11-13 Percy St Auburn - Watercourse and Riparian Assessment

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Template 2.8.1

Contents

List of Figures

List of Tables

Abbreviations

Abbreviation	Description
BC Act	*Biodiversity Conservation Act 2016*
Coastal Management SEPP	*State Environmental Planning Policy (Coastal Management) 2018*
DPIE	Department of Planning, Industry and Environment
ELA	Eco Logical Australia Pty Ltd
EP&A Act	*Environmental Protection and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FM Act	*Fisheries Management Act 1994*
KFH	Key Fish Habitat
MNES	Matters of National Environmental Significance
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
NRAR	Natural Resources Access Regulator

Abbreviation	Description
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSD	State Significant Development
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
WM Act	*Water Management Act 2000*
WSUD	Water Sensitive Urban Design

Executive Summary

Eco Logical Australia Pty Ltd was engaged by Fabcot Pty Ltd to prepare a Watercourse and Riparian Assessment for the proposed State Significant Development (SSD) at 11-13 Percy Road, Auburn. The SSD Application seeks approval for the redevelopment of the site. The site is bordered by Haslams Creek, a concrete-lined 1st order watercourse to the east

A field survey detailed that the creekline was completely concrete-lined and contained no aquatic habitat features. Riparian vegetation adjacent to the study area was in poor condition and dominated by exotic species.

The proposed development was assessed for potential impacts to the creekline adjacent to the site and downstream environments. A Model for Urban Stormwater Improvement Conceptualisation (MUSIC) was used to simulate the pre- and post-development conditions to quantify these impacts. The redevelopment of the project site into the landform proposed will have a positive impact on the quality and quantity of stormwater discharging from the site, compared to the current condition, when Water Sensitive Urban Design (WSUD) features are incorporated into the design.

As a result of an improvement of the quality of water leaving the site following redevelopment, there is unlikely to be a significant impact to Haslams Creek adjacent to the development site or to any downstream environments.

1. Introduction

Eco Logical Australia (ELA) was engaged by Fabcot Pty Ltd to prepare a Watercourse and Riparian Assessment for potential direct and indirect impacts from a proposed redevelopment at 11-13 Percy Street, Auburn, on Haslams Creek, which runs adjacent to the site. The proposed development is classified as State Significant Development (SSD) (SSD-10470) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1 Project Location

The proposed redevelopment is located in western Sydney, within the Cumberland Local Government Area (LGA). The study area (Figure 1) is defined by the boundaries of 11-13 Percy Street Auburn (Lots 1 and 2 DP 1183821). The development site is in the industrial area of Auburn, and is bordered to the east by Haslams Creek, a first order watercourse. The development site has been subject to considerable disturbance and consists of predominantly impervious surfaces, with its current use as the location for a car repair business and warehouse storage.

1.2 Project Description

The proposed development site is approximately 3.1 ha in size. The SSD Application involves the proposed construction of a customer fulfillment centre including warehouse, offices, parking for staff and delivery vans and delivery docks, with the footprint of this development shown in Figure 1 (Nettleton Tribe, Site Plan Option 7, 11250_SK038, Issue P1). The development will also include the removal of three existing stormwater pipes that discharge into Haslams Creek.

Figure 1: Location of study area

2. Legislative Context

The specific riparian and aquatic regulatory requirements and policies were reviewed to determine their application to the Percy St Auburn site. These included:

- *Fisheries Management Act 1994* (FM Act)
- *Water Management Act 2000* (WM Act)
- *State Environmental Planning Policy (Coastal Management) 2018* (Coastal Management SEPP)
- Policy and guidelines for fish habitat conservation and management (Fairfull, 2013)
- *Auburn Local Environmental Plan 2010*
- Draft Cumberland Local Environmental Plan 2020.

2.1 Fisheries Management Act 1994

The FM Act governs the management of fish and their habitat in NSW. The objectives of the FM Act are to conserve fish stocks and key fish habitats, conserve threatened species, populations and ecological communities of fish and marine vegetation and to promote ecologically sustainable development. The FM Act also regulates activities involving dredging and / or reclamation of aquatic habitats, obstruction of fish passage, harming marine vegetation and use of explosives within a waterway.

In accordance with Part 4, Division 1.7, Section 4.41 (b) of the EP&A Act, applications for separate permits under Sections 201, 205 or 219 of the FM Act are not required for SSDA, but the offset policy still applies under the FM Act. In order to inform a comparative and acceptable assessment of impacts to aquatic habitat, the regulatory framework of the FM Act and associated guidelines have been adopted for this assessment.

A search of the Commonwealth Matters of National Environmental Significance (MNES) Search tool, DPIE BioNet database search and Fisheries Threatened Species distribution maps (Riches et al, 2016) identified three species utilising aquatic habitat with the potential to be found within the study area (Table 1). As there are limited records within 5 km of the study area and a lack of suitable habitat, it is unlikely that these species would be found within the proposed development area.

Table 1: Likelihood of occurrence table for aquatic species

Scientific Name	Common Name	FM Act	EPBC Act	Habitat Associations	Records within 5 km	Likelihood of occurrence
Archaeophya adamsi	Adam's Emerald Dragonfly	E	-	Larvae have been found in narrow, shaded riffle zones with moss and abundant riparian vegetation (often closed canopy) in small to moderate sized creeks with gravel or sandy bottoms.	0	Unlikely, no suitable habitat within or adjacent to study area.
Epinephelus daemelii	Black Rockcod	V	V	Usually found in caves, gutters and beneath bommies on rocky reefs, from near shore environments to depths of at least 50 m. Small juveniles are often found in coastal rock pools, and larger juveniles around rocky shores in estuaries.	0	No, no suitable habitat within or adjacent to study area.

Scientific Name	Common Name	FM Act	EPBC Act	Habitat Associations	Records within 5 km	Likelihood of occurrence
Macquaria australasica	Macquarie Perch	E	E	Habitat for this species is bottom or mid-water in slow-flowing freshwater rivers with deep holes, typically in the upper reaches of forested catchments with intact riparian vegetation. Macquarie Perch also do well in some upper catchment lakes. In some parts of its range, the species is reduced to taking refuge in small pools which persist in midland–upland areas through the drier summer periods.	0	No, no suitable habitat and no records within 5 km of site.

Note: E = Endangered, V= Vulnerable.

The *Policy and guidelines for fish habitat conservation and management* (Fairfull, 2013) (herein referred to as the 'Policy') is a supplementary document that outlines the requirements and obligations under the FM Act and the *Fisheries Management (General) Regulation 2010* and were developed to maintain and enhance fish habitat and assist in the protection of threatened species. The Policy provides a definition of key fish habitat (KFH) and provides guidance for assigning a rating for fish habitat sensitivity and the type of key fish habitat. The Policy also states that streams that have been concrete-lined are not considered key fish habitat.

The reach of Haslams Creek is not mapped as Key Fish Habitat (KFH), however approximately 800 m downstream of the study area has been mapped as KFH (Figure 2). A review of the Fisheries Spatial Portal found that there was no freshwater fish community status assigned to Haslams Creek, however the Parramatta River downstream of the site was labelled as 'poor'.

DPI Fisheries mapping indicates that estuarine macrophytes such as mangroves and saltmarsh, which are protected as marine vegetation under the FM Act, occur downstream of the project reach (Figure 3).

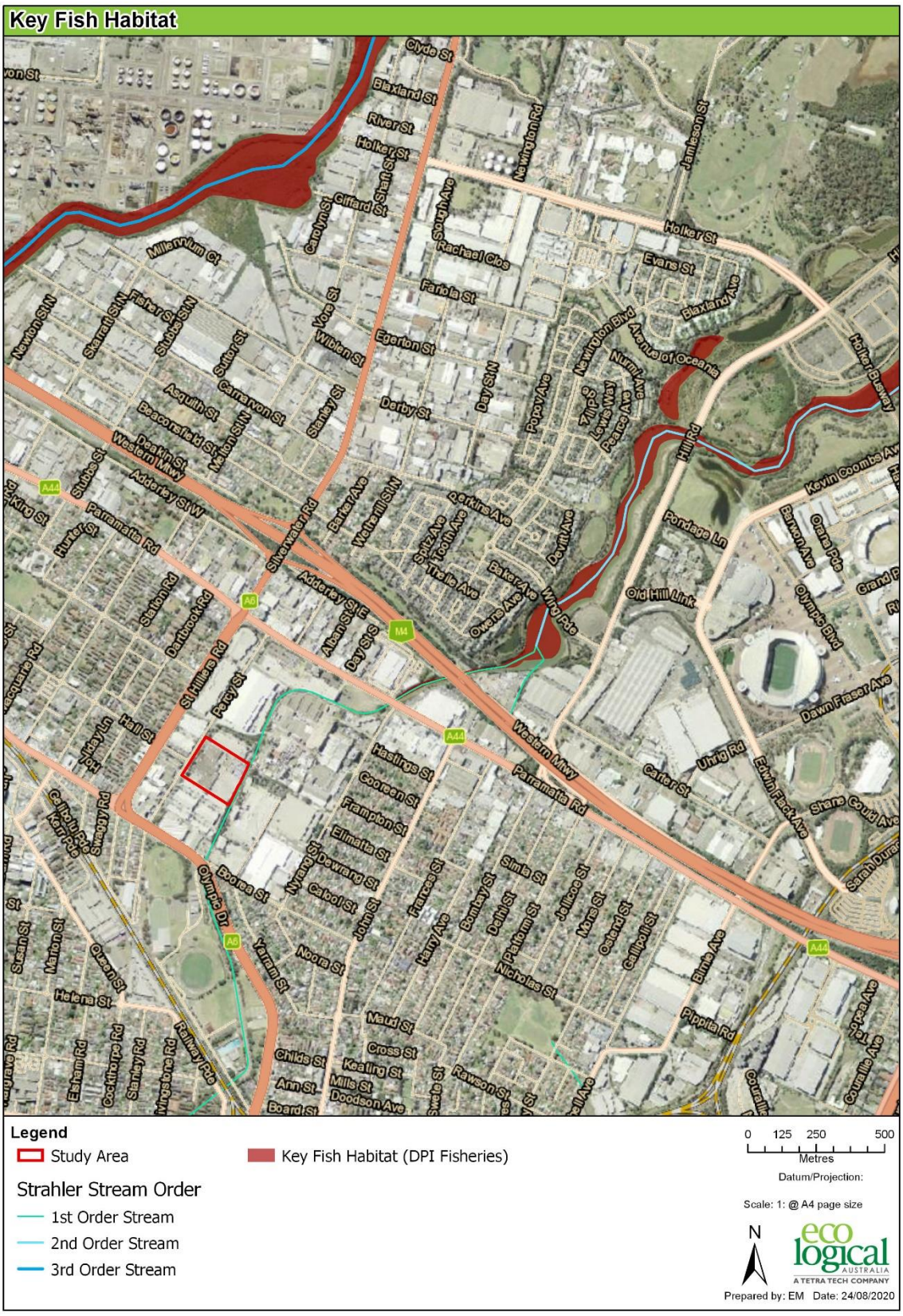

Figure 2: Mapped Key Fish Habitat downstream of the study area

Figure 3: Mapped estuarine macrophytes downstream of the study area

2.2 Water Management Act 2000

The main objective of the WM Act is to manage NSW water in a sustainable and integrated manner that will benefit current generations without compromising future generations' ability to meet their needs. The WM Act is administered by the Natural Resources Access Regulator (NRAR) and establishes an approval regime for activities within waterfront land, defined as the land 40 m from the highest bank of a river, lake or estuary.

Under the WM Act framework, activities and works proposed on waterfront land are regulated. These activities include:

- the construction of buildings or carrying out of works
- the removal of material or vegetation from land by excavation or any other means
- the deposition of material on land by landfill or otherwise
- any activity that affects the quantity or flow of water in a water source.

In accordance with Part 4, Division 1.7, Section 4.41 (g) of the EP&A Act, a water use approval under Section 89, a water management work approval under Section 90 or an activity approval (other than an aquifer interference approval) under Section 91 of the WM Act is not required for SSDA.

However, in order to inform a comparative and acceptable assessment of riparian impacts, the regulatory framework of the WM Act and associated guidelines have been adopted for this assessment.

As Haslams Creek at the rear of the study area is a fully concrete-lined channel, the proposed works are not considered a controlled activity under the WM Act.

2.3 State Environmental Planning Policy (Coastal Management) 2018

The *State Environmental Planning Policy (Coastal Management) 2018* (Coastal Management SEPP) aims to manage development within coastal zones and protect the environmental assets of the coast. In accordance with Section 5 of the *Coastal Management Act 2016*, the term coastal zone is defined as any area of land that is comprised of the following coastal management areas:

- Coastal wetlands and littoral rainforests
- Coastal vulnerability areas
- Coastal environment areas
- Coastal use areas.

As shown in Figure 4, the study area is upstream of areas mapped as Coastal Wetlands and Proximity Area for Coastal Wetlands and Coastal Environmental Area under the Coastal Management SEPP. While the site is not within a mapped coastal management area, consideration of the potential impacts of the proposed development to these downstream environments should be included.

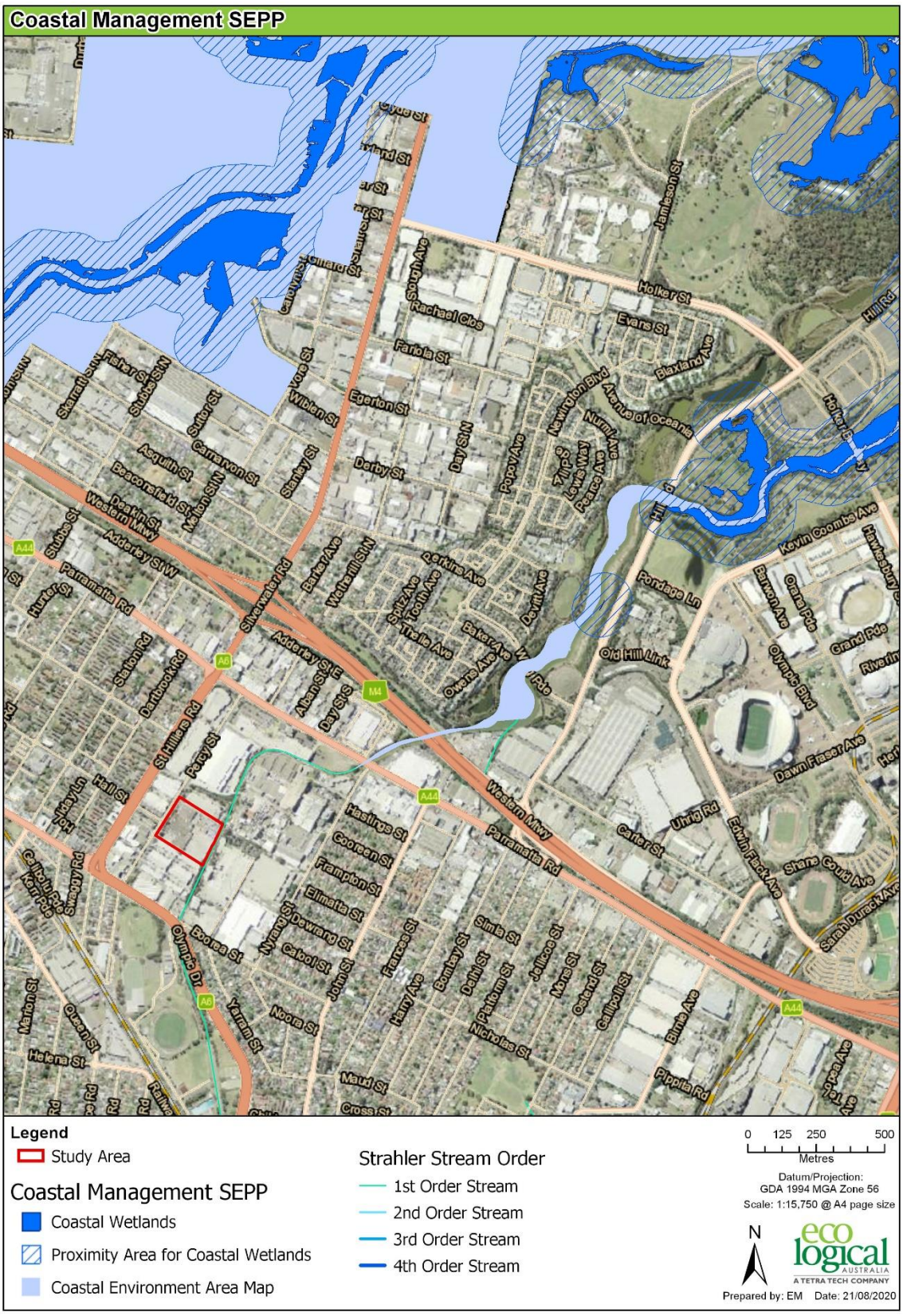

Figure 4: Coastal SEPP mapping downstream of the study area

2.4 Environment Protection and Biodiversity Conservation Act 1999

The Protected Matters search identified two Nationally Important Wetlands within 5 km of the study area: Bicentennial Park and Newington Wetlands. Newington Wetlands are approximately 3.6 km downstream of the study area and Bicentennial Park is approximately 3.7 km downstream. Neither of these sites are directly connected to the study area at Percy Street.

2.5 Auburn Local Environmental Plan 2010

The *Auburn Local Environmental Plan 2020* (Auburn LEP) does not include any waterway or riparian-specific provisions.

2.6 Draft *Cumberland Local Environmental Plan 2020*

Cumberland Council have prepared a draft Cumberland LEP following amalgamation of parts of the former Auburn, Holroyd and Parramatta Councils. The draft Cumberland LEP includes a clause for Riparian land and watercourses and an accompanying Riparian Land and Watercourses Map. The site at 11-13 Percy Street is not mapped on the draft Riparian Land and Watercourses Map.

3. Methods

3.1 Literature and data reviews

The following literature and data sources were reviewed prior to undertaking the field survey:

- BioNet/Atlas of NSW Wildlife 5 km database search (EES 2020)
- EPBC Act Protected Matters Search Tool 5 km database search (DAWE 2020)
- The Native Vegetation of the Sydney Metropolitan Area v.3 (OEH 2016)
- Aerial mapping (SIX Maps)
- Water Management (General) Regulation 2018 hydroline spatial data 1.0
- Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (2013 update) (Fairfull 2013).

3.2 Field survey methods

The Strahler stream order classification was extracted from the DPI Hydroline Spatial Data. A field survey was conducted by one ELA Aquatic Ecologist on 20 August 2020 for the length of Haslams Creek alongside the study area and a reach approximately 1 km downstream to determine the current condition and presence of riparian and aquatic habitat. The following assessments were carried out:

1. Riparian habitat assessment – An assessment of riparian condition and recovery opportunities was conducted for each creek. This assessment considered native vegetation cover, connectivity, quality, bed and bank stability and habitat diversity.

2. Aquatic habitat assessment – An assessment of the aquatic habitat within each reach was completed, which examined the general quality of aquatic habitats, including vegetation structure, regeneration and weed infestations.

3.3 Hydrology Assessment

Henry & Hymas completed a Water Quality Assessment (Henry & Hymas, 2020) for the site, including modelling using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC model) to represent pre- and post-development conditions within the study area. The results of this modelling were used to inform the assessment of impacts on water quality and quantity adjacent to and downstream of the site.

4. Existing environmental conditions

4.1 Haslams Creek

Haslams Creek is a first order watercourse in the Parramatta River catchment and flows to the north east. Adjacent to the study area, Haslams Creek is a concrete-lined channel that is approximately 8 m wide with banks approximately 2 m high (Figure 5 and Figure 6). Base flow conditions were observed within the channel and the flow occupied a 1.5 m width of the channel bed. The creek had no aquatic habitat features and lacked geomorphic diversity.

Adjacent to the southern (upstream) extent of the study area, was an area of mown grass approximately 6 m wide (Figure 7 and Figure 8). This consisted predominantly of exotic herbaceous species including *Plantago lanceolata* (Lamb's Tongue), *Cenchrus clandestinus* (Kikuyu Grass) and *Anredera cordifolia* (Madeira Vine), as well as a few scattered canopy trees of *Cinnamomum camphora* (Camphor Laurel) and *Ligustrum lucidum* (Large-leaved Privet).

At the downstream end of the study area, was an impervious car park, separated from the channel by a thin strip of herbaceous vegetation containing *Conyza bonariensis* (Fleabane), *Bidens pilosa* (Cobbler's Peg) and *Poa annua* (Winter Grass) (Figure 9 and Figure 10).

Figure 5: Haslams Creek adjacent to study area, looking upstream.

Figure 6: Haslams Creek adjacent to study area, looking east.

Figure 7: Area within study area adjacent to Haslams Creek, looking upstream.

Figure 8: Area within study area adjacent to Haslams Creek, looking downstream.

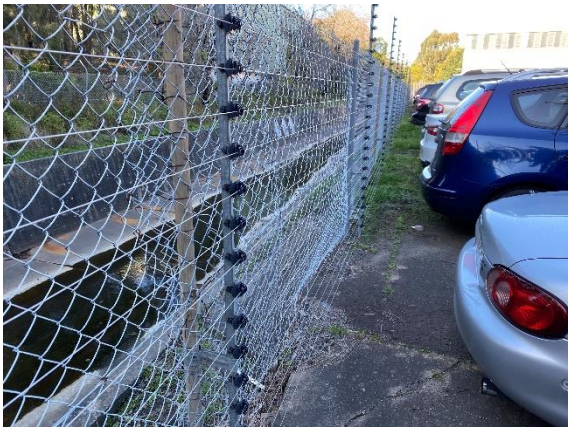

Figure 9: Area adjacent to downstream extent of Haslams Creek within the study area, looking upstream.

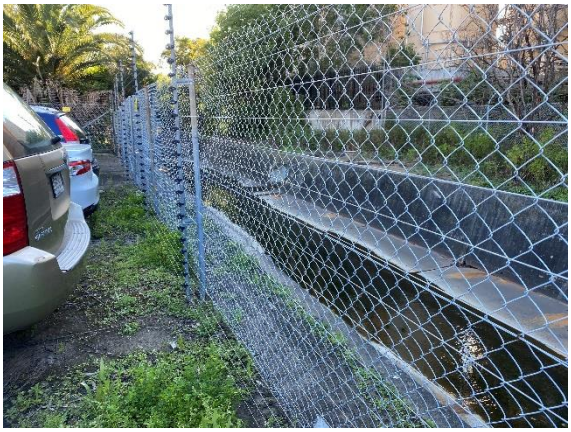

Figure 10: Area adjacent to downstream extent of Haslams Creek within the study area, looking downstream.

An area approximately 1 km downstream of the study area was inspected to develop an idea of what the downstream environment looked like. Haslams Creek within this area was approximately 18 m wide and had concrete lined banks (Figure 11 and Figure 12). The water in Haslams Creek was cloudy and visibility through the water column was less than 0.5 m. There was no geomorphic variability within the creek, in that no pools or riffles were observed. Vegetation alongside the creek was dominated by exotic species on the right bank and was limited to *Casuarina glauca* species scattered alongside the left bank.

Figure 11: Haslams Creek downstream of the study area, looking upstream.

Figure 12: Haslams Creek downstream of the study area, looking downstream.

5. Impact Assessment

5.1 Degradation of water quality

Without water quality intervention in the form of stormwater quality improvement devices or water sensitive urban design features, the proposed redevelopment at 11-13 Percy Street, Auburn, has the potential to have a negative impact on the quality of stormwater generated from the site and entering adjacent creek.

There is the potential for sediment and waste material generated as part of the construction of the crossing to enter the waterway. This would increase the turbidity of the water and potentially introduce chemicals to the creek, and ultimately degrade the water quality downstream. As such, sediment fences or equivalent should be used to filter sediments before they enter watercourses. Storing of any machines, chemicals, oils etc should be in bunded areas away from the watercourses. Sediment fences and bunding should be inspected daily and maintained to prevent the washing of sediment into the creek. These should remain in place until the riparian corridor has been stabilised or revegetated following construction.

There is the potential that during demolition or construction works on site, historic contamination could be disturbed. Detailed assessments of the extent and nature of any potential acid sulfate soils and contaminated groundwater within the site have been completed by Geo-Logix (Geo-Logix 2020a and Geo-Logix 2020b respectively).

In areas where the proposed development includes the construction of new impervious surfaces there is an increased risk of motor vehicle oils, litter and warmer surface water to enter the creek. Subsequent impacts may include water quality issues (heavy metals, oil and grease pollution from vehicles), inorganic clogging of aquatic habitats (litter/rubbish) and destruction of macroinvertebrate communities (warm water inflows). Another impact common in urban areas is when mass leaf drops from deciduous street trees wash into the creek. Large amounts of non-native leaves deposited in a short time cause a decline in water quality during decomposition. These leaves are also not a suitable food resource for macroinvertebrates, which prefer slow-decomposing native leaves that are evenly deposited throughout the year, and their rapid decomposition causes a decline in dissolved oxygen.

The MUSIC model has identified that water will be discharged from the development site in two ways – from the front of the site, where stormwater discharges into the Council stormwater network, and the back of the site, which drains into Halsams Creek. Table 2 compares the pre-and post-redevelopment scenarios considered in MUSIC for the whole site. All water quality parameters are modelled to improve, and the annual flow volume discharged from the site will be unchanged following the redevelopment of the site.

Table 2: Pre and post development water quality for the site (Source: Henry & Hymas, 2020)

Parameter	Pre-development	Post development	Change (%)
Flow (ML/yr)	220	220	0
Total Suspended Solids (kg/yr)	39,400	718	-98.2
Total Phosphorus (kg/yr)	64.4	2.97	-95.4

Parameter	Pre-development	Post development	Change (%)
Total Nitrogen (kg/yr)	480	28.6	-94
Gross Pollutants (kg/yr)	5,880	5.53	-99.9

The MUSIC model identifies that water quality discharged into Haslams Creek or the Council stormwater system will be improved following redevelopment. Therefore, the impact on downstream environments and fauna species that use the downstream area for habitat would be beneficial.

The Agency comments provided in response to the request for Secretary's Environmental Assessment Requirements (SEARs) for the site require the background conditions of the creek affected by the development to be described, including Indicators and trigger values/criteria for the environmental values in accordance with the ANZECC (2000) Guidelines for Fresh and Marine Water Quality and/or local objectives, criteria or targets endorsed by the NSW Government. The ANZECC (2000) Guidelines were replaced in 2018 by the Australian and New Zealand Guidelines for Fresh & Marine Water Quality (ANZG, 2018). Table 3 outlines the guideline levels for 95% protection of freshwater environments. No water quality testing has been completed as part of this assessment as the creekline is not accessible and no water quality data collected by Council or Sydney Water was publicly available.

Table 3: ANZ guideline levels for protection of freshwater environments (ANZG, 2018)

Analyte	ANZ Guidelines	Units
Total Metals (water) [1]		
Arsenic (As III / As V)	0.024 / 0.013	mg/L
Cadmium	0.0002	mg/L
Chromium (Cr VI)	0.001 (VI)	mg/L
Copper	0.0014	mg/L
Lead	0.0034	mg/L
Mercury (inorganic)	0.0006	mg/L
Nickel	0.011	mg/L
Zinc	0.008	mg/L
Nutrients [2]		
Ammonia as N	0.02	mg/L
Nitrite + Nitrate as N (NOx)	0.04	mg/L
Total Nitrogen as N (NOx + TKN)	0.35	mg/L
Total Phosphorus as P	0.025	mg/L
Reactive Phosphorus as P (Filterable RP)	0.02	mg/L
Biological [3]		
Faecal Coliforms	1000	CFU/100mL
Physicochemical [2]		
Temperature		°C

Analyte	ANZ Guidelines	Units
pH	6.5 - 8	pH units
Dissolved Oxygen (% saturation)	85 - 110	% sat
Dissolved Oxygen (mg/L)		mg/L
Turbidity	50	NTU
Oxidation reduction potential (ORP)		mV
Conductivity	300	µS/cm
Salinity		ppt

(1) 95% Level of Protection for Freshwater

(2) Default trigger values for lowland rivers in south-east Australia (values for NSW &Vic east flowing coastal rivers)

(3) Guidelines for recreational water quality and aesthetics: Secondary contact

5.2 Effect on downstream hydrology

The Engineering Report prepared by Henry & Hymas (2020) identified that annual flow volume discharged from the site following development would remain the same as current discharge volumes, that is, that there would be no increase or decrease in the volume of water discharged from the site over the course of a year. This means that there would be no effect on downstream waterbodies, the fauna and flora that inhabit these areas and groundwater dependent ecosystems as a result of the proposed development. It also means that there is likely to be no effect on natural processes and functions within waterbodies including nutrient flow and longitudinal connectivity along waterbodies.

5.3 Surface erosion and sedimentation

Any clearing of vegetation within the riparian zone can result in lack of soil stability. Removing the existing hardstand area for resurfacing could also cause considerable sedimentation of the adjacent waterway. This may cause surface erosion (sheet and gully erosion) and transportation of sediment overland into the nearby creeks. Impacts may include increased water turbidity, which would disrupt light penetration through the water column and impact on primary (plant) production, with flow on effects through the food web. Increased sediment loads may settle in downstream pools, causing a loss of deep habitat, promotion of dense reeds and changes to hydrologic connectivity. Sediment could also smother downstream benthic habitat.

5.4 Increased velocity of surface water runoff

Similar to the impact of pollution from the construction and ongoing use of impervious surfaces, the proposed development can also impact on the velocity of water entering the creekline where impermeable surfaces are constructed over existing vegetation (e.g. proposed car parks). Impacts may include changes to instream flow velocity which can change the aquatic habitat for macroinvertebrates and other small aquatic fauna (e.g. some macroinvertebrates and macrophytes prefer slow water), increased bank erosion from fast discharge resulting in bed and bank erosion, loss of riparian vegetation, loss of edge habitat and sedimentation of downstream environments.

5.5 Policy impacts

5.5.1 Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions

The Agency comments from the Environment, Energy and Science group include the requirement that the background conditions for any water resource likely to be affected by the development including the Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions (Dela-Cruz et al, 2017). This Framework is a protocol that Councils and environmental regulators can use to manage the impact of land use activities on the health of waterways in NSW and was designed for broader landuse planning decisions. Cumberland Council have not adopted this framework as yet for development within the LGA.

5.5.2 Guidelines for controlled activities on waterfront land

NRAR developed the *Guidelines for controlled activities on waterfront land* (2018) to assist with establishment and preservation of the integrity of riparian corridors. However, as per Clause 28 of Schedule 4 of the *Water Management (General) Regulation 2018,* any activity carried out on waterfront land relating to a river where the channel of the river is fully concrete lined or is a fully enclosed pipe channel is exempt from a controlled activity. However, while that means that these guidelines are not applicable to the proposed development, the plans have incorporated a 10 m vegetated setback from Haslams Creek, which is in accordance with these guidelines.

6. Mitigation Measures

6.1 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) should be prepared prior to commencement of any construction works. This should address measures required prior to, during and after works to minimise impacts on the environment. This CEMP should include a Sediment and Erosion Control Plan, prepared in accordance with *The Blue Book – Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) and implemented prior to works, with the aim of achieving an outcome of 'no visible turbid plumes migrating through the waterway'. The Plan must include, as a minimum, the locations and type of erosion and sediment controls to be erected within the development site.

6.2 Stormwater Quality Improvement Devices

Stormwater quality improvement devices, including a 50 kL rainwater tank, 17 Oceanguard pit baskets, 47 Stormfilter cartridges and a CDS0506 Nipper Gross Pollutant Trap are proposed as part of the development. These were factored into the MUSIC model and results are shown in Table 2. All indicators were modelled to decrease when compared to existing conditions.

Water quality protection measures are recommended for adherence where the proposed development includes activities that require:

- Clearing of groundcover (grasses, herbs and shrubs, including exotic species) to bare earth
- Clearing of any native vegetation or mechanical weed removal within the riparian buffer zone
- Construction of any permanent car parks and roads
- Temporary staging areas, compounds and storage areas of oils and chemicals
- Wastewater discharge points, including pumping of groundwater from any below-ground excavation and vehicle wash down bays.

In addition to the incorporation of GPTs and WSUD features in the development, key protection measures suitable to mitigate the above activities include:

- Sediment fences to slow overland flow and trap sediments created from surface erosion.
- Where excess water from the construction site or during operation of the industrial area is to be released into the creekline, constructed storage ponds should be used to first capture and settle the water before discharge. The discharge point should be at a stable point on the creek bank or across a vegetated area, to allow slowing of water before travelling further downstream. Where feasible, the velocity of downstream flows should not exceed natural seasonal flow velocities. Water released in dynamic pulses will give reprieve for fauna travelling upstream.

Urban design should aim to reduce organic pollutants entering the waterway, such as:

- Use native street trees where leaves may enter the stormwater system. Deciduous trees should only be used if leaf drop is contained within a parkland environment.
- Provide a small buffer between mown lawns in public space and stormwater drains. This aims to reduce grass clippings entering the creek.

6.3 Timing and location of works

The proposed redevelopment footprint is adjacent to some areas of the riparian corridor of Haslams Creek. Actual works within these areas are yet to be fully documented, however it is recommended that higher-disturbance activities (such as noisy machinery, flood lights, generators and compounds) be located as far from the riparian buffer as practically possible. This is to avoid disturbance to fauna that rely on the sparse vegetation along Haslams Creek for refuge, roosting, foraging and breeding.

7. SEARs and Agency comments

This Watercourse and Riparian Assessment has been prepared in response to SEARs issued as part of the proposed development at 11-13 Percy Street, Auburn. SEARs relevant to watercourse and riparian matters are listed in Table 4. Relevant Agency comments provided in response to the proposed development have also been addressed in this report, as outlined in italics in Table 5.

Table 4: SEARs addressed within this report

SEARs	Response	Section of this report
The EIS must address the following specific matters: Soils and Water – including: details of impact mitigation, management and monitoring measures	No significant impact on the adjacent and downstream watercourses is likely following redevelopment of the site.	Mitigation measures have been described in Section 6.

Table 5: Agency comments addressed within this report

Agency comment	Response	Section of this report
Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, *watercourses, riparian land*, and groundwater dependent ecosystems, and measures proposed to reduce and mitigate these impacts.	Water quality discharged from the site will be improved following development, therefore having a positive impact on downstream watercourses and riparian land. The annual volume of water discharged from the site will be reduced following development. The small catchment of the development site means that a reduction in annual flow volumes discharged from the site is unlikely to have a significant adverse impact on downstream watercourses and riparian land.	Impact assessment in Sections 5.1 and 5.2 and relevant mitigation measures in Section 6.2.
The EIS must describe background conditions for any water resource likely to be affected by the development, including: *Indicators and trigger values/criteria for the environmental values identified in accordance with the ANZECC (2000) Guidelines for Fresh and Marine Water Quality and / or local objectives, criteria or targets endorsed by the NSW Government.*	No background water quality data was available for Haslams Creek. The ANZ Guidelines (2018) should be used as a guide for the quality of water to be discharged from the site in order to allow protection of freshwater ecosystems downstream.	Section 5.1 and mitigation measures listed in Section 6.2.
Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions http://www.environment.nsw.gov.au/research-and-publications/publications-search/risk-based-framework-for-considering-waterway-	The Risk-based Framework is designed for implementation at the Council or regional scale and is not applicable to the proposed development.	Section 5.5.1

Agency comment	Response	Section of this report
health-outcomes-in-strategic-land-use-planning		
Consideration of relevant legislation, policies and guidelines, including the NSW Aquifer Interference Policy (2012), the Guidelines for Controlled Activities on Waterfront Land (2018) and the relevant Water Sharing Plans (available at https://www.industry.nsw.gov.au/water).	As Haslams Creek is a concrete-lined channel, *Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018) are not applicable to the proposed development.	Section 5.5.2
The EIS must assess the impact of the development on hydrology, including: *effects to downstream rivers, wetlands, estuaries, marine waters and floodplain areas* *effects to downstream water-dependent fauna and flora including groundwater dependent ecosystems* *Impacts to natural processes and functions within rivers, wetlands, estuaries and floodplains that affect river system and landscape health such as nutrient flow, aquatic connectivity and access to habitat for spawning and refuge (e.g. river benches).*	As the annual flow volume discharged from the site has been modelled to stay the same following redevelopment of the site, there would be no impact to downstream waterbodies or flora or fauna that inhabit these areas, or to instream processes and functions of these waterways.	Section 5.2

8. Conclusion

ELA has assessed the watercourse and riparian area alongside the proposed development. Haslams Creek at the rear of the development site is a concrete-lined channel and therefore works within 40 m of the channel are not considered a Controlled Activity. The incorporation of WSUD features into the detailed design of the redevelopment ensure that the water quality and quantity discharged from the site post development are an improvement on current conditions.

Threatened aquatic species are unlikely to be using Haslams Creek adjacent to the site as habitat, therefore it is unlikely that there would be a significant impact on threatened aquatic species or communities.

Prior to construction commencing, a CEMP including an Erosion and Sediment Control Plan would be developed and implanted during the works to minimise impacts on the environment.

9. References

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