

Midtown Shrimpton's Creek Report

By Ecological Consultants Australia Pty Ltd TA

Kingfisher Urban Ecology and Wetlands

November 2022





About this document

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Statement of Authorship

This study and report was undertaken by Ecological Consultants Australia at Studio 1/33 Avalon Parade, Avalon. The author of the report is Geraldene Dalby-Ball with qualifications BSc. majoring in Ecology and Botany with over 20 years experience in this field, Jack Hastings with qualifications BSc. Majoring in Ecology.

Limitations Statement

Information presented in this report is based on an objective study undertaken in response to the brief provided by the client. Any opinions expressed in this report are the professional, objective opinions of the authors and are not intended to advocate any particular proposal or pre-determined position.

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Signed: Geraldene Dalby-Ball – Director of Ecological Consultants Australia

A handwritten signature in black ink, appearing to read "G Dalby Ball", is written over the printed name.

Executive Summary

Purpose

To provide an ecological report for the remediation of Midtown Shrimpton's Creek.

Introduction

- This ecological Report was prepared for Frasers Property Australia for the existing concept development at Shrimpton's Creek, Midtown, Macquarie Park, NSW 2113, in the City Ryde LGA.
- The purpose of this report is to determine if there would be impacts on native flora/fauna and triggers to particular assessment pathways including Biodiversity Offsets.
- This report will also provide an update on how the items outlined below are progressing.
 - * Overall Water Management Plan
 - * Concept Plan
 - * Habitat Opportunities
- Recommendations have been made in this report to increase the ecological integrity of the site.

Methods

- On-ground survey took place in October 2022 by Geraldene Dalby-Ball.
- Observations were made along Shrimpton's creek, Midtown in Macquarie Park.

Recommendations

- Threatened Species and entities have been searched for via Bionet and local data. No threatened entities occur on the site at present.
- For the retention of suitable existing species, remediation of the riparian corridor with endemic Turpentine - Smooth Barked Apple moist shrubby forest will be required.
- Considering that there is significant vegetation immediately adjacent to the site of study it is required to outline adequate Riparian Protection Areas along Shrimpton's Creeks, with the implementation of water treatment/detention facilities to maintain or increase the effective riparian corridor width.
- To improve water quality, the implementation of WSDU features would be ideal, to maintain natural flow regimes and water quality outcomes within the study area and minimize the impact of erosion.
- Develop a long term monitoring and evaluation process.

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1 Introduction

1.1 Purpose

Ecological Consultants Australia (ECA) trading as Kingfisher Urban Ecology & Wetlands has been contracted by Frasers Property Australia to provide an ecological advice for a riparian zone plan, creation and management at Midtown Shrimpton's Creek.

1.2 Site information and general description

The whole site is identified as Shrimpton's Creek, Midtown, in the local government area of Ryde City Council. The site has a total area of 2.3556 ha, and currently contains native bushland. However, the proposal has been redesigned to include a riparian zone within the outlined areas as Figure 1.2 shows.

Table 1.1 - Site Administrative Information

Category	Details
Title Reference (site)	Shrimpton's Creek, Midtown
Area (ha)	2.35 ha
Street Address	Wilga Park, Cottonwood Crescent, Macquarie Park 2113
LGA	Ryde City Council

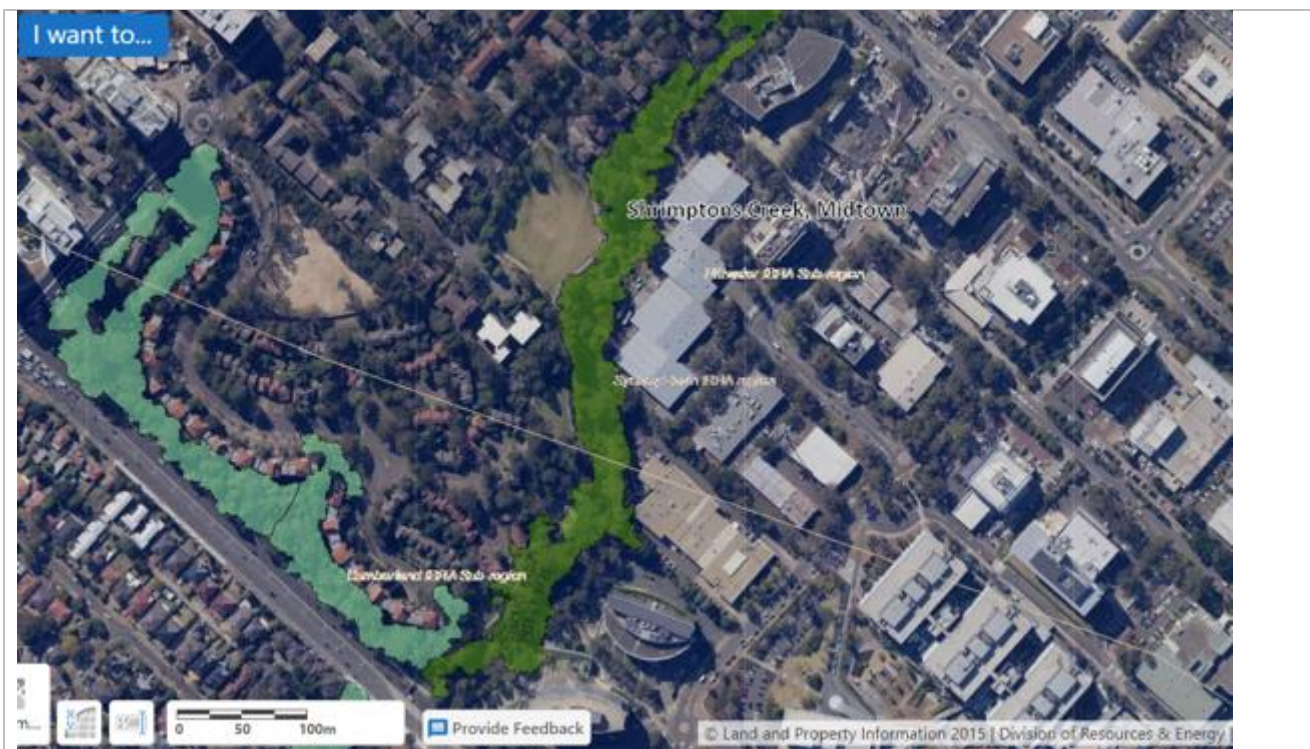


Figure 1.1. Site green shading. Source: SeedMaps accessed 2022.

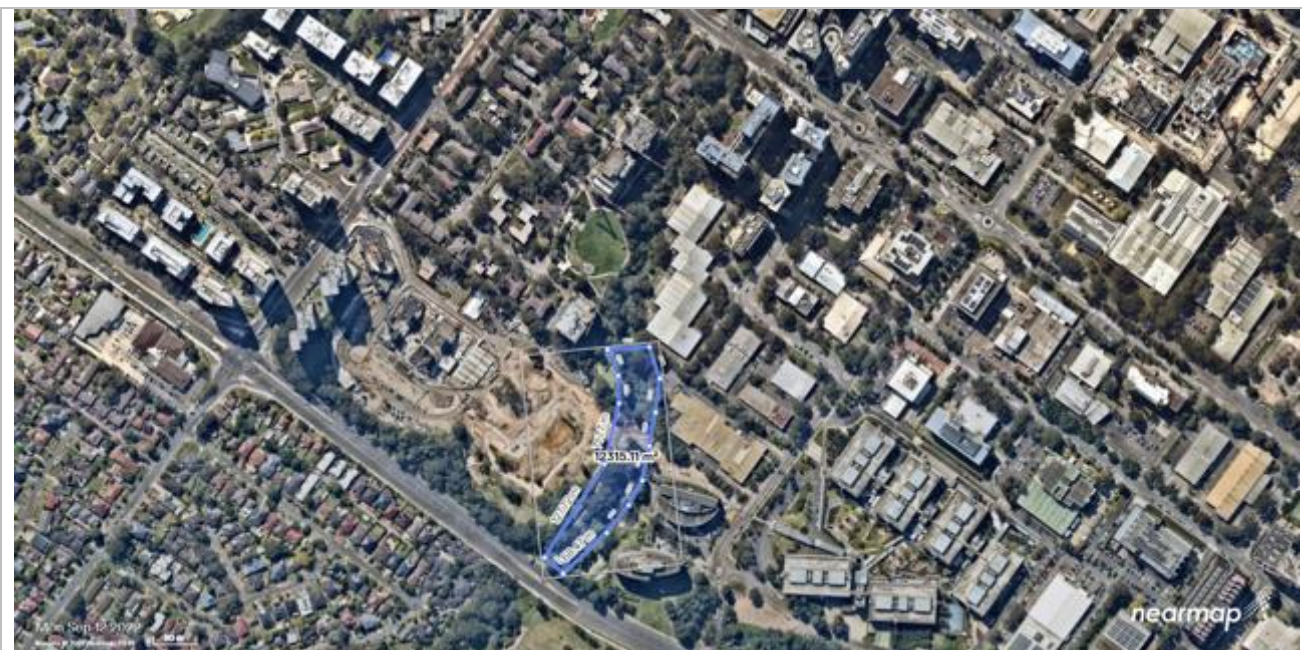


Figure 1.2 Riparian zone as part of the Shrimpton's creek Midtown

1.2.1 Site Photos:

The following photos were collected during the site visit by Senior ecologist and accredited assessor Geraldene Dalby-Ball in October 2022 to register the existing condition of Shrimpton's Creek before works.

Table 1.2 Photographic register of the site before works



Plate 1. Current Condition bank area that can be scrapped (no trees)



Plate 2. Area near existing GPT to be regraded and planted and to have adaptor to take water and disperse it along the slope prior to going into the creek.



Plate 3. Natural pools and riffles can be retained/ included particularly where there are currently used as unofficial access between sides.



Plate 4. Sediment removal upstream is recommended. A Barami or similar can be used to divert sediment out of the creek and into a park-land area that is currently weed dominated. Materials can be used within the site to suppress weeds and then replant with natives.



Areas with trees will require hand work around in the root zone. Battering of the bank may still be done albeit with hand tools.

Areas of dense vegetation (weeds) will be managed in sequence to ensure a continuation of bird habitat. Weeded areas will be planted and this mosaic of actions will continue such that there is always habitat. It is noted that the bulk of weedy shrub habitat is on the opposite bank and this is not to be altered as part of these works.



Figure. 1.3. Type of vegetation within the site

1.2.2 Riparian corridor mapping and condition assessment:

A riparian corridor consists of a channel that comprises the bed and banks of the watercourse (to the highest bank) and the vegetated riparian zone (VRZ) adjoining the channel. The Officer of Water recommends a VRZ width based on watercourse order as classified under the Strahler System of ordering watercourses and using current 1:25 000 topographic maps (see Figure 2 1). The width of the VRZ should be measured from the top of the highest bank on both sides of the watercourse.

Figure 2. The Strahler System

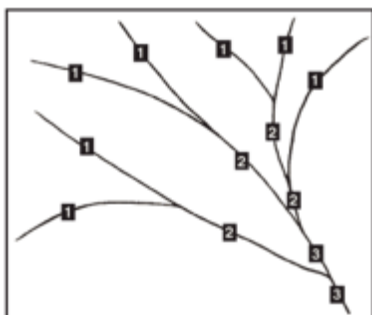


Table 1. Recommended riparian corridor (RC) widths

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

Note: where a watercourse does not exhibit the features of a defined channel with bed and banks, the Office of Water may determine that the watercourse is not waterfront land for the purposes of the WM Act

Figure 1.4 The Strahler System. Source: Guidelines for riparian corridors on waterfront land NSW (2012)

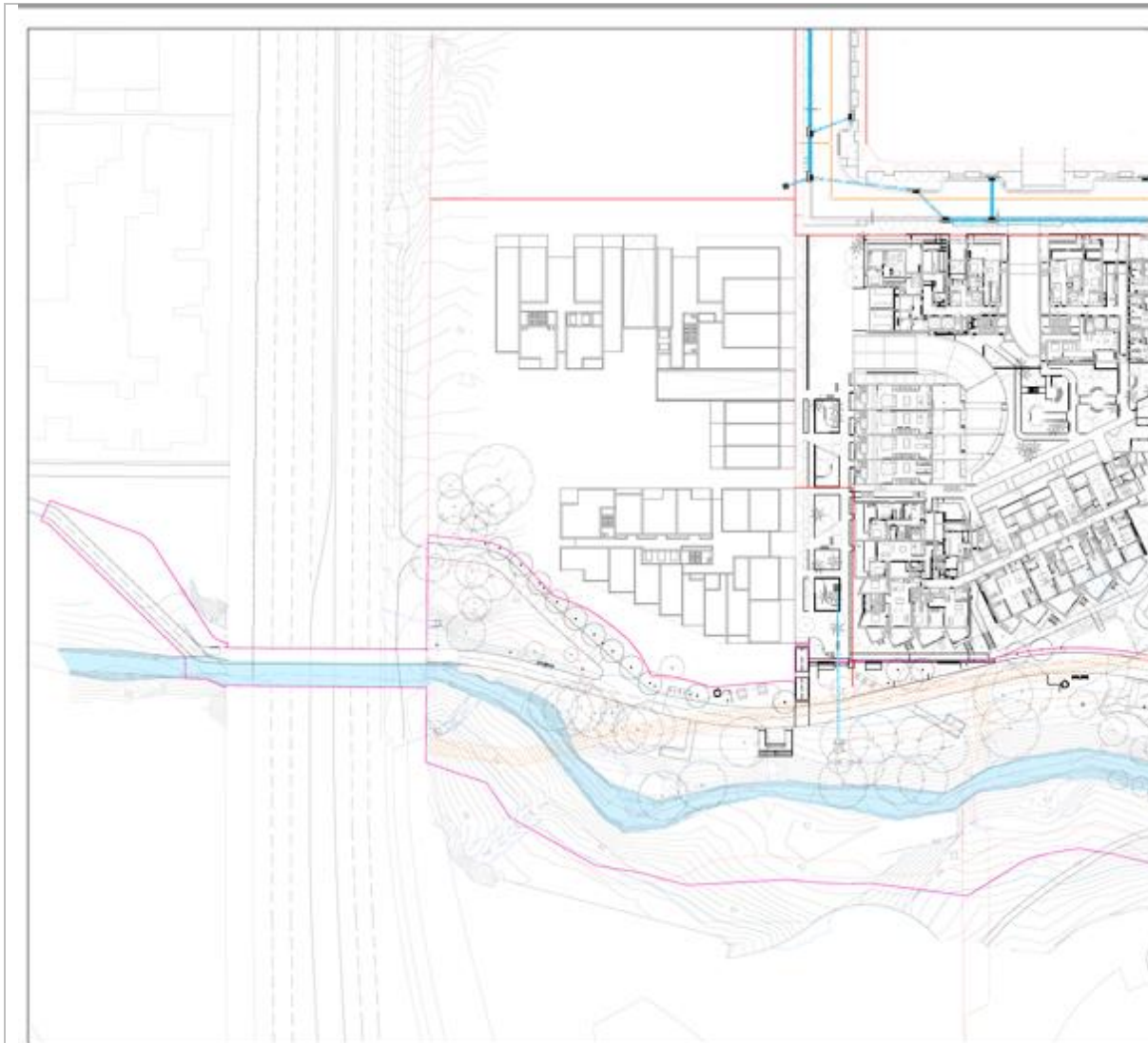


Figure 1.5. Site plan/ Second Order Waterway 20m riparian corridor



Figure 1.6. Concept Development – Latest landscape plans by HASSELLSTUDIO

1.3 Sources of information used in the assessment

The following sources of information were used for this assessment:

Bionet, previous studies and the author's knowledge of the local area, were used to determine the possible occurrence of endangered ecological communities and threatened plant species on-site. The Bionet records accessed cover a 10km² area extending from the site and include recordings from 1993 to the present day.

Aerial imagery from Near Map 2022.

Records from the following databases were collated and reviewed:

- Atlas of NSW (Bionet). New South Wales, Office of Environment and Heritage (OEH).
- NSW Threatened Species Information (DPIE).
- The Native Vegetation of the Sydney Metropolitan Area - Version 3.1 (OEH, 2016) VIS_ID 4489.
- PlantNET (The Royal Botanic Gardens and Domain Trust 2014).
- Protected Matters Search Tool of the Australian Government Department of the Environment (DoE) for matters protected by the Cwlth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Plans and drawings specific to this development:

- Hassell Studio

Other sources of information:

- Guidelines for riparian corridors on waterfront land NSW (2012)

1.3.1 Biodiversity Offsets Scheme Threshold

The Biodiversity Offsets Scheme (BOS) is a test used to determine when it is necessary to engage an accredited assessor to apply the Biodiversity Assessment Method (the BAM) and thus evaluate the impacts of a proposal.

It has been concluded that the development **does not trigger the BOS** area clearing threshold nor is the site located on the BV map. The area clearing threshold trigger is based on the minimum or actual lot size associated with the property (1Ha – 40Ha) and the thresholds for clearing which triggers BOS (0.5Ha or more). The building footprint will not remove more than 0.5Ha of native vegetation therefore the development does not trigger the BOS.

Biodiversity Values Map threshold

The Biodiversity Values (BV) Map identifies land of high biodiversity value, as defined by clause 7.3(3) of the Biodiversity Conservation Regulation 2017. The Biodiversity Offsets Scheme applies to clearing of native vegetation and other biodiversity impacts prescribed by clause 6.1 of the Biodiversity Regulation 2017 on land identified on the map.



The site (red mark) is not located on high biodiversity value land as identified on the Biodiversity Values Map.

Therefore, the development does not trigger the BOS as per the Biodiversity Values Map threshold.

Figure 1.7. The site (red mark) is located on the BV map. Source: DPIE 2022.

1.4 Overall Water Management Plan

As part of a riparian zone plan, it is required to develop a Water Management Plan for Shrimpton's Creek. Therefore, the following aspects are considered for the proposed outlets to be discharged to the creek. This document will also outline some important and relevant information that can be helpful to understand the concept of the plan and the habitat opportunities in the freshwater reintroduction zone.

The Figure below shows the measures that have been set out for the revitalization of Shrimpton's Creek at Midtown.

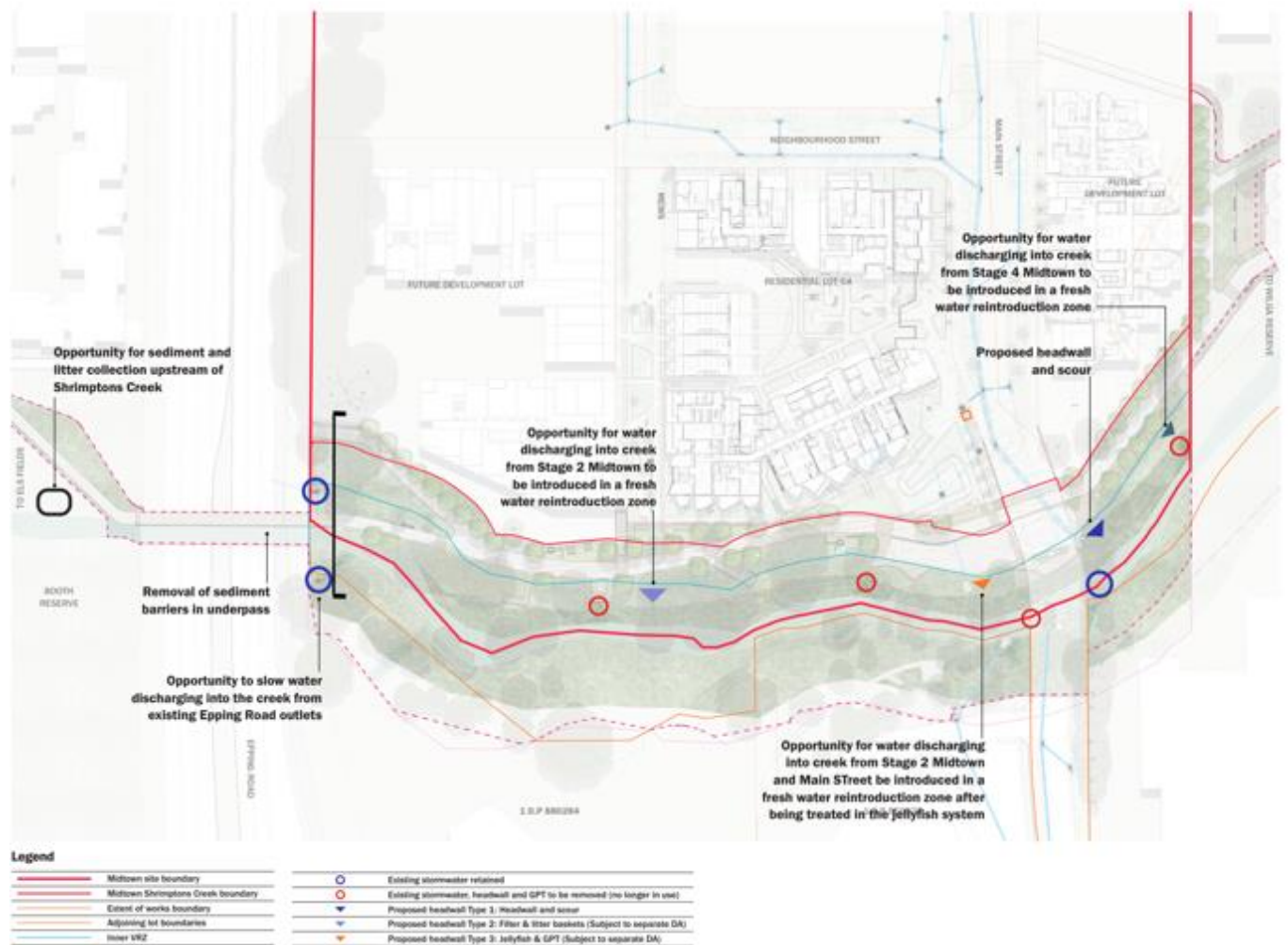


Figure 1.8 Management of water quality for Shrimpton's Creek

1.5 Concept Plan

Two management areas.

Inner 50% (10m from top of bank)

Outer 50% (10m to 20m)

Compensation areas – where works are in the riparian area and can be equaled out by an enviro zone outside the 20m corridor.

Plus, acknowledgement of existing use (to count for skate park etc.).

Works to be in as close alignment with the Act as possible.

Three Management Zones – in stream

Aim in creek to minimize work.

Objectives –

- 1) have a low flow preferential path with minimisation of isolate pools (mosquito habitat),
- 2) ability to collect and removed sediment.
- 3) Introduction of in-stream and bank habitat for frogs, dragonfly etc
- 4) Retain the 'casual' steppingstone crossing use by community presently

Sketches of these 4 are included.

Also ideally work with the Council for responsibility to be taken for materials entering this section of creek from up stream.

Opportunities for a deflector upstream to divert sediment and or large debris out of the water and on the land. This can then be dispersed (woody debris) or removed rubbish. It is noted that most material was woody debris.

Four Management Zones – on edge

Brief description below and sketches

	Description	Treatment	Area	Stage
1	Stormwater – freshwater reintroduction zones	Installation or revamp of stormwater outlets to enable level spreading of low flows and appropriately directed high flows (no bank scour/erosion minimal hard engineering	Two existing and one addition proposed. See figure showing locations	Early
2	Areas with trees and heavy weed in shrub and ground level with steep areas of bank.	Brushcut. Cut and poison weeds – leave ground weed layer until later stages. Removed shrub weeds (in stages) and determined if ground works are required – that is shaping of banks and battering back slope in places.	Trees areas – areas where trees are to be retained – see plan.	Work in sequence from round storm water outlet then up stream to downstream. Leaving habitat for birds as works progress.
3	Areas with only weed and no near-surface tree roots.	Gently scrape the surface to remove some weed and create suitable bank/batter slope for maximising stabilisation and planting opportunities. Where practical, create two height benches. One inundated in mid-size flows and one above this. Slope to be in in 4 or less.	Where canopy, not present – needs to be mapped on site for final detail in order to protect trees roots that may be present to be marked on site as	Work in sequence from round stormwater outlet then upstream to downstream. Leaving habitat for birds as works progress.

4	Areas adjoining infrastructure including in the overpass	Weed removal then planting with low-growing species that retain sight lines.	Skate Park, Stormwater areas, overpass, along the track to 2m.	Weed removal any time (staged). Planting after infrastructure complete.
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1.6 Habitat Opportunities

- Incorporation of new wetlands and the regeneration of aquatic habitat within the open areas to replace areas lost for infrastructure.
- There is also an opportunity to provide better habitats for a diversity of plant communities that will provide valuable habitat for a variety of fauna and can support diverse and abundant communities.
- Species from the Dry Sclerophyll Forest are recommended planting for the site. There is also important to consider species which are known to occur in the area and commonly used in riparian revegetation programs.



Figure 1. 9 Example of Creekside planting

2 Appendix 1 Native vegetation and Threatened Species

2.1 Desktop results – Plant Community Types (PCTs) and Vegetation Zones

A review of the most up-to-date vegetation mapping, CumberlandPlainWest_VIS_4207 (OEH 2016), identified one plant community type (PCT) within site, identified as PCT 1776 – Sydney Coastal Dry-Sclerophyll Forest.

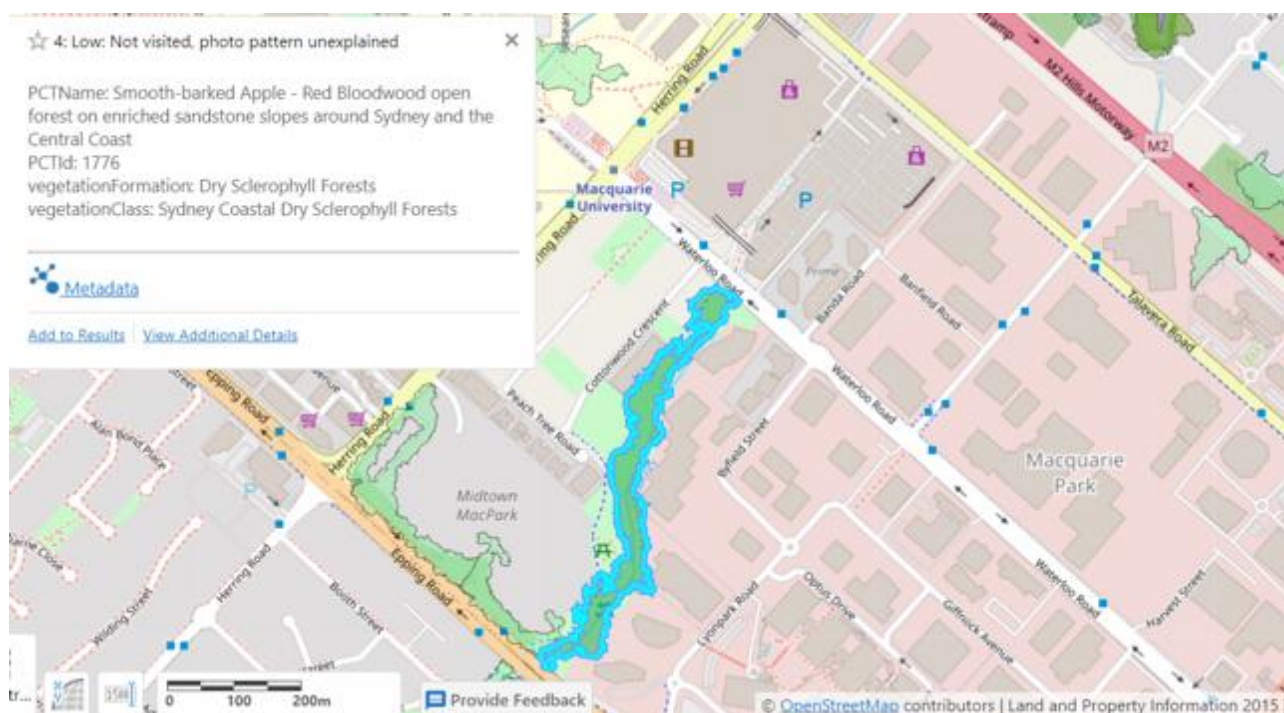


Figure 2.1. Current PCTs and Vegetation Zones. Source: SEED 2022.

2.2 Field survey method – PCTs and Vegetation Zones

2.2.1 Field Survey

A desktop analysis of arial images, knowledge of the land, and environmental software was conducted by Ecologist Jessica Miranda and Senior Ecologist Geraldene Dalby-Ball in November 2022. Geraldene is also very familiar (over 30 years' experience) with the flora and fauna of the local area.

2.3 Threatened flora

Bionet results were compared with the list from the BAM calculator to ensure all possible species were considered. BioNet records within 10km of the study site had returned a total of 21 species currently listed as vulnerable or endangered under state and/or commonwealth legislation. The vulnerable and endangered species to focus on-site searches for can be seen in **Table 2.1** below. This is based on likelihood of occurrence.

Table 2.1. **Threatened flora recorded within a 10km radius since 1993. NSW OEH Bionet 2022.**

Family	Scientific Name	Common Name	NSW status	Comm. status	Records
Convolvulaceae	<i>Wilsonia backhousei</i>	Narrow-leafed Wilsonia	V		2
Dilleniaceae	<i>Hibbertia spanantha</i>	Julian's Hibbertia	E4A,2	CE	6
Elaeocarpaceae	<i>Tetratheca glandulosa</i>		V		28
Ericaceae	<i>Epacris purpurascens</i> var. <i>purpurascens</i>		V		33
Fabaceae (Mimosoideae)	<i>Acacia clunies-rossiae</i>	Kanangra Wattle	V		1
Fabaceae (Mimosoideae)	<i>Acacia pubescens</i>	Downy Wattle	V	V	2
Grammitidaceae	<i>Grammitis stenophylla</i>	Narrow-leaf Finger Fern	E1,3		4
Haloragaceae	<i>Haloragodendron lucasii</i>		E1	E	3
Malvaceae	<i>Lasiopetalum joyceae</i>		V	V	1
Myrtaceae	<i>Callistemon linearifolius</i>	Netted Bottle Brush	V,3		11
Myrtaceae	<i>Darwinia biflora</i>		V	V	389
Myrtaceae	<i>Eucalyptus camfieldii</i>	Camfield's Stringybark	V	V	4
Myrtaceae	<i>Eucalyptus nicholii</i>	Narrow-leafed Black Peppermint	V	V	3
Myrtaceae	<i>Melaleuca deanei</i>	Deane's Paperbark	V	V	15
Myrtaceae	<i>Rhodamnia rubescens</i>	Scrub Turpentine	E4A	CE	5
Myrtaceae	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E1	V	32
Orchidaceae	<i>Rhizanthella slateri</i>	Eastern Australian Underground Orchid	V,P,2	E	1
Orchidaceae	<i>Thelymitra atronitida</i>	Black-hooded Sun Orchid	E4A,P,2		1
Proteaceae	<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Juniper-leaved Grevillea	V		1
Proteaceae	<i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut	V	V	1
Thymelaeaceae	<i>Pimelea curviflora</i> var. <i>curviflora</i>		V	V	6

Note: E = Endangered, V = Vulnerable, P= Protected. **Report generated on 8/11/2022**

2.4 Threatened fauna

36 fauna species have been recorded within 10km of the study according to BioNet records since 1993 and are currently listed as vulnerable or endangered under state and/or commonwealth legislation. The

vulnerable and endangered species to focus on-site searches for can be seen in **Table 2.2** below, this is based on the likelihood of occurrence.

Table 2.2 Threatened fauna recorded within a 10km radius since 1993. NSW OEH Bionet 2022.

Class	Scientific Name	Common Name	NSW status	Comm. status	Records
Amphibia	<i>Pseudophryne australis</i>	Red-crowned Toadlet	V,P		65
Amphibia	<i>Litoria aurea</i>	Green and Golden Bell Frog	E1,P	V	4
Amphibia	<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V,P	V	2
Reptilia	<i>Varanus rosenbergi</i>	Rosenberg's Goanna	V,P		4
Aves	<i>Ptilinopus superbus</i>	Superb Fruit-Dove	V,P		1
Aves	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1,P		1
Aves	<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1,P	E	2
Aves	<i>Ixobrychus flavicollis</i>	Black Bittern	V,P		7
Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P		17
Aves	<i>Hieraaetus morphnoides</i>	Little Eagle	V,P		2
Aves	^^ <i>Lophoictinia isura</i>	Square-tailed Kite	V,P,3		7
Aves	^^ <i>Pandion cristatus</i>	Eastern Osprey	V,P,3		7
Aves	^^ <i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo population in the Hornsby and Ku-ring-gai Local Government Areas	E2,V,P,3	E	26
Aves	^^ <i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V,P,3	E	27
Aves	^ <i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	V,P,2		6
Aves	<i>Glossopsitta pusilla</i>	Little Lorikeet	V,P		6
Aves	^^ <i>Lathamus discolor</i>	Swift Parrot	E1,P,3	CE	16
Aves	^^ <i>Neophema pulchella</i>	Turquoise Parrot	V,P,3		1
Aves	^^ <i>Ninox connivens</i>	Barking Owl	V,P,3		7
Aves	^^ <i>Ninox strenua</i>	Powerful Owl	V,P,3		953
Aves	^^ <i>Tyto novaehollandiae</i>	Masked Owl	V,P,3		1
Aves	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		2
Aves	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,P		1

Class	Scientific Name	Common Name	NSW status	Comm. status	Records
Mammalia	<i>Phascolarctos cinereus</i>	Koala	E1,P	E	2
Mammalia	<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V,P		19
Mammalia	<i>Petaurus australis</i>	Yellow-bellied Glider	V,P	V	1
Mammalia	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	855
Mammalia	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V,P		16
Mammalia	<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V,P		19
Mammalia	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V,P	V	2
Mammalia	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V,P		9
Mammalia	<i>Myotis macropus</i>	Southern Myotis	V,P		22
Mammalia	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P		15
Mammalia	<i>Miniopterus australis</i>	Little Bent-winged Bat	V,P		59
Mammalia	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P		181
Gastropoda	<i>Pommerhelix duralensis</i>	Dural Land Snail	E1	E	3

Note: E = Endangered, V = Vulnerable, P= Protected. **Report generated on 8/11/2022**

Bionet Records

Bionet records are shown in Figures 2.2 and 2.3. Reports found close to the area of study two species identified as Critically Endangered.

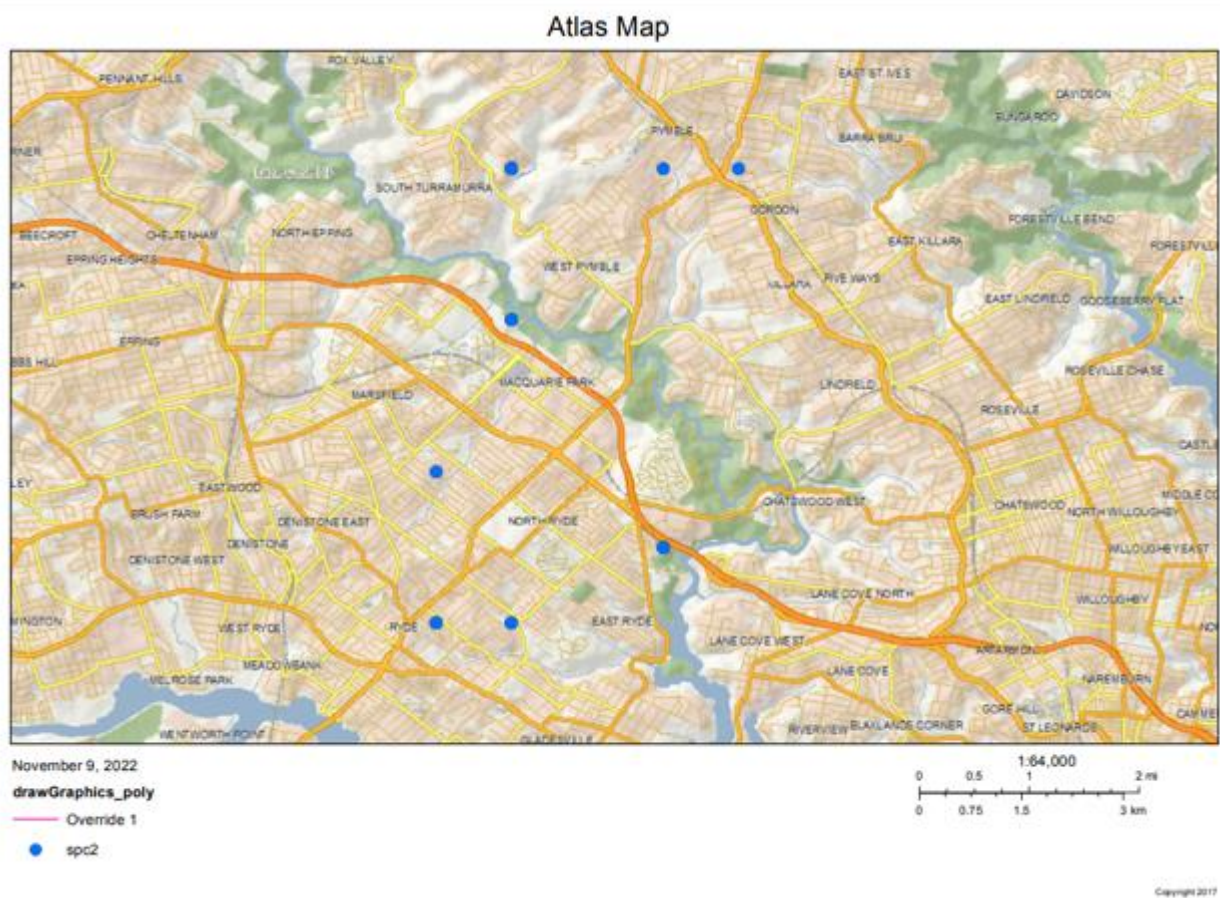


Figure 2.2. Threatened plants Bionet species sighted within 10km radius. Source: Bionet Atlas 2022.



Figure 2.3. Threatened Bionet species sighted. The red polygon outlines the parameter of the site. Source: SEED 2022.

3 Expertise of author

With over 25 years wetland and urban ecology experience, a great passion for what she does, and extensive technical and on-ground knowledge make Geraldene a valuable contribution to any project.

Geraldene has over 8 years local government experience as manager of environment and education for Pittwater Council. Geraldene presented papers on the topic at the NSW Coastal Conference, Sydney CMA and Hawkesbury Nepean forums. Geraldene is a Technical Advisor Sydney Olympic Park Wetland Education and Training (WET) panel.

Geraldene has up to date knowledge of environmental policies and frequently provides input to such works. Geraldene was a key contributor to the recent set of Guidelines commissioned by South East Queensland Healthy Waterways Water Sensitive Urban Design Guidelines. Geraldene's role included significant contributions and review of the Guideline for Maintaining WSUD Assets and the Guideline for Rectifying WSUD Assets.

Geraldene is a frequent contributor to many community and professional workshops on ecological matters particularly relating to environmental management. She is an excellent Project Manager.

Geraldene is a joint author on the popular book Burnum Burnum's Wildthings published by Sainty and Associates. Author of the Saltmarsh Restoration Chapter Estuary Plants of East Coast Australia published by Sainty and Associates (2013). Geraldene's early work included 5 years with Wetland Expert Geoff Sainty of Sainty and Associates. Geraldene is an expert in creating and enhancing urban biodiversity habitat and linking People with Place.

Geraldene Dalby-Ball DIRECTOR



SPECIALISATIONS

- Urban Ecology – and habitat rehabilitation and re-creation.
- Urban waterway management – assessing, designing and supervising rehabilitation works
- Saltmarsh and Wetland re-creation and restoration – assessment, design and monitoring
- Engaging others in the area of environmental care and connection
- Technical Advisor – environmental design, guidelines and policies
- Sound knowledge and practical application of experimental design and statistics
- Project management and supervision
- Grant writing and grant assessment
- Budget estimates and tender selection
- Expert witness in the Land and Environment Court

CAREER SUMMARY

- **Director and Ecologist**, Ecological Consultants Australia. 2014-*present*
- **Director and Ecologist**, Dragonfly Environmental. 1998-*present*
- **Manager** Natural Resources and Education, Pittwater Council 2002-2010
- **Wetland Ecologist** Sainty and Associates 1995-2002

QUALIFICATIONS AND MEMBERSHIPS

- **Bachelor of Science with 1st Class Honors**, Sydney University
- WorkCover WHS General Induction of Construction Industry NSW White Card.
- Senior First Aid Certificate.
- **Practicing member and vice president** Ecological Consultants Association of NSW



Jessica Miranda Parra
ECOLOGIST



Jessica has valuable on-ground experience working in Environmental Consulting, from data collection, using appropriate field methodologies depending on the study to the impact assessment and technical monitoring report. Through her studies, Jessica has developed experience in aquatic vegetation, wetland communities, ecological assessments, and reporting for contaminated land.

Highly skilled not only in terms of water quality monitoring to assess the structure of the biological communities in the marine environment but also qualified to conduct field surveys on land studies with knowledge of the state environmental regulatory framework.

In Sydney, she has been focused to redirect her professional career studying Environmental Management and Sustainability which has given her new knowledge in terms of efficiency in business operations, sustainable work practices and risk assessment. Jessica is passionate about conducting scientific studies and promoting solutions to help clients mitigate the environmental impact and contribute to a more sustainable world.

SPECIALISATIONS

- Urban and landscape ecology
- Flora and Fauna Assessments
- Biodiversity Assessment
- Habitat tree assessment, marking and mapping
- GIS mapping

CAREER SUMMARY

Ecologist, Ecological Consultants Australia. *2022-present*

QUALIFICATIONS AND MEMBERSHIPS

- **Bachelor of Environmental Science Major in Biology**, Macquarie University.
- **WHS General Induction of Construction Industry NSW** White Card.
- **Cert IV in Environmental Management & Sustainability**, Australian College of Business Intelligence, Sydney, 2021.
- **Diploma of Sustainable Operations and Sustainability**, Australian College of Business Intelligence, Sydney, 2022