix J**.

4 NATIVE VEGETATION

This chapter describes the vegetation of the Study Area, in terms of class, PCT and vegetation zones, as well as threatened ecological communities, in accordance with the FBA.

4.1 Native plant species

A total of 120 plant species have been recorded within the Development Site, including 38 native species, nine non-indigenous native species and 73 species are exotic species (see flora species list at **Appendix D**). Six of the exotic flora species recorded are also listed as Weeds of National Significance under the *Biosecurity Act 2015*.

4.2 Regional vegetation mapping

Regional vegetation mapping data sets that cover the site include mapping of the Cumberland Plain by NPWS (2002) and mapping of the Sydney Metropolitan catchment area by OEH (2013a). The more recent mapping by OEH (2013a) was used as a starting point for compiling a site vegetation map for the current assessment.

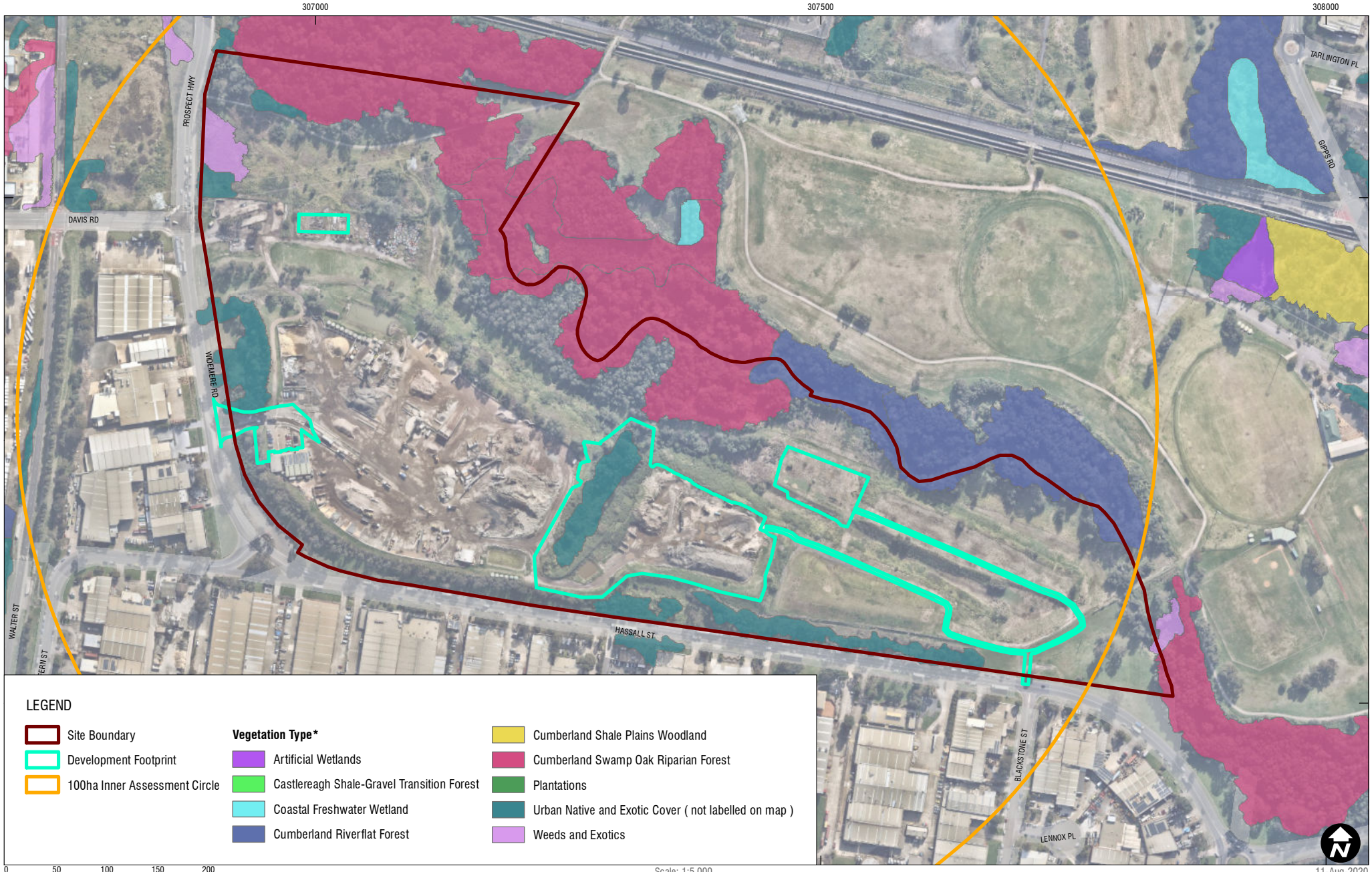
The OEH (2013a) vegetation mapping identifies 'Cumberland Swamp Oak Riparian Forest', 'Cumberland River-flat Forest' and 'Coastal Freshwater Wetland' along Prospect Creek (**Figure 4**). These areas have been identified as being consistent with the endangered ecological community (EEC) known as *River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (River-flat Forest EEC), which is listed under Schedule 2 (Part 2) of the BC Act. The OEH (2013a) vegetation mapping also includes Urban Native and Exotic Cover in several locations.

There are two main forms of River-flat Forest EEC mapped in the Cumberland Plains area, being 'Riparian Forest' and 'Alluvial Woodland' (NPWS 2002). The vegetation on the Development Site has been identified as Alluvial Woodland and is described as occurring along watercourses adjacent to riparian forest. This community includes species such as Forest Red Gum *Eucalyptus tereticornis*, Swamp Oak *Casuarina glauca*, Cabbage Gum *E. amplifolia* and Rough-barked Apple *Angophora floribunda* (NPWS 2002).

The (OEH 2013a) vegetation mapping shows that the Cumberland Swamp Oak Riparian Forest and Cumberland River-flat Forest occur along Prospect Creek at the northern boundary of the Development Site. These native vegetation communities are not mapped as occurring within the Development Footprint. Vegetated areas within the Development Footprint are mapped as "Urban Native and Exotic Cover" as shown in **Figure 4**.

4.3 Previous SLR mapping

Due to inaccuracies between maps in the Fairfield *Draft Local Environmental Plan 2011* and aerial photography, the SLR (2012) study provided detailed mapping of the ecological and riparian features on the site. The SLR (2012) vegetation mapping was used as a reference map for the current investigation, in combination with more recent regional mapping of the Sydney Metro catchment by OEH (2013a), noting that the subject site for the previous SLR assessment did not cover the full extent of the current Development Site and Study Area.



*Source: Sydney Metro, OEH (2013)

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Regional vegetation mapping of the Development Site

FIGURE 4

4.4 Vegetation classes

The native vegetation PCTs mapped across the site comprise 'Coastal Floodplain Wetlands' and 'Coastal Freshwater Lagoons' as described in the following sections.

4.4.1 Coastal Floodplain Wetlands

One PCT mapped across the site is identified as a coastal floodplain wetland comprising PCT 835 'Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion'.

This vegetation class occurs on coastal floodplains with fertile alluvial soil that are periodically inundated. Levees and elevated river flats (up to 250 m above sea level) support predominantly eucalypt forests, but these give way to casuarina forests on more frequently inundated low-lying flats, particularly where soils are sub-saline. Coastal Floodplain Wetlands include a mosaic of open forests 20-40 m tall with an open graminoid understorey and closed sedge land.

On levees and elevated terraces, the canopy includes Rough-barked Apple *Angophora floribunda*, Broad-leaved Apple *A. subvelutina*, Cabbage Gum *Eucalyptus amplifolia* and Forest Red Gum *E. tereticornis*. Lower elevated flats are commonly dominated by Swamp Oak *Casuarina glauca*. Small trees and shrubs include Flax-leaved Paperbark *Melaleuca linariifolia*, Prickly-leaved Tea Tree *M. styphelioides* and Cheese Tree *Glochidion ferdinandi*. Understorey species include climbers such as Common Silkpod *Parsonsia straminea*, and grasses and sedges such as Tall Sedge *Carex appressa*, Couch *Cynodon dactylon*, *Juncus usitatus* and Common Reed *Phragmites australis*.

4.4.2 Coastal Freshwater Lagoons

One PCT mapped across the site is identified as a coastal freshwater lagoon comprising PCT 781 'Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion'. This vegetation class occurs in depressions in coastal sand sheets and floodplains with free-standing water, consisting of a mosaic of sedge land, aquatic herb-fields and open water. Dominant species vary depending on the depth, frequency and duration of inundation. Common species in floodplain areas include *Eleocharis sphacelata*, Jointed twig-rush *Baumea articulata* (syn *Machaerina articulata*), Swamp Millet *Isachne globosa*, *Liparophyllum exaltatum*, Water Primrose *Ludwigia peploides* subsp. *montevidensis* and Water Plantain *Alisma plantago-aquatica*.

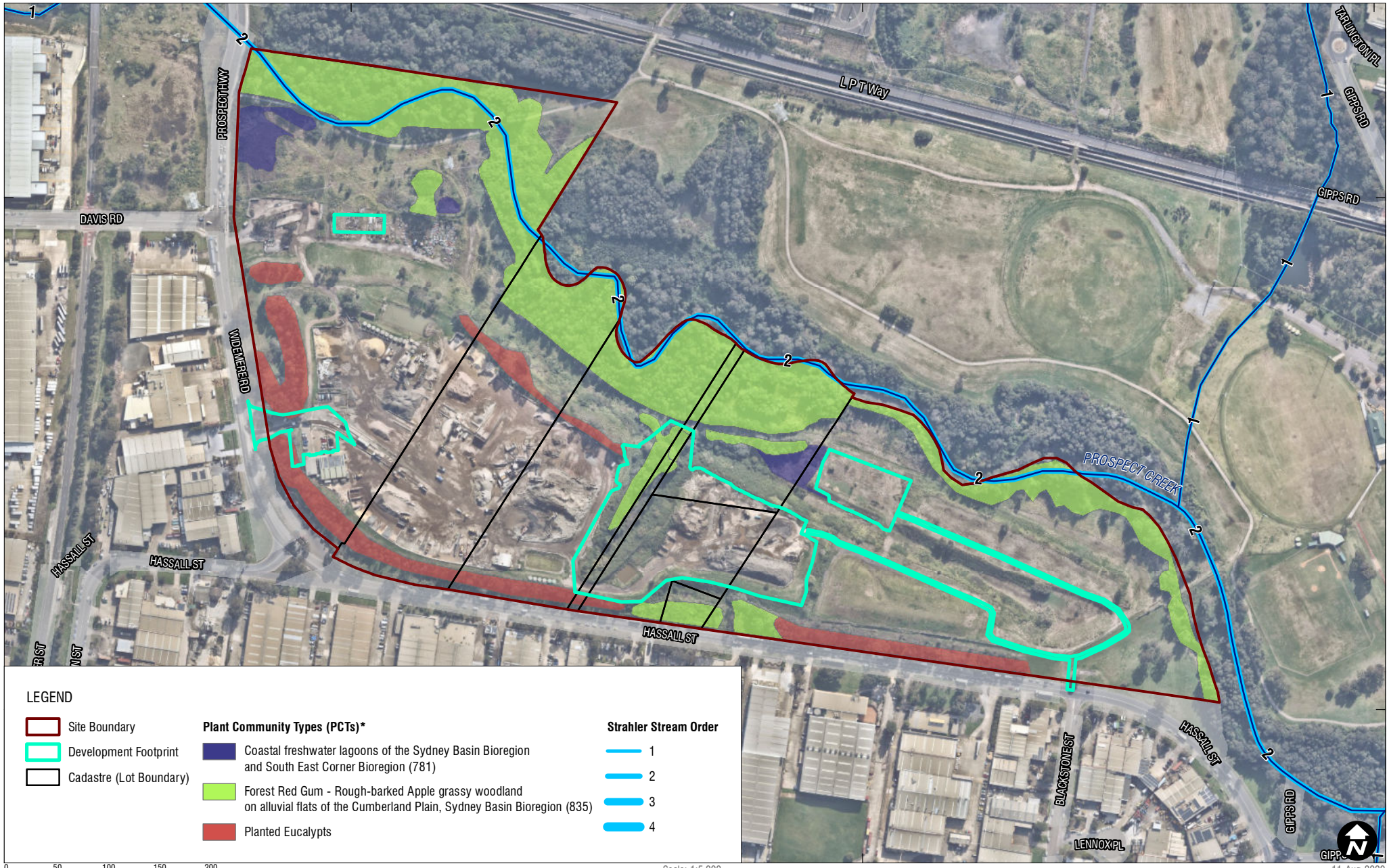
4.5 Site vegetation mapping

4.5.1 Overview

Native vegetation, where present, recorded on the site includes is generally in low condition, with bare soil and/or exotic (non-native and/or weed) flora species. The following PCTs have been identified within the Development Site based on the results of the field survey:

- Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion (PCT 835); and
- Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion (PCT 781).

The distribution of these plant community types within the Development Site is shown in **Figure 5** and their mapped area, class and formation are listed in **Table 5**.



*As mapped by SLR (based on field verification)

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Plant community types mapped within the Development Site

FIGURE 5

Table 5 Plant community types recorded and mapped within the Development Site

PCT Code	55 PCT name	Formation	Class	Area (ha)
59 (N/A)	Planted Eucalypts	Non-Native	Non-Native	1.7
835	Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Forested Wetlands	Coastal Floodplain Wetlands	6.2
781	Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion	Freshwater Wetlands	Coastal Freshwater Lagoons	0.5
			Total	**8.4**

4.5.2 Plant community type descriptions

Detailed descriptions for both PCT 835 and PCT 781 are provided in **Table 6** and **Table 7**.

Table 6 Plant community type 835

Feature	Description
Name	Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion
Location	This vegetation type occurs on lower elevated floodplain areas surrounding Prospect Creek along the northern boundary of the Development Site, including a degraded (low condition) patch within the Development Site (Canal Road Gully) and a small drainage line on the southern boundary of the site.
Formation	Forested Wetlands
Class	Coastal Floodplain Wetlands
Area	6.2 hectares in Development Site
Structure	• Coastal Floodplain Wetlands/Forested Wetlands • A mosaic of open forest, woodland and small areas of wetland along drainage lines and deeper depressions. • Higher-elevated portions of the understorey are generally dominated by exotic grasses and forbs; however, a low diversity and cover of native species may be present in some areas. • Lower elevated understorey areas supporting wetland vegetation are generally dominated by native reeds, grasses and sedges. • Includes a mix of areas with mature eucalypts, plantings and regenerating Swamp Oak. • The suite of species varies according to factors including the extent and duration of flooding, disturbance history and rehabilitation efforts. • Trees: from 10 to 25 m. FPC 0 to 50%. • Groundcover: 0.1 to 1 m. FPC up to 0-100%.

Feature	Description
Floristics	• Trees: Swamp Oak *Casuarina glauca*, Cabbage Gum *Eucalyptus amplifolia*, Rough-barked Apple *Angophora floribunda* and Forest Red Gum *E. tereticornis*. • Shrubs and small Trees: Flax-leaved Paperbark *Melaleuca linariifolia*, Prickly-leaved Tea Tree *M. styphelioides*, Parramatta Wattle *Acacia parramattensis* and Black Wattle *A. decurrens*. • Vines and Groundcovers: Tall Sedge *Carex appressa*, Spiny-headed Mat Rush *Lomandra longifolia* and Couch *Cynodon dactylon*.
Threatened status	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (Endangered, BC Act).

Table 7 Plant community type 781

Feature	Description
Name	Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion
Location	This vegetation type occurs as discreet patches on lower elevated floodplain areas surrounding Prospect Creek along the northern boundary of the study area.
Area	0.2 within Development Site
Formation	Freshwater Wetlands
Class	Coastal Freshwater Lagoons
Structure	• Occurs in depressions and drainage lines with free-standing water as a mosaic of sedge land, aquatic herb fields and open water. • Higher elevated areas of this community support a low cover of canopy and shrub species particularly on the edges. • A high abundance of exotic grasses and herbs generally adjoin patches of this community. • The suite of species varies according to factors including the disturbance history and elevation. • Trees: to 10 m. FPC 0 to 5-10% • Groundcover: 0.1 to 2 m. FPC up to 0-100%.
Floristics	• Trees: Swamp *Oak Casuarina glauca* and Flax-leaved Paperbark *Melaleuca linariifolia*. • Vines and Groundcovers: Common Reed *Phragmites australis*, Broadleaf Cumbungi *Typha orientalis*, Water Plantain *Alisma plantago-aquatica*, Slender Knotweed *Persicaria decipiens*, Tall Sedge *Carex appressa*, Couch *Cynodon dactylon* and *Juncus usitatus*.
Threatened status	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (Endangered, BC Act).

4.5.3 Differences of site vegetation mapping to regional mapping

The main differences between the site-specific vegetation mapping and the regional mapping layer include the following:

- Some areas of freshwater wetland have not been delineated from the areas of riparian forest which form a mosaic along Prospect Creek. OEH (2013b) identifies patches of freshwater wetland along Prospect Creek within the site and surrounding areas.

- Two small patches of vegetation mapped on the southern boundary of the site as Urban Native and Exotic Cover in **Figure 4** support locally indigenous tree species such as Rough-barked Apple *Angophora floribunda* and Parramatta Wattle *Acacia parramattensis* on a small floodplain area associated with a drainage line. Accordingly, these patches are mapped as Forest Red Gum-Rough-barked Apple grassy woodland (PCT 835) in **Figure 5**.
- A small patch in the northwest corner of the site mapped by OEH (2013a) as Weeds and Exotics (see **Figure 4**) has been reclassified as Coastal freshwater lagoons (PCT 781) (see **Figure 5**).
- Patches of vegetation identified as Urban Native and Exotic Cover by OEH (2013a) within in the Development Site (see **Figure 4**), have been classified as Planted Eucalypts, owing to the presence of a stand of Swamp Oak and some wetland species in the understorey it has been classified as riparian forest.
- Areas of planted vegetation surrounding the Study Area have been mapped as Urban Native and Exotic Cover by OEH (2013a), which has been expanded to include the entire area and classified as Planted Eucalypts (**Figure 5**).

4.6 Vegetation zones

According to the FBA (OEH 2014a), vegetation zones are areas of vegetation of the same type (i.e. same PCT) and same condition class. Vegetation zones are categorised into either 'low' or 'moderate to good' condition. To qualify as low condition the native vegetation (being woody vegetation) within a vegetation zone must have:

- a value for 'over-storey' (i.e. canopy) foliage projective cover of less than 25% of the lower benchmark value for that PCT; and
- a groundcover which either comprises less than 50% indigenous (or native) species or is over 90% cleared.

The two plant community types mapped within the study area are in a similar ecological condition across their extent in the study area and therefore two vegetation zones based on these PCTs have been identified as follows:

- Vegetation Zone 1 - River-flat Eucalypt Forest (moderate to good condition) - two FBA plot/transects were completed in this zone: one in the Canal Road Gully and another on the southern boundary (see **Figure 6**).
- Vegetation Zone 2 - Freshwater Wetland (moderate to good condition) – this vegetation zone is outside of the proposed development footprint and no clearing of this vegetation zone is required; accordingly, no FBA plots were completed in this community.

The distribution of vegetation zones and FBA plot locations is shown in **Figure 6** . The vegetation zones and their mapped extent within the Study Area are listed in **Table 8**.

Table 8 Vegetation zones mapped within the Study Area

PCT Code	Zone	Vegetation Zone	Condition	Impact Area (ha)
835	1	Forest Red Gum - Rough-barked Apple grassy woodland (River-flat Forest EEC)	Moderate/good-poor	0.22
781	2	Coastal freshwater lagoons (Freshwater Wetlands EEC)	Moderate/good	0

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Vegetation Zones within the Development Footprint

FIGURE 6

Plots were established in each of these vegetation zones in accordance with the FBA. Based on their size and condition, one plot/transect was established in each zone (see **Figure 6**). Details of the methods applied to the plot/transects survey are provided in **Appendix C.** The plot/transect data recorded in each zone is summarised in **Appendix E,** and a flora species list, with cover/abundance scores for each plant species, is provided in **Appendix D**. A copy of the vegetation zones report from the Credit Calculator, showing the minimum number of plots required in each zone, is provided in **Appendix G.**

It is noted the vegetation zone for Coastal freshwater lagoons (PCT 781, or 'Freshwater Wetland', moderate to good condition) is outside of the Development Site (**Figure 6**), but has been included in the assessment due to potential indirect impacts and potential requirement for biodiversity offsets. Hence, all figures in the BAR show this zone.

4.7 Threatened ecological communities

According to the OEH BioNet Atlas database (10 km radius search), several threatened ecological communities (TECs), as listed under the BC Act (and/or EPBC Act) have previously been recorded in the locality (see **Table 9**).

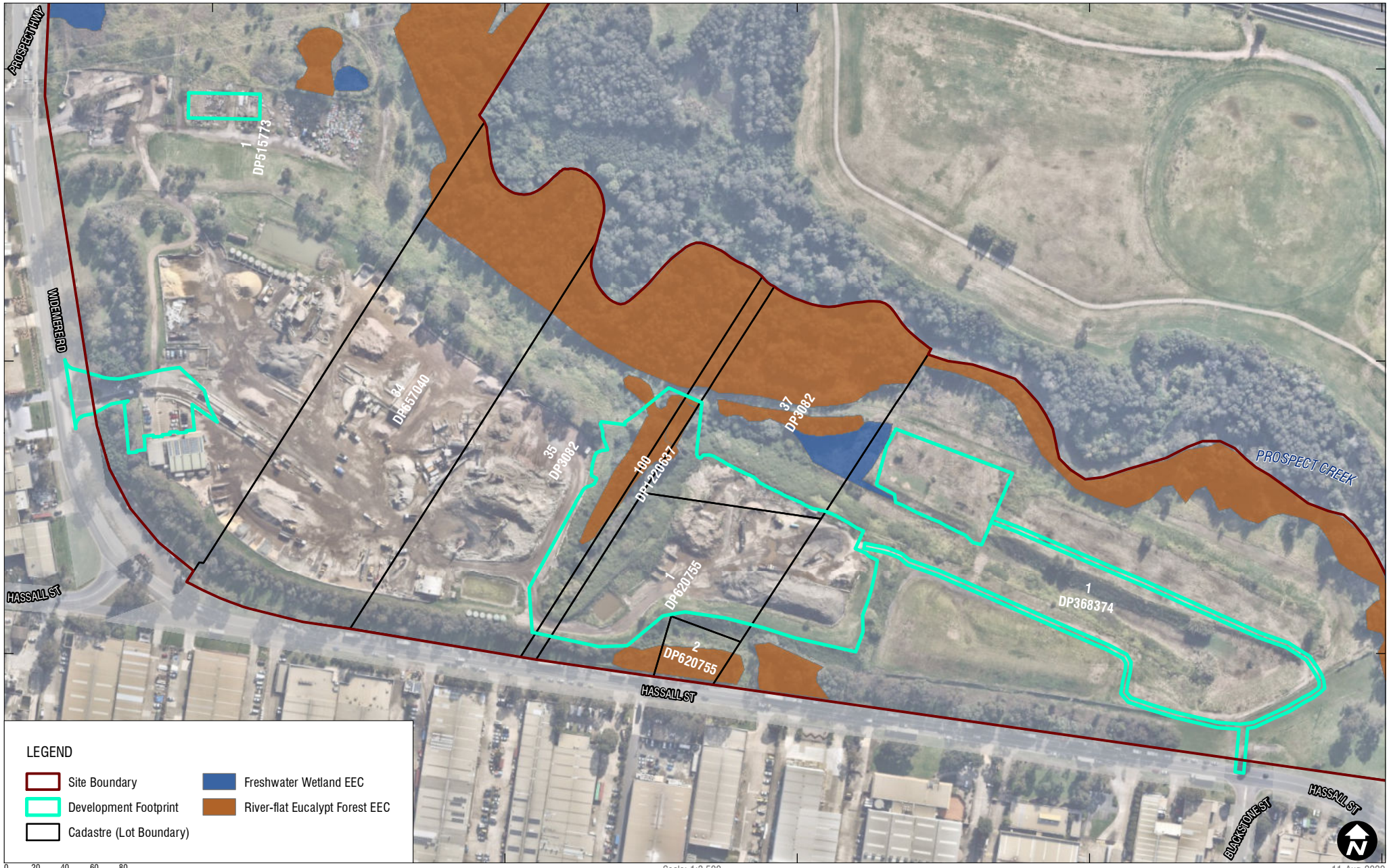
Table 9 Threatened ecological communities recorded within 10 km

Community Name	BC Act Status	EPBC Act Status
Agnes Banks Woodland in the Sydney Basin Bioregion	Critically Endangered	Endangered
Blue Gum High Forest in the Sydney Basin Bioregion	Critically Endangered	Critically Endangered
Blue Mountains Shale Cap Forest in the Sydney Basin Bioregion	Endangered	Critically Endangered
Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion	Vulnerable	Endangered
Castlereagh Swamp Woodland Community	Endangered	Not listed
Cooks River/Castlereagh Ironbark Forest in the Sydney Basin Bioregion	Endangered	Critically Endangered
Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered	Critically Endangered
Elderslie Banksia Scrub Forest in the Sydney Basin Bioregion	Critically Endangered	Not listed
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered	Not listed
Moist Shale Woodland in the Sydney Basin Bioregion	Endangered	Critically Endangered
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered	Not listed
Shale Gravel Transition Forest in the Sydney Basin Bioregion	Endangered	Critically Endangered
Shale Sandstone Transition Forest in the Sydney Basin Bioregion	Critically Endangered	Critically Endangered
Southern Sydney sheltered forest on transitional sandstone soils in the Sydney Basin Bioregion	Endangered	Not listed
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered	Not listed
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered	Not listed
Sydney Turpentine-Ironbark Forest	Endangered	Critically Endangered
Western Sydney Dry Rainforest in the Sydney Basin Bioregion	Endangered	Critically Endangered

Two of these threatened ecological communities have been recorded and mapped within the Development Site:

- *River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* ('River-flat Forest EEC'). The patches of Forest Red Gum – Rough-barked Apple grassy woodland (PCT 835) mapped within the site are representative of River-flat Forest EEC; and
- *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* ('Freshwater Wetlands EEC'). The patches of Coastal freshwater lagoons (PCT 781) mapped within the site are representative of Freshwater Wetlands EEC.

The extent, condition and composition of these threatened ecological communities within the site are described in **Section 4.5** and their distribution within the site displayed on **Figure 7**.



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Threatened Ecological Communities

FIGURE 7

5 THREATENED SPECIES

This chapter describes the threatened species predicted to occur within the study area, based on the field survey results, the outputs of desktop assessment and the outputs of the Biobanking Credit Calculator, in accordance with Section 6 of the FBA.

5.1 Overview

Several sources of information have been employed to create a list of candidate threatened species and populations relevant to the study area. The Credit Calculator outputs of ecosystem credit species and species credit species are used as the main basis of this BAR.

The SEARs for this project do not identify any specific threatened species requiring further consideration; instead it is instructed that the relevant legislation for biodiversity conservation in NSW is incorporated into the assessment. In order to comply with this, the NSW Wildlife Atlas 10 km search tool has been used to address additional biodiversity factors in accordance with the NSW *Biodiversity Conservation Act 2016* (BC Act) (in addition to the outputs of the BioBanking Credit Calculator).

Overall, an assemblage of 30 threatened species or populations are deemed as potential relevance to the study area. This assemblage consists of nine plants, 10 birds, nine mammals, one amphibian and one invertebrate species. Additionally, 18 TECs have been identified as potentially occurring (see **Section 4.7**).

The habitat requirements and ecology of the potential threatened species and relevant habitat attributes within the study area are described in the likelihood of occurrence table presented in **Appendix F** of this report. The likelihood of occurrence rating is based on the results of field surveys, and particularly on the extent, nature and condition of habitat types and habitat features within the study area.

Of the 30 threatened biota relevant to the site at Fairfield, none were recorded within the Study Area or Development Footprint during the current field surveys; however previous surveys (SLR 2012, 2017) identified the Grey-headed Flying-fox and a microbat species in habitats on Prospect Creek (see **Photo 3**).

The following sections describe ecosystem credit species and species credit species separately, in accordance with Chapter 6 of the FBA.

5.2 Fauna survey results

A total of 28 fauna species were opportunistically recorded during the diurnal surveys of the site (see **Appendix C**). Of the 28 fauna species recorded, four are introduced species. The remaining 24 native species include 20 birds, two mammals, one frog and one reptile.

Photo 3 Roosting Grey-headed Flying-fox

5.3 Ecosystem credit species

5.3.1 Generated by credit calculator

A total of five ecosystem credit species have been predicted to occur within the study area according to the Credit Calculator (**Table 10**). The Credit Calculator report listing ecosystem credit threatened species that are predicted to occur within the vegetation zones mapped within the site is provided in **Appendix G.**

Table 10 Ecosystem credit species

Species	BC Act	Likelihood	On site	Explanation (for presence/absence)
Australian Painted Snipe *Rostratula australis*	Endangered	Low	No	No habitat within the construction footprint. Potential habitat on site within wetland areas surrounding Prospect Creek.
Black-tailed Godwit *Limosa limosa*	Vulnerable	None	No	No habitat within the construction footprint. Marginal habitat on site within wetland areas surrounding Prospect Creek.

Species	BC Act	Likelihood	On site	Explanation (for presence/absence)
Freckled Duck *Stictonetta naevosa*	Vulnerable	Low	No	No habitat within the construction footprint. Marginal habitat on site within wetland areas surrounding Prospect Creek.
Little Lorikeet *Glossopsitta pusilla*	Vulnerable	Moderate	No	Possible foraging habitat in vegetation patches on site, flowering eucalypts available on site. Large home ranges. Records within 10km of site
Swift Parrot *Lathamus discolour*	Endangered	Low	No	Possible foraging habitat in woodland patches on site, flowering eucalypts available on site. Breeds in Tasmania.

5.3.2 BioNet atlas

A range of other ecosystem credit threatened species has been identified in the 10 km search results from the NSW Wildlife Atlas. Although not identified as 'predicted threatened species' in the Credit Calculator, these species were targeted during surveys conducted in August 2017.

The relevance of each species to the proposal is based on their individual habitat requirements, which are provided in the Likelihood of Occurrence table in **Appendix F** of this report. The process of assessing habitat for such species was undertaken in accordance with the steps of identification in Section 6.3 of the FBA. Species considered to have a moderate to high likelihood of occurrence on site have been identified in **Table 11** and the full list of the 10 km search results from the NSW Wildlife Atlas is provided in **Appendix F**.

Table 11 Additional ecosystem credit species generated by BioNet atlas

Species	BC Act	Likelihood	On site	Explanation (for presence/absence)
Dusky Woodswallow *Artamus cyanopterus cyanopterus*	Vulnerable	Moderate	No	The species is an aerial forager and prefers woodland habitats. Associated with riparian forests in the study area and previously recorded locally surrounding the site.
Eastern False Pipistrelle *Falsistrellus tasmaniensis*	Vulnerable	Moderate	No	Occurs in tall, mature, wet forests with hollow-bearing trees. Hibernates in winter. Associated with riparian forests in the study area and previously recorded within 10 km of the site.
Eastern Bentwing-bat *Miniopterus schreibersii oceanensis*	Vulnerable	Moderate	No	Tall open forests, favours areas with caves or other shelters. Caves are the primary roosting habitat. Associated with riparian forest recorded within 10 km of the site.
Eastern Freetail-bat *Mormopterus norfolkensis*	Vulnerable	Moderate	No	Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests. Roost mainly in tree hollows but will also roost under bark or in man-made structures. Associated with riparian forest recorded within 10 km of the site.
Southern Myotis *Myotis macropus*	Vulnerable	Moderate	No	Open forests with mature hollow-bearing trees, usually close to water courses. Associated with riparian forest recorded within 10 km of the site.

Species	BC Act	Likelihood	On site	Explanation (for presence/absence)
Grey-headed Flying-fox *Pteropus poliocephalus*	Vulnerable	High	Yes	Rainforests, open forests, closed and open woodlands, melaleuca swamps and banksia woodlands. Feed on the nectar and pollen of native trees. Associated with riparian forest and a roost camp was observed in riparian vegetation along Prospect Creek.
Greater Broad-nosed Bat *Scoteanax rueppellii*	Vulnerable	Moderate	No	Rainforest, dry and wet sclerophyll forest and eucalypt woodland. Forages after sunset. Associated with riparian forest recorded within 10 km of the site.

5.3.3 Predicted ecosystem credit species

The relevant steps of Section 6.2 and 6.3 of the FBA have been used to identify the ecosystem credit species present on the site, or which have a high likelihood of occurrence on the site. The likelihood of occurrence has been identified for all the potential ecosystem credit species by conducting habitat and vegetation type assessments across the site. The results for this are provided in the comprehensive likelihood of occurrence table in **Appendix F**. Furthermore, detailed ecological surveys for species with moderate or high likelihood of occurrence were undertaken on the site in August 2017.

A total of eight threatened species, including two birds and six mammals (of which five are microchiropteran bats), which attract ecosystem credits, have been predicted to occur within the site in the Credit Calculator. Of these, none were recorded during diurnal field surveys, however micro-bat species and a flying-fox roost camp have been observed in the study area in habitats on Prospect Creek.

5.4 Species credit species

5.4.1 Candidate species generated by credit calculator

A total of 18 candidate 'species credit species' have been determined relevant to the study area according to the Credit Calculator (**Table 12**). This prediction is based, *inter alia*, on previous records (as contained in the Wildlife Atlas database) and the 'Geographic/Habitat Features' identified in the Credit Calculator.

Table 12 Species credit species

Species	BC Act	Likelihood	On site	Explanation (for presence/absence)
Austral Pilwort *Pilularia novae-hollandiae*	Endangered	Low	No	Grows in shallow swamps and waterways, often among grasses and sedges. Associated with the vegetation on site. One record within 10km of site (BioNet Atlas).
Australasian Bittern *Botaurus poiciloptilus*	Endangered	Low	No	No habitat in the impact area. Better habitat in the wetlands along Prospect Creek.
Black Bittern *Ixobrychus flavicollis*	Vulnerable	Low	No	No habitat in the impact area. Better habitat in the wetlands along Prospect Creek.

Species	BC Act	Likelihood	On site	Explanation (for presence/absence)
Brown Pomaderris *Pomaderris brunnea*	Endangered	Low	No	The highly disturbed areas within the construction footprint are unlikely to be suitable for this species. Marginally better-quality habitats are present in riparian forest surrounding Prospect Creek. Not recorded within 10km of site (BioNet Atlas).
Camden White Gum *Eucalyptus benthamii*	Vulnerable	Low	No	The highly disturbed areas within the construction footprint are unlikely to be suitable for this species. Marginally better-quality habitats are present in riparian forest surrounding Prospect Creek. Not recorded within 10km of site (BioNet Atlas).
Comb-crested Jacana *Irediparra gallinacea*	Vulnerable	Low	No	No habitat in the impact area. Better habitat in the wetlands along Prospect Creek. Not recorded within 10km of site (BioNet Atlas).
Cumberland Plain Land Snail *Meridolum corneovirens*	Endangered	Low	No	Open woodlands and grasslands with logs and wood debris. Not associated with vegetation on site. Recorded nearby.
Eastern Pygmy Possum *Cercartetus nanus*	Vulnerable	Low	No	Very low potential habitat availability in woodland areas. Food resources are highly scarce. Understorey virtually absent and shelter is scarce. No records within 10km of site (BioNet Atlas).
Green and Golden Bell Frog *Litoria aurea*	Endangered	Moderate	No	Inhabits marshes, dams and stream-sides. Habitat includes waterbodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available. Associated with vegetation on site. Recorded on site in 1963.
Hibbertia sp. Bankstown	Critically Endangered	Low	No	Prostrate shrub with spreading, hairless, wiry branches up to 40 cm in length. Currently known to occur in only one population at Bankstown Airport in Sydney's southern suburbs Flowers spring and early summer. Not associated with vegetation on site. No nearby records.
Hypsela sessiliflora	Not listed	Low	No	The highly disturbed areas within the construction footprint are unlikely to be suitable for this species. Marginally better-quality habitats are present in riparian forest surrounding Prospect Creek.
Koala *Phascolarctos cinereus*	Vulnerable	Low	No	No scats or tree trunk scratches observed on site. SEPP 44 feed trees (*Eucalyptus tereticornis*) present in isolated woodland patches. Records within 10km of site (BioNet Atlas).

Species	BC Act	Likelihood	On site	Explanation (for presence/absence)
Marsdenia viridiflora R. Br. subsp. *viridiflora* population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith LGAs	Endangered Population	High	N	A climber to 4 m high with twining stems, tubular flowers and large pear-shaped fruit. Grows in vine thickets and open shale woodland. The species is associated with Cumberland Plain Woodland but can grow in disturbed areas. Associated with vegetation on site. Recorded nearby.
Regent Honeyeater *Anthochaera phrygia*	Critically Endangered	Moderate	No	Mostly occurs on western slopes of the Great Dividing Range. Breeds between July and January in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak. Associated with riparian forests in the Study Area and previously recorded within 10 km of the site.
Squirrel Glider *Petaurus norfolcensis*	Vulnerable	Low	No	Possible habitat availability in woodland areas. No records within 10km of site (BioNet Atlas).
Tall Knotweed *Persicaria elatior*	Vulnerable	Low	No	The highly disturbed areas within the construction footprint are unlikely to be suitable for this species. Marginally better-quality habitats are present in riparian forest surrounding Prospect Creek. Not recorded within 10km of site (BioNet Atlas).
Wahlenbergia multicaulis Tadgell's Bluebell in the local government areas of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield	Endangered Population	Low	No	A perennial, tufted herb, typically few-stemmed, 10 – 75 cm high. Hairless or sometimes with few hairs. Leaves are mostly long and thin, smooth edged or with small serrations. Not associated with vegetation on site. No nearby records.
White-flowered Wax Plant *Cynanchum elegans*	Endangered	Low	No	A woody vine with white tubular flowers between August and May. Occurs in dry rainforest vegetation, forest, woodland and open scrub. Not associated with vegetation on site. No nearby records.

5.4.2 Candidate species BioNet Atlas

No additional candidate threatened species of potential relevance to the site have been identified through obtaining previous records within 10 km of the site in the BioNet Atlas of NSW Wildlife. Targeted surveys for these species were included as part of the August 2017 diurnal survey and nocturnal surveys in March 2018 and their potential relevance to the site has been documented in the 'likelihood of occurrence' assessments for the site in **Appendix F**.

5.4.3 Candidate species credit species present on site

According to Section 6.5 (Step 3) of the FBA, an assessor must establish whether a candidate threatened species is present on a development site or is likely to use the habitat available on the site.

Previous Surveys and Records

No threatened species were recorded during the diurnal survey completed in August 2017.

Two threatened fauna species that generate species credits were recorded previously within the study area by SLR in 2012, including the Grey-headed Flying-fox, which was recorded roosting in trees along one part of Prospect Creek and the Green and Golden Bell Frog was historically recorded within the and surrounding areas in the 1960's with no recent nearby records. Green and Golden Bell Frog inhabits marshes, dams and stream-sides free of predatory fish such as Plague Minnow *Gambusia holbrooki*, although habitats in the study area are potentially suitable, the presence of Plague Minnow in habitats in the study area and the lack of recent records suggests the species is unlikely to be present in the study area, and highly unlikely to utilise habitats within the area of impact.

Current Threatened Species Surveys

The results of the targeted nocturnal surveys for threatened fauna species conducted in March 2018 are summarised below. Fauna species recorded as part of the current investigation are listed in **Appendix D** and the likelihood of occurrence of all candidate threatened fauna species is identified in **Appendix F**. One threatened bat species was recorded on the site during the March nocturnal surveys. No threatened fauna species were detected on the site.

The results of the nocturnal surveys undertaken on the nights of the 06 and 07 March are summarised below:

- No large forest owls were observed or heard calling following call playback.
- Several common native and exotic fauna species were recorded during spotlighting surveys including Common Ringtail Possum *Pseudocheirus peregrinus*, Eastern Grey Kangaroo *Macropus giganteus*, Eastern Water Dragon *Intellagama lesueurii*, Black Rat *Rattus rattus* and the European Rabbit *Oryctolagus cuniculus*.
- During the spotlight survey, the Grey-headed Flying-fox was observed flying from a camp on Prospect Creek in the northeast of the Study Area (see **Appendix C**). Flying-foxes were not observed foraging within the site boundary.
- Common native amphibian species, including Striped Marsh-frog *Limnodynastes peronii*, Eastern Dwarf Tree Frog *Litoria fallax* and Peron's Tree Frog *Litoria peronii* were recorded during targeted amphibian surveys. No individuals of the Green and Golden Bell Frog, or any other threatened amphibian species, were recorded during the survey and assessment of the habitat determined that the site is not suitable for the Green and Golden Bell Frog.
- Analysis of ultrasonic call data collected from the two AnaBat devices determined that one threatened bat species, the Eastern Freetail-bat *Mormopterus norfolkensis* could potentially utilise the site for foraging or roosting. The results are detailed in **Appendix I**.

Terrestrial bird surveys resulted in the opportunistic observation of common bird species including the Red Wattlebird *Anthochaera carunculata*, Superb Fairy-wren *Malurus cyaneus* and the Australian Reed warbler *Acrocephalus australis*. No threatened bird species were recorded during terrestrial bird surveys.

Surveys for potential fauna habitat resulted in no hollow-bearing trees, stags or nests recorded. No ground logs, burrows, woody debris or areas of substantial leaf litter were observed. A Grey-headed Flying-fox camp was identified on the bank of Prospect Creek approximately one kilometre north-west of the development footprint (**Figure 3**). Species credits for Grey-headed Flying Fox are linked to the presence of breeding habitat comprising "*land within 40 m of rainforest, coastal scrub, riparian or estuarine communities*". However, the flying-fox camp was observed greater than 40 metres from the Development Site.

Using the survey results and habitat assessment conducted as part of the field survey, and by following the steps for identifying species credit species in Section 6.5 of the FBA, all candidate species were excluded from the species credit entries in the Credit Calculator for this project (based upon the absence of breeding habitat in the area of impact).

6 IMPACT AVOIDANCE AND MINIMISATION

This chapter describes the impacts of the proposed development, in accordance with Section 8 of the FBA.

6.1 Impact avoidance measures

6.1.1 Site Selection

The site selection for the proposed development avoids the key biodiversity constraints. The residual impacts are limited to highly disturbed regrowth of riparian forest at 'Canal Road' and disturbed remnant riparian forest surrounding a drainage line on the southern boundary of the site.

6.1.2 Optimising the proposed layout

The site selection was based on the layout of the existing footprint and operational requirements, as well as biodiversity constraints. In designing the layout of the proposed upgrades, the avoidance of trees and minimising impacts on native vegetation has been an important factor in the decision-making process. The key elements in determining the layout of the development footprint included:

- Avoiding the riparian zone of Prospect Creek and minimising adverse effects on the water quality and aquatic habitats of Prospects Creek.
- Avoiding stands of native vegetation (where present) and native trees within the study area (whether pre-existing or planted).
- Utilising existing flat, built up or hardstand areas, to minimise cut and fill and associated construction costs.
- Internal access and daily vehicle movement requirements and need for internal traffic flow and logistics.

The key components of the development footprint are listed below in **Section 6.2** in light of the above considerations, the proposed development footprint utilises the cleared and disturbed parts of the site (with the exception of the low quality vegetation in Canal Road Gully), avoids the areas of higher biodiversity value and thereby avoids significant adverse effects on biodiversity values.

6.2 Final development footprint

The development footprint is defined as "*the area of land that is directly impacted on by a proposed Major Project that is under the EP&A Act, including access roads, and areas used to store construction materials*". The development footprint includes minor vegetation clearing to accommodate the proposed fill area. The final development footprint is shown in **Figure 3**. Total impact areas for the various features of the proposed development are included in **Table 13**.

Table 13 Development Footprint areas

Development component	Area (ha)	Native vegetation removal **(ha)**
Total SRC Area	29.7	0.22
Canal Road Expansion Area	2.51	0.22
Car parking/road upgrade area (off Widemere Road)	0.32	0
Flood storage basin	0.41	0

Development component	Area (ha)	Native vegetation removal **(ha)**
Access road to flood storage basin	0.24	0
Northern stormwater basin (basin No.5)	0.08	0
Total Development Footprint	**3.56**	**0.22**

6.3 Direct impact

6.3.1 Overview

According to the FBA, direct impacts on biodiversity values are described as *"an impact on biodiversity values that is a direct result of vegetation clearance from a development. It is predictable, usually occurs at or near to the development site and can be readily identified during the planning, design, construction, and operational phases of a development."*

The potential ecological impact from the proposed development will be relatively small, with a disturbance footprint of approximately 3.56 ha (see **Table 13**) and these areas are devoid of high conservation habitats. Commercial activity associated with the development will be largely confined to this area.

The final development footprint will involve some minor impacts to threatened ecological communities and habitat for threatened fauna species comprising the following direct impacts:

- Removal and disturbance of regrowth riparian forest within Canal Road gully, which is dominated by exotic weed species with a low cover and diversity of native species (this area is classed as low condition and does not need to be offset).
- Removal of a small portion of potential fauna foraging habitat, associated with tree removal in Canal Road gully, in particular for threatened microchiropteran bats species and Grey-headed Flying-fox.

The areas of native vegetation to be cleared have been carefully considered and all habitats of high conservation value have been avoided where possible. The proposal impacts will be limited to removal of highly disturbed regrowth vegetation that cannot be avoided.

6.3.2 Impacts on vegetation zones

The residual impacts are limited to highly disturbed regrowth of riparian forest within the Canal Road gully. These areas of native vegetation would be replaced with permanent infrastructure for the proposed facility and therefore impacts on native vegetation (and associated habitats) would be permanent (and unavoidable). Total impact areas of the proposed development on native vegetation are included in **Table 14**.

Table 14 Biodiversity impacts

PCT Code	Zone	Vegetation Zone	Condition	Impact Area (ha)
835	1	Forest Red Gum - Rough-barked Apple grassy woodland (River-flat Forest EEC)	Moderate/good-poor	0.22
781	2	Coastal freshwater lagoons (Freshwater Wetlands EEC)	Moderate/good	0

6.4 Indirect impacts

6.4.1 General

According to the FBA indirect impacts on biodiversity values are described as:

> "*an impact on biodiversity values that occurs when development related activities affect threatened species, threatened species habitat, populations or ecological communities in a manner other than direct impact. Compared to direct impacts, indirect impacts often:*
>
> - *occur over a wider area than just the site of the development;*
> - *have a lower intensity of impact in the extent to which they occur compared to direct impacts;*
> - *occur off site;*
> - *have a lower predictability of when the impact occurs;*
> - *have unclear boundaries of responsibility*."

There is some potential for indirect impacts to habitats along Prospect Creek from the filling of Canal Road gully. Potential indirect impacts in relation to the proposed development include:

- sedimentation and run-off during construction of the fill embankment. These are to be managed using appropriate sediment and erosion control measures and in accordance with an engineered stormwater management system.
- increased weed presence, including the introduction of new weed species (through vehicle movements into and out of the site), and/or the spread of weeds into new areas that are currently weed free. Several priority weeds have been identified in the development footprint. Weed management is to be integrated into the construction and operational management measures.

Considering the high degree of existing disturbance to habitats along Prospect Creek downstream of the development footprint including sedimentation, poor water quality, weed infestations and limited native vegetation cover in the understorey, potential minor indirect impacts from the proposal are unlikely to substantially decrease the baseline ecological condition of these habitats.

6.4.2 Western Sydney Parklands

As detailed in the SEARs the site is within 500 metres of the Western Sydney Parklands, the assessment of impacts must address the matters to be considered outlined in the Guidelines for developing adjoining land and water managed by the Office of Environment and Heritage (OEH 2013c) and include:

- The nature of impacts, including direct and indirect impacts.
- The extent of the direct and indirect impacts.
- The duration of the direct and indirect impacts.
- The objectives of the reservation land.
- Measures proposed to prevent, control, abate, minimise and manage the direct and indirect impacts including and evaluation of the effectiveness and reliability of proposed measures.
- Residual impacts.

Prospect Nature Reserve to the northwest of the site is part of the Western Sydney Parklands. The potential for the identified indirect impacts impacting any Western Sydney Parklands is unlikely considering Prospect Nature Reserve is upstream of the Development Site and is therefore unlikely to be indirectly impacted by sedimentation and water pollution. Weed propagules are unlikely to be spread from the development footprint to any Western Sydney Parklands.

The main potential for indirect impacts is to habitats on Prospect Creek directly downstream of the development footprint, however potential minor indirect impacts from the proposal are unlikely to substantially decrease the baseline ecological condition of these habitats.

6.5 Onsite mitigation measures

Numerous best management practices and mitigation measures will be implemented as part of the proposal to prevent, minimise and/or manage the potential for adverse impacts upon the local environment.

The existing site-specific Operational Environmental Management Plan (EMP) will be updated for the proposed development to ensure implementation and compliance with the commitments made within this EIS, along with relevant statutory obligations and the conditions of development consent (including Environment Protection Licence (EPL) requirements).

On-site mitigation measures to reduce direct and indirect impacts include before, during and after construction measures as outlined in **Table 15**.

Table 15 Mitigation measures to be implemented before, during and after construction

Action	Outcome	Timing	Responsibility
Before Construction			
Protection of native vegetation	Delineate construction zone (to ensure no native vegetation outside construction zone is cleared)	Prior to and for the duration of any works	Construction contractor
Revegetation – preparation of plant stock	Commence seed collection and propagation of local native plant species for planting along Prospect Creek	Subject to seed availability and nursery growing times	Council
Erosion and sediment control measures	Install and maintain erosion and sediment control measures in accordance with the requirements of the 'Blue Book'	Prior to and for the duration of any works	Construction contractor
During Construction			
Fauna management	Supervision of tree felling to rescue and recover any fauna (as necessary)	During clearing	Construction team/Fairfield City Council
Weed Management	Vehicle wash-down Site maintenance program	Ongoing	Construction team
Rubbish management	Rubbish (such as food scraps and building waste) are to be properly managed during construction and must not be stockpiled on areas of native vegetation	Ongoing	Construction team

Action	Outcome	Timing	Responsibility
Revegetation	Seeding and planting of propagated (or otherwise) tubestock of local native plant species as per Landscape Plan (see Site Image drawings SS19-4294 102B, 103B and 501B); place mulch and erosion controls as required	Following receipt of propagated plant stock and seed from local supplier	Council
Exposed soil surface management	Revegetation – using re-use of topsoil layers and seeding of with local native species	Immediately following soil disturbances	Construction team
After Construction			
Weed management	Limit spread of weeds along with landscape maintenance program	Ongoing, half-yearly minimum	Site operator
Waste management	Appropriate systems will be implemented to ensure that each waste stream generated by the development is effectively managed and/or disposed of off-site (see detail in EIS). There will not be any on-site stockpiling or disposal of waste materials.	Ongoing	Site operator
Plant maintenance	Watering, weeding, replacement of dead plants, within Prospect Creek revegetation areas, as per Landscape Plan.	Ongoing (quarterly)	Council
Surface water and run-off	Surface water and stormwater to be managed according to Soil and Water Management Plan (WSP 2020)	Ongoing	Site operator

7 IMPACTS SUMMARY

This chapter describes the impact of the proposed development in terms of biodiversity credits, in accordance with Section 9 of the FBA.

7.1 Areas not requiring further assessment

Areas that do not require further assessment are those that do not contain native vegetation, as per Section 9.5 of the FBA (unless otherwise required by the SEARs). The development site supports highly disturbed native vegetation dominated by exotic flora with a site value score of less than 17. Therefore, according to the FBA, these areas are classified as low condition and/or cleared land and do not require further assessment. These areas do not contain tree hollows or other important habitats or resources for native fauna, such as hollow logs, rocks or caves. These areas have been assessed for the potential occurrence of threatened species (i.e. those that generate species credits), as outlined in Chapter 4 (see FBA, Section 9.5).

7.2 Entities not requiring offsets

Impacts for which the assessor is not required to determine an offset (FBA, Section 9.4) comprise:

- clearing within a vegetation zone that has a site value score of less than 17 and the PCT is not a TEC;
- impacts on PCTs that are not threatened species habitat and are not TECs;
- threatened species habitat within a vegetation zone that has a site value score of <17; and
- species or populations that are not threatened and do not form part of a TEC.

As listed in **Table 16** all of the vegetation zones mapped in the development footprint have a current site value score of less than 17 and all zones are degraded to the extent that they would not provide habitat of any ecological importance for threatened species. Hence, the proposal does not require offsets for the impacted areas of disturbed native vegetation.

7.3 Impacts requiring offsetting

According to Section 9.3 of the FBA, impacts on native vegetation that require an offset include:

- impacts on EECs and CEECs, unless specifically nominated in the SEARs as an impact requiring further consideration; and
- impacts on PCTs associated with threatened species habitat and in a vegetation zone that has a site value score of >= 17.

7.3.1 Plant community types requiring offset

All vegetation zones mapped with the site have current site value scores of less than 17 and do not represent habitat for threatened species. Considering the highly disturbed nature of the PCTs in the development footprint and the lack of important roosting/breeding habitats, clearing of these vegetation zones does not require an offset in accordance with the FBA.

7.3.2 Species polygons requiring offset

As discussed in Chapter 4 of this report, no local populations of threatened species that generate species credits are likely to occupy the vegetation within the study area, on other than a transient basis when opportunistically foraging. Hence, the creation of species polygons for such species is not considered appropriate for this assessment and there are no species credit polygons that require offset as part of the proposed development.

7.4 Impacts requiring further consideration

There are no impacts that require further consideration by the consent authority for the proposed development.

7.5 Biodiversity credit requirements

The Biobanking Credit Calculator has been used to calculate the impacts of the proposed development and potential offset requirements, in accordance with Section 8 of the FBA. This section of the report provides a summary of the results of the credit calculations. A copy of the credit profile for the impacts of the proposal is provided in **Appendix G**.

7.5.1 Ecosystem credits

The ecosystem credits required to offset the proposed development are listed by vegetation zone in **Table 16**. A total of zero ecosystem credits would be required to offset the clearing of native vegetation as part of the construction and operation of the proposed development.

Table 16 Vegetation zones requiring offsets and credits required

Code	Vegetation Zone Name	Management Area (ha)	Current Site Value Score	Future Site Value Score	Ecosystem Credits
835	River-flat Eucalypt Forest (moderate to good condition)	0.22	14.06	0	0
	Total	**0.22**			**0**

7.5.2 Landscape value score

The loss in landscape value score is 9, as per the attached credit report (**Appendix F**).

7.5.3 Species credits

As shown in the attached credit reports (see **Appendix F**), no species credits are required to offset the impacts of the proposed development.

7.6 Biodiversity credit report

In accordance with the FBA, copies of the BioBanking credit reports are provided in **Appendix G**. The results of the Credit Reports are detailed in the preceding section, but can be summarised as follows:

- No ecosystem credits are required to offset the proposed development impacts.
- No species credits are required to offset the proposed development impacts.

7.7 Biodiversity offset strategy

As detailed in the preceding sections of **Section 7**, the impacts of the proposed development do not require biodiversity offsets. In this regard, the vegetation to be removed from the development footprint is in low condition, is dominated by exotic plant species (including priority weeds) and has low native plant diversity. The site value scores for the vegetation zones identified within the site are less than 17.

According to the thresholds for biodiversity offsets in Table 4 (and Section 9.4) of the FBA, impacts "*for which the assessor is not required to determine an offset*" are impacts on PCTs that have a site value of score of <17 and are not associated with threatened species habitat. Accordingly, the removal of vegetation within the Development Site to allow construction and operation of the proposed development (as described in this Chapter) does not require an offset in accordance with the FBA.

Accordingly, there is no requirement for a biodiversity offset strategy.

8 EPBC ACT MATTERS

A search of the on-line Protected Matters Search Tool (PMST) was conducted on 27 September 2017. A search area was created by buffering the centre point of the site by a radius of 10 km. The PMST database provides an indicative list of matters of national environmental significance (matters of NES) listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). A copy of the PMST results is provided in **Appendix H**. The PMST results indicate the following matters (or their habitats) are predicted to occur within the locality:

- 45 threatened species
- 17 listed migratory species
- six listed threatened ecological communities

No wetlands of international importance (Ramsar Wetlands), or World Heritage properties are identified within the locality in the PMST. No other matters of NES listed under the EPBC Act are of relevance to the site at Wetherill Park. Of the above matters of NES that are predicted to occur within the locality of the site, those of potential relevance to the site and the proposed development are discussed in the following sections.

8.1 Relevant matters of national environmental significance

8.1.1 Listed threatened species

The 45 threatened species (and/or their habitats) listed under the EPBC Act that are predicted to occur within the locality comprise 11 bird species, two fish species, seven mammal species, three amphibians, one snail, 20 plant species and one reptile. These species and their legal status within NSW (BC Act) and on the EPBC Act are listed in **Table 17**.

Table 17 PMST results listed threatened species

Species Name	Common Name	EPBC Act Listing	BC Act Listing
BIRDS			
Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Critically Endangered
Botaurus poiciloptilus	Australasian Bittern	Endangered	Endangered
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	Endangered
Dasyornis brachypterus	Eastern Bristlebird	Endangered	Endangered
Grantiella picta	Painted Honeyeater	Vulnerable	Vulnerable
Lathamus discolor	Swift Parrot	Critically Endangered	Endangered
Limosa lapponica baueri	Bar-tailed Godwit	Vulnerable	Not listed
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	Critically Endangered	Not listed
Numenius madagascariensis	Eastern Curlew	Critically Endangered	Not listed
Pachyptila turtur subantarctica	Fairy Prion	Vulnerable	Not listed
Rostratula australis	Australian Painted Snipe	Endangered	Endangered
FISH			

Species Name	Common Name	EPBC Act Listing	BC Act Listing
Macquaria australasica	Macquarie Perch	Endangered	Not listed
Prototroctes maraena	Australian Grayling	Vulnerable	Not listed
FROGS			
Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	Vulnerable
Litoria aurea	Green and Golden Bell Frog	Endangered	Vulnerable
Litoria raniformis	Southern Bell Frog	Vulnerable	Endangered
MAMMALS			
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Vulnerable
Dasyurus maculatus maculatus	Spot-tailed Quoll	Endangered	Vulnerable
Petauroides volans	Greater Glider	Vulnerable	Not listed
Petrogale penicillata	Brush-tailed Rock-wallaby	Vulnerable	Endangered
Phascolarctos cinereus	Koala	Vulnerable	Vulnerable
Pseudomys novaehollandiae	New Holland Mouse	Vulnerable	Not listed
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable
OTHER			
Pommerhelix duralensis	Dural Land Snail	Endangered	Endangered
PLANTS			
Acacia bynoeana	Bynoe's Wattle	Vulnerable	Endangered
Acacia pubescens	Downy Wattle	Vulnerable	Vulnerable
Allocasuarina glareicola	-	Endangered	Endangered
Asterolasia elegans	-	Endangered	Endangered
Cryptostylis hunteriana	Leafless Tongue-orchid	Vulnerable	Vulnerable
Cynanchum elegans	White-flowered Wax Plant	Endangered	Endangered
Genoplesium baueri	Yellow Gnat-orchid	Endangered	Endangered
Grevillea parviflora subsp. *parviflora*	Small-flower Grevillea	Vulnerable	Vulnerable
Haloragis exalata subsp. *exalata*	Square Raspwort	Vulnerable	Vulnerable
Leucopogon exolasius	Woronora Beard-heath	Vulnerable	Vulnerable
Pelargonium sp. *Striatellum* (G.W. Carr 10345)	Omeo Storksbill	Endangered	Endangered
Persoonia nutans	Nodding Geebung	Endangered	Endangered
Pimelea curviflora var. *curviflora*		Vulnerable	Vulnerable
Pimelea spicata	Spiked Rice-flower	Endangered	Endangered
Pomaderris brunnea	Rufous Pomaderris	Vulnerable	Endangered
Pterostylis gibbosa	Illawarra Greenhood	Endangered	Endangered
Pterostylis saxicola	Sydney Plains Greenhood	Endangered	Endangered

Species Name	Common Name	EPBC Act Listing	BC Act Listing
Pultenaea parviflora	-	Vulnerable	Endangered
Syzygium paniculatum	Magenta Lilly Pilly	Vulnerable	Vulnerable
Thesium australe	Austral Toadflax	Vulnerable	Vulnerable
REPTILES			
Hoplocephalus bungaroides	Broad-headed Snake	Vulnerable	Vulnerable

Most of the species listed in **Table 16** are also listed under the BC Act and therefore are considered in **Section 5** of this report, as well as in the likelihood of occurrence table in **Appendix F**. In relation to the EPBC Act listed species that are not listed on the BC Act, SEARs or Credit Calculator, including the Greater Glider *Petauroides volans*, New Holland Mouse *Pseudomys novaehollandiae*, fish species and seabirds, there is no suitable habitat for these species within the Development Site.

Prospect Creek provides potential habitat for threatened fish species that have been historically recorded in the locality, namely the Macquarie Perch *Macquaria australasica* and Australian Grayling *Prototroctes maraena*. Potential habitat for fish species is absent from the Development Site; however, there is potential for indirect impacts to Prospect Creek which will be managed during construction and operation of the proposal.

The study area contains limited potential foraging habitat for the migratory Swift Parrot *Lathamus discolour* and Regent Honeyeater *Anthochaera phrygia*, as these species are associated with the PCT's recorded within the study area. Both species are known to disperse to NSW coastal forests during winter to feed on winter flowering Eucalyptus and so called 'gum' trees, such as Spotted Gum *Corymbia maculata*, and ironbarks (e.g. *Eucalyptus fibrosa*), both of which occur in western Sydney but only occur in limited numbers and low densities on the site. Nether species breed within the Sydney metropolitan region. Consequently, the occurrence of adult birds of these species is possible on a transient or temporary basis during dispersal movements or foraging activities during flowering of feed tree on the site), however this would be unlikely.

There is some habitat present for Spotted-tail Quoll *Dasyurus maculatus maculatus* within the Study Area. However, these habitats are relatively marginal considering the poor connectivity, lack of denning/breeding habitat and understorey cover.

Individuals of the Large-eared Pied Bat *Chalinolobus dwyeri*, which is a cave dwelling micro-bat, may utilise the study area for foraging if suitable roosting or breeding habitats are present in the locality.

Habitat for threatened flora species in the study area is limited to species that occur in disturbed habitats, such as Downy Wattle *Acacia pubescens*, which has been previously recorded in the locality, including a record in the study area from 2010. However, no individuals of *Acacia pubescens* or any other threatened flora species were recorded in the development footprint and surrounding areas within the study area, despite targeted searches.

8.1.2 Listed threatened communities

Threatened ecological communities listed under the EPBC Act that have been recorded or are predicted to occur within the locality (based on PMST search results – see **Appendix H**) comprise:

- Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion
- Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion

- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest
- Shale Sandstone Transition Forest of the Sydney Basin Bioregion
- Turpentine-Ironbark Forest of the Sydney Basin Bioregion
- Western Sydney Dry Rainforest and Moist Woodland on Shale

None of these listed threatened communities is present within the Study Area.

8.1.3 Wetlands of national significance

No wetlands of international importance (Ramsar Wetlands) are listed in the PMST.

8.1.4 Migratory species

A total of 17 migratory species (and/or their habitats) are predicted to occur within the locality (refer to **Appendix H**). Of these 17 migratory species:

- Nine are migratory wetland species (Common Sandpiper, Sharp-tailed Sandpiper, Curlew Sandpiper, Pectoral Sandpiper, Latham's Snipe, Bar-tailed Godwit, Eastern Curlew, Osprey and Common Greenshank) which have limited suitable habitat in the study area.
- Seven are terrestrial migratory species (Oriental Cuckoo, White-throated Needletail, Black-faced Monarch, Spectacled Monarch, Yellow Wagtail and Satin Flycatcher) which have some potential to occur in the forested and wetland habitats of the study area.
- One migratory marine species (Fork-tailed Swift) which is likely to intermittently fly over the study area.

The Study Area does contain some marginal habitat for the listed wetland species, including wetland areas, Prospect Creek, and in times of heavy rainfall there would be flooded paddocks and floodplain areas. However, many of the suitable habitat attributes for these species are absent such as estuarine habitats, mudflats, larger areas of wetland vegetation or open water and sandy beaches. Although the wetlands in the study area provide some potential habitat for these wetland migratory species, regardless of this, due to their large ranges, such species would not be dependent on the study area (if they use it at all) for foraging, breeding or other life cycle processes.

The terrestrial species all occupy a large variety of habitats and similarly have very large ranges. The vegetation within the study area does not constitute 'important habitat' for such species, as defined by DoE (2013), most of which utilise more intact and structurally complex woodlands.

8.2 Impacts on relevant matters of national environmental significance

8.2.1 Listed threatened species

The threatened species identified in **Section 5** have been considered in accordance with the 'significant impact criteria' for 'vulnerable' and 'endangered' species in the *Significant Impact Guidelines 1.1* (DoE 2013).

Taking into consideration all stages and components of the proposal, and all related activities and infrastructure, there is the potential for impacts, including indirect impacts, on matters of national environmental significance, being mainly loss of a small area of degraded habitat for mobile threatened fauna species. However, it is highly unlikely that any of such species will be adversely impacted by the proposal, because:

- Suitable habitat for most of the species is absent within the study area. For those species that have either been recorded or could utilise the habitats within the study area, there are not likely to be local populations present wholly within the study area or reliant on the study area for their survival in isolation. Any such populations present within the locality will not be rendered locally extinct by the proposed development. This is based on the large ranges of these species, the poor quality and condition of the habitats present within the study area.
- The study area is not assessed as likely to contain habitat critical to the survival of a species.
- The study area is not likely to support an 'important population' (as defined by DoE 2015) of any threatened species.
- The proposed mitigation measures, which are described in **Section 6,** will avoid or reduce impacts on threatened species.

With reference to the criteria for vulnerable and endangered species, the proposal is not likely to:

- lead to a long-term decrease in the size of an important population of a species;
- reduce the area of occupancy of an important population;
- fragment an existing important population into two or more populations;
- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of an important population;
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that a species is likely to decline;
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;
- introduce disease that may cause a species to decline; or
- interfere substantially with the recovery of any of these species.

8.2.2 Threatened ecological communities

No federally listed threatened ecological communities have been identified in the Study Area.

8.2.3 Migratory species

The Study Area contains marginal foraging habitat for marine, terrestrial and wetland migratory species which are generally limited to habitats along Prospect Creek including riparian forest, freshwater wetlands and paddock areas; however habitat in the development footprint for these species is highly disturbed and limited to several small forest remnants. It is theoretically possible that these species could utilise the study area temporarily during foraging or dispersal. Habitats within the study area generally lack important habitat attributes for these species and would constitute only a relatively small proportion of the large ranges of such species.

With reference to the criteria for migratory species in the *Significant Impact Guidelines 1.1*, the study area does not contain an area of 'important habitat' for any migratory species. Furthermore, the proposal is highly unlikely to disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

9 REFERENCES

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Specht RL et al 1995 "*Conservation Atlas of Plant Communities in Australia*", Centre for Coastal Management, Southern Cross University Press, Lismore.WSP 2020, *Fairfield Sustainable Resource Centre, Soil and Water Management Plan*. REF: SWMP-001 Rev D. WSP, Sydney.

APPENDIX A

SEARs (biodiversity)

Planning Services
Industry Assessments
Contact: Bianca Thornton
Phone: (02) 8217 2040
Email: Bianca.Thornton@planning.nsw.gov.au

Mr Ross Smith
Fairfield City Council
PO Box 21
FAIRFIELD NSW 1860

17/01086
SSD 8184

Dear Mr Smith

State Significant Development
Revised Planning Secretary's Environmental Assessment Requirements
Fairfield Sustainable Resource Centre Expansion (SSD 8184)

I refer to the Planning Secretary's Environmental Assessment Requirements (SEARs) issued on 27 January 2017 and our meeting held on 25 February 2019 regarding the above project. Two years have passed since the SEARs were issued. Accordingly, a copy of reissued SEARs is attached.

The SEARs have been amended to update the development description and location and to provide additional requirements in relation to the following key issues:

- Community and Stakeholder Engagement
- Waste Management
- Soil and Water
- Air Quality and Odour
- Noise and Vibration
- Traffic and Transport
- Fire and Incident Management.

The Department has not carried out additional consultation with the government agencies. The comments and requirements previously provided in Attachment 2 remain valid. Please note that the Secretary may alter the SEARs at any time. You must consult further with the Secretary if you do not lodge a development application and Environmental Impact Statement (EIS) for the development by 6 May 2021.

The Department notes that the site currently operates under a separate consent. The Department prefers operations like the Fairfield Sustainable Resource Centre to operate under a single, modern planning approval. Consequently, the Department encourages you to develop the project with this preference in mind, and to consider surrendering all of the existing planning approvals for the facility if the project is approved.

I wish to emphasise the importance of effective and genuine community consultation and the need for the proposal to proactively respond to the community's concerns. Accordingly, you must undertake a comprehensive, detailed and genuine community consultation and engagement process during the preparation of the EIS. This process must ensure that the community is informed of the development and engaged with issues of concern to them. Sufficient information must be provided to the community to enable a good understanding of the development and any potential impacts.

Your development may require separate approval under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). If an EPBC Act

approval is required, please advise the Department accordingly, as the Commonwealth assessment process may be integrated into the NSW assessment process, and supplementary SEARs may need to be issued.

Please contact the Department at least two weeks before you intend lodge the EIS and any associated documentation for the development. This will enable the Department to determine the:

- applicable fee (under Division 1AA, Part 15 of the Environmental Planning and Assessment Regulation 2000)
- consultation and public exhibition arrangements, including copies and format requirements of the EIS.

If you have any enquiries about these SEARs, please contact Bianca Thornton on the above details.

Yours sincerely

C. Ritchie 6/5/19.

Chris Ritchie
Director
Industry Assessments
as delegate of the Planning Secretary

Planning Secretary's Environmental Assessment Requirements

Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*

Application Number	SSD 8184
Project Name	Fairfield Sustainable Resource Centre Expansion
Development	Expansion of an existing resource recovery facility to increase the processing capacity to 550,000 tonnes per annum (tpa) of waste.
Location	Hassall Street and Widemere Road, Wetherill Park, in the Fairfield local government area, comprising: • Lot 1 DP 515773 • Lot 34 DP 657040 • Lots 35 and 37 DP 3082 • Lot 100 DP 1220637 • Lots 1 and 2 DP 620755 • Lot 1 DP 368374.
Applicant	Fairfield City Council
Date of Issue	6 May 2019
General Requirements	The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in clauses 6 and 7 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*. In addition, the EIS must include: • a detailed description of the development, including: – existing operations carried out on the site and how the site operates lawfully under the *Environmental Planning and Assessment Act 1979* (EP&A Act) including any reliance on existing use rights and/or planning approvals and how these will be consolidated – accurate history of the site, including development consents – need for the proposed development – justification for the proposed development – likely staging of the development – likely interactions between the development and existing, approved and proposed operations in the vicinity of the site – plans of any proposed building works • demonstration that the site is suitable for the proposed use in accordance with *State Environmental Planning Policy No 55 – Remediation of Land* • consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments • consideration of issues discussed in **Attachment 2** (public authority responses to key issues) • risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment • detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes: – a description of the existing environment, using sufficient baseline data – an assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes – a description of the measures that would be implemented to avoid, minimise and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage any significant risks to the environment

	• a consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS. The EIS must also be accompanied by a report from a qualified quantity surveyor providing: • a detailed calculation of the capital investment value (as defined in clause 3 of the *Environmental Planning and Assessment Regulation 2000*) of the proposal, including details of all assumptions and components from which the CIV calculation is derived • a close estimate of the jobs that will be created by the development during the construction and operational phases of the development • certification that the information provided is accurate at the date of preparation.
Key issues	The EIS must address the following specific matters: • **Community and Stakeholder Engagement** – including: – a detailed community and stakeholder participation strategy which identifies who in the community has been consulted and a justification for their selection, other stakeholders consulted and the form(s) of the consultation, including a justification for this approach – a report on the results of the implementation of the strategy including issues raised by the community and surrounding occupiers and landowners that may be impacted by the proposal – details of how issues raised during community and stakeholder consultation have been addressed and whether they have resulted in changes to the proposal – details of the proposed approach to future community and stakeholder engagement based on the results of the consultation. • **Waste Management** – including: – a description of the waste streams that would be accepted at the site including the maximum daily, weekly and annual throughputs and the maximum size and heights for stockpiles – a description of waste processing operations (including flow diagrams for each waste stream), including a description of the technology to be installed, resource outputs, and the quality control measures that would be implemented – details of how waste would be stored and handled on site, and transported to and from the site including details of how the receipt of non-conforming waste would be dealt with – detail the developments waste tracking system for incoming and outgoing waste – detail the quality of waste produced and final dispatch locations – the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the *NSW Waste Avoidance and Resource Recovery Strategy 2014-2021*. • **Soil and Water** – including: – an assessment of potential impacts to soil and water resources, topography, hydrology, drainage lines, watercourses and riparian lands on or nearby to the site – a detailed site water balance, including identification of water requirements for the life of the project, measures that would be implemented to ensure an adequate and secure water supply is available for the proposal and a detailed description of the measures to minimise the water use at the site – characterisation of water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria (including details of the contaminants of concern that may leach from the waste into the wastewater and proposed mitigation measures to manage any impacts to receiving waters) – details of stormwater/wastewater/leachate management systems including the capacity of onsite detention systems, and measures to treat, reuse or dispose of water

- a description of erosion and sediment controls
- a flood assessment utilising the latest hydraulic model from Fairfield City Council's *Prospect Creek Floodplain Management Plan Review* to determine base case scenario and the potential impacts for the full range of flooding up to the probable maximum flood
- characterisation of the nature and extent of any contamination on the site and a description of proposed management measures.

- **Air Quality and Odour** – including:
  - a quantitative assessment of the potential air quality, dust and odour impacts of the development in accordance with relevant Environment Protection Authority guidelines. This is to include the identification of existing and potential future sensitive receivers and consideration of approved and/or proposed developments in the vicinity
  - the details of buildings and air handling systems and strong justification for any material handling, processing or stockpiling external to a building
  - a greenhouse gas assessment
  - details of proposed mitigation, management and monitoring measures.
- **Noise and Vibration** – including:
  - a quantitative assessment of potential construction, operational and transport noise and vibration impacts in accordance with relevant Environment Protection Authority guidelines
  - details of the specific times of operation for all phases of the development and for all noise producing activities
  - details and justification of the proposed noise mitigation and monitoring measures.
- **Traffic and Transport** – including:
  - details of all traffic types and volumes likely to be generated during construction and operation, including a description of haul routes
  - an assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model
  - detailed plans of the proposed layout of the internal road network, pedestrian network and parking on site in accordance with the relevant Australian Standards
  - plans of any proposed road upgrades, infrastructure works or new roads required for the development
  - plans demonstrating how all vehicles associated with construction and operation awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network
  - turning path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site.
- **Flora and Fauna** – including:
  - an assessment of the proposal under the *Framework for Biodiversity Assessment* including an assessment of any potential impacts on aquatic and riparian vegetation and groundwater dependent ecosystems
  - an assessment of impacts to the Western Sydney Parklands in accordance with relevant Office of Environment and Heritage guidelines and proposed mitigation measures.
- **Filling Works** – including:
  - a detailed plan addressing the filling of "Canal Road" gully including materials and volumes to be used
  - proposed quality control measures.
- **Hazards** – including a preliminary risk screening completed in accordance with *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* and Applying SEPP 33 (DoP, 2011), with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development. Should preliminary screening indicate that the project is "potentially hazardous" a Preliminary Hazard Analysis (PHA) must be prepared in accordance with *Hazardous*

	Industry Planning Advisory Paper No. 6 - Guidelines for Hazard Analysis (DoP, 2011) and *Multi-Level Risk Assessment* (DoP, 2011). • **Fire and Incident Management** – including: – identification of the aggregate quantities of combustible waste products to be stockpiled at any one time and a detailed plan showing the size and volume of each stockpile – technical information on the environmental protection equipment to be installed on the premises such as air, water and noise controls, spill clean-up equipment and fire (including location of fire hydrants and water flow rates at the hydrant) management and containment measures. • **Heritage and Aboriginal Cultural Heritage** • **Visual** – including an assessment of the potential visual impacts of the project on the amenity of the surrounding area.
Plans and Documents	The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the *Environmental Planning and Assessment Regulation 2000*. These documents should be included as part of the EIS rather than as separate documents.
Consultation	During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and potentially affected landowners. In particular you must consult with: • Cumberland Council • Environment Protection Authority • Office of Environment and Heritage • Department of Primary Industries • WaterNSW • Fire and Rescue NSW • Roads and Maritime Services • nearby land owners and occupiers that may be affected by the proposal. The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.
Further consultation after 2 years	If you do not lodge an EIS for the development within 2 years of the issue date of these SEAR's, you must consult with the Planning Secretary in relation to the requirements for lodgement.
References	The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. While not exhaustive, the following attachment contains a list of some of the guidelines, policies, and plans that may be relevant to the environmental assessment of this development.

ATTACHMENT 1
Technical and Policy Guidelines

The following guidelines may assist in the preparation of the Environmental Impact Statement. This list is not exhaustive and not all of these guidelines may be relevant to your proposal.

Many of these documents can be found on the following websites:
http://www.planning.nsw.gov.au
http://www.bookshop.nsw.gov.au
http://www.publications.gov.au

Policies, Guidelines & Plans	
Plans and Documents	
	The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Environmental Planning and Assessment Regulation 2000. Provide these as part of the EIS rather than as separate documents. In addition, the EIS must include the following: 1. An existing site survey plan drawn at an appropriate scale illustrating: • the location of the land, boundary measurements, area (sq. m) and north point • the existing levels of the land in relation to buildings and roads • location and height of existing structures on the site • location and height of adjacent buildings and private open space • all levels to be to Australian Height Datum (AHD). 2. A locality/context plan drawn at an appropriate scale should be submitted indicating: • watercourses including nearby rivers and creeks, and dams • significant local features such as heritage items • the location and uses of nearby buildings, shopping and employment areas, hospitals and schools • traffic and road patterns, pedestrian routes and public transport nodes. 3. An indication of the location of the site with respect to the relevant Land Zoning Map within the *Shoalhaven Local Environment Plan 2014*. 4. Drawings at an appropriate scale illustrating: • detailed plans, sections and elevations of the existing building, which clearly show all proposed internal and external alterations and additions.
Documents to be submitted	
	Documents to submit include: • 1 electronic copy of all the documents and plans for review prior to exhibition • other copies as determined by the Department once the development application is lodged.

Technical and Policy Guidelines

The following guidelines may assist in the preparation of the Environmental Impact Statement. This list is not exhaustive and not all of these guidelines may be relevant to your proposal.

Many of these documents can be found on the following websites:
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http://www.bookshop.nsw.gov.au
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Policies, Guidelines & Plans

Aspect	Policy /Methodology
Waste	
	Waste Avoidance and Resource Recovery Strategy 2010-2021 (EPA)
	The National Waste Policy: Less Waste More Resources 2009
	Waste Classification Guidelines (EPA, 2014)
	Environmental guidelines: Composting and Related Organics Processing Facilities (DEC)
	Environmental guidelines: Use and Disposal of Biosolid Products (EPA)
	Composts, soil conditioners and mulches (Standards Australia, AS 4454)
Soil and Water	
Soil	Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (ANZECC & NHMRC)
	National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC)
	Draft Guidelines for the Assessment & Management of Groundwater Contamination (DECC)
	State Environmental Planning Policy No. 55 – Remediation of Land
	Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land (DOP)
	Acid Sulfate Soils Manual (Stone et al. 1998)
Surface	National Water Quality Management Strategy: Water quality management - an outline of the policies (ANZECC/ARMCANZ)
	National Water Quality Management Strategy: Policies and principles - a reference document (ANZECC/ARMCANZ)
	National Water Quality Management Strategy: Implementation guidelines (ANZECC/ARMCANZ)
	National Water Quality Management Strategy: Australian Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ)
	National Water Quality Management Strategy: Australian Guidelines for Water Quality Monitoring and Reporting (ANZECC/ARMCANZ)
	Using the ANZECC Guideline and Water Quality Objectives in NSW (DEC)
	NSW State Rivers and Estuaries Policy (1993)
	State Water Management Outcomes Plan
	NSW Government Water Quality and River Flow Environmental Objectives (DECC)
	Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC)
	Managing Urban Stormwater: Soils & Construction (Landcom)
	Managing Urban Stormwater: Treatment Techniques (DECC)
	Managing Urban Stormwater: Source Control (DECC)
	Technical Guidelines: Bunding & Spill Management (DECC)
	NSW Floodplain Development Manual 2005
	NSW Guidelines for Controlled Activities on Waterfront Land (NOW, 2012)
Groundwater	National Water Quality Management Strategy Guidelines for Groundwater Protection in Australia (ARMCANZ/ANZECC)
	NSW State Groundwater Policy Framework Document 1997 (DLWC)

	NSW State Groundwater Quality Protection Policy 1998 (DLWC)
	NSW State Groundwater Dependent Ecosystems Policy (2002)
	NSW State Groundwater Quantity Management Policy 2002 (DLWC)
	Guidelines for the Assessment and Management of Groundwater Contamination (DEC 2007)
	NSW Aquifer Interference Policy (NOW, 2012)
	MDBC Guidelines on Groundwater Flow Modelling 2000
	Australian Groundwater Modelling Guidelines (NWC, 2012)
Wastewater	Environmental Guidelines: Use of Effluent by Irrigation (DECC)
	National Water Quality Management Strategy - Guidelines For Water Recycling: Managing Health And Environmental Risks (Phase1) 2006 (EPHC, NRMMC & AHMC)
	National Water Quality Management Strategy – Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 2): Augmentation of Drinking Water Supplies 2008 (EPHC, NRMMC & AHMC)
	National Water Quality Management Strategy: Guidelines for Sewerage Systems - Effluent Management (ARMCANZ/ANZECC)
	National Water Quality Management Strategy: Guidelines for Sewerage Systems - Use of Reclaimed Water (ARMCANZ/ANZECC)
	Recycled Water Guidance Document: Recycled Water Management Systems (DPI, 2015)
Air Quality and Odour	
Air Quality	Protection of the Environment Operations (Clean Air) Regulation 2010
	Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC)
	Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC)
	The National Greenhouse and Energy Reporting (Measurement) Technical Guidelines (NGER Technical Guidelines)
	Guidelines for Energy Savings Action Plans (DEUS, 2005)
Odour	Technical Framework: Assessment and Management of Odour from Stationary Sources in NSW (DEC, 2006)
	Technical Notes: Assessment and Management of Odour from Stationary Sources in NSW (DEC)
Noise and Vibration	
Noise	Noise Policy for Industry (EPA, 2017)
	NSW Road Noise Policy (EPA, 2011)
	Environmental Criteria for Road Traffic Noise (EPA)
	Interim Construction Noise Guideline (DECC, 2009)
Vibration	Assessing Vibration: A Technical Guideline (DEC, 2006)
Traffic and Transport	
	Guide to Traffic Generating Development (RTA)
	Road Design Guide (RTA)
Flora and Fauna	
	Framework for Biodiversity Assessment (OEH, 2014)
Hazards	
	State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
	Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines (DUAP)
	AS/NZS 4360:2004 Risk Management
	HB 203:2006 Environmental Risk Management – Principles and Process
	Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis
	Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning (DUAP)
	Contaminated Sites – Guidelines on Significant Risk of Harm from Contaminated Land and the Duty to Report (EPA 2003)

Heritage	
	Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011)
	Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010)
	Draft Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation (Department of Planning, 2005)
	Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010)
	NSW Heritage Manual (DUAP)
Visual	
	Control of Obtrusive Effects of Outdoor Lighting (Standards Australia, AS 4282)
	State Environmental Planning Policy No 64 – Advertising and Signage

ATTACHMENT 2
Public Authority Responses to Request for Key Issues

Transport
Roads & Maritime
Services

20 January 2017

Our Reference: SYD17/00059 (A15803605)
DP&E Ref: SSD 8184

Manager
Industry Assessments
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Bianca Thornton

Dear Sir/Madam,

REQUEST FOR SEARS - EXPANSION OF FAIRFIELD SUSTAINABLE RESOURCE CENTRE CORNER OF HASSALL STREET AND WIDEMERE ROAD, WETHERILL PARK

Reference is made to the Department of Planning and Environment (DP&E) email dated 10 January 2017 requesting Roads and Maritime Services (Roads and Maritime) to provide details of key issues and assessment requirements regarding the abovementioned development for inclusion in the Secretary's Environmental Assessment Requirements (SEARs).

Roads and Maritime require the following issues to be included in the transport and traffic impact assessment of the proposed development:

1. Daily and peak traffic movements likely to be generated by the proposed development including the impact on nearby intersections and the need/associated funding for upgrading or road improvement works (if required).

2. Details of the proposed accesses and the parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian Standards (ie: turn paths, sight distance requirements, aisle width, etc).

3. Proposed number of car parking spaces and compliance with the appropriate parking codes.

4. Details of service vehicle movements (including vehicle type and likely arrival and departure times).

Any inquiries in relation to this application can be directed to Zhaleh Alamouti on 8849 2331 or by email at development.sydney@rms.nsw.gov.au

Yours sincerely

Aleks Tancevski
A/Senior Land Use Coordinator
Network Sydney West Precinct