WATERWAY IMPACT ASSESSMENT

King Living Balgowlah

202-204 Condamine Street Balgowlah NSW

Ref: SY213791-00-WE-RP01
Rev: 1
Date: 09 Dec 2022

PREPARED FOR
Centric Architects
202/20 Dale St
Brookvale NSW 2100

Water & Environment Report

Revision Information

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Executive Summary

King Furniture Australia Pty Ltd have engaged Northrop Consulting Engineers to prepare a Waterway Impact Assessment as requested by Northern Beaches Council. The existing development was commercial buildings with an existing concrete undercroft area for carparking. The site is flood affected, which is managed through retaining the undercroft area as flood storage.

With a new owner, the plan is to totally rejuvenate the existing facility to create a two-storey facility including retail and showroom space, with the following inclusions.

- New building to be suspended over the existing undercroft area
- Minor works to the undercroft area to allow overland flow to the existing concrete lined channel.
- Retain the undercroft area provided flood storage
- WSUD water quality treatment through stormwater pit inserts and storm filter cartridges prior to discharge

The development is adjacent to an existing concrete lined channel known as Burnt Bridge Creek Deviation. This channel is located under the adjacent building known as 206 Condamine Street. All works are within the site boundary and existing development footprints. The drainage discharge from the site discharges into this concrete lined channel adjacent to the site.

In relation to the *Water Management Act* and the *Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018), the site is within 40m of a prescribed waterway,(i.e. the blue lines on the 1:25,000 topo sheet), known as Manly Lagoon, where the Burnt Bridge Creek Deviation connects. Therefore, a Controlled Activity Application will be required to conduct works in this instance – application after DA approved.

Council's Policy No PL 740 Waterways states that any 2nd order watercourse has an associated 20m wide riparian zone plus 20m wide riparian buffer. The existing highly modified creek with its concrete channel and buildings over is not relevant to the policy in this instance. The new WSUD treatment for the proposed development will benefit the quality of water discharging to the channel.

The existing development at 200-204 Condamine Street could be potentially causing impacts to local waterways, including:

- Release of sediment and associated nutrients from the existing undercroft carpark with no WSUD treatment.
- Potential release of runoff from roof drainage without protection and removal of gross pollutants
- Release of sediment and hydrocarbons from car park and driveway access

The new development mitigates these impacts by implementing the following:

- GPT stormwater pit inserts within the new carpark area
- GPT on roof drainage
- WSUD Stormwater filter cartridges prior to site stormwater discharge to meet TSS, TP, TN and Gross Pollutant targets.
- The new development does not increase flowrates to the existing channel.

The potential impacts of the development that are most important to control in the context of waterway protection are:

- Runoff peak flows – minimising erosion potential in creeks
- Sediment – minimising erosion and subsequent sedimentation in creeks

- Nutrients – minimising nutrient runoff in stormwater and wastewater

The proposed stormwater quality strategy ensures that the post-development mean annual pollutant loads are no greater than the pre-development mean annual pollutants loads. Modelling has been employed to demonstrate compliance with Council and NPWS policy requirements.

It is important to note the following where no impacts will arise:

- No change to channel form or overland flow
- No increase in erosion rates
- Stormwater discharge points – the existing stormwater pipe that discharges to the channel
- No changes external to site boundary

In conclusion, the proposed development will result in an improvement to the waterways adjoining the site. The proposed stormwater and runoff will be adequately mitigated, and in compliance with contemporary standards and methods.

1. Preamble

1.1 Author

This report is authored by Nicole Sutherland who has the following credentials:

- Associate | Senior Civil Engineer
- BE (Hons)
- 20 years' experience in civil engineering

1.2 Reference documents

This Report should be read in conjunction with the following specialist reports written to support the Development Application:

Report type	Title	Author
Civil Engineering	Flood Management Report Ref: 213791 – 23rd November 2022 Rev A	Northrop Consulting Engineers
Civil Engineering	Civil/Stormwater Management Plans for DA DAC0000 to DAC6101 (November 2022)	Northrop Consulting Engineers
Survey Plan	Detail and Level Survey 20586B Detail (16/6/2022)	C.M.S Surveyors
Geotechnical	Geotechnical Investigation Ref: 35254SJrpt (17 November 2022)	JK Geotechnics

2. Existing Development

The site (200,202 and 204 Condamine Street) contains three (3) developed commercial properties. At the western boundary is an existing 3m high concrete retaining wall which supports Condamine Street frontage. The vehicular access to the properties is via Condamine Street, which ramps down into an undercroft area, which is 3m lower than the site frontage on Condamine Street.

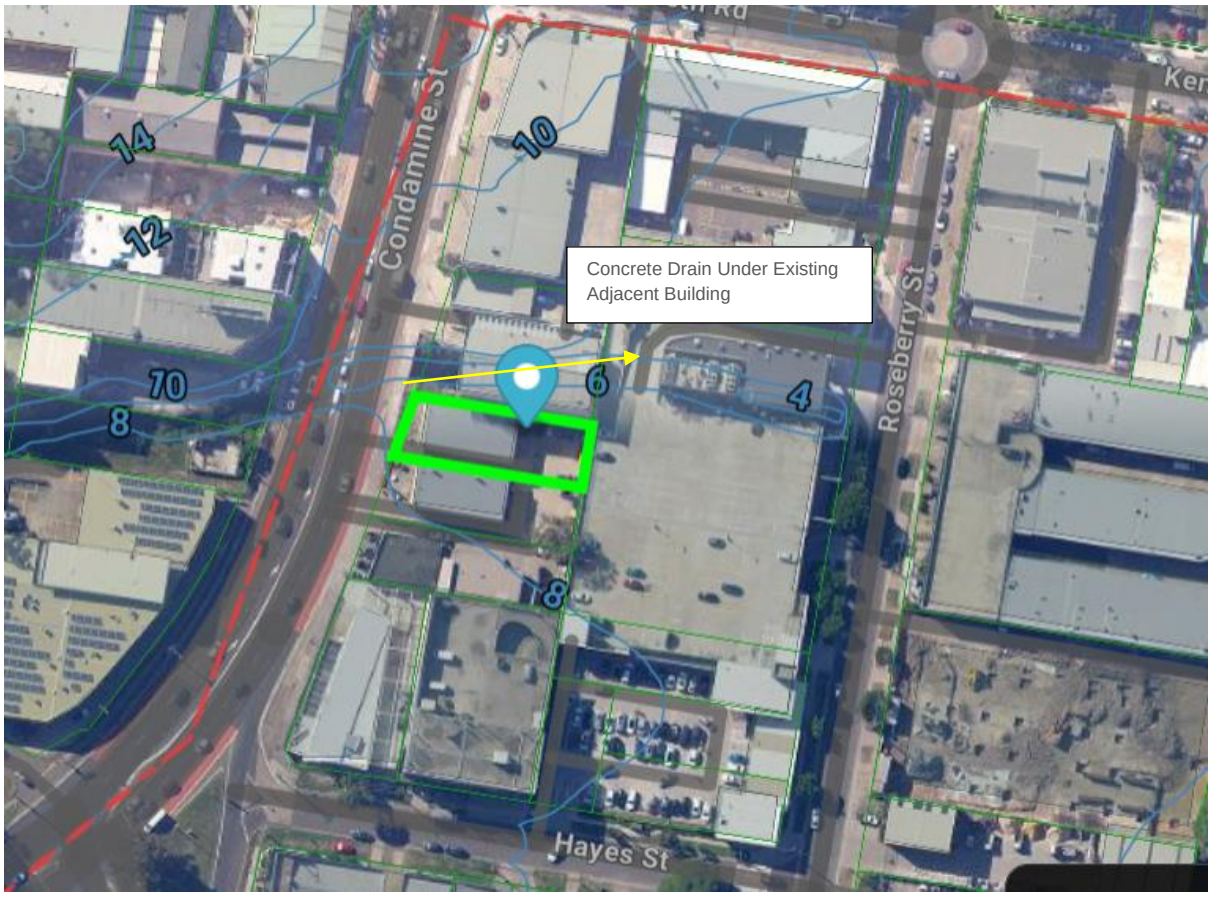

Figure 1: Existing site Context

Stormwater is drained from the carpark to the adjacent concrete lined through a couple if smaller pipes (150mm diameter). Refer site stormwater mapping provided by C.M.S Surveyors below.

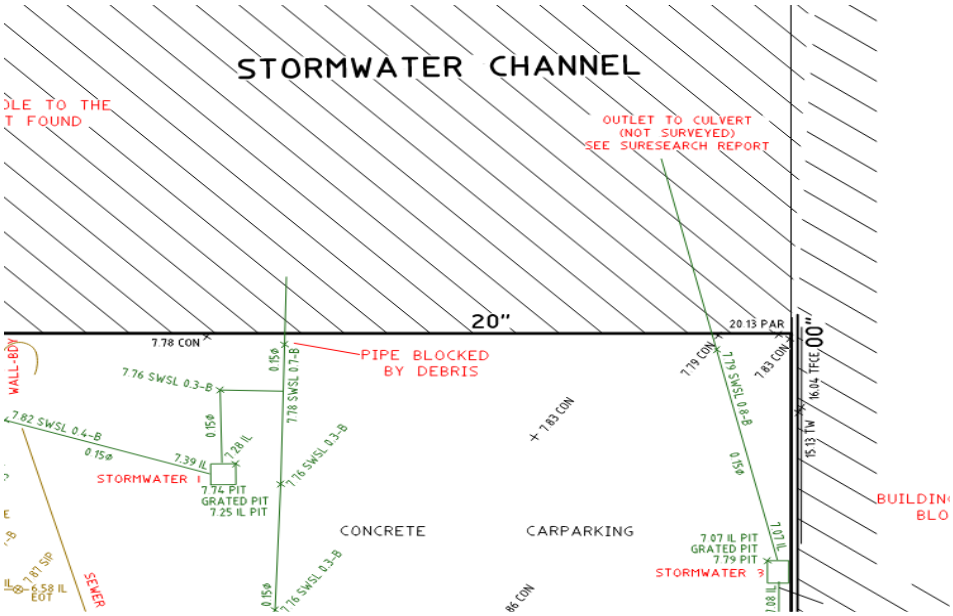

Figure 2: Existing stormwater mapping

A CCTV was performed to determine where the existing stormwater connects and if working efficiently. It was found that one of the 150mm diameter pipes were blocked as full of debri, however the other outlet connects to the concrete channel as shown below.

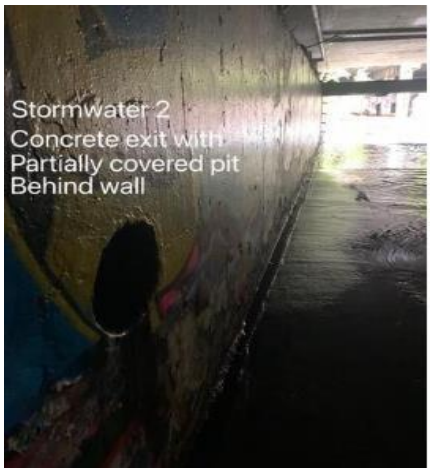

Figure 3: Existing stormwater connection to channel

In summary, the existing site which is a built form discharges the site stormwater to the existing concrete lined channel which is located under the adjacent building (206 Condamine Street). Based on discussions with Council, this is an illegal point of discharge and therefore will not be utilising this connection as part of the new development.

3. Proposed Development

With a new owner, the plan is to totally rejuvenate the existing facility to create a two storey facility including retail and showroom space, with the following inclusions.

- New building to be suspended over the existing undercroft area
- Minor works to the undercroft area to allow overland flow to the existing concrete lined channel.
- Retain the undercroft area provided flood storage
- WSUD water quality treatment through stormwater pit inserts and storm filter cartridges prior to discharge

The new building is set at the Flood Planning Level and new carparking level suspended to suit the new building levels.

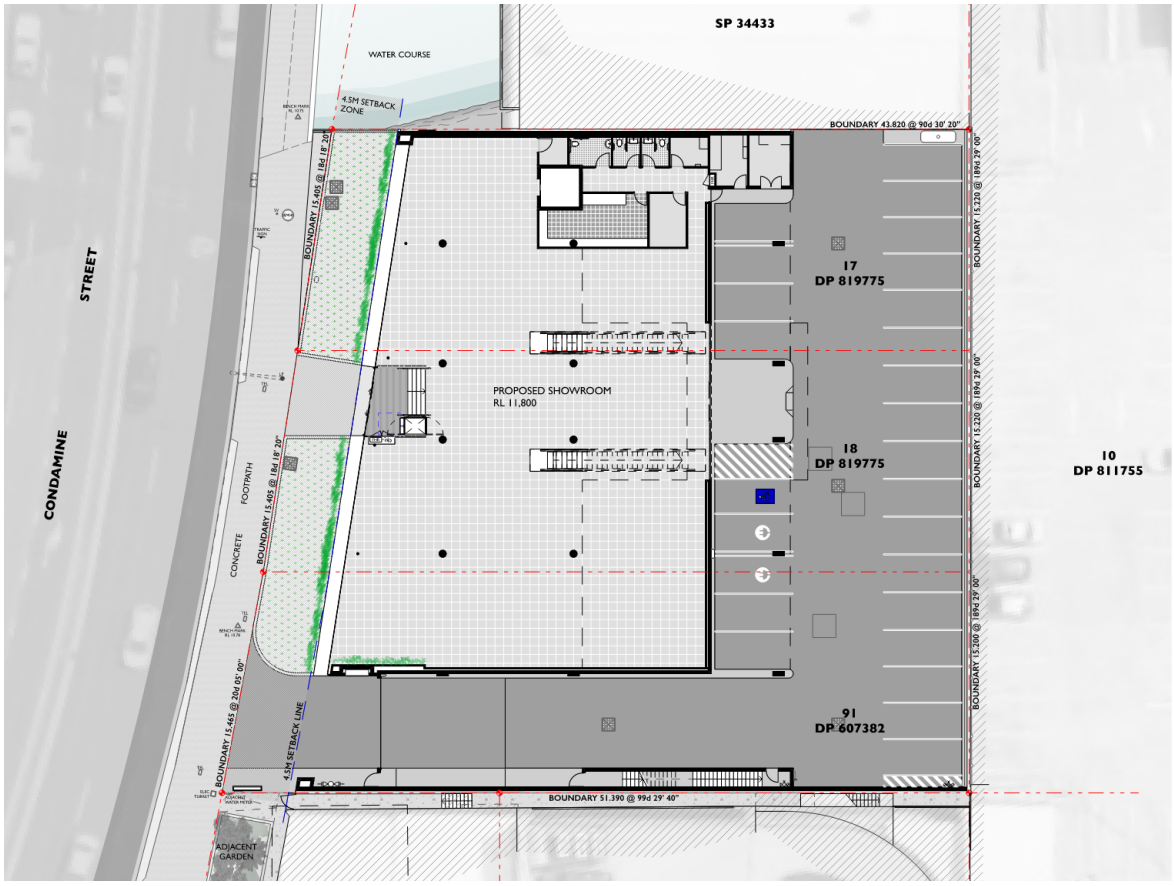

Figure 4: Proposed site redevelopment

The site stormwater, once treated with discharge into the existing 600mm diameter stormwater pipe and easement located and crosses the north western corner of the site.

4. Waterways Description

The development is adjacent to Burnt Bridge Creek Deviation, which flows into Manly Lagoon. The adjacent Burnt Bridge Creek Deviation is a concrete lined channel located under a suspended building at 206 Condamine Street.

Figure 5: Site dashed in red in relation to the stormwater network

The existing 600mm stormwater pipe from a kerb inlet pit in Condamine Street connects to the channel as shown below. There is sparse weedy vegetation at this discharge connection point.

Figure 6: Condamine Street discharge point and adjoining waterways

5. Waterway Analysis

Site inspection

A site inspection of the adjoining waterways was undertaken on 26th October, 2022, where drainage lines were observed from Condamine Street, as access into 206 Condamine Street was not granted.

Photos of key drainage items are included, as follows:

Photo 1: Concrete Lined channel adjacent to site

Photo 2: Southern boundary where flood flows enter the site

Photo 3: Open concrete channel with sparse vegetation before closed channel under adjacent building

Statutory context

Water Management Act

In relation to the *Water Management Act* and the *Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018), the site is within 40m of a prescribed waterway, (i.e. the blue lines on the 1:25,000 topo sheet), as shown below. Therefore, a Controlled Activity Application will be required to conduct works. The process is that Council will issue stamped DA plans and these are then used as the basis of a Controlled Activity Application.

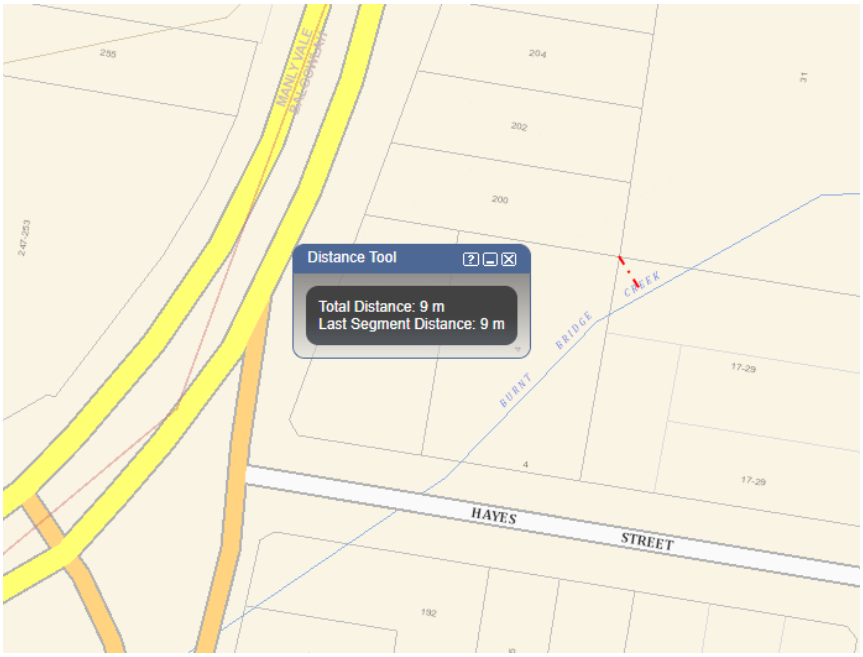

Figure 7: Site in context of proximity to prescribed stream (NSW 1:25,000 topographic series)

Council Policy No. PL 740 Waterways

Assessing the upstream extents of Burnt Bridge Creek, it is a 2nd order stream according to the Strahler method of determining stream order. In the vicinity of the site, Burnt Bridge Creek is channelised and passes beneath buildings. It has extremely limited values that would normally be associated with a natural waterway.

Council's Policy states that any 2nd order watercourse has an associated 20m wide riparian zone plus 20m wide riparian buffer. In reality, these zones do not currently exist in the vicinity of the site. It is important to note that - the proposed development will not encroach closer to the waterway than at present. The new WSUD treatment proposed as part of the development will benefit the waterway.

The Policy also states that development within waterways and riparian land should be avoided. Where this cannot be avoided, a Waterway Impact Assessment shall be prepared – this document. This Waterway Impact Assessment seeks to show that the waterway function will not be adversely impacted in the context of waterway stability and ecology, and risk to life or property.

6. Assessment of Impacts

Existing impacts

The existing development at 200, 202 and 204 Condamine Street is causing impacts to local waterways, including:

- Release of sediment and associated nutrients from the existing undercroft carpark with no WSUD treatment.
- Potential release of runoff from roof drainage without protection and removal of gross pollutants
- Release of sediment and hydrocarbons from car park and driveway access

Impacts of proposed redevelopment

During construction, the main impacts will arise from the erosion of soils by wind and water action. However as minor works are proposed to the existing carpark, undercroft area, this can be managed.

During the operational phase of the development, the site will implement mitigation measures through WSUD treatment and therefore will benefit the quality of the creek waters. The development also does not increase flow rates so the volume of runoff remains the same as the existing scenario.

The potential impacts of the development that are most important to control are:

- Runoff peak flows – minimising scour to the concrete channel
- Sediment – minimising erosion and subsequent sedimentation in creeks
- Nutrients – minimising nutrient runoff in stormwater

It is important to note the following where no impacts will arise:

- No change to channel form or overland flow
- No increase in erosion rates
- Stormwater discharge points is a new connection to the existing 600mm pipe which discharges into the channel
- No changes external to site boundary

7. Assessment of Compliance

Council's *Waterways Impact Assessment Guideline* document references a requirement to demonstrate compliance with the *Warringah Development Control Plan* 2011, with particular emphasis on the following:

- C4 Stormwater
- C5 Erosion and Sedimentation
- E2 Prescribed Vegetation;
- E3 Threatened species, populations, ecological communities listed under State or Commonwealth legislation, or High Conservation Habitat;
- E4 Wildlife Corridors;
- E5 Native Vegetation;
- E6 Retaining unique environmental features on site;
- E8 Waterways and Riparian Lands.

As the watercourse is a concrete lined channel, sections E2 to E8 would not be required for assessment.

In general, the proposed development with its mitigation measures and well-considered design complies with the relevant DCP provisions.

8. Mitigation Measures

The following Outcomes are taken directly from the Waterway Impact Statement guideline document.

Outcome 1: Protecting native species and communities

Performance criteria	Comments	Mitigation measures
Maintain natural habitats	Note that the development proposal pertains only to lands that are within the site boundary, and that are previously disturbed. No areas external to site boundary, or undisturbed lands will be directly affected by the proposal.	Because no vegetation external to site (incl. Endangered Ecological Communities or Riparian Vegetation) is affected, no mitigation measures are proposed.
Provide fauna movement routes	Any Existing fauna movement routes will be unaffected by the proposal.	Because no Endangered Ecological Communities or Riparian Vegetation is affected, no mitigation measures are proposed.
Prevent unnatural erosion or sediment deposition	As the site is in built form, there is no sediment or erosion deposition	The whole site – when redeveloped - will be stable and no accelerated erosion is predicted to occur. All surfaces will be durable and have drainage installed discharging to stormwater treatment devices.
Maintain acceptable water quality	The pollutants expected from the developed site are listed as follows: • Driveway and Car parks – sediment, litter, oil and grease and heavy metals • Building roofs	A water quality treatment system is proposed to manage all the site runoff. It targets all the key pollutants expected to be generated from the site. The treatment measures include: • Gross pollutant pit inserts in proposed stormwater pits • Stormwater Filter Cartridges in a pit prior to discharge into the channel
Maintain connectivity between waterways and floodplains	The existing development, and the proposed development do not affect the floodplains of nearby creeks.	Existing floodplains are unaffected by the proposal. No mitigation measures are proposed.

Outcome 2: Prevent loss of natural diversity through protecting waterway and riparian vegetation

Performance criteria	Comments	Mitigation measures
Avoid introducing plants or animals which may displace natural species	A Landscape Plan proposes planting along the frontage of the site.	No mitigation measures are proposed.
No increase in nutrient loads to riparian soils and waterways	The existing development does not have WSUD control measures.	The proposed stormwater quality strategy ensures that the post-development mean annual pollutant loads are no greater than the pre-development mean annual pollutants loads and meets Council's pollutant removal targets for TSS, TP, TN, Gross Pollutants.
Avoid displacing species by habitat changes	Existing habitats will be retained, albeit in a poor state	Because no riparian zone or other vegetation external to the site is affected, no mitigation measures are proposed.
Protect natural areas from contamination	No materials or hazardous substances will be stored or used anywhere near any riparian zone. No activities will be undertaken that will lead to contamination of soils will occur anywhere near the riparian zone	As there are no predicted impacts, no mitigation measures are proposed.
Prevent the loss of any rare or threatened natural features Protect downstream areas, such as National Parks	No natural feature external to the site boundary or within any riparian zone will be affected or lost.	No mitigation measures are proposed.

Outcome 3: Minimise damage to public and private property by waterway processes by maintaining bed and bank stability

Performance criteria	Comments	Mitigation measures
Avoid increases in peak channel flows and sediment exports for events <2yr ARI	The proposed development does not increase flowrates to the channel for all storms	No mitigation measures are proposed.
Avoid local erosion at stormwater outlets	The new development discharges into an existing stormwater pipe which connects to the channel	The proposed stormwater allows connection to the existing 600mm stormwater pipe located at the north western corner of the site.
Avoid export of weeds from private property into waterways	Weeds are present adjacent to the channel, and flood overflow slots. These will be removed with our site boundary only.	The proposed mitigation measures will result in less nutrients and runoff being discharged. No disposal of garden refuse in/near waterways will occur – there are no gardens.
Channel banks are not over-steepened Channel banks are stable	No changes to any land or waterway external to the site boundary is proposed	Waterway channels and banks are stable and will be unaffected by the development.

Outcome 4: Preserve natural ecological processes

Performance criteria	Comments	Mitigation measures
Streamflow and water quality are natural	There is no proposal to alter any land external to the site Boundary. This includes all waterways which will be left intact with no artificial barriers and no removal of water. Any aquatic and riparian vegetation will remain unaffected, as will habitats and movement corridors.	WSUD are proposed to mitigate the impacts of stormwater on waterways.
Aquatic and riparian vegetation are undisturbed and unmodified		
Aquatic and riparian fauna habitat and movement corridors are retained		

Outcome 5: Create opportunities for public access and recreation in waterway corridors

Performance criteria	Comments	Mitigation measures
Provide public access along creek corridors	No change to creek access will result, or is proposed	Not applicable.