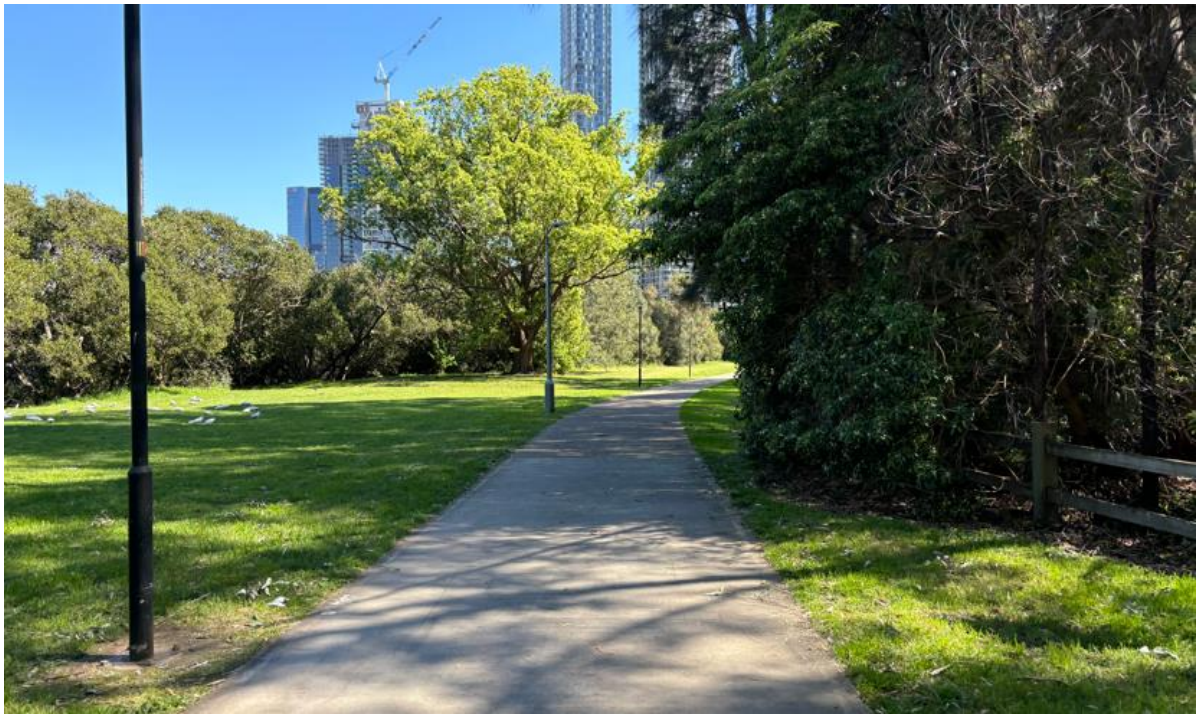
planning consultants

Review of Environmental Factors

Construction of Pedestrian and Cyclist Pathways

Rangihou Reserve, Parramatta



Prepared for: City of Parramatta
September 2025

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Version	Prepared By	Reviewed By	Issued To	Date
V1	T. West	H Burnett	Council	25 July 2025
V2	T. West	H Burnett	Council	3 September 2025

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Abbreviations

AS	Australian Standard
BC Act	*Biodiversity Conservation Act 2016*
BCA	Building Code of Australia
Council	City of Parramatta
DFP	DFP Planning Pty Limited
DPHI	NSW Department of Planning, Housing and Infrastructure
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2021*
EPI	Environmental Planning Instrument
LEP	Local Environmental Plan
LGA	Local Government Area
REF	Review of Environmental Factors
SEPP	State Environmental Planning Policy
TfNSW	Transport for NSW
WM Act	*Water Management Act 2000*

1 Introduction

1.1 Commission

DFP has been commissioned by the City of Parramatta (Council) to prepare a Review of Environmental Factors (REF) for the installation of an active transport corridor via Rangihou Reserve, located on the northern side of the Parramatta River foreshore.

This REF report assesses the potential environmental impacts which could arise from the proposed activity which include:

- Construction of a 5m wide concrete shared path. Where possible, the existing path is proposed to be widened;
- Landscaping and tree removal;
- Construction of sandstone block retaining walls;
- Construction of a planted drainage swale;
- Construction of a raised composite boardwalk; and
- Associated drainage restoration works.

This REF also details any relevant environmental management measures that should be implemented during the carrying out of the works.

This REF has been prepared in accordance with the relevant provisions of the *Environmental Planning and Assessment Act 1979* (EP&A Act), the *Environmental Planning and Assessment Regulation 2021* (the Regulation) and *State Environmental Planning Policy (Transport and Infrastructure) 2021* (SEPP TI) and concludes that, by adopting the mitigation measures identified in this assessment, it is unlikely that there would be significant environmental impacts associated with the Proposal.

1.2 Background

The proposed activity within Rangihou Reserve forms part of the Eastern Parramatta River and CBD Precinct Cycleway upgrades, which include George Kendall Riverside Park, Halvorsen Park, Reid Park and Baludarri Wetlands.

This project has been given State government funding as part of the Western Sydney Infrastructure Grants Program, in association with Council.

In total, the project will deliver 2.8km worth of separated walking and cycling paths to increase the active transport capacity, safety and accessibility of the cycling and pedestrian network along the Parramatta River foreshore. The project is planned for completion in 2027.

This REF relates only to the works within Rangihou Reserve, with separate REF's being prepared in relation to the four (4) other locations along the foreshore.

1.3 Certification

This REF provides a true and fair review of the Proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the Proposal. The information contained in this REF is neither false nor misleading. This REF has been prepared in accordance with the relevant requirements of the EP&A Act, EP&A Regulation, and the NSW Code of Practice for Part 5 Activities.	
Name of the person(s) who prepared the REF:	**Thomas West**
Position and Qualifications of the person(s) who prepared the REF:	**Senior Project Planner** **M.Planning Macquarie University**
Signature: 	Date: 3 September 2025

1 Introduction

Name of the person(s) who reviewed the REF:	**Henry Burnett**
Position and Qualifications of the person(s) who prepared the REF:	**Director** **B Planning Macquarie University**
Signature: 	Date: 3 September 2025
I have examined this REF and the Certification and accept the REF on behalf of the City of Parramatta	
Name of the Authorised Person:	Troy Holbrook
Position of the Authorised Person:	Senior Open Space & Natural Area Planner
Signature: 	Date: 10 September 2025
I accept this REF on behalf of the City of Parramatta, as the determining authority and determine that the Proposal can proceed subject to the mitigation measures being implemented	
Name of Delegated Officer:	Ian Hasselman
Designation:	Acting Group Manager Parks & Open Space
Signature: 	Date: 12 September 2025

1.4 Material Relied Upon

This REF has been prepared by DFP based on the information listed below.

Appendix 1: *Survey Plan, prepared by City of Parramatta, dated October 2024;*

Appendix 2: *Landscape Plans prepared by Capital Projects, dated 2 April 2024;*

Appendix 3: *Civil Plans prepared by City of Parramatta, dated 9 October 2024;*

Appendix 4: *Arborist Report prepared by Hugh The Arborist, dated 23 December 2024;*

Appendix 5: *Flora and Fauna Assessment Report prepared by East Coast Ecology, dated 26 March 2025;*

Appendix 6: *Flood Impact Assessment Report prepared by City of Parramatta, dated 24 June 2025;*

Appendix 7: *Remediation Action Plan prepared by Progressive Risk Management, dated 13 June 2025;*

Appendix 8: *Construction Management Plan prepared by City of Parramatta;*

Appendix 9: *Heritage Impact Statement prepared by DFP Planning, dated 28 January 2025;*

Appendix 10: *AHIMS Search, dated 4 October 2024;*

Appendix 11: *Acid Sulfate Soils Assessment prepared by Progressive Risk Management, dated 23 June 2025;*

Appendix 12: *Environmental Management Plan prepared by Prensa, dated May 2019;*

Appendix 13: *Community Engagement Report prepared by City of Parramatta, dated February 2025; and*

Appendix 14: *Mitigation Measures*

1 Introduction

1.5 The Site

1.5.1 Location and Legal Description

The site is located approximately 500m to the east of the Parramatta CBD and is within the City of Parramatta Local Government Area (LGA).

The site subject to the proposed works is Rangihou Reserve, Parramatta and is located within the following property addresses:

- Lot 1 in DP 587055 (Planning Ministerial Corporation);
- Lot 50 in DP 1308168 (City of Parramatta Council);
- Lot 301 in DP 1241775 (City of Parramatta Council); and
- Lot 3 in DP 1215559 (City of Parramatta Council).

Figure 1 is an extract form Council's Community and Crown Land Plan of Management, which shows the land categorisation of the site. As shown on the map below, the land shaded in blue to the north of Parramatta River (being the subject land to which this REF relates to) is identified for use as a 'park'.

Figure 1 Land Categorisation Map. Source: City of Parramatta Council

A Survey of the site is included at **Appendix 1** of this REF.

The site of the proposed works is irregularly shaped with a frontage to Baludarri Drive to the north and Parramatta River to the south.

Figure 2 below is a locality plan showing the site outlined in red.

1 Introduction

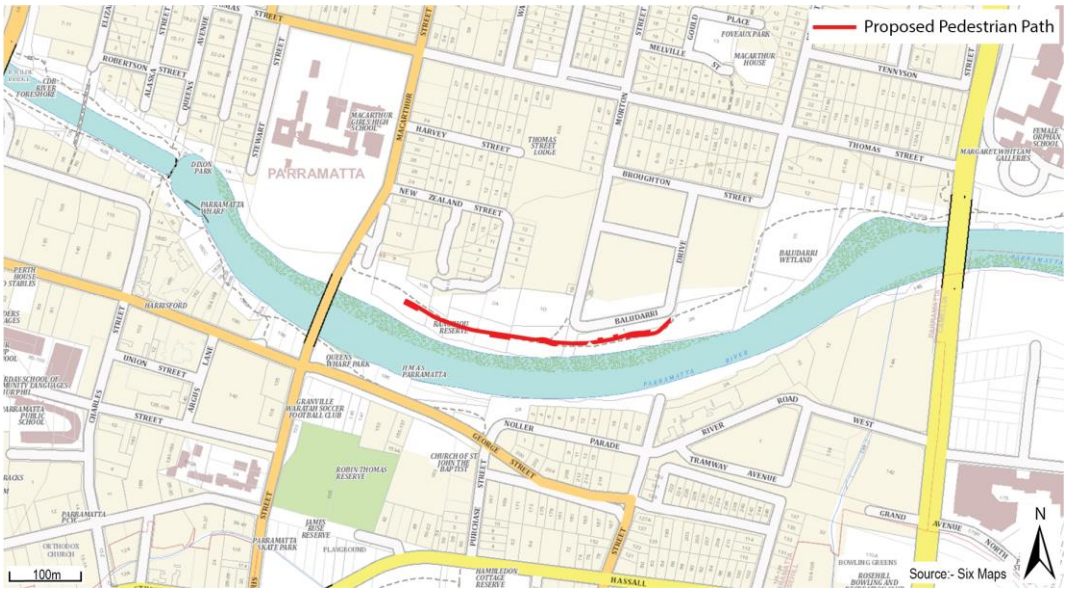

Figure 2 Site Location

Figure 3 is an aerial photograph of the site and its surrounds.

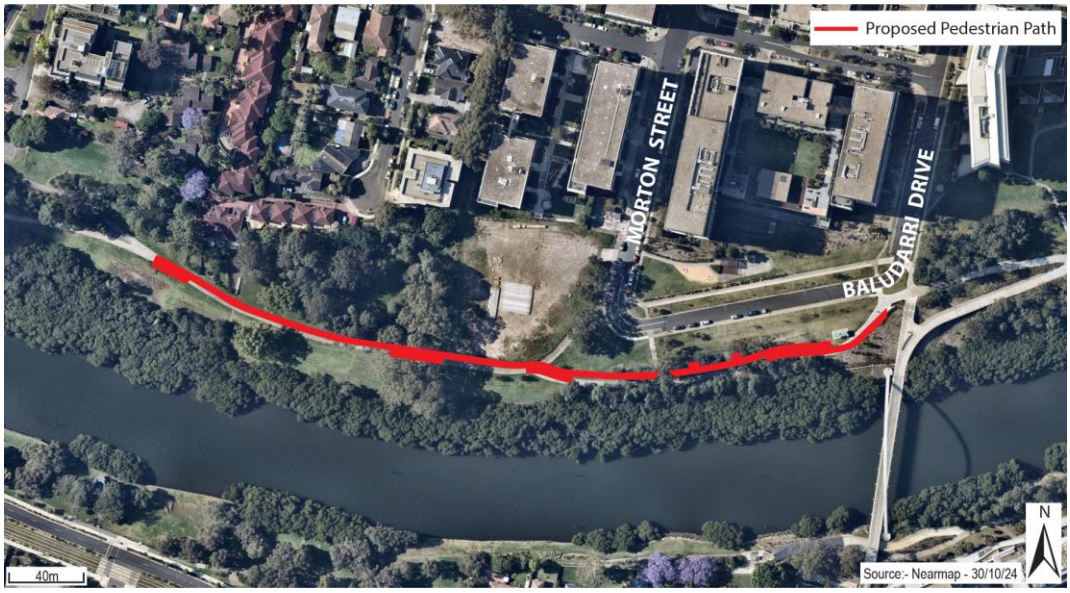

Figure 3 Aerial photograph.

1.5.2 Physical Description

Existing facilities on the site include a number of interconnected shared paths that extend between both eastern and western ends of Rangihou Reserve. The land consists of existing trees, grass covers and low-lying shrubs. Also located on the site are existing light posts, community amenities such as picnic tables and shelters and kickabout areas located towards the eastern and northern sides of the site.

Figure 4 to **Figure 9** provide site photographs.

1 Introduction

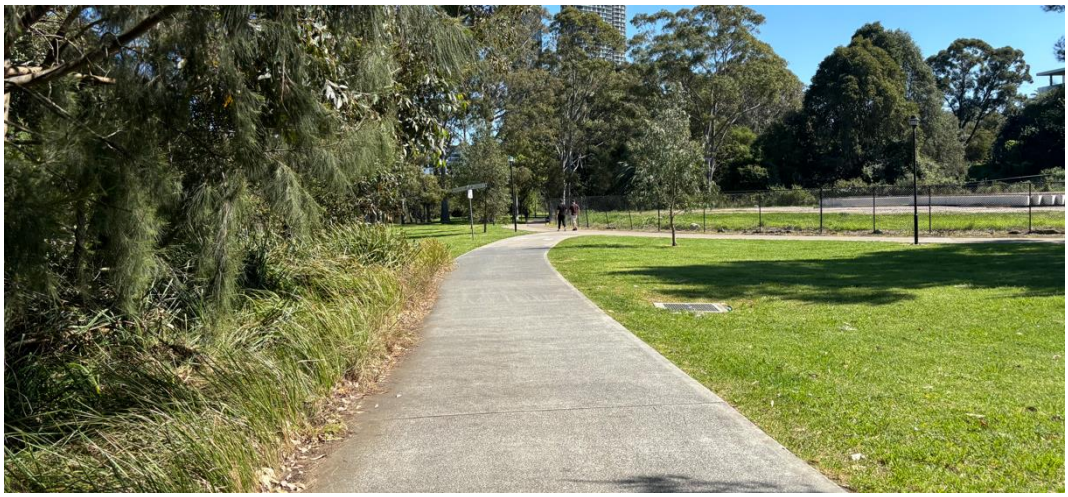

Figure 4 Photograph of existing path looking west

Figure 5 Photograph of existing vegetation looking south towards Parramatta River

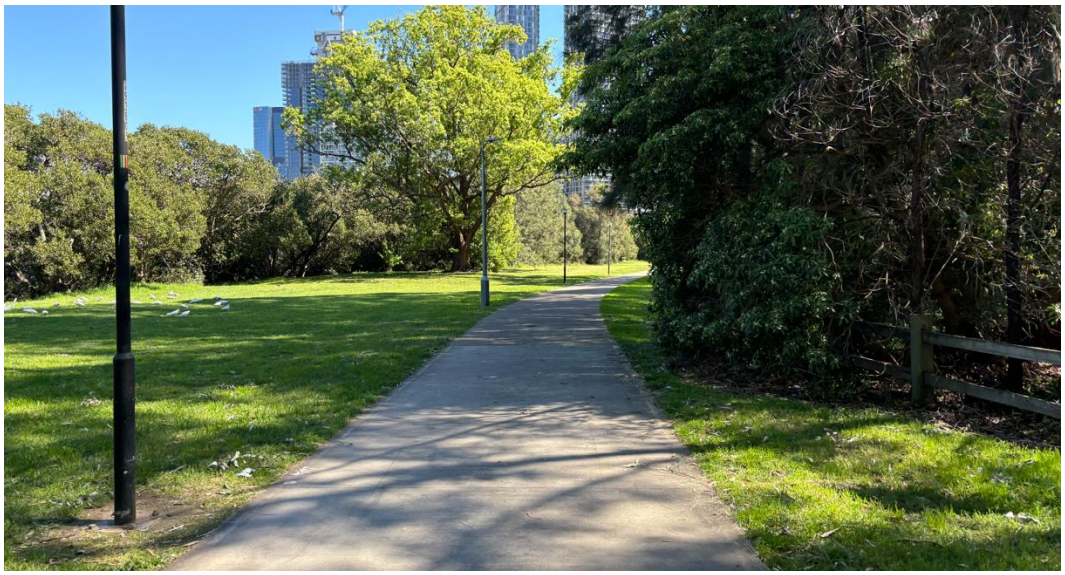

Figure 6 Photograph of existing path looking west

1 Introduction

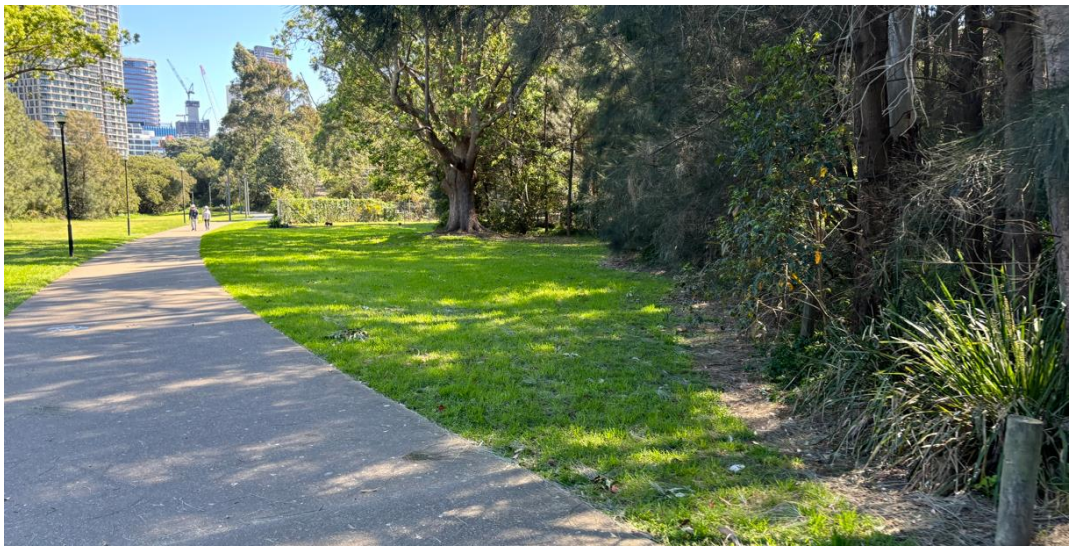

Figure 7 Photograph of existing path and vegetation looking west

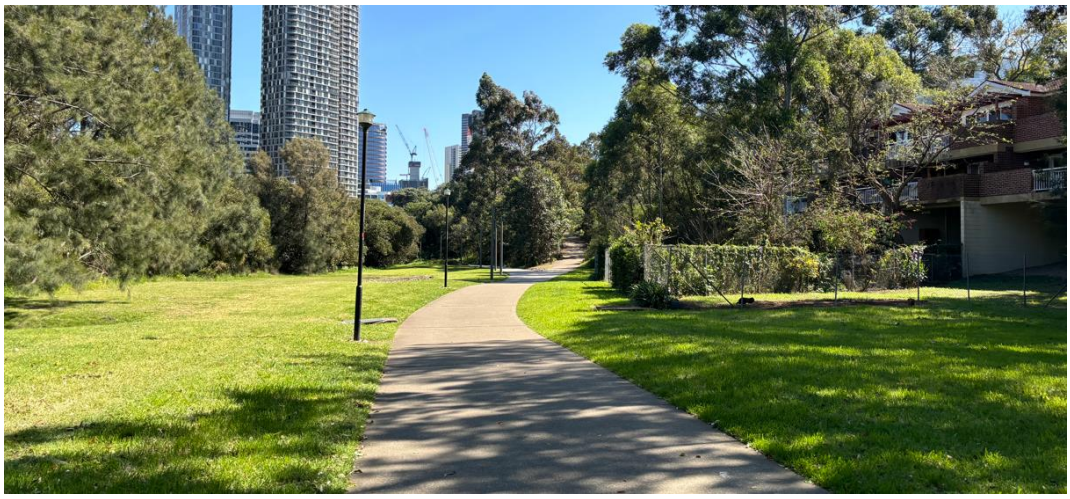

Figure 8 Photograph of existing path looking west with Parramatta CBD in the background

Figure 9 Photograph of connecting path (right) that links to Macarthur Street to the west

1.5.3 Vegetation

There are a variety of trees and shrubs across the full extent of the Rangihou Reserve site. Trees located within the vicinity of the proposed works have been assessed in the Arboricultural Impact Assessment (AIA) report prepared by Hugh The Arborist (see **Appendix 4**).

1 Introduction

The AIA has identified 62 trees within the vicinity of the proposed activity.

Eighteen (18) of those trees are proposed to be removed due to being within the footprint of the proposed works resulting in a major encroachment which cannot be satisfactorily reduced or mitigated to enable the retention of those trees.

Twenty-one (21) trees are proposed to be retained with no encroachment and as a result, will not be impacted by the proposed activity.

Six (6) trees proposed to be retained will be subject to minor encroachment. The AIA has recommended that this minor encroachment does not significantly affect the viability of the trees and as a result does not require tree sensitive construction methods.

The remaining seventeen (17) trees proposed to be retained are subject to major encroachment from the proposed works. This encroachment can be minimised by tree sensitive construction methods, which are to be implemented prior to and during construction works.

The trees that are subject to removal as part of this REF are detailed in **Section 2** below.

1 Introduction

1.5.4 Surrounding Development

To the north of the site is Baludarri Drive. Also located to the north of the site are a range of residential developments, mostly consisting of mid and high-density residential developments and some mixed-use developments (**Figure 10**).

Figure 10 Photograph of Baludarri Drive and development on the northern side of the road

To the east of the site are the Baludarri Wetlands (**Figure 11**). Also located to the east of the site is the Alfred Street Bridge, which was constructed in 2023 (**Figure 12**). The bridge is a pedestrian bridge that connects the northern and southern sides of the Parramatta foreshore.

Figure 11 Photograph of the Baludarri Wetlands boardwalk

1 Introduction

Figure 12 Photograph of the Alfred Street Pedestrian Bridge

To the south of the site is Parramatta River.

To the west of the site is Dixon Park. Further to the west is the Parramatta Central Business District (CBD).

2 Description of Proposed Works

2.1 Summary of Works

In summary the proposed development comprises:

- Construction of a 5m wide concrete shared path. Where possible, the existing path is proposed to be widened;
- Landscaping and tree removal;
- Construction of sandstone block retaining walls;
- Construction of a planted drainage swale;
- Construction of a raised composite boardwalk; and
- Associated drainage restoration works.

The following subsections provide a more detailed description of the proposed works and should be read in conjunction with the accompanying consultant plans and reports.

2.2 Widening of Existing Shared Path & Boardwalk

An existing shared path running east to west within Rangihou Reserve is proposed to be widened from 3m to 5m.

A new footpath connection is also proposed within the Morton Street road reserve, running north to south and will link to the existing shared path.

A raised composite boardwalk is proposed towards the western side of the shared path. The raised boardwalk will be located over the existing low point of the pathway and will be over a drainage swale. That drainage swale involves the construction of a new headwall with scour protection to the north of the boardwalk.

Figure 13 to **Figure 15** are extracts of the proposed Landscape Plans.

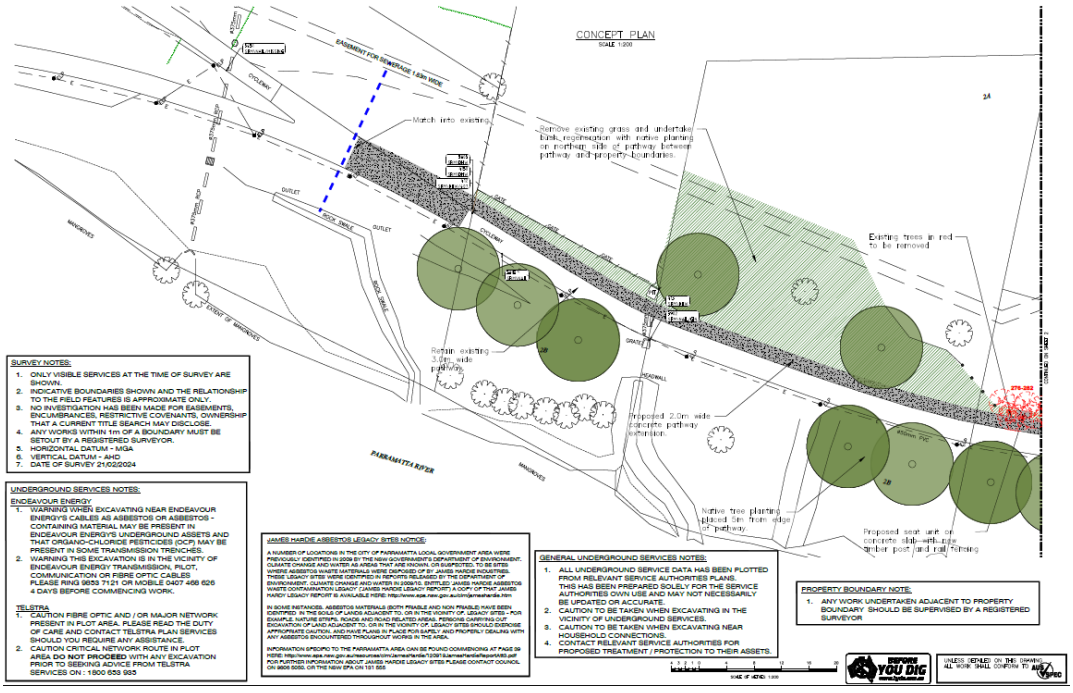

Figure 13 Proposed Landscape Plan (Sheet 1). Source: City of Parramatta Council

2 Description of Proposed Works

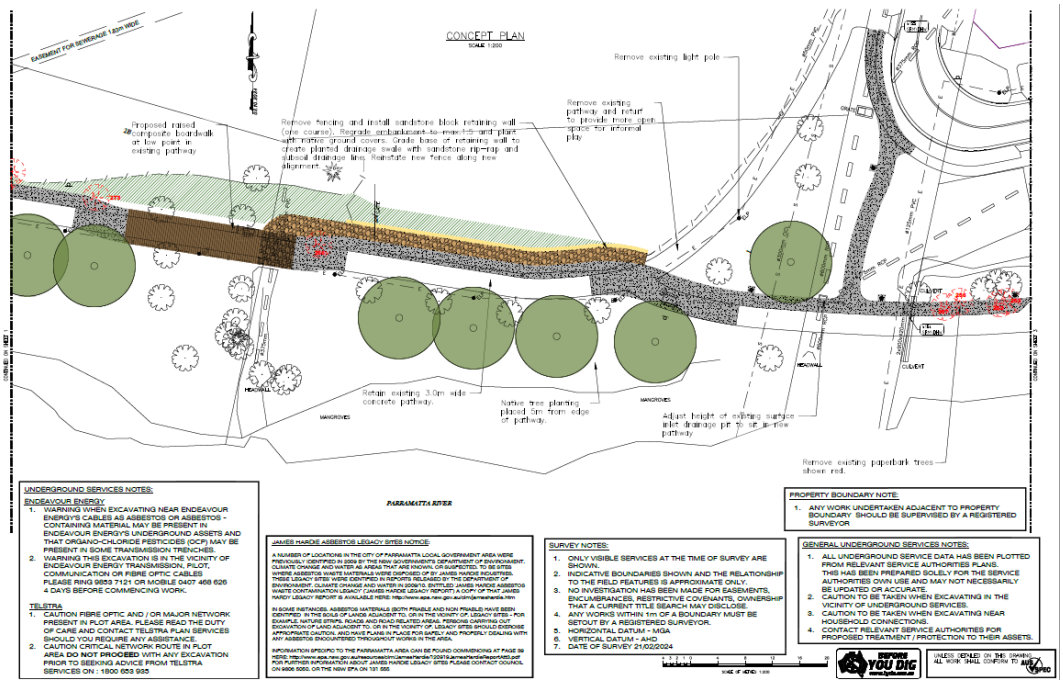

Figure 14 Proposed Landscape Plan (Sheet 2). Source: City of Parramatta Council

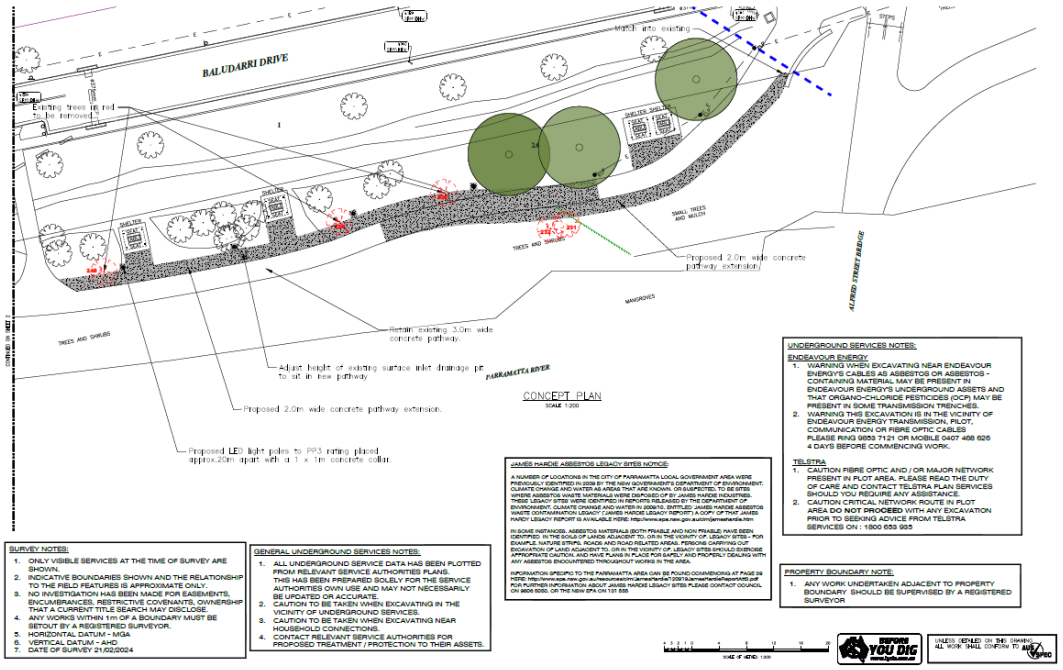

Figure 15 Proposed Landscape Plan (Sheet 2). Source: City of Parramatta Council

2.3 Proposed Landscaping & Tree Removal

The proposal includes the removal of 18 trees that are within the footprint of the proposed physical works.

The trees that are proposed to be removed as part of this activity are detailed in the AIA and set out in **Table 1** below.

Table 1 Trees subject to removal

Tree Number	Species	Height	Health	Landscape value
231	Spotted Gum	4m	Good	Low

2 Description of Proposed Works

Table 1 Trees subject to removal				
Tree Number	**Species**	**Height**	**Health**	**Landscape value**
232	Swamp Oak	6m	Good	Medium
236	Cheese Tree	7m	Good	Low
239	Broad Leaved Paperbark	7m	Good	High
248	Broad Leaved Paperbark	12m	Good	High
252	River She Oak	8m	Good	High
253	Lemon Scented Gum	7m	Good	Medium
256	River She Oak	9m	Good	High
257	River She Oak	10m	Good	High
266	Canary Palm	6m	Good	Medium
273	Prickly Leaved Paperbark	3.5m	Good	Low
276	Swamp Oak	15m	Good	High
277	Swamp Oak	15m	Good	High
278	Swamp Oak	15m	Good	High
279	Swamp Oak	15m	Good	High
280	Swamp Oak	15m	Good	High
281	Swamp Oak	15m	Good	High
282	Swamp Oak	15m	Good	High

As part of the proposed activity, supplementary tree planting will be undertaken approximately 5m from the path on both sides. This planting compliments the offset strategy for tree removal and will be guided by species suitability and RAP specifications.

The selected trees will be assessed to ensure appropriate soil volume, the landscape documentation will cover all requirements to support healthy establishment while considering remediation of any contamination.

Planting consists of trees, shrubs and grasses that will consist of native species to the area.

On the northern side of the path, six trees are proposed, with 12 trees proposed on the southern side of the path.

2.4 Retaining Walls

A sandstone block retaining wall is proposed towards the northern side of part of the widened shared path. The retaining wall will span a length of approximately 50m and will consist of one course of retaining blocks that are 500mm by 500mm in size.

Once constructed, the grade base of the retaining wall will create a drainage swale with sandstone rip-rap and subsoil drainage line. At the completion of these works, the fence will be reinstated along the new alignment.

3 Statutory Framework

3.1 Relevant Legislation

3.1.1 Environmental Planning and Assessment Act, 1979

The provisions of SEPP TI allow the proposed works to be carried out as development without consent under Part 5 of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

This REF also considers the requirements of Section 6.28 of the EP&A Act and Section 170 and Section 171 of the *Environmental Planning and Assessment Regulation* (EP&A Regulation).

3.1.2 Other Relevant Acts

Table 2 below provides an assessment against the relevant provisions of other applicable Acts under NSW legislation:

Table 2 Assessment against other relevant Acts

Legislation	Assessment	Compliance
National Parks & Wildlife Act 1974 (NPW Act)	The NPW Act, amongst other things, aims to conserve nature, objects, places or features of cultural value within the landscape. An AHIMS Search was conducted on 3 October 2024 (refer to **Appendix 10**). Six (6) Aboriginal site was identified within a 200m radius of the location of the proposed works. Notwithstanding, the location of these Aboriginal sites are on the southern side of Parramatta River. Three (3) of these sites are within Queens Wharf Park and the remaining three (3) sites are located along Harris Street. Due to the nature of the proposed works and the distance separating the location of the works from these Aboriginal sites, no adverse impacts are likely to be generated. The location of the proposed activity is an extension of an existing shared path and is sited in a portion of the park that has already been subject to disturbance. Notwithstanding, considering archaeological potential within the site, a Mitigation Measure has been included that relates to unexpected finds. If encountered during construction, all works should cease and consultation with a heritage professional or State government agency be conducted to determine the subsequent course of action.	Yes
Disability Discrimination Act 1992	The proposed widened path will provide accessibility and inclusion for all people and in this regard, the proposed works have been designed to allow compliant access for all users.	Yes
Local Government Act 1993	The site is classified as 'Community Land' under the Local Government Act 1993 (LG Act) and is categorised as a 'Park'. Chapter 6 of the LG Act regulates community land, which is required to be managed in accordance with a Plan of Management applying to the land. In this regard, the Community and Crown Land Plan of Management adopted on 4 December 2023 applies to Rangihou Reserve, which was prepared in consultation with the community. The POM specifies that development of Community Land is to be consistent with the objectives of the plan and the provisions of any relevant environmental planning instrument (EPI's), including the EP&A Act. Those core objectives are: *(a) to encourage, promote and facilitate recreational, cultural, social and educational pastimes and activities, and* *(b) to provide for passive recreational activities or pastimes and for the casual playing of games, and*	Yes

3 Statutory Framework

Table 2 Assessment against other relevant Acts		
Legislation	**Assessment**	**Compliance**
	(c) to improve the land in such a way as to promote and facilitate its use to achieve the other core objectives for its management. This REF has considered the relevant EPI's and the EP&A Act, noting that the works are proposed to be undertaken in accordance with Part 5 of the EP&A Act	
Fisheries Management Act 1994 (FM Act)	The objects of the FM Act are to develop and share the fishery resources of the State for the benefit of present and future generations. Rangihou Reserve adjoins Parramatta River to the south. However, the location of the proposed works do not extend to within Parramatta River, including marine vegetation (such as mangroves and saltmarsh) that is protected under the FM Act. In this regard, no permit issued under Part 7 of the FM Act is required. Notwithstanding, erosion and sediment control measures during the construction works will be important to prevent sediment-laden water from entering into the nearby natural waterways. The Preliminary Construction Management Plan (PCMP) sets out requirements for management of erosion and sediment control, which includes the preparation of a plan that is to be established by the Principal Contractor and approved by Council prior to the commencement of works. Subject to the implementation of appropriate erosion and sediment control measures, it is considered that the proposed works are consistent with the objects of the FM Act.	
Water Management Act 2000	The objectives of the WM Act are to provide for sustainable and integrated management of the water sources of the State for the benefit of both present and future generations. Section 91 of the WM Act relates to a controlled activity approval on waterfront land. Waterfront land is defined in the WM Act as being [**bold** text for emphasis]: *(a) the bed of any river, together with any land lying between the bed of the river and a line drawn parallel to, and the prescribed distance inland of, the highest bank of the river, or* *(a1) the bed of any lake, together with any land lying between the bed of the lake and a line drawn parallel to, and the prescribed distance inland of, the shore of the lake, or* *(a2) the bed of any estuary, together with any land lying between the bed of the estuary and a line drawn parallel to, and the prescribed distance inland of, the mean high-water mark of the estuary, or* *(b) if the regulations so provide, the bed of the coastal waters of the State, and any land lying between the shoreline of the coastal waters and a line drawn parallel to, and the prescribed distance inland of, the mean high-water mark of the coastal waters,* *where the prescribed distance is **40 metres** or (if the regulations prescribe a lesser distance, either generally or in relation to a particular location or class of locations) that lesser distance. Land that falls into 2 or more of the categories referred to in paragraphs (a), (a1) and (a2) may be waterfront land by virtue of any of the paragraphs relevant to that land.* Whilst a portion of the proposed works is close to being within 40m of Parramatta River, Clause 41 of the *Water Management (General) Regulation 2018* in any event provides that public authorities are exempt from Section 91E(1) of the WM Act.	Yes

3 Statutory Framework

Table 2 Assessment against other relevant Acts		
Legislation	**Assessment**	**Compliance**
	Consequently, Council does not require a controlled activity approval in this instance.	
Biodiversity Conservation Act 2016 (BC Act)	The requirements for biodiversity assessment under the EP&A Act are provided in Part 7 of the BC Act. The test under Part 7 that needs to be established is whether an activity is "likely to significantly affect threatened species, ecological communities, or their habitats". In this regard, a Flora and Fauna Assessment Report (FFAR) has been prepared by East Coast Ecology (**Appendix 5**) which has considered whether the proposed works are likely to affect threatened species. Having regard to Section 1.3.3 of the FFAR, the proposed works will not result in a significant impact on any threatened entities and as a result, a Biodiversity Development Assessment Report (BDAR) or Species Impact Statement (SIS) are not required.	Yes

3.1.3 Environmental Planning and Assessment Regulation 2021

This REF has been prepared in accordance with the Guidelines for Division 5.1 Assessments prepared by the Department of Planning and Environment dated June 2022, in accordance with s170 of the Regulation.

Table 3 includes an assessment against factors for consideration under Section 171 of the Regulation.

Table 3 Environmental Factors to be considered under s171 of the EP&A Regulation	
Factor	**Assessment**
(1) When considering the likely impact of an activity on the environment, the determining authority must take into account the environmental factors specified in the environmental factors guidelines that apply to the activity.	This REF has been prepared in accordance with the Guidelines for Division 5.1 Assessments. There are no activity specific guidelines.
(2) If there are no environmental factors guidelines in force, the determining authority must take into account the following environmental factors— (a) the environmental impact on the community,	The environmental impact on the community has been considered in the assessment at **Section 5** of this REF.
(b) the transformation of the locality,	The proposal relates to the widening of an existing shared path, construction of a new pedestrian boardwalk and associated works. Other minor upgrades to the park include landscaping and the construction of a retaining wall. While these improvements may enhance the park's usability, they are not expected to substantially alter the character or connectivity of the surrounding area.
(c) the environmental impact on the ecosystems of the locality,	The impact of the proposed works on existing vegetation is assessed in this REF as being minimal. The proposal also involves the planting of additional trees to offset removal of existing trees.
(d) reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality,	The proposal aims to establish an active transport corridor through Rangihou Reserve.

3 Statutory Framework

Table 3 Environmental Factors to be considered under s171 of the EP&A Regulation	
Factor	**Assessment**
	The associated environmental impacts of the development have been assessed in this REF as being minimal.
(e) the effects on any locality, place or building that has— (i) aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or (ii) other special value for present or future generations,	An AHIMS Search (**Appendix 10**) was undertaken on 3 October 2024 which identified six (6) known Aboriginal Sites or Places within a 200m radius of the site. Notwithstanding, all of these items are located on the southern side of Parramatta River (including wetlands and heritage items) and are considerably setback from the location of the proposed works. A Heritage Impact Statement (HIS) has been prepared which has determined that there are no known cultural heritage items, objects or relics within the site and the location of the proposed works. Notwithstanding, if during the construction works, Aboriginal objects or relics are uncovered, a Mitigation Measure has been included to cease works immediately and contact the relevant authority.
(f) the impact on the habitat of protected animals, within the meaning of the *Biodiversity Conservation Act 2016*,	The proposal will result in the removal of eighteen trees. Having regard to the Flora and Fauna Assessment, the trees subject to removal will not impact on the habitat of protected animals, within the meaning of the *Biodiversity Conservation Act 2016*.
(g) the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air,	The proposal will result in the removal of eighteen isolated trees and is unlikely to result in any significant adverse impacts on any species of animal plant or other wildlife, having regard to the Flora and Fauna Assessment
(h) long-term effects on the environment,	This REF has assessed that the minimal short-term construction impacts of the proposal can be mitigated and that there will be no significant adverse long-term effects on the environment.
(i) degradation of the quality of the environment,	
(j) risk to the safety of the environment,	
(k) reduction in the range of beneficial uses of the environment,	The proposed upgrades to the public reserve are anticipated to create an active transport corridor.
(l) pollution of the environment,	As detailed within this REF, short term construction waste can be appropriately managed and there will be no long-term waste or pollution of the environment that will be associated with the proposal.
(m) environmental problems associated with the disposal of waste,	
(n) increased demands on natural or other resources that are, or are likely to become, in short supply,	The proposed development is minor in nature and is not likely to result in a substantial increase in demands on natural or other resources that are likely to become in short supply.
(o) the cumulative environmental effect with other existing or likely future activities,	The proposed works involve upgrades to existing infrastructure. Given the minor nature of the proposed works, there are not foreseen to be any significant adverse cumulative impacts arising from the development that will affect future activities.
(p) the impact on coastal processes and coastal hazards, including those under projected climate change conditions,	Having regard to the Flood Impact Assessment Report (FIAR), the proposed activity will not generate any additional adverse impacts on coastal processes and coastal hazards.
(q) applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1,	The proposal is considered to be consistent with relevant strategic documents (including the Greater Sydney Region Plan, Central City District Plan and the Parramatta Local Strategic Planning Statement) as it will improve a high-quality recreational resource

3 Statutory Framework

Table 3 Environmental Factors to be considered under s171 of the EP&A Regulation	
Factor	**Assessment**
	to service the existing and future population of the City of Parramatta.
(r) other relevant environmental factors.	All relevant factors have been considered within this REF.

3.1.4 Environment Protection and Biodiversity Act 1999 (Commonwealth)

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), a referral is required to the Australian Government for proposed actions that have the potential to significantly impact on matters of National Environmental Significance (NES) or the environment of Commonwealth land.

An assessment of the proposals impact on matters of National Environmental Significance is included in **Table 4** below.

Table 4 EPBC Act 1999 Checklist	
Factor	**Impact**
Any significant impact on a declared World Heritage Property?	No
Any significant impact on a National Heritage place?	No
Any significant impact on a declared RAMSAR wetland?	No
Any significant impact on Commonwealth listed threatened species or endangered community?	No
Any significant impact on Commonwealth listed migratory species?	No
Does any part of the proposal involve nuclear actions?	No
Any significant impact on Commonwealth marine areas?	No
Any significant impact on the Great Barrier Reef Marine Park?	No
Any significant impact on Commonwealth land?	No
Any significant impact on a declared World Heritage Property?	No

3.1.5 State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP TI)

Chapter 2 of SEPP TI provides planning provisions for the establishment of infrastructure. Relevant to the proposed works are Section 2.10-2.17 and Section 2.73.

Section 2.10 – Section 2.17 – Consultation

Section 2.10 – Section 2.15 relate to consultation requirements for development with impacts to Council related infrastructure or services, local heritage, flood liable land and within a coastal zone.

Notwithstanding, Section 2.17 provides for exceptions to consultation. Subclause (c) provides that consultation in accordance with Section 2.10 – 2.15 is not required to be given to Council or a public authority that is carrying out the development. In this instance, Council is carrying out the proposed development.

Section 2.16 of SEPP TI relates to consideration of planning for bush fire protection. It is noted that the site is not mapped as bush fire prone land. Notwithstanding, this section only applies to development for the purpose of health services facilities, correctional centres, and residential accommodation.

Section 2.73 – Parks and other Public Reserves

Section 2.73(3) of SEPP TI sets out the following development that may be carried out by or on behalf of a public authority (including Council) as development without consent on a public reserve as follows (**bold** emphasis added):

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(3) Any of the following development may be carried out by or on behalf of a public authority without consent on land owned or controlled by the public authority—

(a) development for any of the following purposes—

(i) roads, pedestrian pathways, cycleways, single storey car parks, ticketing facilities, viewing platforms and pedestrian bridges,

(ii) recreation areas and recreation facilities (outdoor), but not including grandstands,

(iii) visitor information centres, information boards and other information facilities,

(iv) lighting, if light spill and artificial sky glow is minimised in accordance with the Lighting for Roads and Public Spaces Standard,

(v) landscaping, including landscape structures or features (such as art work) and irrigation systems,

(vi) amenities for people using the reserve, including toilets and change rooms,

(vii) food preparation and related facilities for people using the reserve,

(viii) maintenance depots,

(ix) portable lifeguard towers,

(b) environmental management works,

(c) demolition of buildings (other than any building that is, or is part of, a State or local heritage item or is within a heritage conservation area).

The proposed works involve the widening of an existing shared path shared path, the construction of a pedestrian boardwalk and other minor works within Rangihou Reserve. Associated minor works include landscaping, retaining walls, line markings and adjustments to existing surface inlet drainage pits.

Accordingly, the proposal can be undertaken as development without consent pursuant to Section 2.73(3) of SEPP TI.

Section 2.109 – Roads and Road Infrastructure Facilities

A minor portion of the proposed works relate to extending an existing shared path located within the Morton Street Road Reserve.

Section 2.109(1) of SEPP TI provides that development for the purpose of road infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land.

Road infrastructure facilities are defined in Section 2.108 of SEPP TI as including:

road infrastructure facilities *includes—*

(a) tunnels, ventilation shafts, emergency accessways, vehicle or pedestrian bridges, causeways, road-ferries, retaining walls, toll plazas, toll booths, security systems, bus lanes, transit lanes, transitways, transitway stations, rest areas and ***road related areas*** *(within the meaning of the Road Transport Act 2013), and*

(b) associated public transport facilities for roads used to convey passengers by means of regular bus services, and

(c) bus layovers that are integrated or associated with roads (whether or not the roads are used to convey passengers by means of regular bus services), and

(d) bus depots, and

(e) bus stops and bus shelters, and

(f) traffic control facilities (within the meaning of Part 6 of the Transport Administration Act 1988), TfNSW road safety training facilities and safety works, and

(g) premises used for the purposes of testing and inspecting heavy vehicles (within the meaning of the Road Transport Act 2013) under the TfNSW Heavy Vehicle Authorised Inspection Scheme.

[**bold** text for emphasis]

Road related areas are defined in the *Road Transport Act 2013* as being:

road related area means—

(a) an area that divides a road, or

*(b) **a footpath** or nature strip adjacent to a road, or*

*(c) **an area that is open to the public and is designated for use by cyclists** or animals, or*

(d) an area that is not a road and that is open to or used by the public for driving, riding or parking vehicles, or

(e) a shoulder of a road, or

(f) any other area that is open to or used by the public and that has been declared under section 18 to be an area to which specified provisions of this Act or the statutory rules apply.

[**bold** text for emphasis]

Having regard to the definition of road related area, the proposed works within the Morton Street Road Reserve are consistent with being a footpath and an area that is used by cyclists.

3.1.6 State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 2 – Coastal Management

Chapter 2 of *State Environmental Planning Policy (Resilience and Hazards) 2021* (SEPP RH) relates to coastal management. The aim of the chapter is to *promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the Coastal Management Act 2016, including the management objectives for each coastal management area.*

Having regard to the provisions of Chapter 2, the location of the proposed activity is within a proximity area to Coastal Wetlands and is within a Coastal Environment Area and Coastal Use Area.

The FFAR (**Appendix 5**) has considered the potential for impacts of the proposed activity on the coastal values that are present within the site.

Having regard to Section 2.8 of SEPP RH and given the minor nature of the proposed activity and that the area of the works is within a highly modified landscape, the proposed activity is unlikely to result in further impacts to these coastal values, including the biophysical, hydrological, or ecological integrity of the adjacent coastal wetlands, as well as the quantity and quality of surface and ground water flows to and from the adjacent coastal wetlands.

Chapter 4 – Remediation of Land

Chapter 4 of *State Environmental Planning Policy (Resilience and Hazards) 2021* (SEPP RH) relates to remediation of land. The object of this chapter is to *promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment*.

Section 4.6 requires a consent authority to consider whether the land is contaminated and if it is contaminated, that it would be suitable in its contaminated state or whether remediation is required.

A Detailed Site investigation (DSI) was prepared by Douglas Partners which identified bonded and friable asbestos in three (3) test pit locations. Based on the outcomes of the DSI, it was recommended that a Remediation Action Plan (RAP) be prepared to provide an appropriate strategy for managing fill impacted with asbestos and in doing so, remediate the site for its intended use.

Consequently, a RAP was prepared by Progressive Risk Management (PRM). Subject to the implementation of the RAP, PRM has concluded that the site will be suitable for the ongoing open space use of the site and that the contamination risks can be managed to ensure no risk to human health or the environment.

Furthermore, PRM have provided that the remediation works are considered to be Category 2 Remediation and therefore does not require consent.

A Mitigation Measure has been included that relates to the implementation of the RAP and management of any unexpected finds.

3.1.7 State Environmental Planning Policy (Biodiversity and Conservation) 2021

Section 171A of the EP&A Regulation requires the determining authority to 'take into account' certain sections of *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (SEPP BC) as the site is within the Sydney Harbour Catchment, a regulated catchment under SEPP BC.

Water Quality and Quantity

Section 6.6 of SEPP BC sets out water quality and quantity provisions. Having regard to the Civil Plans and drainage investigations undertaken by Council, the proposed activity will result in negligible impacts to the water quality and quantity, caused by the additional hardstand that is generated by the path upgrades.

Aquatic Ecology

Section 6.7 of SEPP BC sets out aquatic ecology provisions. The Flora and Fauna Assessment Report (FFAR) that accompanies this REF does not identify any aquatic ecology within the activity area which is within a highly modified environment of Rangihou Reserve.

Notwithstanding, the proposed activity will be undertaken in a nature that minimises impacts on the natural water body and associated coastal wetlands, including sediment and erosion control during construction.

Flooding

Section 6.8 of SEPP BC sets out provisions to consider the impacts on periodic flooding that benefits wetlands and other riverine ecosystems. A Flood Impact Assessment Report (FIAR) has been prepared by Council, dated 24 June 2025 (**Appendix 6**), which confirms that the site is impacted by flooding in the 1 in 100-year ARI event and the 1 in 20-year ARI event.

The FIAR has determined that the peak flood depth in the 20-year ARI is a maximum of 670mm, whereas under the more extreme 100-year ARI event, the maximum flood depth reaches up to 2.62m.

An assessment of the drainage infrastructure along the existing shared path and wider Rangihou Reserve has determined that improvements to the existing stormwater infrastructure can be made to improve the conveyance capacity of the existing network and in turn, enhance the stormwater management of the site.

The FIAR has also concluded that the flood characteristics of the site will remain largely unchanged throughout the catchment from the proposed activity, with no negative impacts identified within private property boundaries.

In this regard, the activity is considered to have negligible impact on flood behaviour. Erosion and sediment control during construction and hardstand surfaces will minimise the likelihood of pollutants entering the natural waterbody.

Recreation and public access

Section 6.9 of SEPP BC sets out recreation and public access provisions. The proposed activity is for the purpose of enhancing recreation and public access and is accordingly consistent with these provisions.

Development in Foreshores and Waterways Area

Section 6.28(1) of SEPP BC sets out general provisions for development in the Foreshores and Waterways Area. The proposed activity promotes recreation within the foreshore while not resulting in any adverse impacts on its natural setting.

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3.1.8 Parramatta Local Environmental Plan 2023

Permissibility

The site is zoned RE1 Public Recreation (the RE1 Zone) and W1 Natural Waterways (the W1 zone) under the LEP, however the location of the proposed works are located only on land in the RE1 zone only.

The proposal seeks to upgrade a shared path, construct a pedestrian boardwalk and associated landscaping, retaining walls and line marking.

Pursuant to the LEP, the works in the RE1 zone are defined as being an 'Environmental Facility' which is permissible with development consent.

An extract of the zoning map for the site is provided at **Figure 16** below.

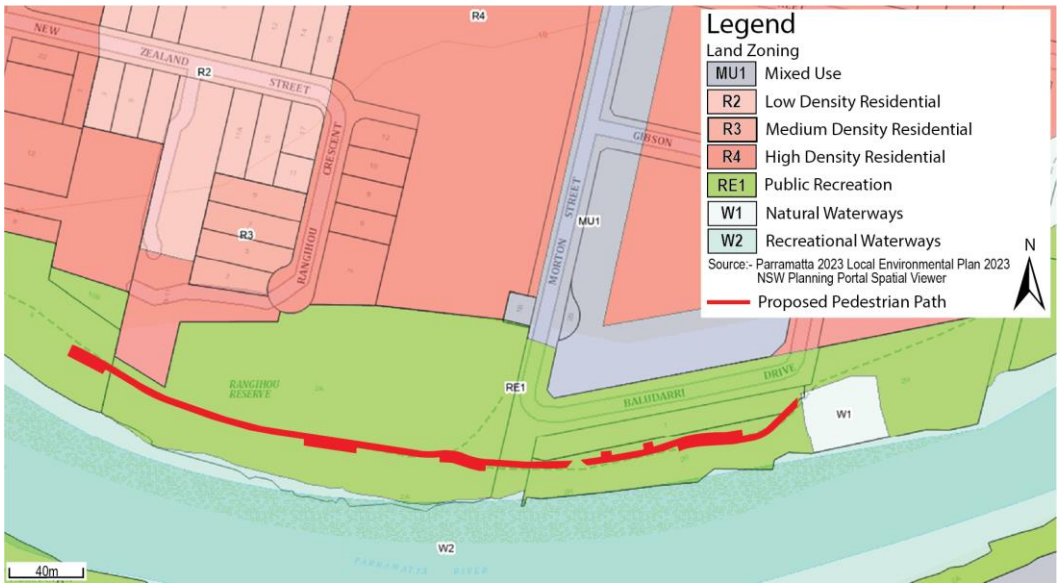

Figure 16 Land zoning map. Source: ePlanning Spatial Viewer

Zone Objectives

The objectives of the RE1 zone are provided below.

- *To enable land to be used for public open space or recreational purposes.*
- *To provide a range of recreational settings and activities and compatible land uses.*
- *To protect and enhance the natural environment for recreational purposes.*
- *To conserve, enhance and promote the natural and cultural heritage value of parks and open space in the zone.*
- *To create opportunities to use riverfront land for public recreation.*

Having regard to the objectives of the RE1 zone, the proposed works relate to an existing area of public open space that provides for a range of recreational activities. This includes passive recreation activities, cycling, and walking / running along the existing paths.

The proposed works also involve the planting of 18 trees, six of which are located to the north of the pedestrian path, and the other 12 to the south. These trees will provide a connection to the existing natural environment of the park, particularly the established vegetation along the southern portion of the site, adjacent to Parramatta River.

Having regard to the Heritage Impact Statement (HIS) that accompanies this development, the proposal will not adversely impact on the natural and cultural heritage value of the park.

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The separated pedestrian path will create more opportunities for people to use the riverfront land and in doing so, minimising conflict between cyclists and pedestrians that currently utilise the shared path.

Due to the minor nature of the proposal, the use of the park for public recreation purposes will not be impacted.

Table 5 below provides an assessment of the proposed works against the relevant provisions of the LEP.

Table 5 Assessment of proposal against relevant provisions of the LEP

Provision	Assessment	Consistent
Clause 5.10: Heritage Conservation	The site is mapped as comprising two (2) heritage items, being 'Wetlands' (I011) and 'Stone Wall' (I632). A Heritage Impact Statement (HIS) has been prepared by DFP Planning, dated 28 January 2025, which assesses the impact of the proposed works on the heritage significance of the site. The HIS has determined the proposed works will have a negligible visual impact and potential minor physical impacts on the natural significance of the remnant mangroves and saltmarsh. No impacts are likely to be generated towards the wetlands and the existing stone wall. In this regard, it is considered that the proposed works are consistent with the objectives of Clause 5.10 of the LEP.	Yes
Clause 5.21: Flood Planning	In accordance with the Section 10.7 (2) & (5) Planning Certificate for the site, dated 15 October 2024, part of the land is within the flood planning area and between the flood planning area and the probable maximum flood and therefore subject to flood related development controls. A Flood Impact Assessment Report (FIAR) was provided by Council (**Appendix 6**), in relation to the potential flood impacts as a result of the proposed development. That report has determined that the site affected by the 20-year ARI event and the 100-year ARI event. The FIAR has provided recommendations that are implemented as part of the Mitigation Measures. These recommendations relate to drainage modifications to improve the performance, capacity and reliability of the stormwater network. Subject to compliance with these recommendations, the FIAR has supported the proposal. In this regard, it is considered that the proposed works are consistent with the objectives of Clause 5.21 of the LEP. Flooding is discussed further in **Section 5.1** of this report.	Yes
Clause 6.1: Acid Sulfate Soils	The location of the proposed activity is on land mapped as Class 2 acid sulfate soils. Development consent is only required whereby works are likely to lower the watertable. Due to the minor nature of the proposed works, it is unlikely that the proposal will lower the water table in this instance. Therefore, development consent is not required in this instance.	Yes

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Table 5 Assessment of proposal against relevant provisions of the LEP		
	Notwithstanding, an Acid Sulfate Soils Assessment (ASSA) has been prepared by Progressive Risk Management (PRM) (**Appendix 11**) which has recommended that potential acid sulfate soils (PASS) or actual acid sulfate soils (AASS) are not expected to be disturbed as part of the proposed activity. The ASSA provides that PASS is present on the site at approximately -0.3 to -0.4m AHD. Given that the elevation of the site area typically spans around 2.0 to 3.0m AHD, the proposed upgrade works, including associated tree planting are unlikely to extend to the depth where PASS may be present. Acid sulfate soils is discussed further in **Section 5.1** of this report.	
Clause 6.6: Foreshore Area	The site is partly located within a foreshore area. The objective of Clause 6.6 of the LEP is to protect the Parramatta River by ensuring development in the area will not impact nature foreshore processes, the significance and amenity of the area and that the development will be compatible with the riverine environment. Based on the minor nature of the proposed works and subject to compliance with the Mitigation Measures, it is considered that the proposed works will be consistent with the objectives of this clause.	Yes

4 Environmental Risk Assessment

This section examines the environmental risks in relation to the proposed works.

4.1 Assessment Method

The methodology applied to the environmental risk assessment for the proposed works is as follows:

- Initial risk assessment for environmental constraints based upon:
    - Review of relevant planning controls and legislation;
    - Review of consultant reports; and
    - Examination of aerial photographs and site photos.
- Identifying potential environmental risks/impacts associated with the proposed works;
- Evaluating identified risks/impacts to determine the potential for occurrence and degree of severity; and
- Identifying and determining suitable environmental management/mitigation procedures and control measures appropriate for planned works.

4.2 Site Constraints

Table 6 identifies site constraints applicable to the site. Where an environmental issue is identified, impact assessment is provided in **Section 5** and mitigation measures and conditions are included in **Appendix 14.**

Table 6 Site Constraints				
Constraint	**Factor**	**Yes**	**No**	**Action**
Contamination	Is the site affected by contamination as identified in Section 10.7 Certificate or 'List of NSW contaminated sites notified to the EPA' and/or potentially affected by contamination?	☒	☐	The DSI prepared by Douglas Partners identified bonded and friable asbestos within three (3) test locations of the site. Remediation of these soils is required to be undertaken in accordance with the Remediation Action Plan (RAP) prepared by Progressive Risk Management.
	Does the project involve demolition of buildings or part of a building that may contain Asbestos?	☐	☒	The proposed activity does not involve the demolition of buildings or part of buildings that may contain asbestos.
	Does the project require the disturbance of any other hazardous material (e.g. lead paint, lead dust, PCBs, ozone depleting substances)?	☐	☒	As set out above, the site is not identified as being contaminated based on the Section 10.7 (2) & (5) Planning Certificate for the site. Notwithstanding, a mitigation measure has been included to provide guidance for how to manage unexpected, contaminated material if encountered during construction works.
Flooding	Is the site affected by flooding? (i.e. is the land below the 1 in 100-year flood planning level)	☒	☐	The Section 10.7 Certificates for the site have confirmed that the land or part of the land is between the flood planning area and the probable maximum flood and subject to flood related development controls. A Flood Impact Assessment Report (FIAR) has been undertaken by Council (**Appendix 6**), which confirms that the site is affected by flooding in the 20-year ARI and 100-year ARI events. Notwithstanding, the FIAR has concluded that flood characteristics remain largely unchanged throughout the catchment following the proposed activity. No further action is required.
Coastal Hazards	Is the site identified within the coastal zone in the *Coastal Management Act 2016* OR has the site been identified by Council as affected, or potentially affected, by existing and future coastal hazards? This includes coastal storm erosion and recession of land due to sea level rise.	☒	☐	The site is mapped within a coastal environment area, a coastal use area and partly coastal wetlands. It is noted that the location of the proposed works is within a proximity area to coastal wetlands. To mitigate impacts towards the coastal zones with which the site is located within and within proximity to, the implementation of appropriate erosion and sediment control measures is required.
Bushfire Hazard	Is the land nominated as Bushfire Prone Land on the Section 10.7 Certificate or is the site within 100m of unmanaged bushland?	☐	☒	No action required.
Threatened Species	Does the Project involve the clearing of vegetation that would affect any threatened species? If YES, answer the following two questions:	☐	☒	No action required. The Flora and Fauna Assessment Report has considered potential impacts to threatened species. Refer to discuss in **Section 5** below.
	Has the Section 10.7 Certificate and/or consultation with Council and/or review of the OEH critical habitat register identified a known critical habitat or threatened species, populations or endangered ecological communities and their habitat on or in close proximity to the site?	☐	☒	No action required.

Table 6 Site Constraints				
Constraint	**Factor**	**Yes**	**No**	**Action**
	Is the Project Site adjacent to an area of bushland (including a National Park, State Forest, Council Reserve or area of unmanaged bushland) OR a natural watercourse (including a creek, river, estuary, lake or wetland)?	☒	☐	The site is located adjacent to Parramatta River and wetland areas. Notwithstanding, a FFAR has been prepared by East Coast Ecology (**Appendix 5**), which has considered the impacts of the proposed activity on the surrounding land. The conclusions of the FFAR are that the proposed activity will not result in a significant impact on any threatened entities.
Native Vegetation	Does the project involve the clearing of native vegetation?	☒	☐	No further action is required.
Aboriginal Cultural Significance	Has the Section 10.7 certificate and/or consultation undertaken with Council identified that the site has, or is likely to have, significance to Aboriginal people, AND / OR will the proposed project impact on an Aboriginal place or known Aboriginal Objects?	☐	☐	The Section 10.7 Planning Certificate for the site has identified the site as being high sensitivity and having potential to contain items of Aboriginal heritage. Notwithstanding, an Aboriginal Heritage Information Management System (AHIMS) Search was undertaken on 3 October 2024 (**Appendix 10**) which did not identify any Aboriginal sites or places within the location of the proposed activity. Six (6) previously recorded sites or places are located within a 200m radius of the site, however, these are all located on the southern side of Parramatta River. A Mitigation Measure has been included that relates to unexpected finds of Aboriginal objects, sites or places during construction works.
	Is the site in an area very highly disturbed /modified (i.e. does it contain large areas of sealed surface, fill or previously excavated areas?)	☒	☐	The site has recently been modified to facilitate the recreational uses that occur within the site.
	If NO, does the project involve more than 1ha of ground disturbance?	☐	☒	No action required.
	Is the project site within 200m of a high-water mark of coastal waters of NSW?	☐	☒	No action required.
	Is the project site within 200m of a wetland, coastal lake or waterway?	☒	☐	The proposed works are located approximately 30m to the north of mapped coastal wetlands. The location of the proposed works is therefore within a proximity area to coastal wetlands. Notwithstanding, the proposed works are minor in nature and subject to the implementation of appropriate erosion and sediment control measures, are unlikely to result in any impacts to the nearby Coastal Wetlands.
	Is the project site located on a sand sheet or within a dune area located on a ridge top?	☐	☒	No action required.
	Is the project site within 20m of a cave, rock shelter, or a cave mouth?	☐	☒	No action required.
	Is the site less than 6m AHD?	☒	☐	The site is less than 6m AHD.

Table 6 Site Constraints				
Constraint	**Factor**	**Yes**	**No**	**Action**
Acid Sulphate Soils	Does the site contain acid sulphate soils of Class 1-4?	☒	☐	The location of the proposed activity is on Class 2 Acid Sulfate Soils. The proposed activity is minor in nature and having regard to Clause 6.1 of the LEP, the activity is not likely to lower the watertable. Furthermore, an Acid Sulfate Soils Assessment has been undertaken by PRM which has concluded that there is no potential acid sulfate soils (PASS) or actual acid sulfate soils (AASS) in the material that is to be disturbed as part of the proposed works. As a result, no Acid Sulfate Soils Management Plan (ASSMP) is required to be prepared. No action required.
	If YES, does the Project involve the excavation of more than 1 tonne of soil?	☐	☒	No action required.
Mine Subsidence	Is the land located in a Mine Subsidence District?	☐	☒	No action required.
Land Slip	Does the Section 10.7 Certificate and/or consultation with the relevant council identify the site as being affected by land slip?	☐	☒	No action required.
Heritage	Does the site contain an item of local or state heritage significance or is the site located in the vicinity of a local or state heritage item?	☒	☐	Two (2) heritage items are located within the subject site, including: - Wetlands (I011); and - Stone Wall (I632). A Heritage Impact Statement (HIS) has been prepared as part of this REF (**Appendix 10**). The HIS concludes that the proposed development is not likely to result in any adverse heritage impacts. No further action is required.

5 Environmental Impact Assessment

This section provides an environmental impact assessment for the proposed works at Rangihou Reserve. The assessment includes an overview of the proposal and provides additional information for any specific environmental issues relating to the site which require more detailed consideration.

5.1 Detailed Environmental Assessment

The following environmental aspects are considered to be applicable to the site and the proposed works:

- Flora and Fauna;
- Tree Removal and Protection;
- Stormwater and Flooding;
- Soil and Water Quality;
- Contamination
- Aboriginal Heritage;
- European Heritage;
- Waste Management;
- Community Amenity;
- Cumulative Impacts; and
- Construction Management.

5.1.1 Flora and Fauna

The proposed works have been designed and located to retain trees and established vegetation where possible. Notwithstanding, 18 trees will be required to be removed due to their location within the vicinity of the activity.

A Flora and Fauna Assessment Report (FFAR) has been prepared by East Coast Ecology, dated 26 March 2025 (**Appendix 5**), to consider the impacts of the tree removal on the biodiversity values that are present within the site and surrounding area.

As documented within the FFAR, the subject land is within close proximity to PCT 4091: Grey Mangrove River Mangrove Forest, a State Vegetation listed plant community type which is mapped to the south of the proposed activity.

An extract of the mapping which shows the vegetation communities within and surrounding the subject land is provided at **Figure 14** below.

5 Environmental Impact Assessment

Figure 17 Vegetation Communities within the subject area. Source: East Coast Ecology

A review of the threatened species within the subject land was also undertaken as part of the FFAR. Based on the threatened species records, there have been two (2) threatened species records within proximity to the subject land, including one (1) Pteropus poliocephalus (Grey-headed Flying-fox) and one (1) Callistemon linearifolius (Netted Bottle Brush).

An assessment of the likely occurrence of threatened species within the subject land has been conducted as part of the FFAR. In relation to the Grey-headed Flying-fox, it is a highly mobile-species and is likely to visit the site. However, the species is not dependant on habitats in the subject land. In relation to the Netted Bottle Brush, a targeted assessment was undertaken and this species was absent from the subject land.

On this basis and due to the minor nature of works proposed within Rangihou Reserve, it is considered that no further assessment is required when considering the impact of the works on threatened species.

5.1.2 Tree Removal and Protection

The proposed works at Rangihou Reserve are within the vicinity of 62 trees, with 18 of those trees requiring removal (refer to **Table 1** of this REF for details), with the remaining 44 trees to be retained.

37 of those trees are subject to no or minor encroachment from the proposed activity, however, do not require tree sensitive construction methods.

17 trees are subject to major encroachment from the proposed activity, however, impacts can be minimised by tree sensitive construction methods. Consequently, tree sensitive construction methods are required to be in force prior to and during the construction works.

Site Plans have been prepared which show the location of the existing trees (including the crown, tree protection zone (TPZ) and structural root zone (SRZ) of each tree) within the context of the proposed works. These plans have been provided at **Figure 18** to **Figure 20**.

5 Environmental Impact Assessment

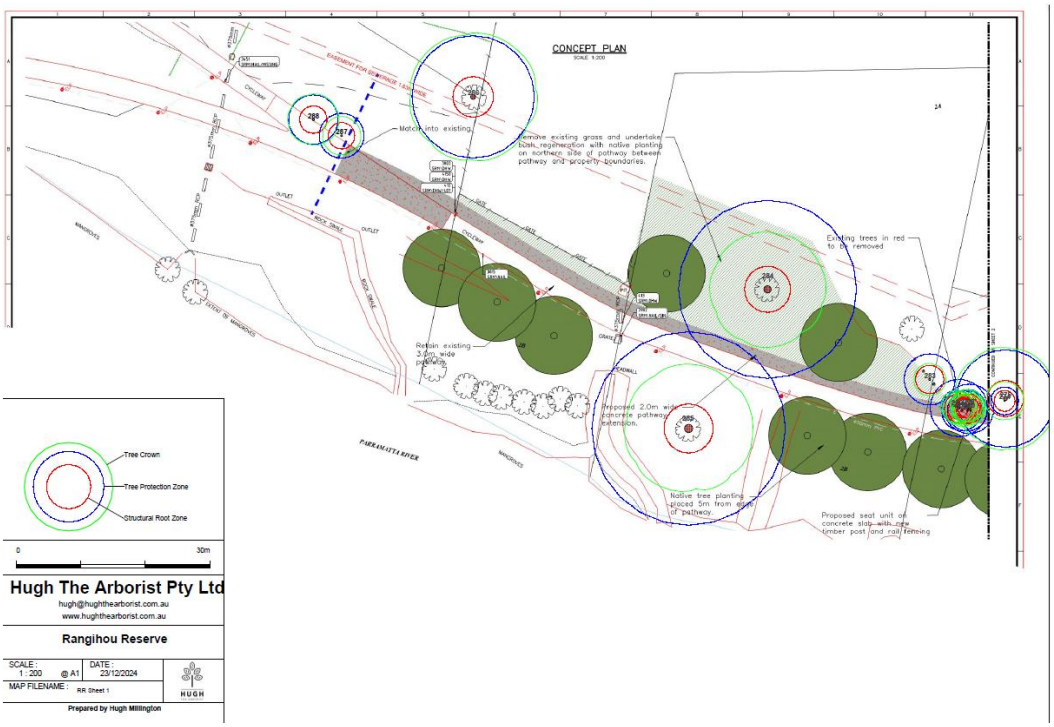


Figure 18 Site Plan (Sheet 1). Source: Hugh The Arborist

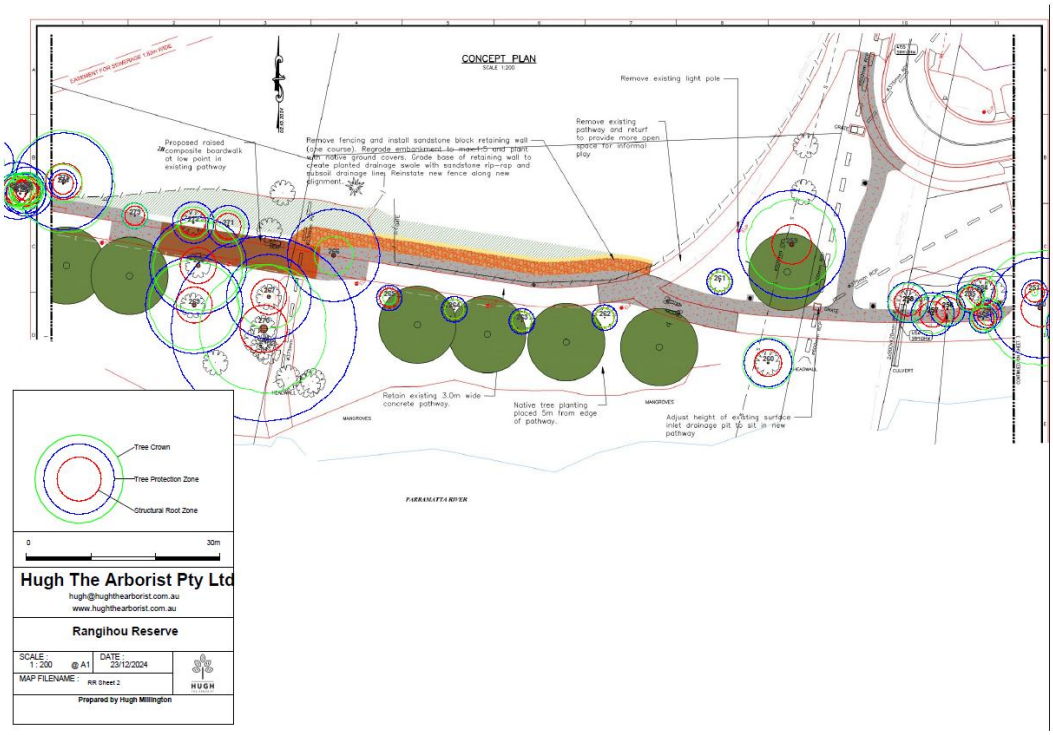


Figure 19 Site Plan (Sheet 2). Source: Hugh The Arborist

5 Environmental Impact Assessment

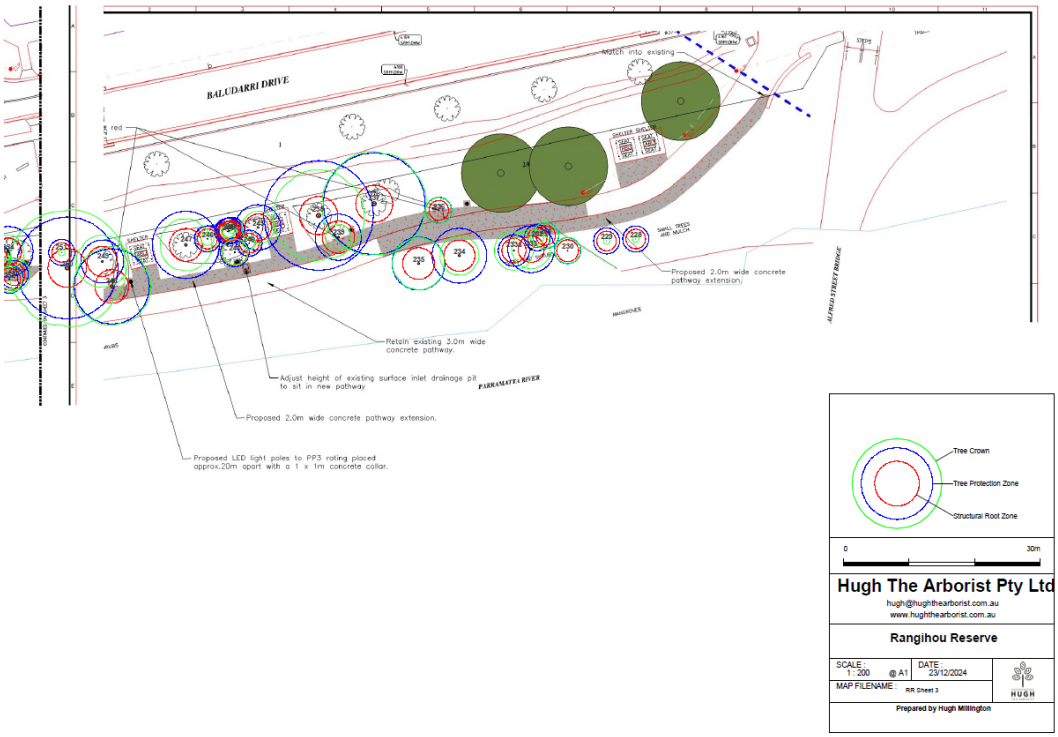


Figure 20 Site Plan (Sheet 3). Source: Hugh The Arborist

As provided in the Arborist Report prepared by Hugh The Arborist, dated 23 December 2024 (**Appendix 4**) trees that are subject to a major encroachment (>10% within the TPZ or any encroachment within the SRZ) will require tree sensitive methods of construction to minimise development impacts. These methods are set out in Section 9 of the Arborist Report.

As detailed on the Landscape Plans (**Appendix 2**), replacement planting is proposed along both the northern and southern sides of the path.

5.1.3 Stormwater and Flooding

A Drainage Investigation and Flood Impact Assessment Report (FIAR) was undertaken by Council (**Appendix 6**) to analyse the drainage components and flood impact assessment associated with the proposed activity.

Runoff from the upstream catchment is currently collected by the existing drainage network as shown in **Figure 21** below.

In relation to flooding impacts, the Drainage Investigation and FIAR has concluded that the proposed upgrades do not adversely impact runoff management across the site. The flood impact assessment for the 100-year ARI event indicates that the flood characteristics remain unchanged throughout the catchment, including no negative impacts within private property boundaries.

The proposed activity includes the installation of new stormwater pits and pipes to improve the existing drainage system. DRAINS modelling was undertaken and demonstrates that the proposed drainage modifications will significantly improve the conveyance capacity of the existing network and as a result, will improve the stormwater management of the site.

5 Environmental Impact Assessment

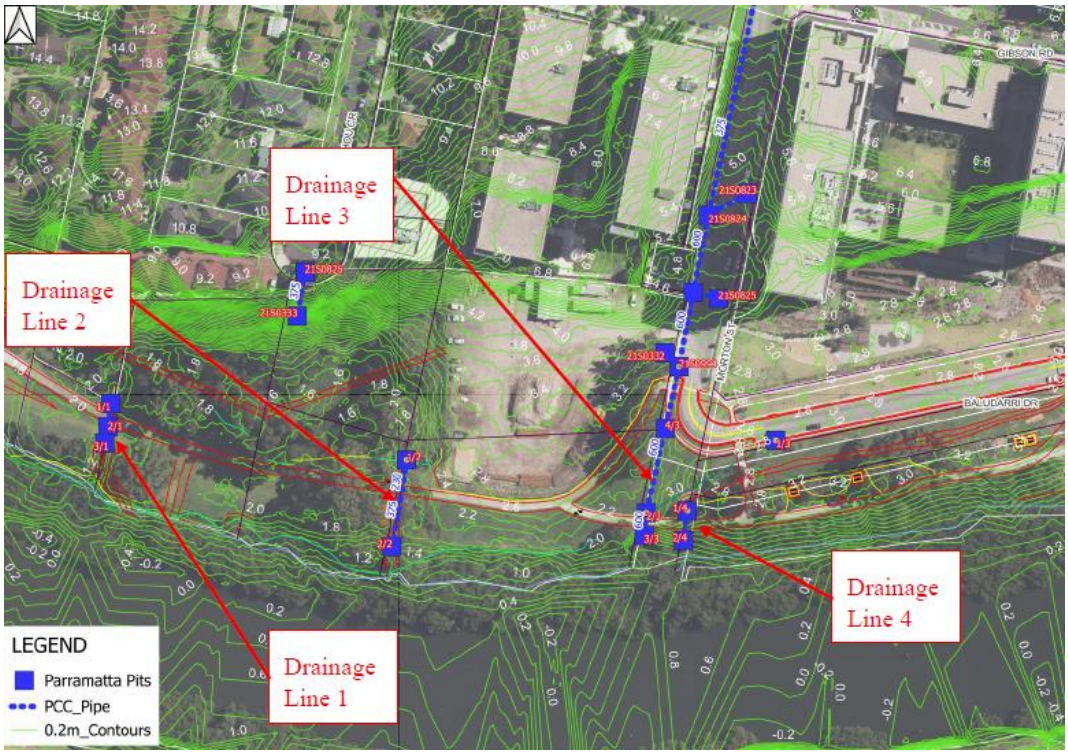


Figure 21 Existing Stormwater Drainage Network. Source: Council

5.1.4 Soil and Water Quality

Acid Sulfate Soils

The location of the proposed activity is on land that is mapped Class 2 Acid Sulfate Soils. As a result, an Acid Sulfate Soils Assessment (ASSA) was conducted by PRM to assess if material proposed to be disturbed as part of the activity contains potential acid sulfate soils (PASS) or actual acid sulfate soils (AASS) and if required, the need for an Acid Sulfate Soils Management Plan (ASSMP).

The ASSA took soils samples in the location of the proposed activity. The results did not indicate the presence of PASS or AASS within the location of the proposed activity due to the minor excavation depths proposed / required for the activity (in the order of 0.05m AHD).

As set out in the ASSA, PASS is present on the site at approximately -0.3 to -0.4m AHD. Given that the elevation of the site area typically spans around 2.0 to 3.0m AHD, the proposed upgrade works, including associated tree planting are unlikely to extend to the depth where PASS may be present.

Notwithstanding, if any works are required to excavate material to a depth of -0.3m AHD, this will need to be treated as PASS and managed in accordance with an Acid Sulfate Soils Management Plan (ASSMP).

Erosion and Sediment Control

The site is located within close proximity to Parramatta River (located to the south) and as a result, there is the potential for soil to spill into the nearby river, unless appropriate erosion and sediment control measures are implemented.

Erosion and sediment control measures are to be established by the Principal Contractor prior to works commencing and must remain in place for the duration of the works. To prevent sediment-laden water from entering into the natural waterway, erosion and sediment control must be managed in accordance with best practice environmental management practices.

5 Environmental Impact Assessment

5.1.5 Contamination

A Detailed Site Investigation (DSI) has been prepared by Douglas Partners, dated 17 January 2025.

The DSI acknowledged that the site may have been part of agricultural land prior to 1943 and that the site remains largely undeveloped, with the exception of the eastern portion of the site which consisted of industrial/commercial development between 1940-1980.

Following the 1980's, the warehouse to the east of the site was demolished and replaced with car parking. The remainder of the site has remained undeveloped, with the exception of the shared path that exists today, having been constructed in 2005 and extended in 2015.

A site walkover was undertaken, including the collection of soil samples from 12 boreholes across varying sections of Rangihou Reserve (**Figure 18**). Asbestos was recorded in three (3) of the test locations. Based on the results and findings of the DSI, it was concluded that asbestos in soils can be managed subject to the preparation of the RAP and the preparation of an Acid Sulfate Soils Management Plan.

Part of the site is also subject to existing capping and an associated Environmental Management Plan (EMP) (**Appendix 12**). This includes a 1,740m^2 area of open space to the south of Morton Street and north of the existing shared path. This area was remediated in 2018 and consisted of removing asbestos-impacted soils to a depth of 300mm and covering the remediation excavations surface with a high visibility geofabric marker layer and 300mm of virgin excavated natural material (VENM). A condition of this remediation strategy was the creation of the EMP which is designed to manage the remaining capped asbestos-impacted material on site.

Figure 22 Sample Locations. Source: Douglas Partners

A RAP has been prepared by Progressive Risk Management (PRM), dated 13 June 2025 in accordance with the current regulatory guidelines.

The RAP has confirmed that the preferred remedial strategy for the asbestos impacted soils is partial excavation and disposal of contaminated material, and capping of remaining asbestos impacted fill to be managed under the long-term EMP. The proposed tree planting must ensure that the geotextile marker layer is not compromised by the future root system of mature trees. Furthermore, the tree planting must account for soil conditions and may require a larger suitable and sufficient soil depth and planting requirement to support healthy establishment of trees to meet the long-term EMP requirements.

5 Environmental Impact Assessment

Subject to compliance with the RAP, PRM has determined that the site will be suitable for the ongoing open space land use and that the risks associated with the identified contamination can be managed to ensure that there is no contamination risk to human health or the environment.

5.1.6 Aboriginal Heritage

Having regard to Part 7 of the Parramatta Development Control Plan 2023 (DCP), the location of the proposed activity is located within a high Aboriginal sensitivity area. An Aboriginal Heritage Information Management System (AHIMS) search was undertaken on 3 October 2024 which identified six Aboriginal sites recorded within a 200m radius of the subject location. Notwithstanding, all of these sites are located on the southern side of Parramatta River, with no previous recorded Aboriginal sites or places within the location of the proposed activity. Additionally, the site has been subject to past disturbances which has reduced archaeological potential within the site.

In the event of unexpected finds relating to Aboriginal objects, sites or places, a mitigation measure has been included which requires construction works to cease and consultation with a suitably qualified heritage professional and / or the relevant State government agency to determine the subsequent course of action.

5.1.7 European Heritage

The site borders heritage item I011 Parramatta River Wetlands and Item I632 a stone wall.

As shown in **Figure 19** below, the location of the proposed upgrades is outside of the location of the mapped heritage items.

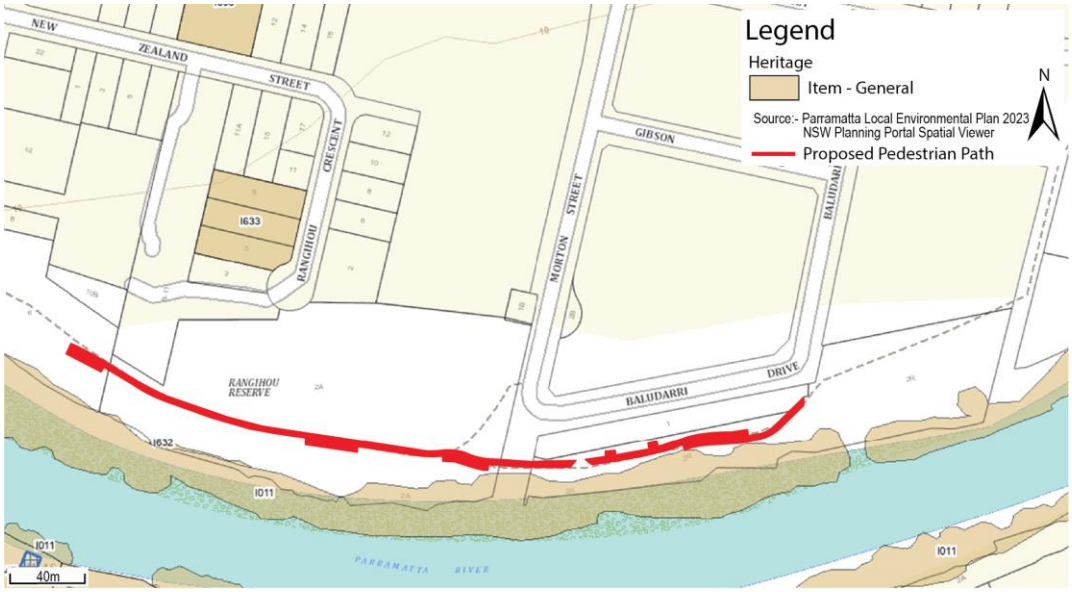


Figure 23 Heritage map. Source: ePlanning Spatial Viewer

Notwithstanding, as the proposed works are within the immediate vicinity of two (2) heritage items, a Heritage Impact Statement (HIS) has been undertaken by DFP Planning and is included as part of this REF.

The HIS has provided a heritage significance assessment and has included the statement of significance for the heritage items that are located within the vicinity of the works. Having regard to the NSW Heritage Inventory, the wetlands to the south of the proposed activity *are of significance for Parramatta area as remnant representative areas of mangroves and salt marshes which once extensively lined the foreshores and tidal water flats of the region.*

The statement of significance for the stone wall is provided below.

Stone wall shown on south side of Parramatta River in this location on plan of gas works of March 1890, which shows stone wall holding back reclamation fill. A rubble stone wall is shown on the north side of the river in this location on the Water Board Survey of November 1926.

Having regard to the minor nature of the proposed works and the separation of the works from the nearest heritage items, the HIS has concluded that the works will have a negligible visual impact and potential minor physical impacts on the natural significance of the remnant mangroves and saltmarsh that are located to the south of the site. No impacts are likely to be generated towards the wetlands and the existing stone wall.

5.1.8 Waste Management

The Preliminary Construction Management Plan (PCMP) prepared by Council (**Appendix 8**), provides for requirements in relation to the management of waste. In relation to general construction waste such as litter and material waste, these are to be contained on site.

Where skip bins are to be brought on site, they must have hinged lids and be closed at night and during wind affected days. The skip bins must be located within a secure construction compound to prevent unauthorised access and located outside of the high flood frequency zones. Where possible, waste generated from timber and metalworks should be recycled.

A mitigation measure has been included for a final Construction Management Plan (CMP) to be prepared by the contractor, prior to construction works commencing. The CMP should specify how waste will be generated, managed and disposed of in accordance with the Waste Classification Guidelines. The CMP, should specify the following details:

- The nature of waste to be generated;
- The presence of waste on site prior to work commencing;
- The quantity of waste anticipated;
- The potential for waste receptors; and
- The proximity to potential waste receptors.

Prior to construction works commencing, the CWMP will need to be reviewed and approved by Council.

5.1.9 Community Amenity

As set out in **Section 2** of this REF, Rangihou Reserve comprises a range of public recreational uses and facilities that are available for community use.

The proposed works will improve the useability of the existing shared facilities and in turn minimising potential conflict between users. The proposed works will not impact on other uses of the reserve.

Subject to compliance with the mitigation measures, it is considered that the community and amenity impacts in relation to the proposed activity works are acceptable.

Formal public consultation for the proposed works occurred between 21 October 2024 and 21 November 2024, including engagement with local residents, targeted letter box distributions, City of Parramatta website, social media and newsletters. It is noted that the formal public consultation related to the full extent of upgrades along the northern side of Parramatta River. This includes upgrades to Halvorsen Park, Reid Park, Baludarri Wetlands and George Kendall Riverside Park.

In total, 156,370 people were reached during the community engagement associated with this activity. During this engagement period, a total of 67 surveys were completed by members of the community, of which 53 were supportive of the proposed works, 12 were supportive to an

extent, one was unsure and one did not support the proposal. Eighty (80) pins were also placed on the interactive map that was available for residents to participate on

The majority of the submissions that were received are summarised by the following themes:

1. **Cycle and Pedestrian Paths**: The separation of cycle and pedestrian paths was supported by local residents. Further to this, the removal of narrow sections of the existing paths along the foreshore was also supported.

   Some comments were also received relating to signage and potential for campaigns to improve the operation between users of the cycle path and pedestrian path.

2. **LED Lighting**: Residents enthusiastically endorsed LED lighting to promote use of the path in the evenings.

3. **Planting**: Residents enthusiastically supported the planting of more trees, native shrubs and grasses in sections of the park. Some comments were also provided in relation to the original path (to the south of the proposed activity). These comments were predominantly associated with general upkeep of this area, to prevent it from becoming overgrown and therefore underutilised.

Other general comments received during the public notification period related to the provision of additional bins (including dog poo bins/bags), additional water/drinking fountains, additional bike repair stations, upgrades to existing cycle paths to fix bumps in the surface and additional lighting.

In regard to the first theme, a widened share path is being pursued across the full extent of the proposed Rangihou Reserve upgrades to create separated pedestrian and cyclist lanes.

In regard to the second theme lighting is not proposed, however, may be pursued under a separate activity in the future.

In regard to the third theme, 18 replacement trees will be planted to offset the removal of 18 existing trees. The suitability of the selected tree profile will be as per the Landscape Design documentation ensuring successful establishment. Species requirements and the volume of available soil will be taken into consideration in accordance with the RAP guidelines.

5.1.10 Cumulative Impacts

Given the minor nature of the proposed works, it is unlikely that any significant adverse cumulative impacts would be generated towards users of the foreshore along Rangihou Reserve and adjoining site's.

Any cumulative impacts associated with the works are considered to be minor, temporary and acceptable, subject to the implementation of mitigation measures, as provided in **Appendix 14** of the REF.

Some short-term impacts are likely to be generated by the construction works, which will mostly relate to noise and vibration impacts and possible dust exposure. Notwithstanding, the longer-term benefit of the proposed activity is likely to significantly outweigh any short-term impacts.

Long-term impacts associated within the proposed activity may include any future repair works or maintenance works to the proposed retaining wall, swale or pathway. All future works must remain consistent with the approved remediation strategy and ensure ongoing protection of human health and the environment, including mitigating and foreseeable issues.

5.1.11 Construction Management

A Preliminary Construction Management Plan (PCMP) has been prepared by City of Parramatta (**Appendix 8**) which sets out the overarching approach to the construction works, management measures to mitigate or minimise environmental impacts and protocols for communicating with relevant authorities and other stakeholders.

6 Conclusion

This Review of Environmental Factors has been prepared by DFP for the City of Parramatta Council, the proponent and determining authority for the proposed widening of the active transport cycleway to Rangihou Reserve, Parramatta.

This REF describes the existing site context and provides details of the proposed works which should be read in conjunction with the relevant design documentation which accompanies the REF.

An assessment of the potential for the proposed works to impact the environment has been undertaken, drawing upon other specialist reports and investigations and together with undertaken due diligence, this REF identifies relevant environmental management measures that should be implemented during the carrying out of the works to mitigate or minimise potential impacts to an acceptable level.

This REF concludes that the proposed works can be undertaken as development without consent pursuant to Part 5 of the EP&A Act and pursuant to the provisions of SEPP TI.

Furthermore, it is assessed that, by adopting the mitigation measures identified in this assessment, it is unlikely that there would be significant environmental impacts associated with the proposed development and that no EIS, BDAR, or SIS are required to be prepared.

Appendix 14: Mitigation Measures

1 Introduction

Part 5 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) provides for certain works to be undertaken as development without consent.

To ensure that the development activity, being the upgrade works to Rangihou Reserve, forming part of the Parramatta Cycleway Upgrades project is carried out in accordance the provisions of Part 5 of the EP&A Act, **Section 2.1** of this document identifies the plans / documents (and any amendments approved under Part 5) which have been relied upon for the purposes of this assessment.

The remainder of this document sets out the mitigation measures that are to be implemented during the carrying out of the works to ensure impacts are avoided, mitigated or minimised to an acceptable level.

2 Mitigation Measures

2.1 Authorised Documents

The development activity must be implemented generally in accordance with the REF prepared by DFP Planning Pty Ltd dated 25 July 2025 and the documents listed in **Table 1,** which are authorised for the carrying out of works as development without consent.

Table 1 Authorised Documents

Survey Plan prepared by City of Parramatta			
Drawing Reference	**Revision**	**Name of Plan**	**Date**
-	-	Survey – Rangihou Reserve	October 2024
Other Supporting Documents			
Document		**Prepared By**	**Date**
Landscape Plans		City of Parramatta	October 2024
Civil Plans		City of Parramatta	30 June 2025
Arborist Report		Hugh The Arborist	23 December 2024
Flora and Fauna Assessment Report		East Coast Ecology	26 March 2025
Detailed Site Investigation		Douglas Partners	16 January 2025
Remediation Action Plan		Progressive Risk Management	13 June 2025
Acid Sulfate Soils Assessment		Progressive Risk Management	23 June 2025
Heritage Impact Statement		DFP Planning	28 January 2025
Drainage Investigation and Flood Impact Assessment Report		City of Parramatta	24 June 2025
Environmental Management Plan		Prensa	May 2019

In the event of any inconsistency between the authorised documents and a mitigation measure hereunder, the mitigation measure shall prevail.

2.2 Amendment Tracking

Where there are any amendments to the authorised documents, an amendment register must be prepared which identifies the proposed amendment and demonstrates how the amendments will result in development that is substantially the same as the development to which the original REF applied.

Appendix 14: Mitigation Measures

2.3 Measures to be Implemented Prior to Works Commencing

2.3.1 Council Notification

The City of Parramatta (Council) shall be advised in writing of the date it is intended to commence work, including demolition. A minimum period of seven (7) days notification shall be given.

2.3.2 Notification to occupiers of adjoining land

Adjoining land owners shall be advised in writing of the date it is intended to commence work, including demolition. A minimum period of seven (7) days notification shall be given.

2.3.3 Final Construction Traffic Management Plan (CTMP)

A Final Construction Traffic Management Plan shall be prepared prior to the commencement of any works and approved by Council.

2.3.4 Final Construction Management Plan (CMP)

A Final Construction Management Plan (CMP) shall be prepared prior to commencement of any works and approved by Council.

2.3.5 Utilities and Services

Prior to commencement of any demolition activities, any services near the works site which may be impacted by the works are to be accurately located.

Dial Before You Dig should be contacted prior to the commencement of any works.

Prior to commencement of works, and if required, an application for a compliance certificate is to be made to Sydney Water or other evidence of Sydney Water's non-objection to the commencement of work on the basis of service availability is to be provided.

2.3.6 Tree Protection Measures

Tree protection measures are to be installed in accordance with the Tree Protection Specification provided as part of the authorised Arboricultural Impact Assessment prepared by Hugh The Arborist, dated 23 December 2024.

A Tree Protection Plan must be prepared which illustrates TPZ sensitive construction zones and exclusion zones prior to the commencement of works.

Tree protection fencing and signage must also be implemented to minimise any potential impacts upon retained trees prior to the commencement of works

2.3.7 Compliance with the Building Code of Australia and Australian Standards

Any works that are required to be undertaken in accordance with the National Construction Code (NCC) must be designed and constructed in accordance with the relevant provisions of the BCA and any relevant Australian Standards.

2.3.8 Remediation of Asbestos Impacted Soils

Remediation of asbestos impacted soils must be carried out in accordance with the Remediation Action Plan (RAP) prepared by Progressive Risk Management, dated 13 June 2025.

Any new tree planting is to utilise suitable species and soil volumes that will ensure tree health and stability whilst protecting the geotextile marker layer from mature root systems.

2.3.9 Acid Sulfate Soils

In accordance with the Acid Sulfate Soils Assessment prepared by Progressive Risk Management, dated 23 June 2025, if any works (including tree planting) exceed -0.3 m AHD, it will need to be treated as Potential Acid Sulfate Soils (PASS). This would need to be managed according to an Acid Sulfate Soils Management Plan (ASSMP).

Appendix 14: Mitigation Measures

2.4 Measures to be implemented During Demolition and Construction

2.4.1 Site Notice

A site notice must be prominently displayed in a prominent position at the site during construction to inform the public of project details, and must satisfy the following requirements:

1. The site notice(s) must be durable and weatherproof and must be displayed throughout the works period;
2. Include details of the approved hours of work, the name of the builder, Certifier, structural engineer, site/project manager, the responsible managing company (if any), its address and 24-hour contact phone number for any inquiries must be displayed on the site notice(s); and
3. The site notice(s) must be mounted at eye level on the perimeter hoardings/fencing and must state that unauthorised entry to the site is not permitted.

2.4.2 Complaints Management

A Complaints Register is to be established during construction works. Action taken or proposed to be taken must be documented on the register in response to complaints raised.

2.4.3 No Obstruction of Public Way

Building materials, machinery, vehicles, refuse, skip bins or the like must not be stored or placed in the public way (outside of any approved construction works zone). A secure site compound must be provided on site.

2.4.4 Implementation of Final CMP

All demolition and construction works are to be undertaken in accordance with the Final CMP.

The CMP must include measures for erosion and sediment control, which are to remain in place for the duration of the demolition and construction works.

Temporary site traffic management measures must also be implemented to provide for pedestrian, cyclist and vehicular safety.

2.4.5 Demolition

Demolition work must comply with the demolition work plans required by Australian Standard AS 2601-2025 The demolition of structures (Standards Australia, 2025) and endorsed by a suitably qualified person.

2.4.6 Work Hours

Unless otherwise agreed by the relevant statutory body, work hours shall be limited to:

(a) Monday to Friday: 7:00am to 5:00pm;

(b) Saturday: 8:00am to 5:00pm; and

(c) Sunday and Public holidays: No work unless prior approval from Council is granted.

2.4.7 Unexpected Finds Protocol – Aboriginal Heritage

In the event that unexpected Aboriginal objects, sites or places (or potential Aboriginal objects, site or places) are discovered during construction, all works in the vicinity should cease and the proponent should determine the subsequent course of action in consultation with a heritage professional and/or the relevant State government agency as appropriate.

If surviving A Horizon soils are identified during the construction earthworks, it is recommended that an observer with knowledge of Aboriginal cultural objects (e.g. registered Aboriginal stakeholder) is present.

If human skeletal material less than 100 years old is discovered, the *Coroners Act 2009* requires that all works should cease, and the NSW Police and the NSW Coroner's Office should be contacted. Should the skeletal material prove to be archaeological Aboriginal

remains, notification shall be given to Heritage NSW, the Local Aboriginal Land Council and the Commonwealth Minister for the Environment.

2.4.8 Unexpected Finds Protocol – Historic Heritage

If any unexpected archaeological relics are uncovered during the work, then all works must cease immediately in that area and the NSW Heritage Division contacted. Depending on the possible significance of the relics, an archaeological assessment and management strategy may be required before further works can continue in that area. Works may only recommence with the written approval of the NSW Heritage Division.

2.4.9 Unexpected Finds Protocol – Contamination

If during remediation works, material is encountered which appears to be potentially contaminated or appears to be different from the contamination described in the Remediation Action Plan (RAP) prepared by PRM, or known areas of contamination appear to extend beyond their defined boundary, the procedures set out in Section 6.5 of the RAP are to be applied.

2.4.10 Tree Removal and Protection

All works must be undertaken consistent with the tree protection requirements set out in the Arboricultural Impact Assessment Report prepared by Hugh The Arborist, dated 23 December 2024.

Any excavation works carried out within Tree Protection Zones (TPZs) are to be undertaken via sensitive construction techniques under the supervision of a Level 5 qualified Arborist.

Tree roots greater than 25mm in diameter are to be retained and protected;

- Existing footings within TPZs to be either removed using non-destructive excavation or be retained in situ with the structure cut off below ground level;
- Demolition of existing structures is to be carried out with 2-2.5t rubber-tracked excavator under Arborist supervision; and
- Shared pathway within TPZs is to be installed at or above existing ground level with no excavation in TPZs of retained trees.

2.4.11 Ecology

Exclusion zones will be set up at the limit of clearing in accordance with Guide 2: Exclusion zones of the Biodiversity Guidelines: Protecting and managing biodiversity on Transport for NSW projects (TfNSW, 2024).

2.4.12 Erosion and Sediment Control

Appropriate erosion and sediment control should be erected and maintained at all times during construction in order to avoid the potential of incurring indirect impacts on biodiversity values. Erosion and sediment controls would be established in accordance with an erosion and sedimentation plan to be produced for the proposed works. As a minimum, such measures should comply with the relevant industry guidelines such as ‘the Blue Book’ (Landcom, 2004).

2.4.13 Storage and Stockpiling

Allocate all storage, stockpile, and laydown sites away from any vegetation that is planned to be retained. Avoid importing any soil from outside the site in order to avoid the potential of incurring indirect impacts on biodiversity values as this can introduce weeds and pathogens to the site. If materials are required to be imported for landscaping works, they are to be sterilised according to industry standards prior to importation to site.

Appendix 14: Mitigation Measures

2.5 Measures to be implemented – Prior to Occupation

2.5.1 Traffic Certification

At the completion of the activity, a suitably qualified traffic engineer must confirm that the works, including works within the road reserve, comply with the relevant Australian Standards and any requirements from the Section 138 *Roads Act* approval.

2.5.2 Landscaping Certification

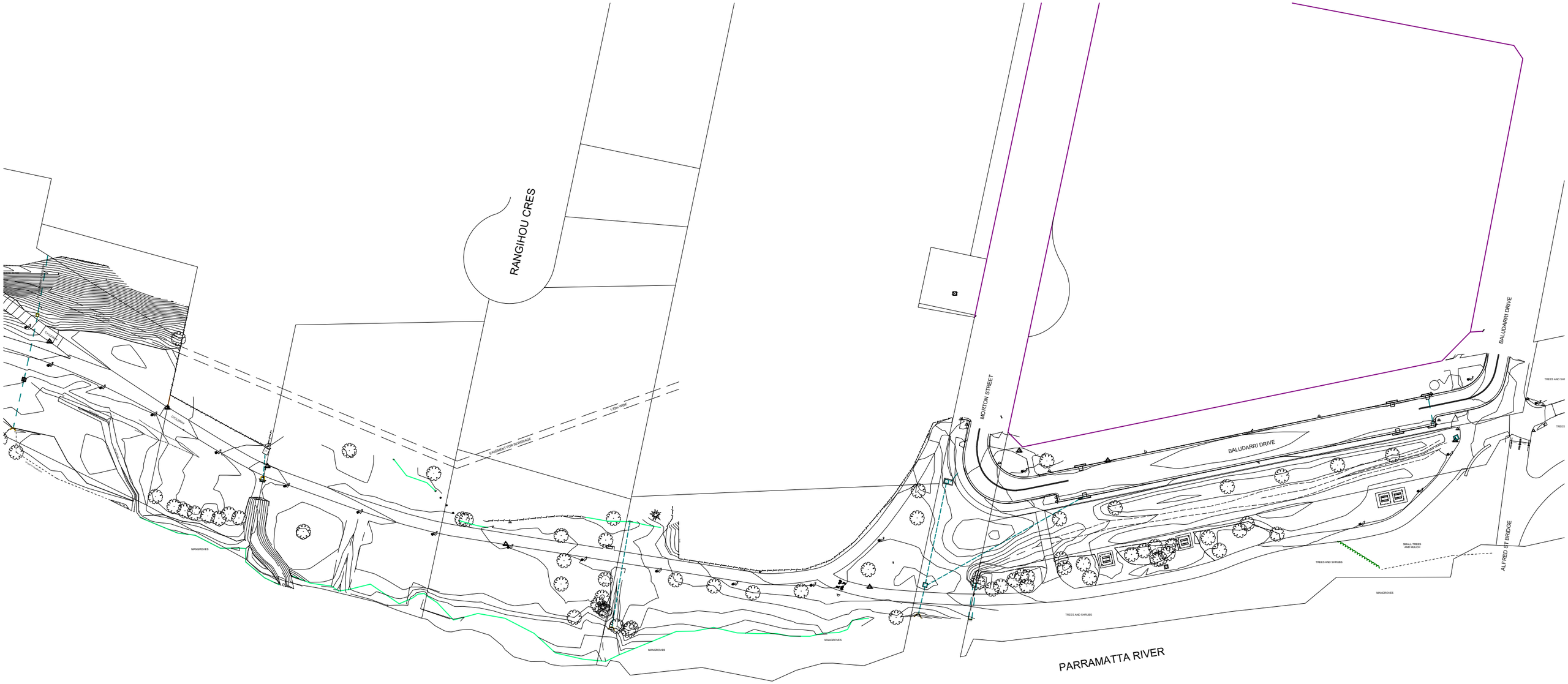
At the completion of the activity, a Landscape Completion Certificate for the proposed landscaping must be issued.

2.5.3 Arborist Certification

At the completion of the activity, a Level 5 qualified Arborist is to certify that the tree protection measures were undertaken in accordance with the Tree Protection Plan and the Tree Protection Specifications

2.5.4 Remediation Certification

At the completion of the activity, a suitably qualified environmental consultant is to verify that the site has been remediated and validated in accordance with the Remediation Action Plan (RAP) and is fit-for-purpose.



Date:
October 2024

Scale:
1:1000 @ A3

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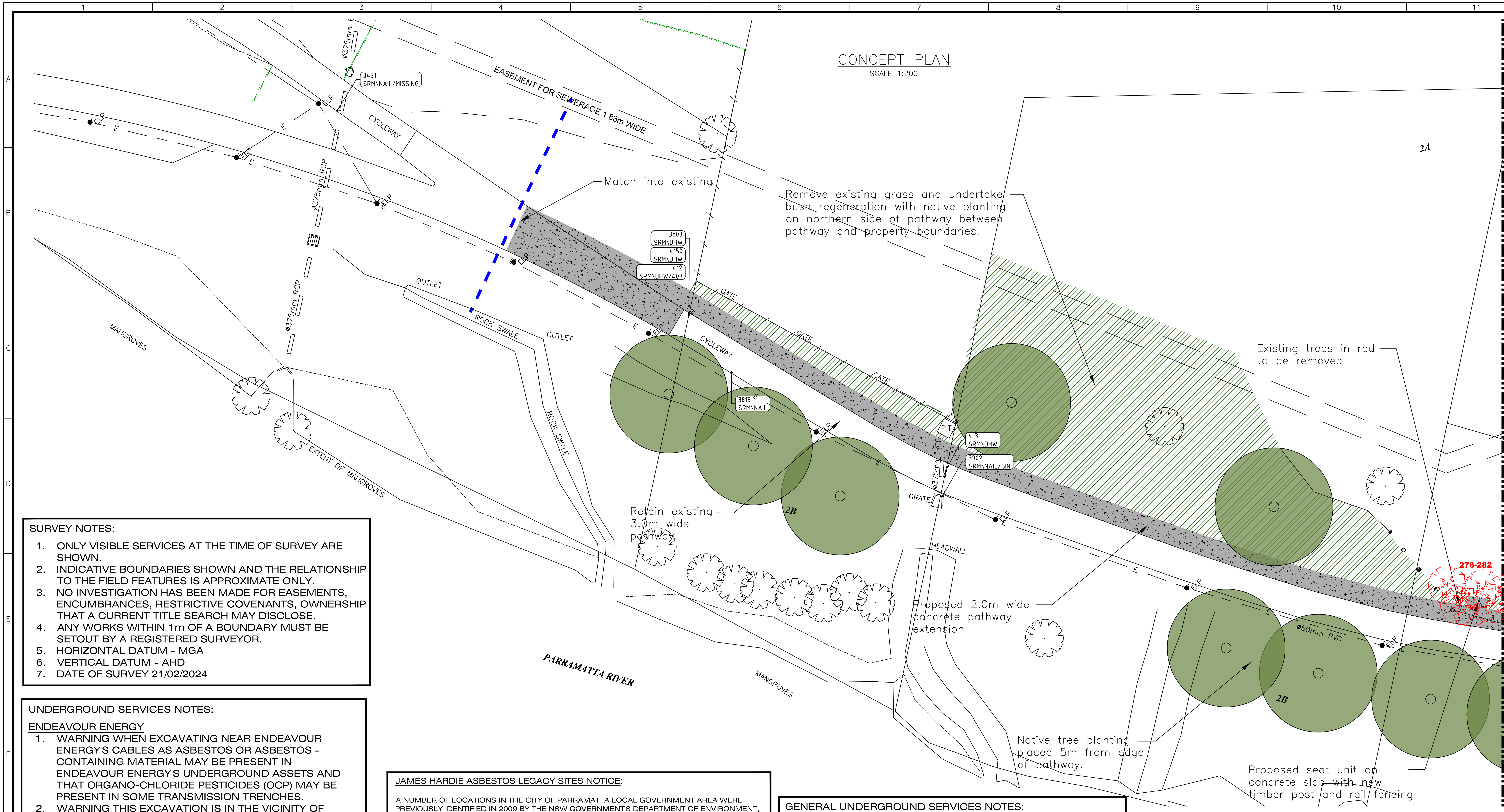
RANGIHOU RESERVE PARRAMATTA

EXISTING SITE SURVEY

CITY OF PARRAMATTA



SURVEY NOTES:

1. ONLY VISIBLE SERVICES AT THE TIME OF SURVEY ARE SHOWN.
2. INDICATIVE BOUNDARIES SHOWN AND THE RELATIONSHIP TO THE FIELD FEATURES IS APPROXIMATE ONLY.
3. NO INVESTIGATION HAS BEEN MADE FOR EASEMENTS, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP THAT A CURRENT TITLE SEARCH MAY DISCLOSE.
4. ANY WORKS WITHIN 1m OF A BOUNDARY MUST BE SETOUT BY A REGISTERED SURVEYOR.
5. HORIZONTAL DATUM - MGA
6. VERTICAL DATUM - AHD
7. DATE OF SURVEY 21/02/2024

UNDERGROUND SERVICES NOTES:

ENDEAVOUR ENERGY

1. WARNING WHEN EXCAVATING NEAR ENDEAVOUR ENERGY'S CABLES AS ASBESTOS OR ASBESTOS - CONTAINING MATERIAL MAY BE PRESENT IN ENDEAVOUR ENERGY'S UNDERGROUND ASSETS AND THAT ORGANO-CHLORIDE PESTICIDES (OCP) MAY BE PRESENT IN SOME TRANSMISSION TRENCHES.
2. WARNING THIS EXCAVATION IS IN THE VICINITY OF ENDEAVOUR ENERGY TRANSMISSION, PILOT, COMMUNICATION OR FIBRE OPTIC CABLES PLEASE RING 9853 7121 OR MOBILE 0407 468 626 4 DAYS BEFORE COMMENCING WORK.

TELSTRA

1. CAUTION FIBRE OPTIC AND / OR MAJOR NETWORK PRESENT IN PLOT AREA. PLEASE READ THE DUTY OF CARE AND CONTACT TELSTRA PLAN SERVICES SHOULD YOU REQUIRE ANY ASSISTANCE.
2. CAUTION CRITICAL NETWORK ROUTE IN PLOT AREA **DO NOT PROCEED** WITH ANY EXCAVATION PRIOR TO SEEKING ADVICE FROM TELSTRA SERVICES ON : 1800 653 935

JAMES HARDIE ASBESTOS LEGACY SITES NOTICE:

A NUMBER OF LOCATIONS IN THE CITY OF PARRAMATTA LOCAL GOVERNMENT AREA WERE PREVIOUSLY IDENTIFIED IN 2009 BY THE NSW GOVERNMENT'S DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER AS AREAS THAT ARE KNOWN, OR SUSPECTED, TO BE SITES WHERE ASBESTOS WASTE MATERIALS WERE DISPOSED OF BY JAMES HARDIE INDUSTRIES. THESE 'LEGACY SITES' WERE IDENTIFIED IN REPORTS RELEASED BY THE DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER IN 2009/10, ENTITLED 'JAMES HARDIE ASBESTOS WASTE CONTAMINATION LEGACY' ("JAMES HARDIE LEGACY REPORT") A COPY OF THAT JAMES HARDY LEGACY REPORT IS AVAILABLE HERE: http://www.epa.nsw.gov.au/clm/jameshardie.htm

IN SOME INSTANCES, ASBESTOS MATERIALS (BOTH FRIABLE AND NON FRIABLE) HAVE BEEN IDENTIFIED IN THE SOILS OF LANDS ADJACENT TO, OR IN THE VICINITY OF, LEGACY SITES - FOR EXAMPLE, NATURE STRIPS, ROADS AND ROAD RELATED AREAS. PERSONS CARRYING OUT EXCAVATION OF LAND ADJACENT TO, OR IN THE VICINITY OF, LEGACY SITES SHOULD EXERCISE APPROPRIATE CAUTION, AND HAVE PLANS IN PLACE FOR SAFELY AND PROPERLY DEALING WITH ANY ASBESTOS ENCOUNTERED THROUGHOUT WORKS IN THE AREA.

INFORMATION SPECIFIC TO THE PARRAMATTA AREA CAN BE FOUND COMMENCING AT PAGE 39 HERE: http://www.epa.nsw.gov.au/resources/clm/JamesHardie/120919JamesHardieReportAtt3.pdf FOR FURTHER INFORMATION ABOUT JAMES HARDIE LEGACY SITES PLEASE CONTACT COUNCIL ON 9806 5050, OR THE NSW EPA ON 131 555

GENERAL UNDERGROUND SERVICES NOTES:

1. ALL UNDERGROUND SERVICE DATA HAS BEEN PLOTTED FROM RELEVANT SERVICE AUTHORITIES PLANS. THIS HAS BEEN PREPARED SOLELY FOR THE SERVICE AUTHORITIES OWN USE AND MAY NOT NECESSARILY BE UPDATED OR ACCURATE.
2. CAUTION TO BE TAKEN WHEN EXCAVATING IN THE VICINITY OF UNDERGROUND SERVICES.
3. CAUTION TO BE TAKEN WHEN EXCAVATING NEAR HOUSEHOLD CONNECTIONS.
4. CONTACT RELEVANT SERVICE AUTHORITIES FOR PROPOSED TREATMENT / PROTECTION TO THEIR ASSETS.

PROPERTY BOUNDARY NOTE:

1. ANY WORK UNDERTAKEN ADJACENT TO PROPERTY BOUNDARY SHOULD BE SUPERVISED BY A REGISTERED SURVEYOR

4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

BEFORE YOU DIG www.byda.com.au

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS SPEC

PLAN FEATURES				PUBLIC UTILITIES		
EXISTING/MISCELLANEOUS		PROPOSED		ABOVEGROUND		U/GROUND
KERB AND GUTTER:		KERB AND GUTTER:		TELSTRA:	TPIL	— T —
EDGE OF BITUMEN:		EDGE OF BITUMEN:		ELECTRICITY:	SUB. STATION	— E —
ROAD ℄/CROWN:		ROAD ℄/CROWN:		GAS & MISC.:	G AV LH	GAS
EARTH BATTERS:		EARTH BATTERS:		SEWER:	MH	—S— —S—
PIPE DRAINS:		PIPE DRAINS:		WATER:	H SV	-W- -W-
DRAINAGE PITS:		DRAINAGE PITS:		POLES:	LPP LP PPT	
TREES & SHRUBS:		SUB-SOIL DRAIN:	—>>>—	OVERHEAD:	—O—H—	
SPOT LEVELS:	20.00 25.000 25.000	SET-OUT LINE:		SURVEY:	STN PM S.C.PM MARK DHW_IN_KERB	

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED .…/……/……	DESIGNED .…/……/……	DATUM: AHD	**CITY OF PARRAMATTA COUNCIL**
APPROVED Group Manager Capital Projects .…/……/……	DRAWN .…/……/……	CO-ORDS: MGA 94	RANGIHOU RESERVE, PARRAMATTA
ACCEPTED Client .…/……/……	DRAWING REVIEW .…/……/……	RATIO: 1:200	BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS
		TRIM No: N/A	CONCEPT PLAN
		STATUS: **DRAFT**	

PLAN NUMBER
Sheet No : 1
Revision :

09, October, 2024 4:16:40 p.m.
Drawing: RANGIHOU RESERVE_MM.DWG

CONCEPT PLAN

SCALE 1:200

EASEMENT FOR SEWERAGE 1.83m WIDE

02.10.2024

Proposed raised composite boardwalk at low point in existing pathway

2B

Remove fencing and install sandstone block retaining wall (one course). Regrade embankment to max.1:5 and plant with native ground covers. Grade base of retaining wall to create planted drainage swale with sandstone rip-rap and subsoil drainage line. Reinstate new fence along new alignment.

Remove existing pathway and returf to provide more open space for informal play

Remove existing light pole

Retain existing 3.0m wide concrete pathway.

Native tree planting placed 5m from edge of pathway.

Adjust height of existing surface inlet drainage pit to sit in new pathway

Remove existing paperbark trees shown red.

MANGROVES

MANGROVES

HEADWALL

HEADWALL

CULVERT

CULVERT

GRATE

GRATE

ø375mm RCP

ø600mm RCP

ø300mm CICL

ø600mm RCP

ø375mm RCP

ø50mm PVC

ø375mm RCP

ø125mm PVC

2x900x420mm WIDE

DRAINAGE PIT

4155 SRM\DHW

4154 SRM\DHW

ELP

E

S

W

O

273

266

256

253

252

257

CONTINUED ON SHEET 1

CONTINUED ON SHEET 3

PARRAMATTA RIVER

UNDERGROUND SERVICES NOTES:

ENDEAVOUR ENERGY

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TELSTRA

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2. CAUTION CRITICAL NETWORK ROUTE IN PLOT AREA **DO NOT PROCEED** WITH ANY EXCAVATION PRIOR TO SEEKING ADVICE FROM TELSTRA SERVICES ON : 1800 653 935

JAMES HARDIE ASBESTOS LEGACY SITES NOTICE:

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5. HORIZONTAL DATUM - MGA
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7. DATE OF SURVEY 21/02/2024

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4 3 2 1 0 4 8 12 16 20

SCALE OF METRES 1:200

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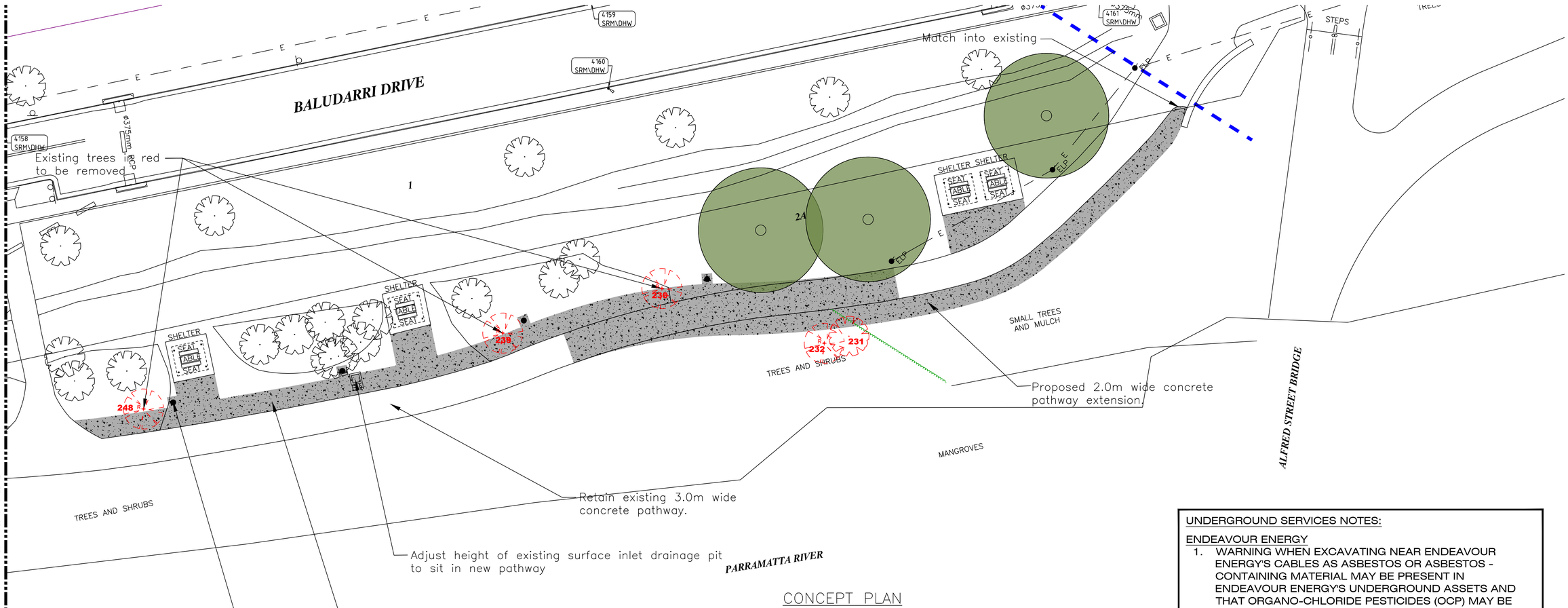
UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS-SPEC

PLAN FEATURES		PUBLIC UTILITIES		AMENDMENTS			
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND	No.	DETAIL	CHECKED	DATE
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	— — T — —				
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY: SUB. STATION	— E — —				
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.: G AV LH	— GAS —				
EARTH BATTERS:	EARTH BATTERS:	SEWER: MH	—S— — —S—				
PIPE DRAINS:	PIPE DRAINS:	WATER: H SV	-W- - - -W- - -				
DRAINAGE PITS:	DRAINAGE PITS:	POLES: LP LP PP					
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	—O—H— — —				
SPOT LEVELS:	SET-OUT LINE:	SURVEY: STN PM S.C.P.M					

DESIGN CHECKED AND APPROVED ...../...../.....	DESIGNED ...../...../.....	DATUM: AHD	**CITY OF PARRAMATTA COUNCIL**
APPROVED Group Manager Capital Projects ...../...../.....	DRAWN ...../...../.....	CO-ORDS: MGA 94	RANGIHOU RESERVE, PARRAMATTA
ACCEPTED Client ...../...../.....	DRAWING REVIEW ...../...../.....	RATIO: 1:200	BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS
		TRIM No: N/A	CONCEPT PLAN
		STATUS: **DRAFT**	PLAN NUMBER / Sheet No : 2 / Revision :

09, October, 2024 4:16:40 p.m.
Drawing: RANGIHOU RESERVE_MM.DWG



CONCEPT PLAN
SCALE 1:200

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4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

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PLAN FEATURES			PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED		ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:		TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:		ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:		GAS & MISC.:	
EARTH BATTERS:	EARTH BATTERS:		SEWER:	
PIPE DRAINS:	PIPE DRAINS:		WATER:	
DRAINAGE PITS:	DRAINAGE PITS:		POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:		OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:		SURVEY:	

No.	DETAIL	CHECKED	DATE

AMENDMENTS

DESIGN CHECKED AND APPROVED ...../...../.....

APPROVED
Group Manager Capital Projects ...../...../.....

ACCEPTED
Client ...../...../.....

DESIGNED ...../...../.....

DRAWN ...../...../.....

DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:200
TRIM No: N/A
STATUS: **DRAFT**

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

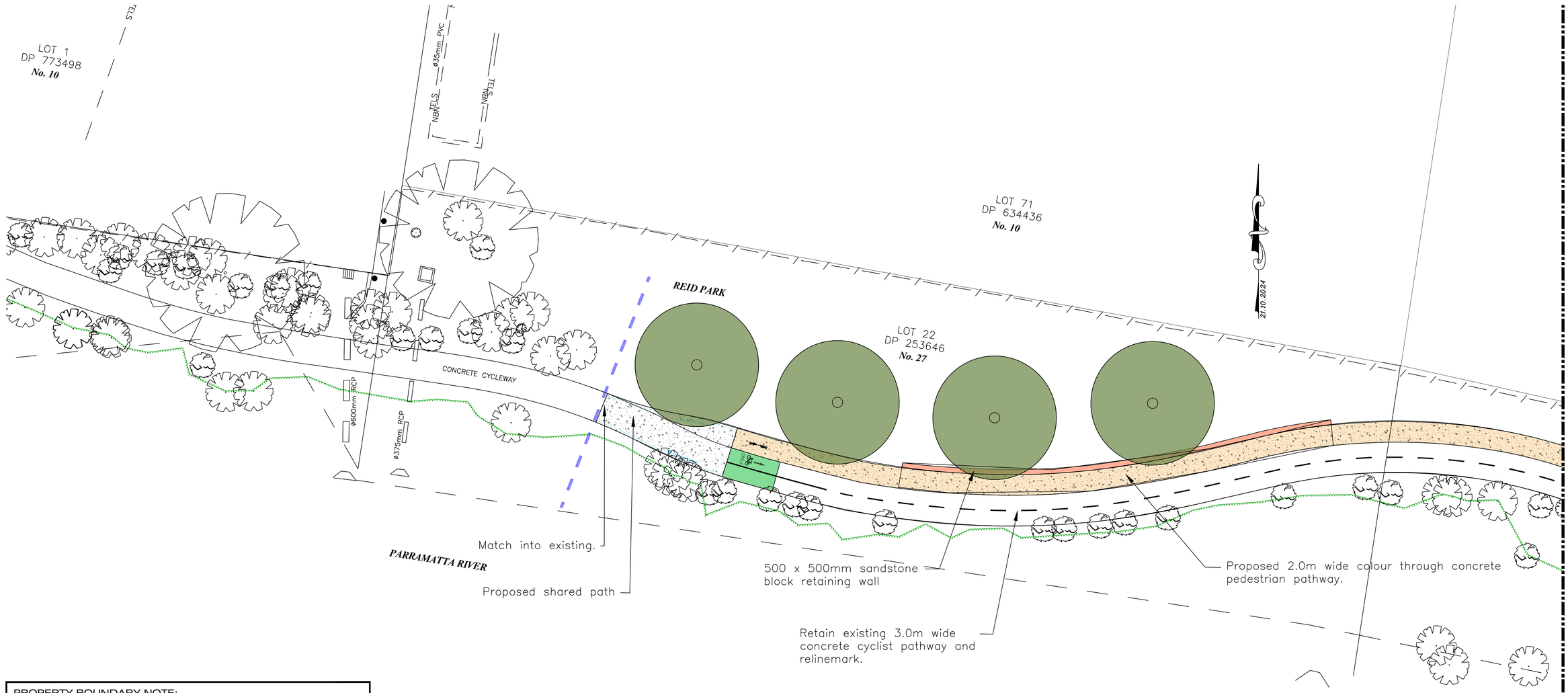
CONCEPT PLAN

PLAN NUMBER

Sheet No : 3

Revision :

09, October, 2024 4:16:40 p.m.
Drawing: RANGIHOU RESERVE_MM.DWG



CONCEPT PLAN

SCALE 1:200

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4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

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EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA: OPIT	T
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY: SUB STATION	E
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.: G AV LH	GAS
EARTH BATTERS:	EARTH BATTERS:	SEWER: MH	S
PIPE DRAINS:	PIPE DRAINS:	WATER: H SV	W
DRAINAGE PITS:	DRAINAGE PITS:	POLES: LP PPT	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	O-H
SPOT LEVELS:	SET-OUT LINE:	SURVEY: STN PM SCPM	

No.	AMENDMENTS DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED ...../...../.....

APPROVED
Group Manager Capital Projects ...../...../.....

ACCEPTED
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DESIGNED ...../...../.....

DRAWN ...../...../.....

DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:200
TRIM No: N/A
STATUS: **DRAFT**

CITY OF PARRAMATTA COUNCIL

REID PARK, RYDALMERE

SOUTH OF PIKE STREET ADJCENT RIVER CYCLEWAY AND ASSOCIATED WORKS

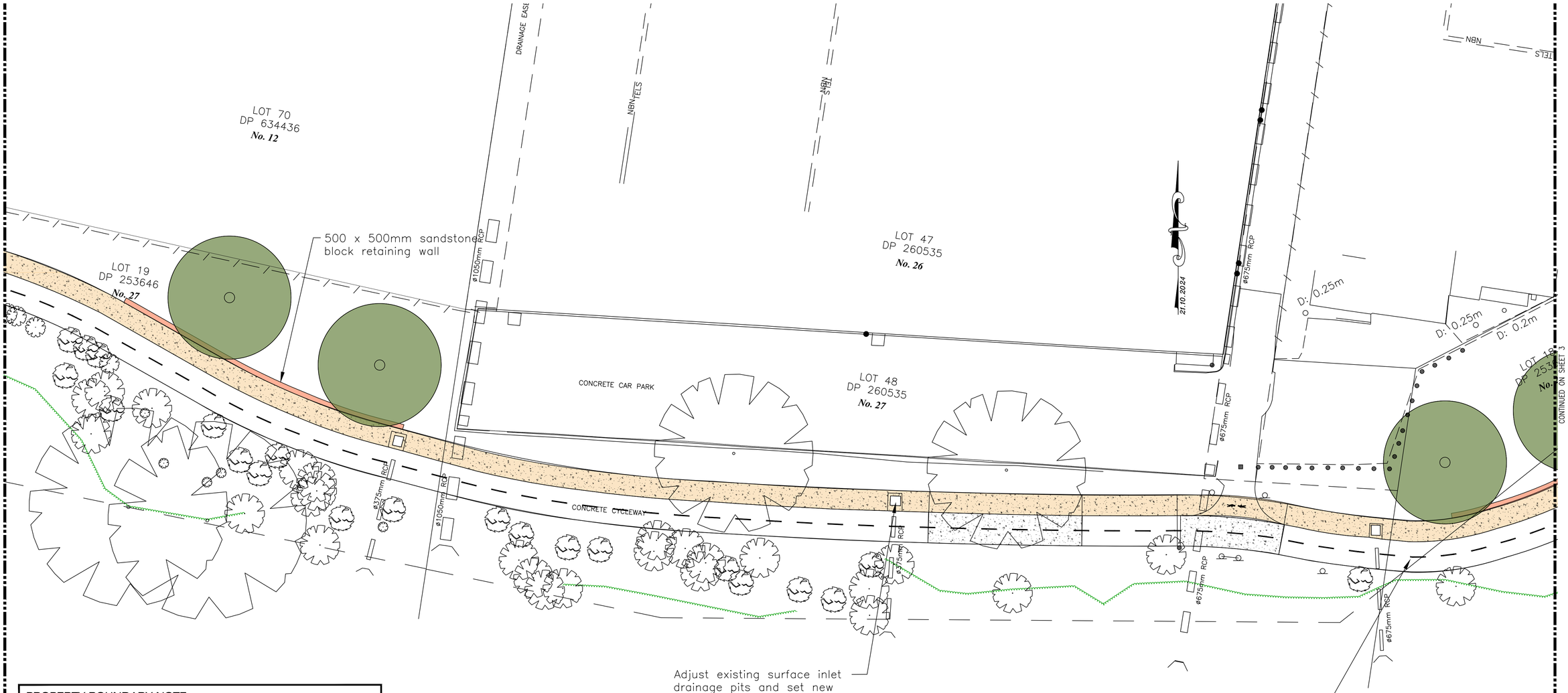
CONCEPT PLAN

PLAN NUMBER 18036

Sheet No : 1

Revision :

22, October, 2024 2:10:16 p.m.
Drawing: REID PARK_MM.DWG



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CONCEPT PLAN

SCALE 1:200

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SCALE OF METRES 1:200

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KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	T
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY: SUB. STATION	E
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	GAS
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No.	AMENDMENTS DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED ...../...../.....

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DRAWN ...../...../.....

DRAWING REVIEW ...../...../.....

DATUM: AHD

CO-ORDS: MGA 94

RATIO: 1:200

TRIM No: N/A

STATUS: **DRAFT**

CITY OF PARRAMATTA COUNCIL

REID PARK, RYDALMERE

SOUTH OF PIKE STREET ADJCENT RIVER CYCLEWAY AND ASSOCIATED WORKS

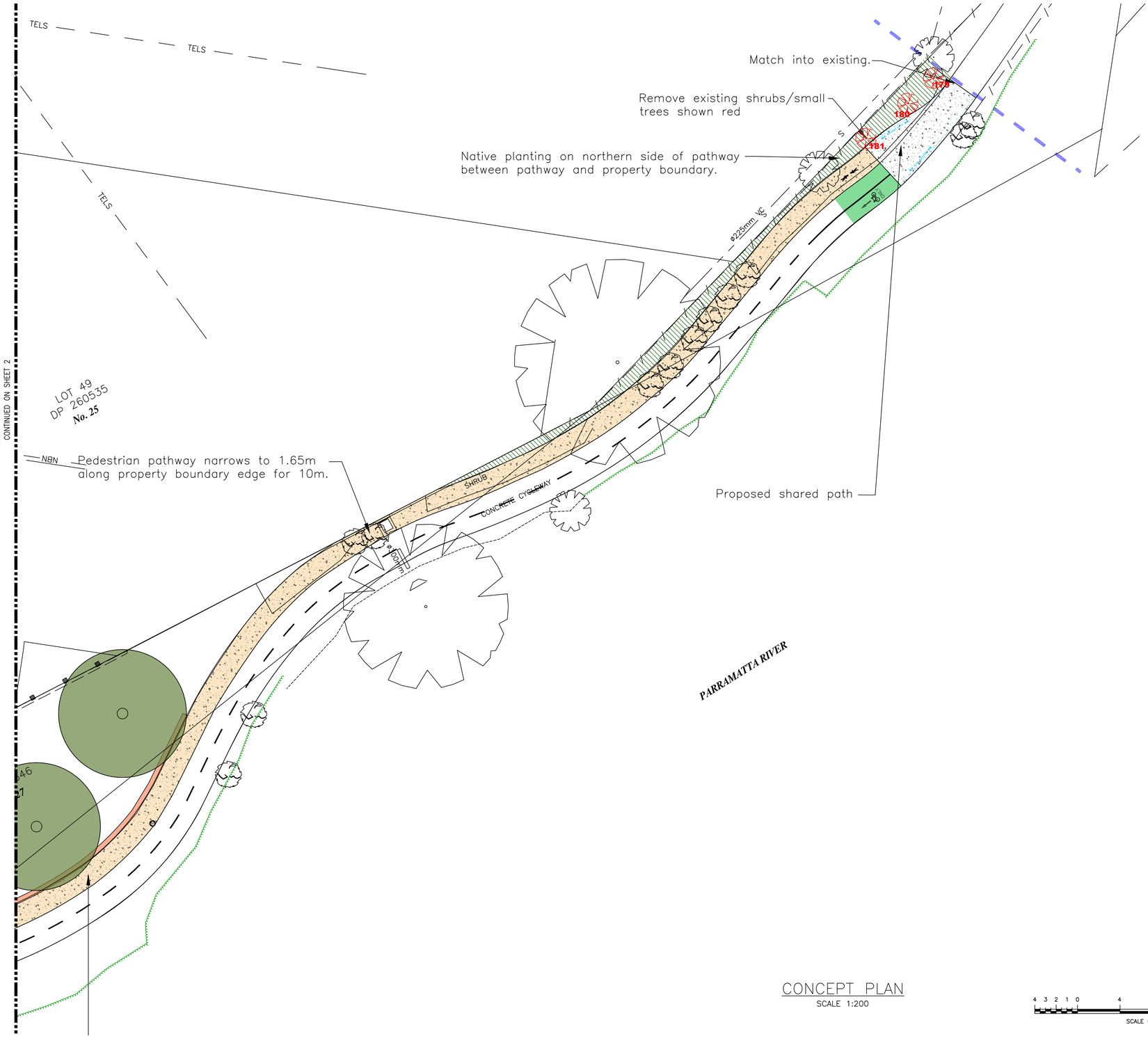
CONCEPT PLAN

PLAN NUMBER 18036

Sheet No : 2

Revision :

22, October, 2024 2:10:16 p.m.
Drawing: REID PARK_MM.DWG



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UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA: OPPL	— — T — — —
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY: SUB. STATION	— E — — —
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.: G AV LH	GAS
EARTH BATTERS:	EARTH BATTERS:	SEWER: MH	—S— — — —S—
PIPE DRAINS:	PIPE DRAINS:	WATER: H SV	-W- - - -W- - -
DRAINAGE PITS:	DRAINAGE PITS:	POLES: LP LP PPT	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD: —O—H— — —	
SPOT LEVELS: 25.00 RL100 RL100	SET-OUT LINE:	SURVEY: STN PM S.C.PM	

No.	AMENDMENTS DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED ...../...../.....

APPROVED Group Manager Capital Projects ...../...../.....

ACCEPTED Client ...../...../.....

DESIGNED ...../...../.....

DRAWN ...../...../.....

DRAWING REVIEW ...../...../.....

DATUM: AHD

CO-ORDS: MGA 94

RATIO: 1:200

TRIM No: N/A

STATUS: **DRAFT**

CITY OF PARRAMATTA COUNCIL

REID PARK, RYDALMERE

SOUTH OF PIKE STREET ADJCENT RIVER CYCLEWAY AND ASSOCIATED WORKS

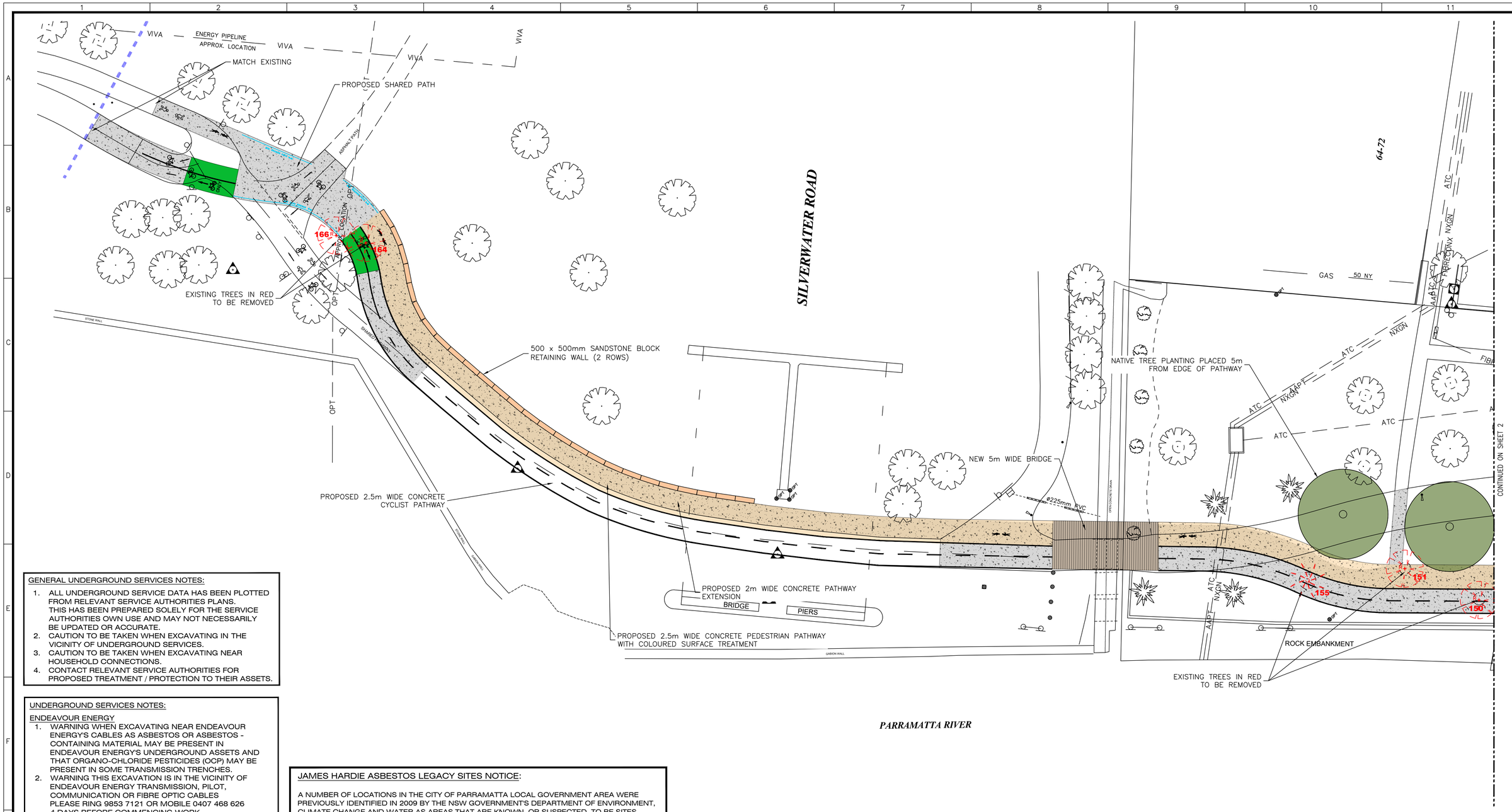
CONCEPT PLAN

PLAN NUMBER 18036

Sheet No : 3

Revision :

22, October, 2024 2:10:16 p.m.
Drawing: REID PARK_MM.DWG



GENERAL UNDERGROUND SERVICES NOTES:

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UNDERGROUND SERVICES NOTES:

ENDEAVOUR ENERGY

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TELSTRA

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PROPERTY BOUNDARY NOTE:

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JAMES HARDIE ASBESTOS LEGACY SITES NOTICE:

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INFORMATION SPECIFIC TO THE PARRAMATTA AREA CAN BE FOUND COMMENCING AT PAGE 39 HERE: http://www.epa.nsw.gov.au/resources/clm/JamesHardie/120919JamesHardieReportAtt3.pdf FOR FURTHER INFORMATION ABOUT JAMES HARDIE LEGACY SITES PLEASE CONTACT COUNCIL ON 9806 5050, OR THE NSW EPA ON 131 555

CONCEPT PLAN

SCALE 1:200

SCALE OF METRES 1:200

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UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	T
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY: SUB. STATION	E
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	GAS
EARTH BATTERS:	EARTH BATTERS:	SEWER:	S
PIPE DRAINS:	PIPE DRAINS:	WATER:	W
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	O-H
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	STN PM SCPM

No.	DETAIL	CHECKED	DATE
	AMENDMENTS		

DESIGN CHECKED AND APPROVED ...../...../.....

APPROVED FOR CONSTRUCTION

Group Manager Capital Projects ...../...../.....

ACCEPTED

Client ...../...../.....

DESIGNED ...../...../.....

DRAWN ...../...../.....

DRAWING REVIEW ...../...../.....

DATUM: AHD

CO-ORDS: GDA 94

RATIO: 1:200

TRIM NO: N/A

STATUS: **DRAFT**

CITY OF PARRAMATTA COUNCIL

ROYAL SHORES, ERMINGTON
FROM ERIC PRIMROSE RESERVE TO GEORGE KENDALL RESERVE
CYCLEWAY AND ASSOCIATED WORKS

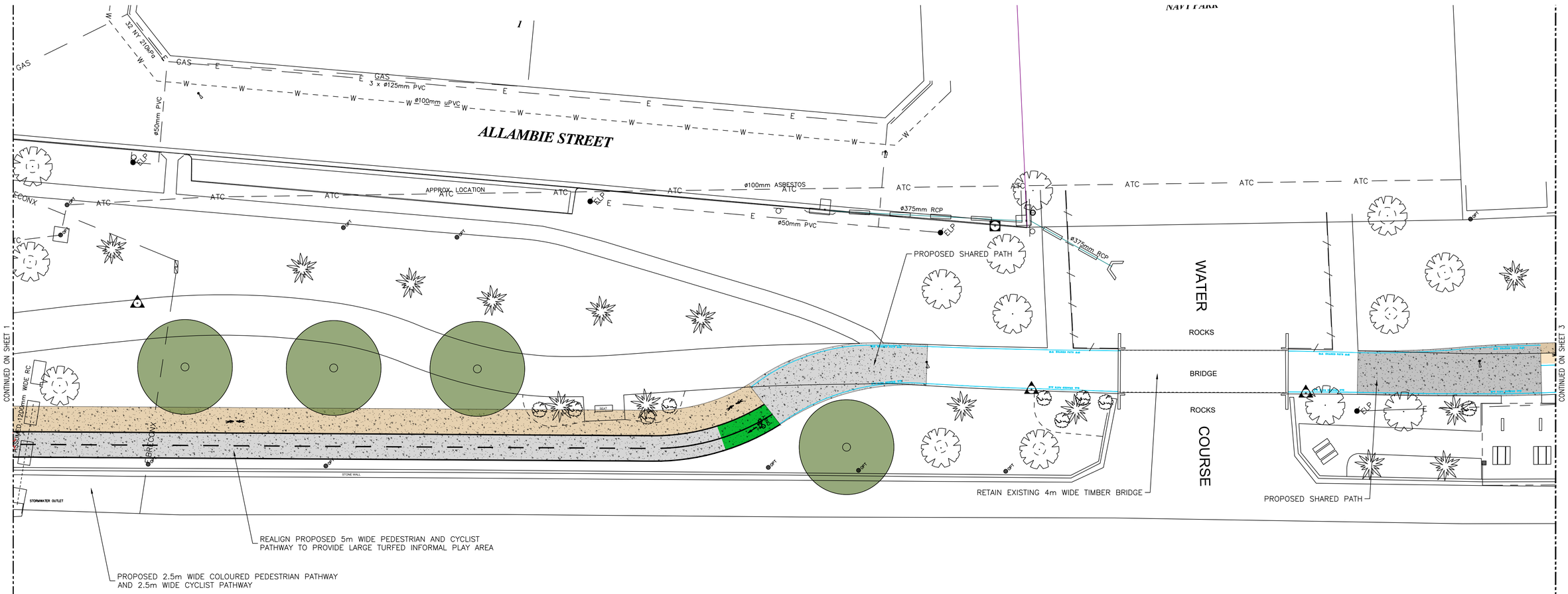
CONCEPT PLAN

PLAN NUMBER 18035

Sheet No : 1

Revision :

15, October, 2024 9:25:56 a.m.
Drawing: 18035_GKRP SEP CYCLE.DWG



CONCEPT PLAN

SCALE 1:200

SCALE OF METRES 1:200

UNDERGROUND SERVICES NOTES:

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SPOT LEVELS:	SET-OUT LINE:

PUBLIC UTILITIES

ABOVEGROUND	U/GROUND
TELSTRA:	T
ELECTRICITY: SUB STATION	E
GAS & MISC.: GAS	GAS
SEWER:	S
WATER:	W
POLES:	
OVERHEAD:	O-H
SURVEY: STN PM SCPM	

AMENDMENTS

No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED ...../...../.....

APPROVED FOR CONSTRUCTION

Group Manager Capital Projects ...../...../.....

ACCEPTED

Client ...../...../.....

DESIGNED ...../...../.....

DRAWN ...../...../.....

DRAWING REVIEW ...../...../.....

DATUM: AHD

CO-ORDS: GDA 94

RATIO: 1:200

TRIM NO: N/A

STATUS: **DRAFT**

CITY OF PARRAMATTA COUNCIL

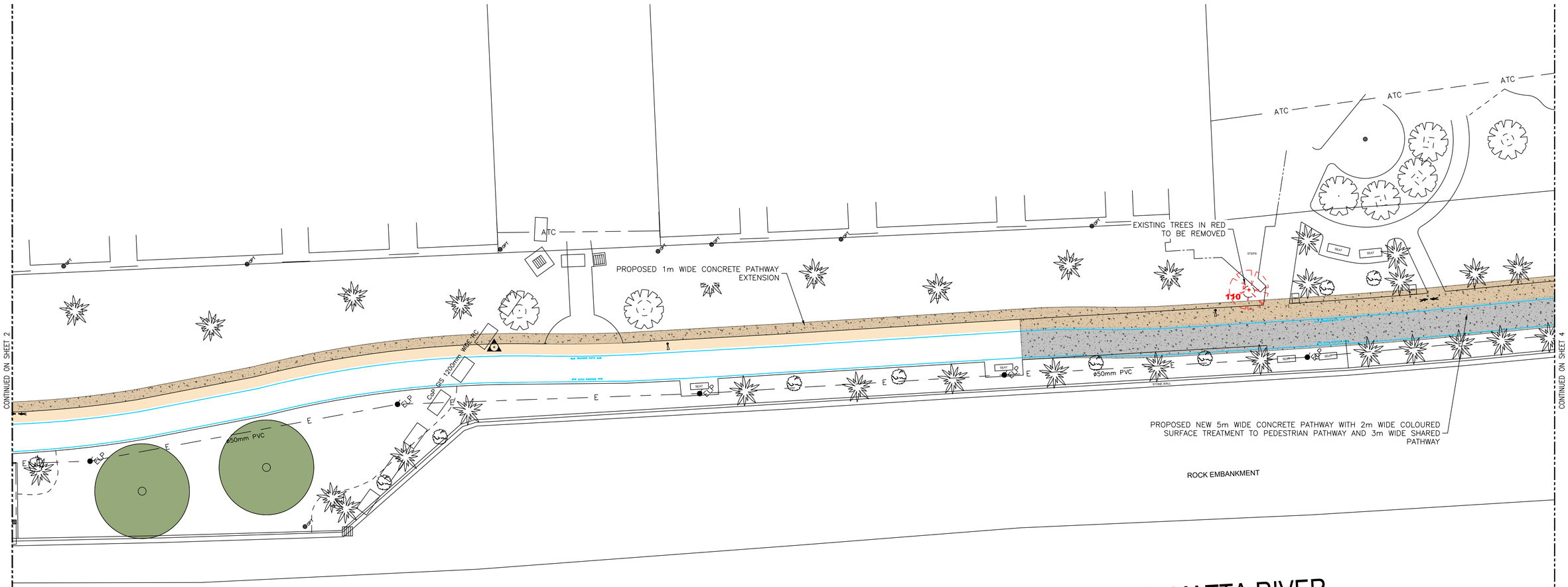
ROYAL SHORES, ERMINGTON
FROM ERIC PRIMROSE RESERVE TO GEORGE KENDALL RESERVE
CYCLEWAY AND ASSOCIATED WORKS
CONCEPT PLAN

PLAN NUMBER 18035

Sheet No : 2

Revision :

15, October, 2024 9:25:56 a.m.
Drawing: 18035_GKRP SEP CYCLE.DWG



CONCEPT PLAN

SCALE 1:200

SCALE OF METRES 1:200

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KERB AND GUTTER:	KERB AND GUTTER:
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SPOT LEVELS:	SET-OUT LINE:

PUBLIC UTILITIES

ABOVEGROUND	U/GROUND
TELSTRA:	— — T — —
ELECTRICITY: SUB. STATION	— E — — —
GAS & MISC.:	— GAS —
SEWER:	—S— — — —S—
WATER:	–W———W——–
POLES:	
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AMENDMENTS

No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED ...../...../.....

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Group Manager Capital Projects ...../...../.....

ACCEPTED

Client ...../...../.....

DESIGNED ...../...../.....

DRAWN ...../...../.....

DRAWING REVIEW ...../...../.....

DATUM: AHD

CO-ORDS: GDA 94

RATIO: 1:200

TRIM NO: N/A

STATUS: **DRAFT**

CITY OF PARRAMATTA COUNCIL

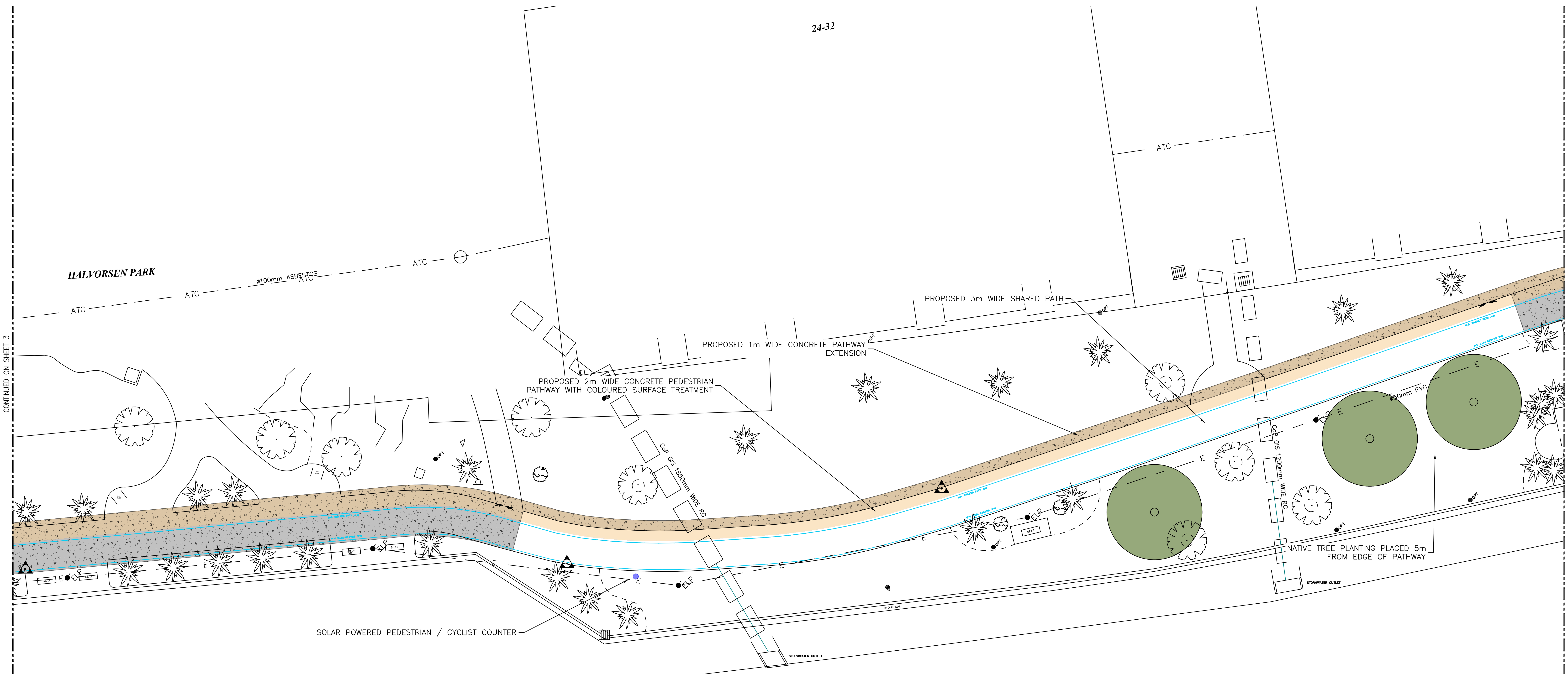
ROYAL SHORES, ERMINGTON
FROM ERIC PRIMROSE RESERVE TO GEORGE KENDALL RESERVE
CYCLEWAY AND ASSOCIATED WORKS
CONCEPT PLAN

PLAN NUMBER 18035

Sheet No : 3

Revision :

15, October, 2024 9:25:56 a.m.
Drawing: 18035_GKRP SEP CYCLE.DWG



CONCEPT PLAN

SCALE 1:200

UNDERGROUND SERVICES NOTES:

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4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

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PLAN FEATURES		PUBLIC UTILITIES	
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AMENDMENTS

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APPROVED FOR CONSTRUCTION Group Manager Capital Projects .…/………/…….	DRAWN .…/………/…….	RATIO: 1:200 TRIM NO: N/A
ACCEPTED Client .…/………/…….	DRAWING REVIEW .…/………/…….	STATUS: **DRAFT**

CITY OF PARRAMATTA COUNCIL

ROYAL SHORES, ERMINGTON
FROM ERIC PRIMROSE RESERVE TO GEORGE KENDALL RESERVE
CYCLEWAY AND ASSOCIATED WORKS

CONCEPT PLAN

PLAN NUMBER 18035

Sheet No : 4

Revision :

15, October, 2024 9:25:56 a.m.
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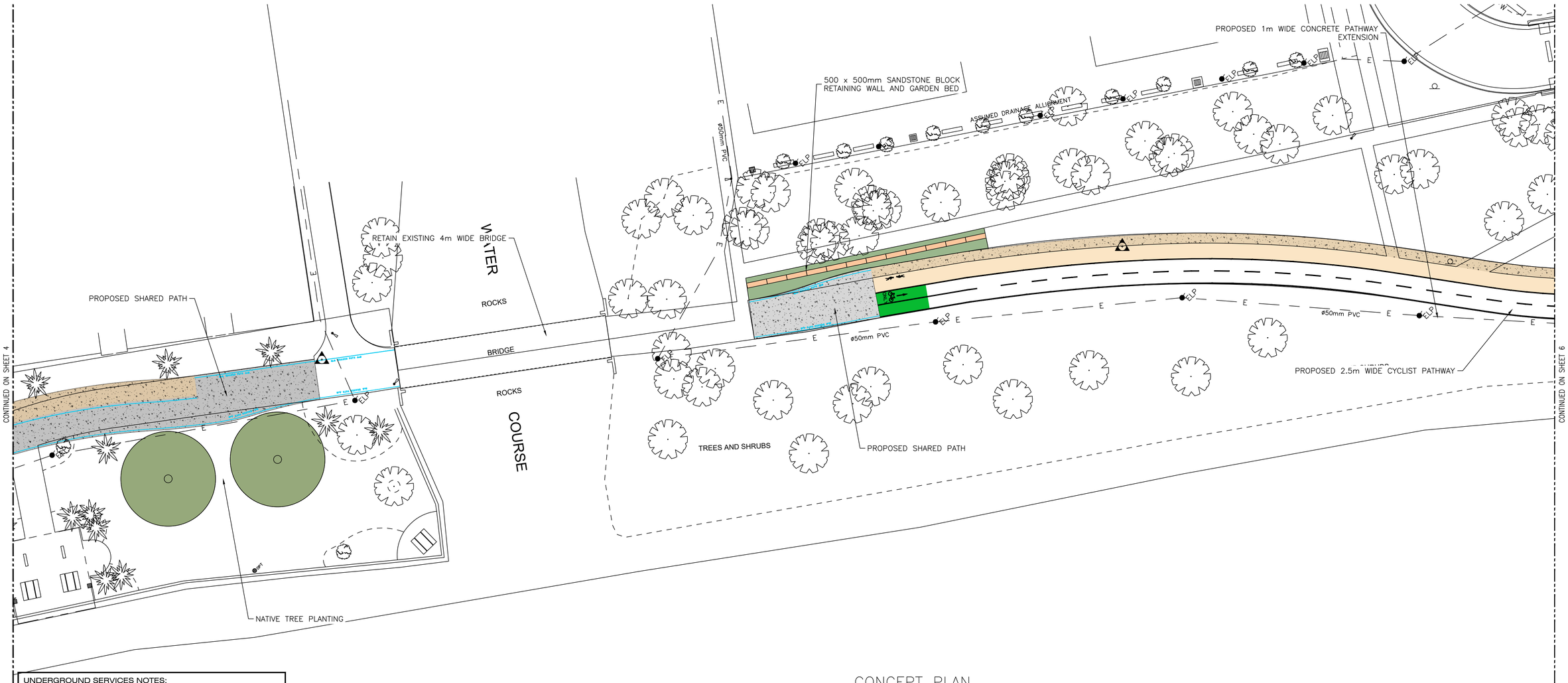

CONCEPT PLAN

SCALE 1:200

SCALE OF METRES 1:200

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2. CAUTION TO BE TAKEN WHEN EXCAVATING IN THE VICINITY OF UNDERGROUND SERVICES.
3. CAUTION TO BE TAKEN WHEN EXCAVATING NEAR HOUSEHOLD CONNECTIONS.
4. CONTACT RELEVANT SERVICE AUTHORITIES FOR PROPOSED TREATMENT / PROTECTION TO THEIR ASSETS.

JAMES HARDIE ASBESTOS LEGACY SITES NOTICE:

A NUMBER OF LOCATIONS IN THE CITY OF PARRAMATTA LOCAL GOVERNMENT AREA WERE PREVIOUSLY IDENTIFIED IN 2009 BY THE NSW GOVERNMENT'S DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER AS AREAS THAT ARE KNOWN, OR SUSPECTED, TO BE SITES WHERE ASBESTOS WASTE MATERIALS WERE DISPOSED OF BY JAMES HARDIE INDUSTRIES. THESE 'LEGACY SITES' WERE IDENTIFIED IN REPORTS RELEASED BY THE DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER IN 2009/10, ENTITLED 'JAMES HARDIE ASBESTOS WASTE CONTAMINATION LEGACY' ('JAMES HARDIE LEGACY REPORT') A COPY OF THAT JAMES HARDY LEGACY REPORT IS AVAILABLE HERE: http://www.epa.nsw.gov.au/clm/jameshardie.htm

IN SOME INSTANCES, ASBESTOS MATERIALS (BOTH FRIABLE AND NON FRIABLE) HAVE BEEN IDENTIFIED IN THE SOILS OF LANDS ADJACENT TO, OR IN THE VICINITY OF, LEGACY SITES - FOR EXAMPLE, NATURE STRIPS, ROADS AND ROAD RELATED AREAS. PERSONS CARRYING OUT EXCAVATION OF LAND ADJACENT TO, OR IN THE VICINITY OF, LEGACY SITES SHOULD EXERCISE APPROPRIATE CAUTION, AND HAVE PLANS IN PLACE FOR SAFELY AND PROPERLY DEALING WITH ANY ASBESTOS ENCOUNTERED THROUGHOUT WORKS IN THE AREA.

INFORMATION SPECIFIC TO THE PARRAMATTA AREA CAN BE FOUND COMMENCING AT PAGE 39 HERE: http://www.epa.nsw.gov.au/resources/clm/JamesHardie/120919JamesHardieReportAtt3.pdf FOR FURTHER INFORMATION ABOUT JAMES HARDIE LEGACY SITES PLEASE CONTACT COUNCIL ON 9806 5050, OR THE NSW EPA ON 131 555

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UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	T
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY: SUB. STATION	E
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	GAS
EARTH BATTERS:	EARTH BATTERS:	SEWER:	S
PIPE DRAINS:	PIPE DRAINS:	WATER:	W
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	O-H
SPOT LEVELS:	SET-OUT LINE:	SURVEY: STN SCON	

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED ...../...../.....	DESIGNED ...../...../.....	DATUM: AHD
APPROVED FOR CONSTRUCTION Group Manager Capital Projects ...../...../.....	DRAWN ...../...../.....	CO-ORDS: GDA 94
ACCEPTED Client ...../...../.....	DRAWING REVIEW ...../...../.....	RATIO: 1:200
		TRIM NO: N/A
		STATUS: **DRAFT**

CITY OF PARRAMATTA COUNCIL

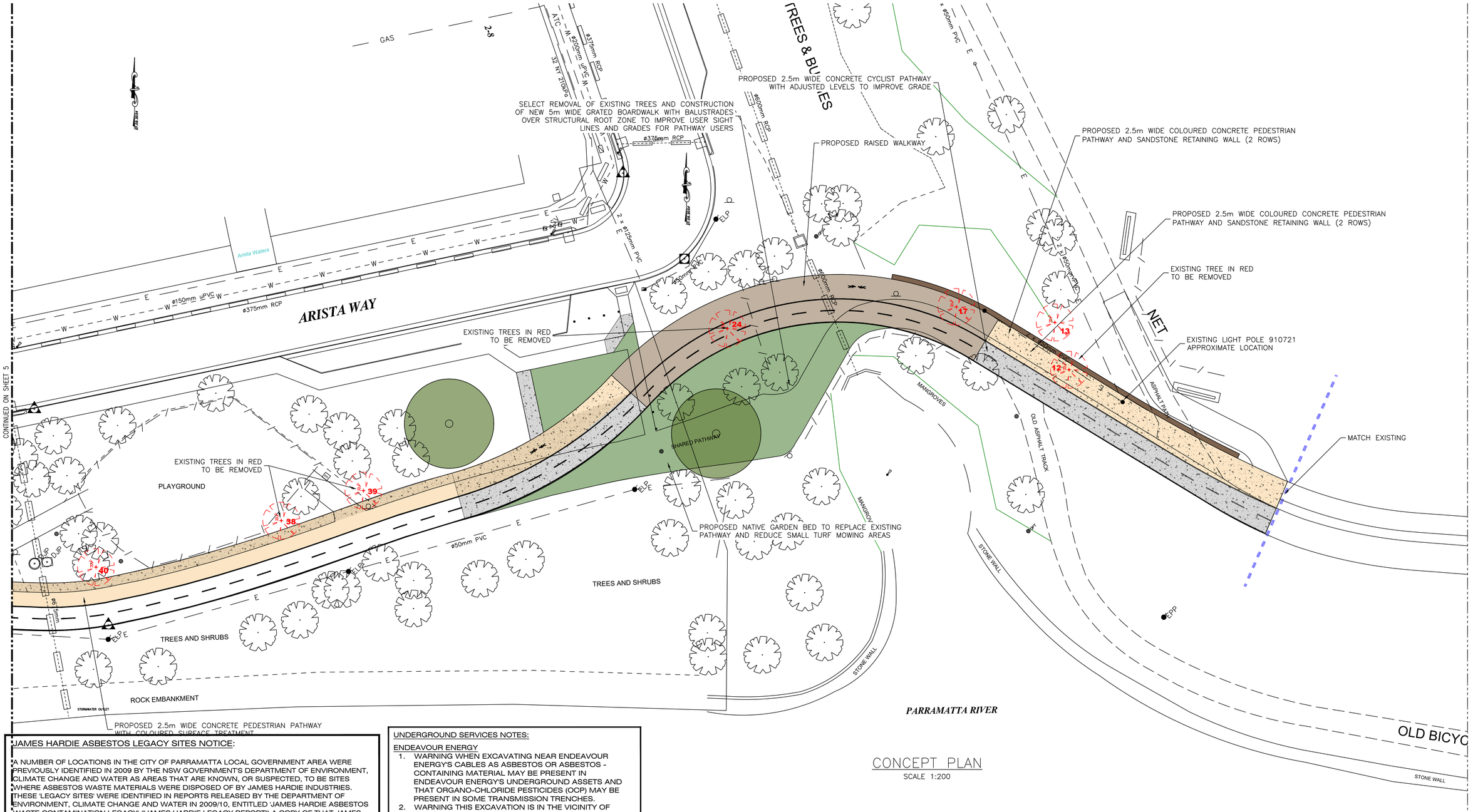
ROYAL SHORES, ERMINGTON
FROM ERIC PRIMROSE RESERVE TO GEORGE KENDALL RESERVE
CYCLEWAY AND ASSOCIATED WORKS
CONCEPT PLAN

PLAN NUMBER 18035

Sheet No : 5

Revision :

15, October, 2024 9:25:56 a.m.
Drawing: 18035_GKRP SEP CYCLE.DWG



CONCEPT PLAN

SCALE 1:200

JAMES HARDIE ASBESTOS LEGACY SITES NOTICE:

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UNDERGROUND SERVICES NOTES:

ENDEAVOUR ENERGY

1. WARNING WHEN EXCAVATING NEAR ENDEAVOUR ENERGY'S CABLES AS ASBESTOS OR ASBESTOS - CONTAINING MATERIAL MAY BE PRESENT IN ENDEAVOUR ENERGY'S UNDERGROUND ASSETS AND THAT ORGANO-CHLORIDE PESTICIDES (OCP) MAY BE PRESENT IN SOME TRANSMISSION TRENCHES.
2. WARNING THIS EXCAVATION IS IN THE VICINITY OF ENDEAVOUR ENERGY TRANSMISSION, PILOT, COMMUNICATION OR FIBRE OPTIC CABLES PLEASE RING 9853 7121 OR MOBILE 0407 468 626 4 DAYS BEFORE COMMENCING WORK.

TELSTRA

1. CAUTION FIBRE OPTIC AND / OR MAJOR NETWORK PRESENT IN PLOT AREA. PLEASE READ THE DUTY OF CARE AND CONTACT TELSTRA PLAN SERVICES SHOULD YOU REQUIRE ANY ASSISTANCE.
2. CAUTION CRITICAL NETWORK ROUTE IN PLOT AREA **DO NOT PROCEED** WITH ANY EXCAVATION PRIOR TO SEEKING ADVICE FROM TELSTRA SERVICES ON : 1800 653 935

GENERAL UNDERGROUND SERVICES NOTES:

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PROPERTY BOUNDARY NOTE:

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4 3 2 1 0 4 8 12 16 20

SCALE OF METRES 1:200

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PLAN FEATURES

EXISTING/MISCELLANEOUS	PROPOSED
KERB AND GUTTER:	KERB AND GUTTER:
EDGE OF BITUMEN:	EDGE OF BITUMEN:
ROAD ℄/CROWN:	ROAD ℄/CROWN:
EARTH BATTERS:	EARTH BATTERS:
PIPE DRAINS:	PIPE DRAINS:
DRAINAGE PITS:	DRAINAGE PITS:
TREES & SHRUBS:	SUB-SOIL DRAIN:
SPOT LEVELS:	SET-OUT LINE:

PUBLIC UTILITIES

ABOVEGROUND	U/GROUND
TELSTRA:	— — T — —
ELECTRICITY: SUB. STATION	— E — —
GAS & MISC.:	— GAS —
SEWER:	—S— — —S—
WATER:	–W———W——–
POLES:	
OVERHEAD:	—O—H— — —
SURVEY:	

AMENDMENTS

No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED ...../...../.....

DESIGNED ...../...../.....

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Group Manager Capital Projects ...../...../.....

DRAWN ...../...../.....

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DRAWING REVIEW ...../...../.....

DATUM: AHD

CO-ORDS: GDA 94

RATIO: 1:200

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CITY OF PARRAMATTA COUNCIL

ROYAL SHORES, ERMINGTON
FROM ERIC PRIMROSE RESERVE TO GEORGE KENDALL RESERVE
CYCLEWAY AND ASSOCIATED WORKS

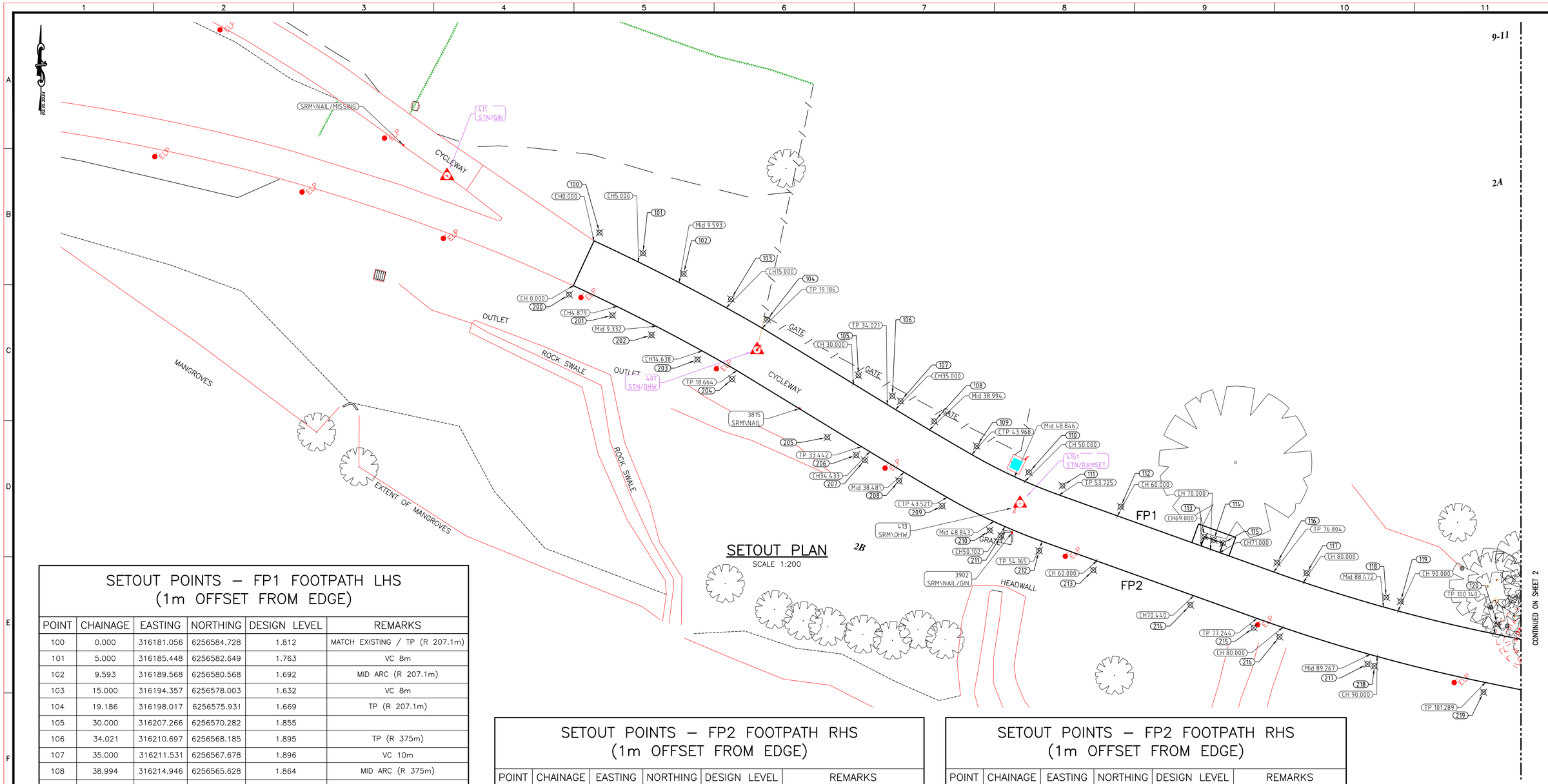
CONCEPT PLAN

PLAN NUMBER 18035

Sheet No : 6

Revision :

15, October, 2024 9:25:56 a.m.
Drawing: 18035_GKRP SEP CYCLE.DWG



SETOUT POINTS – FP1 FOOTPATH LHS (1m OFFSET FROM EDGE)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
100	0.000	316181.056	6256584.728	1.812	MATCH EXISTING / TP (R 207.1m)
101	5.000	316185.448	6256582.649	1.763	VC 8m
102	9.593	316189.568	6256580.568	1.692	MID ARC (R 207.1m)
103	15.000	316194.357	6256578.003	1.632	VC 8m
104	19.186	316198.017	6256575.931	1.669	TP (R 207.1m)
105	30.000	316207.266	6256570.282	1.855	
106	34.021	316210.697	6256568.185	1.895	TP (R 375m)
107	35.000	316211.531	6256567.678	1.896	VC 10m
108	38.994	316214.946	6256565.628	1.864	MID ARC (R 375m)
109	43.968	316219.230	6256563.127	1.773	CTP (R 375m – R 55m)
110	50.000	316224.516	6256560.462	1.677	VC 5m
111	53.725	316227.914	6256559.111	1.693	TP (R 55m)
112	60.000	316233.820	6256556.992	1.749	
113	69.000	316242.292	6256553.953	1.827	PARK BENCH
114	70.000	316243.233	6256553.615	1.834	VC 5m
115	71.000	316244.174	6256553.278	1.841	PARK BENCH
116	76.804	316249.637	6256551.318	1.867	TP (R 164.5m)
117	80.000	316252.637	6256550.274	1.881	
118	88.472	316260.683	6256547.792	1.919	MID ARC (R 164.5m)
119	90.000	316262.147	6256547.389	1.925	
120	100.140	316271.950	6256545.058	1.974	TP (R 164.5m) / VC 10m

SETOUT POINTS – FP2 FOOTPATH RHS (1m OFFSET FROM EDGE)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
200	0.000	316177.979	6256578.454	1.733	MATCH EXISTING / TP (R 202.1m)
201	4.879	316182.362	6256576.366	1.706	VC 8m
202	9.332	316186.317	6256574.369	1.649	MID ARC (R 202.1m)
203	14.638	316190.971	6256571.876	1.597	VC 8m
204	18.664	316194.458	6256569.903	1.628	TP (R 202.1m)
205	30.000	316204.111	6256564.006	1.804	
206	33.442	316207.048	6256562.212	1.829	TP (380m)
207	34.433	316207.897	6256561.695	1.828	VC 10m
208	38.481	316211.377	6256559.606	1.785	MID ARC (R 380m)
209	43.521	316215.741	6256557.059	1.678	CTP (R 380m – R 60m)
210	48.843	316220.545	6256554.573	1.567	MID ARC (R 60m)

SETOUT POINTS – FP2 FOOTPATH RHS (1m OFFSET FROM EDGE)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
211	50.101	316221.712	6256554.048	1.556	VC 5m
212	54.165	316225.550	6256552.522	1.579	TP (R 60m)
213	60.000	316231.042	6256550.552	1.642	
214	70.440	316240.869	6256547.027	1.751	VC 5m
215	77.244	316247.274	6256544.729	1.785	TP (R 169.5m)
216	80.000	316249.890	6256543.814	1.797	
217	89.267	316258.792	6256541.052	1.838	MID ARC (R 169.5m)
218	90.000	316259.503	6256540.855	1.841	
219	101.289	316270.542	6256538.201	1.898	TP (R 169.5m) / VC 10m
220	110.000	316279.075	6256536.449	1.980	

4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

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PUBLIC UTILITIES

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TELSTRA:	
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POLES:	
OVERHEAD:	
SURVEY:	

AMENDMENTS

No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25

APPROVED
Group Manager Capital Projects ...../...../.....

ACCEPTED
Client ...../...../.....

DESIGNED 30/06/25

DRAWN 30/06/25

DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:200
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

SETOUT PLAN – FP1 AND FP2

PLAN NUMBER 18034

Sheet No : 1

Revision :

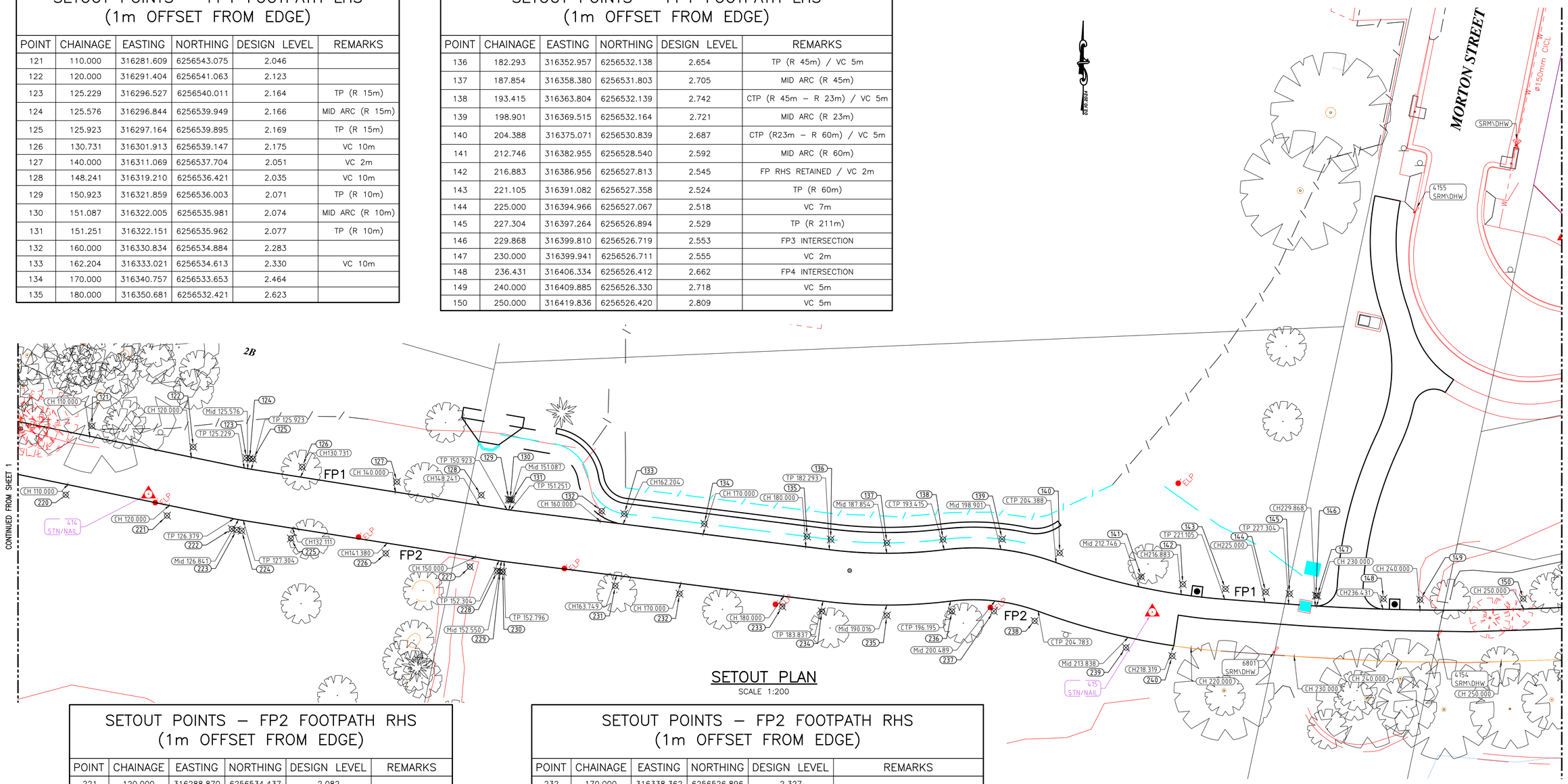
30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG

SETOUT POINTS – FP1 FOOTPATH LHS (1m OFFSET FROM EDGE)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
121	110.000	316281.609	6256543.075	2.046	
122	120.000	316291.404	6256541.063	2.123	
123	125.229	316296.527	6256540.011	2.164	TP (R 15m)
124	125.576	316296.844	6256539.949	2.166	MID ARC (R 15m)
125	125.923	316297.164	6256539.895	2.169	TP (R 15m)
126	130.731	316301.913	6256539.147	2.175	VC 10m
127	140.000	316311.069	6256537.704	2.051	VC 2m
128	148.241	316319.210	6256536.421	2.035	VC 10m
129	150.923	316321.859	6256536.003	2.071	TP (R 10m)
130	151.087	316322.005	6256535.981	2.074	MID ARC (R 10m)
131	151.251	316322.151	6256535.962	2.077	TP (R 10m)
132	160.000	316330.834	6256534.884	2.283	
133	162.204	316333.021	6256534.613	2.330	VC 10m
134	170.000	316340.757	6256533.653	2.464	
135	180.000	316350.681	6256532.421	2.623	

SETOUT POINTS – FP1 FOOTPATH LHS (1m OFFSET FROM EDGE)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
136	182.293	316352.957	6256532.138	2.654	TP (R 45m) / VC 5m
137	187.854	316358.380	6256531.803	2.705	MID ARC (R 45m)
138	193.415	316363.804	6256532.139	2.742	CTP (R 45m – R 23m) / VC 5m
139	198.901	316369.515	6256532.164	2.721	MID ARC (R 23m)
140	204.388	316375.071	6256530.839	2.687	CTP (R23m – R 60m) / VC 5m
141	212.746	316382.955	6256528.540	2.592	MID ARC (R 60m)
142	216.883	316386.956	6256527.813	2.545	FP RHS RETAINED / VC 2m
143	221.105	316391.082	6256527.358	2.524	TP (R 60m)
144	225.000	316394.966	6256527.067	2.518	VC 7m
145	227.304	316397.264	6256526.894	2.529	TP (R 211m)
146	229.868	316399.810	6256526.719	2.553	FP3 INTERSECTION
147	230.000	316399.941	6256526.711	2.555	VC 2m
148	236.431	316406.334	6256526.412	2.662	FP4 INTERSECTION
149	240.000	316409.885	6256526.330	2.718	VC 5m
150	250.000	316419.836	6256526.420	2.809	VC 5m



SETOUT PLAN

SCALE 1:200

SETOUT POINTS – FP2 FOOTPATH RHS (1m OFFSET FROM EDGE)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
221	120.000	316288.870	6256534.437	2.082	
222	126.379	316295.119	6256533.154	2.147	TP (R 20m)
223	126.841	316295.595	6256533.062	2.152	MID ARC (R 20m)
224	127.304	316296.074	6256532.981	2.157	TP (R 20m)
225	132.111	316300.823	6256532.232	2.171	VC 10m
226	141.381	316309.979	6256530.789	2.039	VC 2m
227	149.622	316318.120	6256529.506	1.965	VC 10m
228	152.304	316320.769	6256529.089	1.988	TP (R 15m)
229	152.550	316321.029	6256529.050	1.992	MID ARC (R 15m)
230	152.796	316321.289	6256529.015	1.995	TP (R 15m)
231	163.749	316332.159	6256527.666	2.221	VC 10m

SETOUT POINTS – FP2 FOOTPATH RHS (1m OFFSET FROM EDGE)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
232	170.000	316338.362	6256526.896	2.327	
233	180.000	316348.286	6256525.664	2.486	
234	183.837	316352.094	6256525.192	2.542	TP (R 50m)
235	190.016	316358.380	6256524.803	2.597	MID ARC (R 50m)
236	196.195	316364.667	6256525.193	2.639	CTP (R 50m – R 18m) / VC 5m
237	200.489	316368.713	6256525.211	2.625	MID ARC (R 18m)
238	204.783	316372.648	6256524.272	2.596	CTP (R 18m – R 65m) / VC 5m
239	213.838	316381.468	6256521.700	2.480	MID ARC (R 65m)
240	218.319	316385.944	6256520.887	2.420	TP (R 65m) / MATCH EXISTING
241	297.788	316465.236	6256525.340	2.926	TP (90m) / MATCH EXISTING

SCALE OF METRES 1:200

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PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

No.	DETAIL	CHECKED	DATE
	AMENDMENTS		

DESIGN CHECKED AND APPROVED 30/06/25

APPROVED Group Manager Capital Projects ...../...../.....

ACCEPTED Client ...../...../.....

DESIGNED 30/06/25

DRAWN 30/06/25

DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:200
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

SETOUT PLAN – FP1 AND FP2

PLAN NUMBER 18034

Sheet No : 2

Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG

SETOUT POINTS – FP1 FOOTPATH LHS (1m OFFSET FROM EDGE)

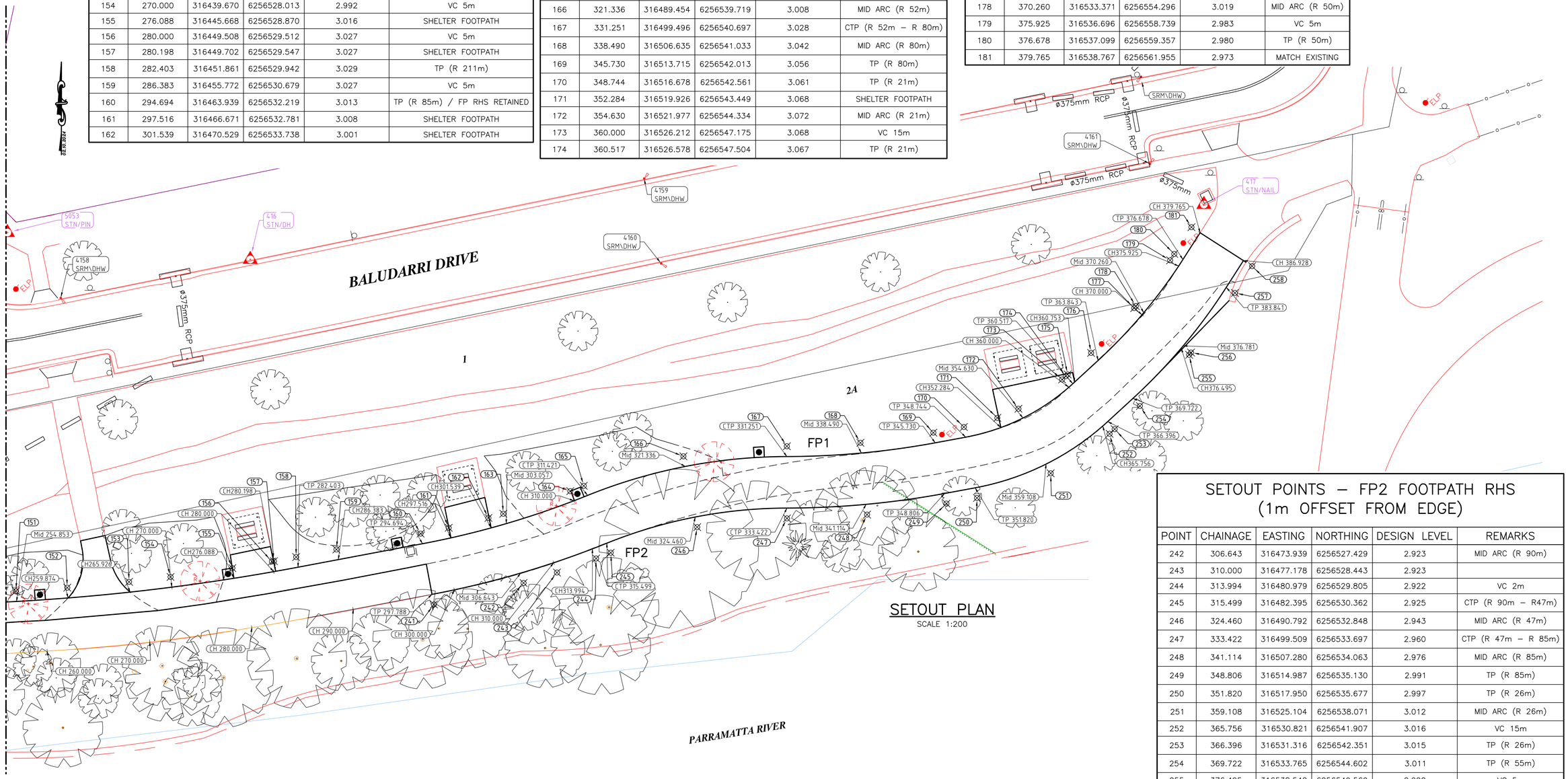
POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
151	254.853	316424.662	6256526.634	2.854	MID ARC (R 211m)
152	259.874	316429.647	6256526.971	2.901	FP5 INTERSECTION
153	265.926	316435.644	6256527.536	2.958	FP6 INTERSECTION
154	270.000	316439.670	6256528.013	2.992	VC 5m
155	276.088	316445.668	6256528.870	3.016	SHELTER FOOTPATH
156	280.000	316449.508	6256529.512	3.027	VC 5m
157	280.198	316449.702	6256529.547	3.027	SHELTER FOOTPATH
158	282.403	316451.861	6256529.942	3.029	TP (R 211m)
159	286.383	316455.772	6256530.679	3.027	VC 5m
160	294.694	316463.939	6256532.219	3.013	TP (R 85m) / FP RHS RETAINED
161	297.516	316466.671	6256532.781	3.008	SHELTER FOOTPATH
162	301.539	316470.529	6256533.738	3.001	SHELTER FOOTPATH

SETOUT POINTS – FP1 FOOTPATH LHS (1m OFFSET FROM EDGE)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
163	303.057	316471.972	6256534.147	2.999	MID ARC (R 85m)
164	310.000	316478.472	6256536.341	2.987	VC 2m
165	311.421	316479.779	6256536.855	2.989	CTP (R 85m – R52m)
166	321.336	316489.454	6256539.719	3.008	MID ARC (R 52m)
167	331.251	316499.496	6256540.697	3.028	CTP (R 52m – R 80m)
168	338.490	316506.635	6256541.033	3.042	MID ARC (R 80m)
169	345.730	316513.715	6256542.013	3.056	TP (R 80m)
170	348.744	316516.678	6256542.561	3.061	TP (R 21m)
171	352.284	316519.926	6256543.449	3.068	SHELTER FOOTPATH
172	354.630	316521.977	6256544.334	3.072	MID ARC (R 21m)
173	360.000	316526.212	6256547.175	3.068	VC 15m
174	360.517	316526.578	6256547.504	3.067	TP (R 21m)

SETOUT POINTS – FP1 FOOTPATH LHS (1m OFFSET FROM EDGE)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
175	360.753	316526.752	6256547.664	3.066	SHELTER FOOTPATH
176	363.843	316529.027	6256549.755	3.056	TP (R 50m)
177	370.000	316533.207	6256554.102	3.020	VC 5m
178	370.260	316533.371	6256554.296	3.019	MID ARC (R 50m)
179	375.925	316536.696	6256558.739	2.983	VC 5m
180	376.678	316537.099	6256559.357	2.980	TP (R 50m)
181	379.765	316538.767	6256561.955	2.973	MATCH EXISTING



SETOUT PLAN
SCALE 1:200

SETOUT POINTS – FP2 FOOTPATH RHS (1m OFFSET FROM EDGE)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
242	306.643	316473.939	6256527.429	2.923	MID ARC (R 90m)
243	310.000	316477.178	6256528.443	2.923	
244	313.994	316480.979	6256529.805	2.922	VC 2m
245	315.499	316482.395	6256530.362	2.925	CTP (R 90m – R47m)
246	324.460	316490.792	6256532.848	2.943	MID ARC (R 47m)
247	333.422	316499.509	6256533.697	2.960	CTP (R 47m – R 85m)
248	341.114	316507.280	6256534.063	2.976	MID ARC (R 85m)
249	348.806	316514.987	6256535.130	2.991	TP (R 85m)
250	351.820	316517.950	6256535.677	2.997	TP (R 26m)
251	359.108	316525.104	6256538.071	3.012	MID ARC (R 26m)
252	365.756	316530.821	6256541.907	3.016	VC 15m
253	366.396	316531.316	6256542.351	3.015	TP (R 26m)
254	369.722	316533.765	6256544.602	3.011	TP (R 55m)
255	376.495	316538.542	6256549.569	2.992	VC 5m
256	376.781	316538.730	6256549.792	2.992	MID ARC (R 55m)
257	383.841	316542.990	6256555.575	2.981	TP (R 55m) / VC 2m
258	386.928	316544.658	6256558.173	2.975	MATCH EXISTING

4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

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EXISTING/MISCELLANEOUS	PLAN FEATURES PROPOSED	PUBLIC UTILITIES ABOVEGROUND	PUBLIC UTILITIES U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

AMENDMENTS

No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25
APPROVED Group Manager Capital Projects ...../...../.....
ACCEPTED Client ...../...../.....
DESIGNED 30/06/25
DRAWN 30/06/25
DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:200
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

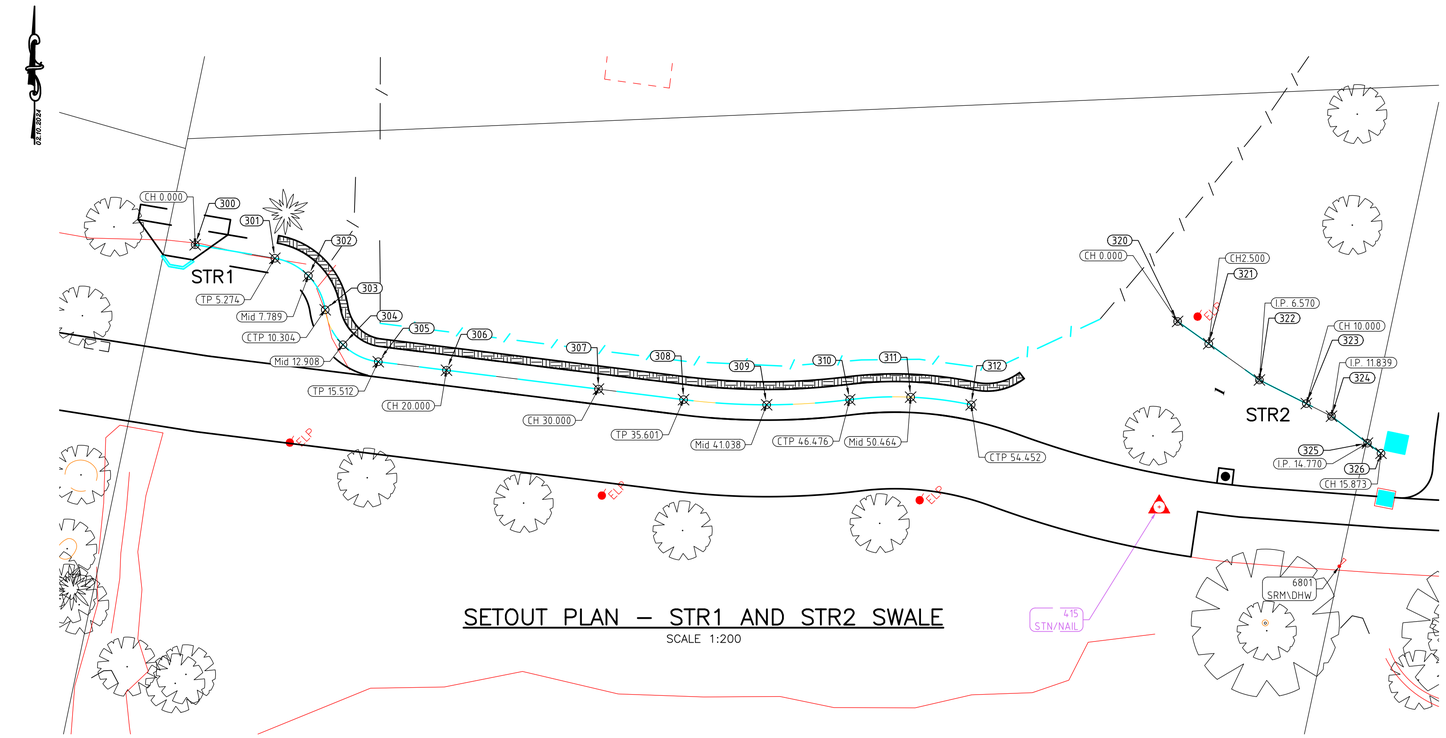
RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

SETOUT PLAN – FP1 AND FP2

PLAN NUMBER 18034
Sheet No : 3
Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG

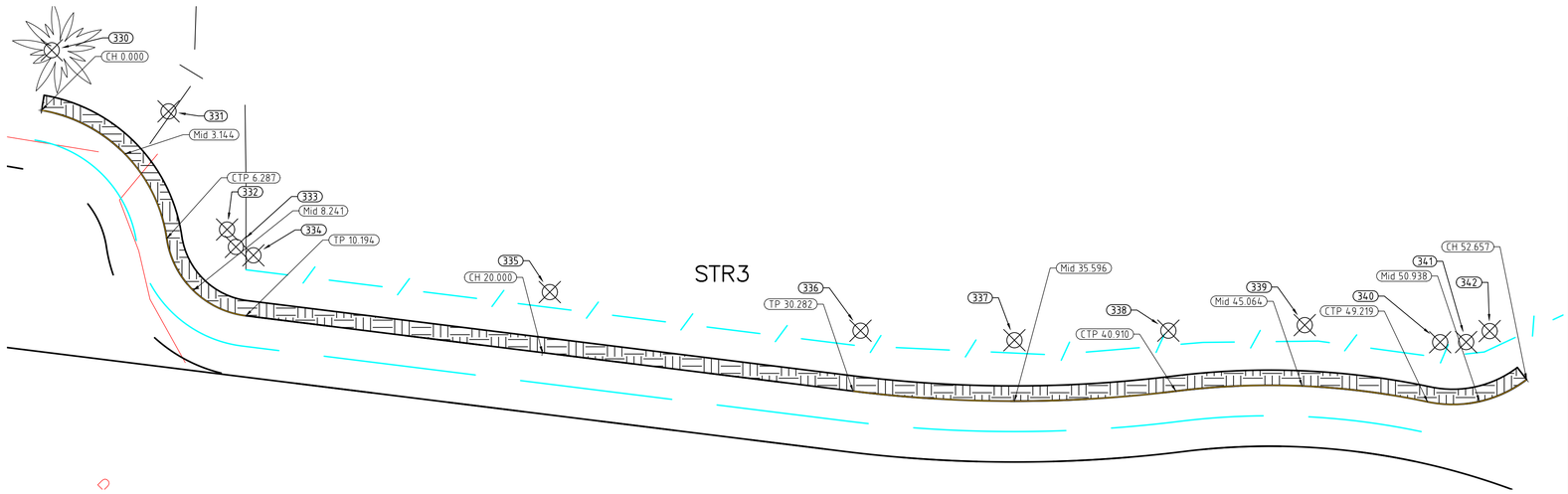


SETOUT PLAN – STR1 AND STR2 SWALE

SCALE 1:200

SETOUT POINTS – STR1 VEGETATED SWALE INVERT					
POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
300	0.000	316321.067	6256542.251	1.485	HEADWALL
301	5.274	316326.267	6256541.368	1.910	TP (R 4m)
302	7.789	316328.458	6256540.220	2.018	MID ARC (R 4m)
303	10.304	316329.556	6256538.003	2.126	CTP (R 4m – R 4m)
304	12.908	316330.716	6256535.723	2.178	MID ARC (R 4m)
305	15.512	316333.021	6256534.613	2.230	TP (R 4m)
306	20.000	316337.475	6256534.060	2.301	
307	30.000	316347.399	6256532.828	2.459	
308	35.601	316352.957	6256532.138	2.543	TP (R 44m)
309	41.038	316358.380	6256531.803	2.589	MID ARC (R 44m)
310	46.476	316363.804	6256532.139	2.631	CTP (R 44m – R 24m)
311	50.464	316367.784	6256532.301	2.669	MID ARC (R 24m)
312	54.452	316371.736	6256531.802	2.709	CTP (R 24m – R 5m)

SETOUT POINTS – STR2 GRASS SWALE INVERT					
POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
320	0.000	316385.214	6256537.245	2.651	NATURAL SURFACE
321	2.500	316387.248	6256535.791	2.506	NATURAL SURFACE
322	6.570	316390.558	6256533.423	2.479	DESIGN LEVEL
323	10.000	316393.622	6256531.882	2.457	NATURAL SURFACE
324	11.839	316395.265	6256531.055	2.436	NATURAL SURFACE
325	14.770	316397.613	6256529.301	2.415	NATURAL SURFACE
326	15.873	316398.497	6256528.640	2.408	SURFACE INLET PIT



SETOUT PLAN – STR3 RETAINING WALL

SCALE 1:100

SETOUT POINTS – STR3 RETAINING WALL FRONT FACE (2m OFFSET FROM FACE OF WALL)					
POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
330	0.000	316326.768	6256544.326	2.053	TP (R 5m)
331	3.144	316330.604	6256542.318	2.145	MID ARC (R 5m)
332	6.287	316332.525	6256538.438	2.238	CTP (R 5m – R 3m)
333	8.240	316332.815	6256537.868	2.289	MID ARC (R 3m)
334	10.193	316333.391	6256537.591	2.341	TP (R 3m)
335	20.000	316343.123	6256536.383	2.496	
336	30.282	316353.326	6256535.116	2.655	TP (R 43m)
337	35.595	316358.380	6256534.804	2.705	MID ARC (R 43m)
338	40.909	316363.434	6256535.117	2.742	CTP (R 43m – R 25m)
339	45.064	316367.912	6256535.299	2.730	MID ARC (R 25m)
340	49.218	316372.358	6256534.738	2.709	CTP (R 25m – R 4m)
341	50.937	316373.211	6256534.743	2.709	MID ARC (R 4m)
342	52.656	316373.984	6256535.103	2.709	TP (R 4m)

2 1 0 2 4 6 8 10
SCALE OF METRES 1:100

4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

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PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	GAS
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

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DESIGNED 30/06/25

DRAWN 30/06/25

DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: AS SHOWN
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

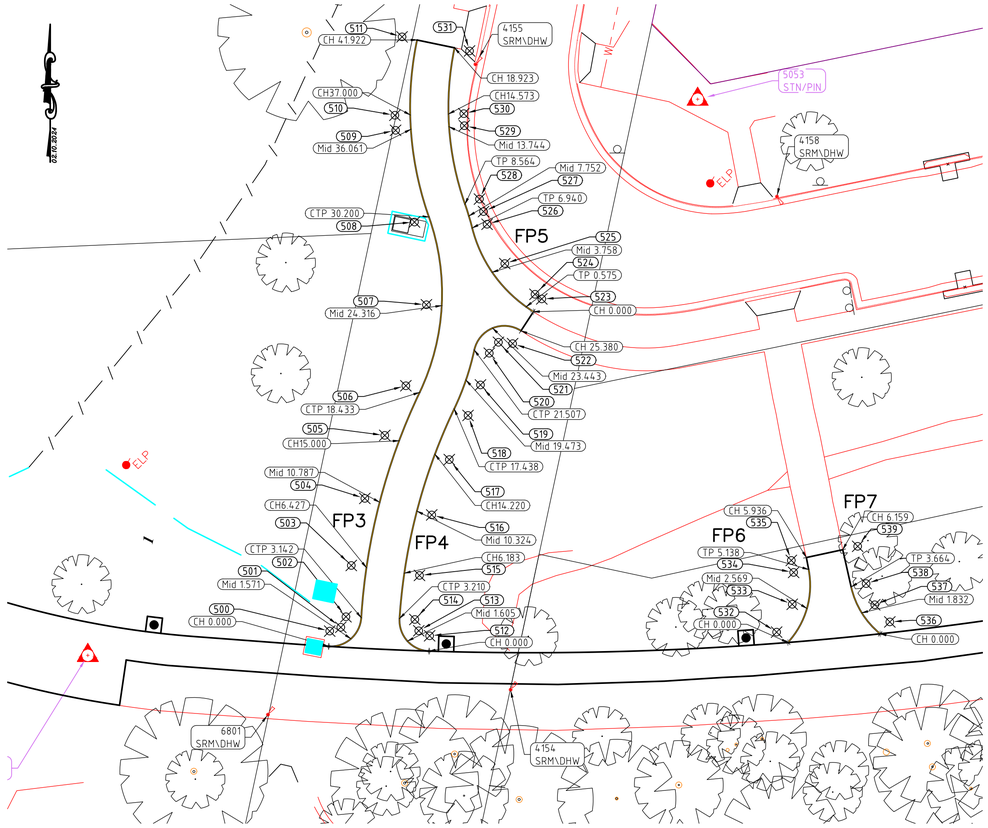
SETOUT PLAN – STR1, STR2 AND STR3

PLAN NUMBER 18034

Sheet No : 4

Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG



SETOUT PLAN

SCALE 1:200

SETOUT POINTS – FP3 LHS (1m OFFSET)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
500	0.000	316399.810	6256526.719	2.560	MATCH / TP (R 2m)
501	1.571	316400.534	6256526.967	2.578	MID ARC (R 2m)
502	3.142	316400.870	6256527.655	2.596	CTP (R 2m – R 40m)
503	6.427	316401.219	6256531.003	2.654	VC 5m
504	10.787	316402.103	6256535.381	2.827	MID ARC (R 40m)
505	15.000	316403.405	6256539.497	2.993	VC 5m
506	18.433	316404.782	6256542.734	3.052	CTP (R 40m – R 15m)
507	24.316	316406.125	6256548.022	3.116	MID ARC (R 15m)
508	30.200	316405.345	6256553.422	3.182	CTP (R 15m – R 21.5m) / VC 5m
509	36.061	316404.111	6256559.411	3.253	MID ARC (R 21.5m)
510	37.000	316404.067	6256560.393	3.254	VC 5m
511	41.922	316404.535	6256565.511	3.188	MATCH / TP (R 21.5m)

SETOUT POINTS – FP4 RHS (1m OFFSET)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
512	0.000	316406.334	6256526.412	2.662	TP (R 2m) / MATCH EXISTING
513	1.605	316405.625	6256526.739	2.662	MID ARC (R 2m)
514	3.210	316405.368	6256527.477	2.662	CTP (R 2m – R 37.5m)
515	6.183	316405.672	6256530.354	2.693	VC 5m
516	10.324	316406.472	6256534.302	2.869	MID ARC (R 37.5m)
517	14.220	316407.618	6256537.915	3.038	VC 5m
518	17.438	316408.843	6256540.797	3.089	CTP (R 37.5m – R 17.5m)
519	19.473	316409.654	6256542.788	3.105	MID ARC (R 17.5m)
520	21.507	316410.229	6256544.859	3.115	CTP (R 17.5m – R 2m) / VC 5m
521	23.443	316410.826	6256545.572	3.119	MID ARC (R 2m)
522	25.380	316411.753	6256545.485	3.117	TP (R 2m) / MATCH EXISTING

SURVEY CONTROL MARKS

POINT	EASTING	NORTHING	R.L.	REMARKS
407	316197.003	6256572.867	1.696	STN/DHW
411	316165.617	6256590.489	2.037	STN/GIN
413	316223.142	6256556.925	1.574	SRM\DHW
414	316287.080	6256536.524	2.032	STN/NAIL
415	316384.016	6256525.135	2.529	STN/NAIL
416	316447.408	6256558.824	2.716	STN/DH
417	316539.979	6256564.162	2.948	STN/NAIL
3902	316222.818	6256554.362	1.579	SRM\NAIL/GIN
4151	316223.629	6256557.317	1.587	STN/RAMSET
4154	316411.620	6256522.893	2.670	SRM\DHW
4155	316409.321	6256563.717	3.214	SRM\DHW
4156	316419.192	6256570.189	3.218	SRM\DHW
4158	316429.013	6256555.089	2.717	SRM\DHW
4159	316485.646	6256566.678	2.895	SRM\DHW
4160	316487.291	6256558.438	2.831	SRM\DHW
4161	316534.724	6256568.112	2.655	SRM\DHW
4162	316533.865	6256576.558	2.717	SRM\DHW
5053	316423.835	6256561.439	2.982	STN/PIN
6801	316395.771	6256521.263	2.448	SRM\DHW

SETOUT POINTS – FP5 RHS (1m OFFSET)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
523	0.000	316413.658	6256548.404	3.068	MATCH EXISTING
524	0.575	316413.214	6256548.706	3.071	TP (R 9m)
525	3.758	316411.241	6256550.713	3.088	MID ARC (R 9m)
526	6.940	316410.084	6256553.278	3.106	CTP (R 9m – R 17.5m)
527	7.752	316409.855	6256554.105	3.113	MID ARC (R 17.5m)
528	8.564	316409.588	6256554.921	3.121	CTP (R 17.5m – R 19m) / VC 5m
529	13.744	316408.601	6256559.712	3.190	MID ARC (R 19m)
530	14.573	316408.566	6256560.497	3.192	VC 5m
531	18.923	316408.940	6256564.592	3.133	TP (R 19m) / MATCH EXISTING

SETOUT POINTS – FP6 LHS (1m OFFSET)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
532	0.000	316428.991	6256526.652	2.901	TP (R 5.5m) / MATCH EXISTING
533	2.569	316430.010	6256528.469	2.794	MID ARC (R 5.5m)
534	5.138	316430.102	6256530.549	2.686	TP (R 5.5m)
535	5.936	316429.951	6256531.333	2.653	MATCH EXISTING

SETOUT POINTS – FP7 RHS (1m OFFSET)

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LEVEL	REMARKS
536	0.000	316436.383	6256527.318	2.958	TP (R 5.5m) / MATCH EXISTING
537	1.832	316435.398	6256528.438	2.866	MID ARC (R 5.5m)
538	3.664	316434.833	6256529.819	2.778	TP (R 5.5m) / VC 2m
539	6.159	316434.284	6256532.253	2.687	MATCH EXISTING

4 3 2 1 0 4 8 12 16 20

SCALE OF METRES 1:200

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PLAN FEATURES

EXISTING/MISCELLANEOUS	PROPOSED
KERB AND GUTTER:	KERB AND GUTTER:
EDGE OF BITUMEN:	EDGE OF BITUMEN:
ROAD ℄/CROWN:	ROAD ℄/CROWN:
EARTH BATTERS:	EARTH BATTERS:
PIPE DRAINS:	PIPE DRAINS:
DRAINAGE PITS:	DRAINAGE PITS:
TREES & SHRUBS:	SUB-SOIL DRAIN:
SPOT LEVELS: 10.00 25.000 25.000	SET-OUT LINE:

PUBLIC UTILITIES

ABOVEGROUND	U/GROUND
TELSTRA:	
ELECTRICITY: SUB STATION	
GAS & MISC.:	GAS
SEWER:	
WATER:	
POLES:	
OVERHEAD:	
SURVEY: STN SPK SCRIB PK	

AMENDMENTS

No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25

APPROVED Group Manager Capital Projects ...../...../.....

ACCEPTED Client ...../...../.....

DESIGNED 30/06/25

DRAWN 30/06/25

DRAWING REVIEW ...../...../.....

DATUM: AHD

CO-ORDS: MGA 94

RATIO: 1:200

TRIM No: N/A

STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

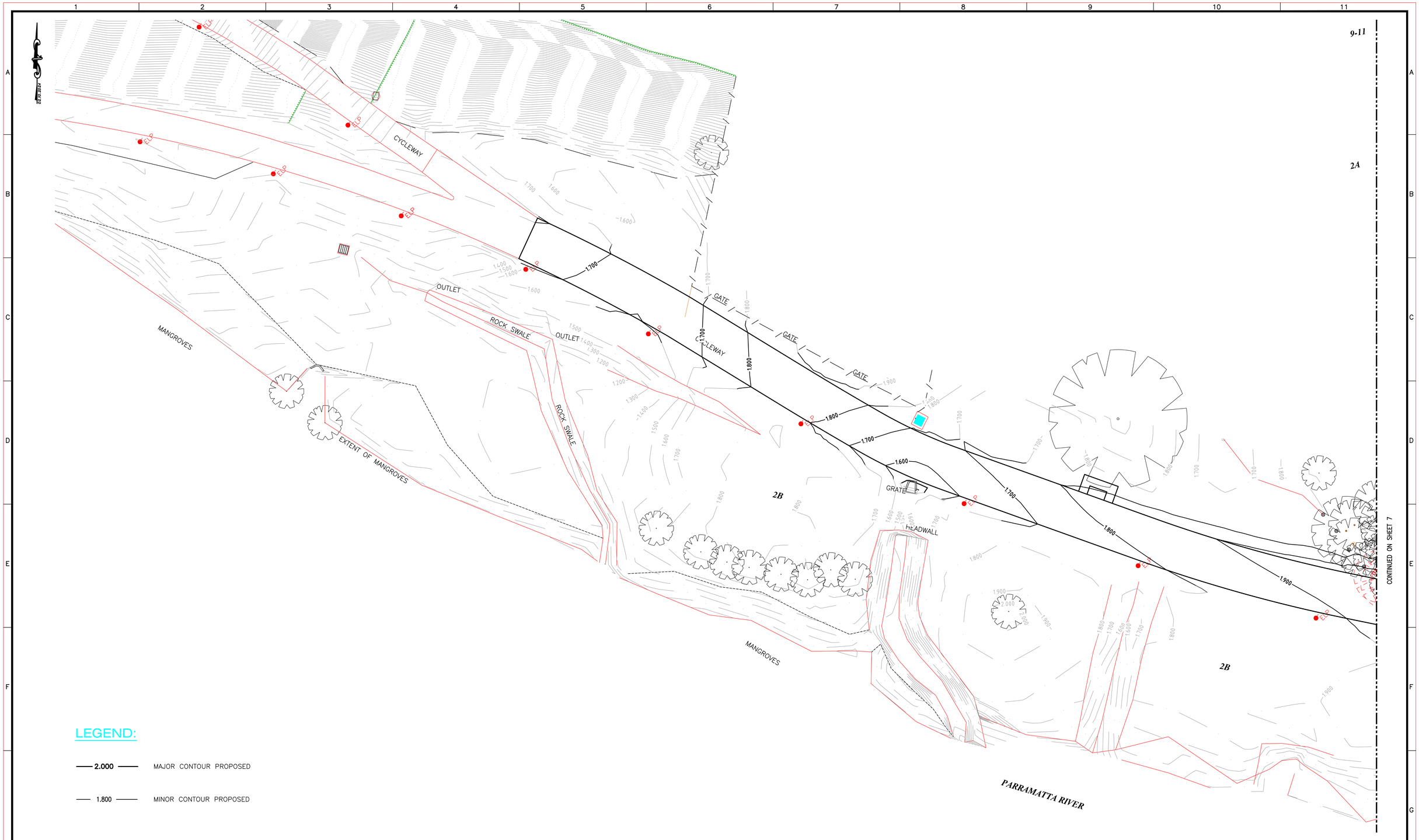
SETOUT PLAN – FP3, FP4, FP5, FP6, FP7 AND SURVEY CONTROL POINTS

PLAN NUMBER 18034

Sheet No : 5

Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG



LEGEND:

2.000 — MAJOR CONTOUR PROPOSED

1.800 — MINOR CONTOUR PROPOSED

CONTOUR PLAN

SCALE 1:200

SCALE OF METRES 1:200

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PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

AMENDMENTS			
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DESIGN CHECKED AND APPROVED 30/06/25

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DESIGNED 30/06/25

DRAWN 30/06/25

DRAWING REVIEW ...../...../.....

DATUM: AHD

CO-ORDS: MGA 94

RATIO: 1:200

TRIM No: N/A

STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

CONTOUR PLAN – 1

PLAN NUMBER 18034

Sheet No : 6

Revision :

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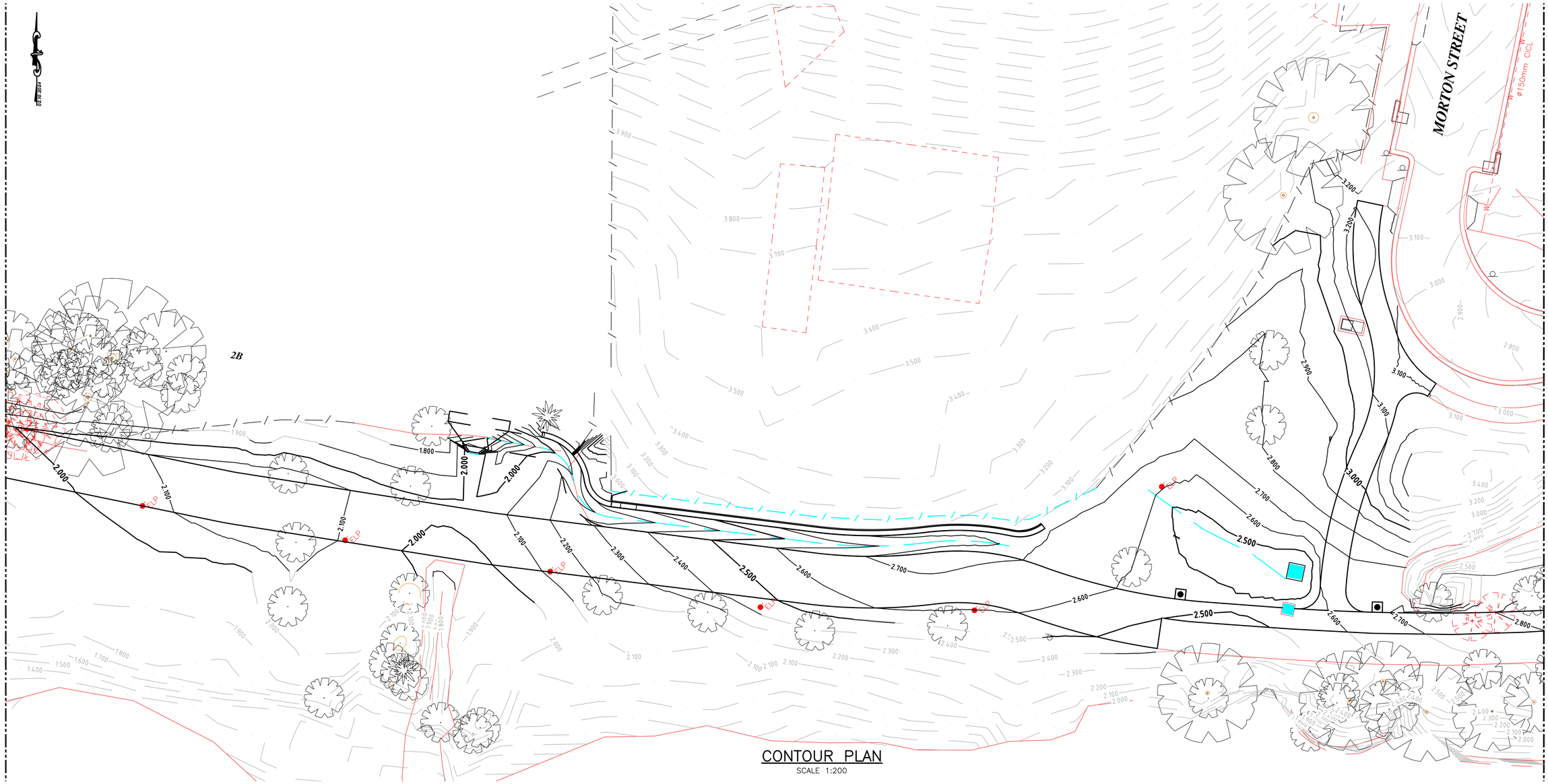

CONTOUR PLAN

SCALE 1:200

LEGEND:

2.000 — MAJOR CONTOUR PROPOSED

1.800 — MINOR CONTOUR PROPOSED

SCALE OF METRES 1:200

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PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	GAS
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25

APPROVED
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ACCEPTED
Client ...../...../.....

DESIGNED 30/06/25

DRAWN 30/06/25

DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:200
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

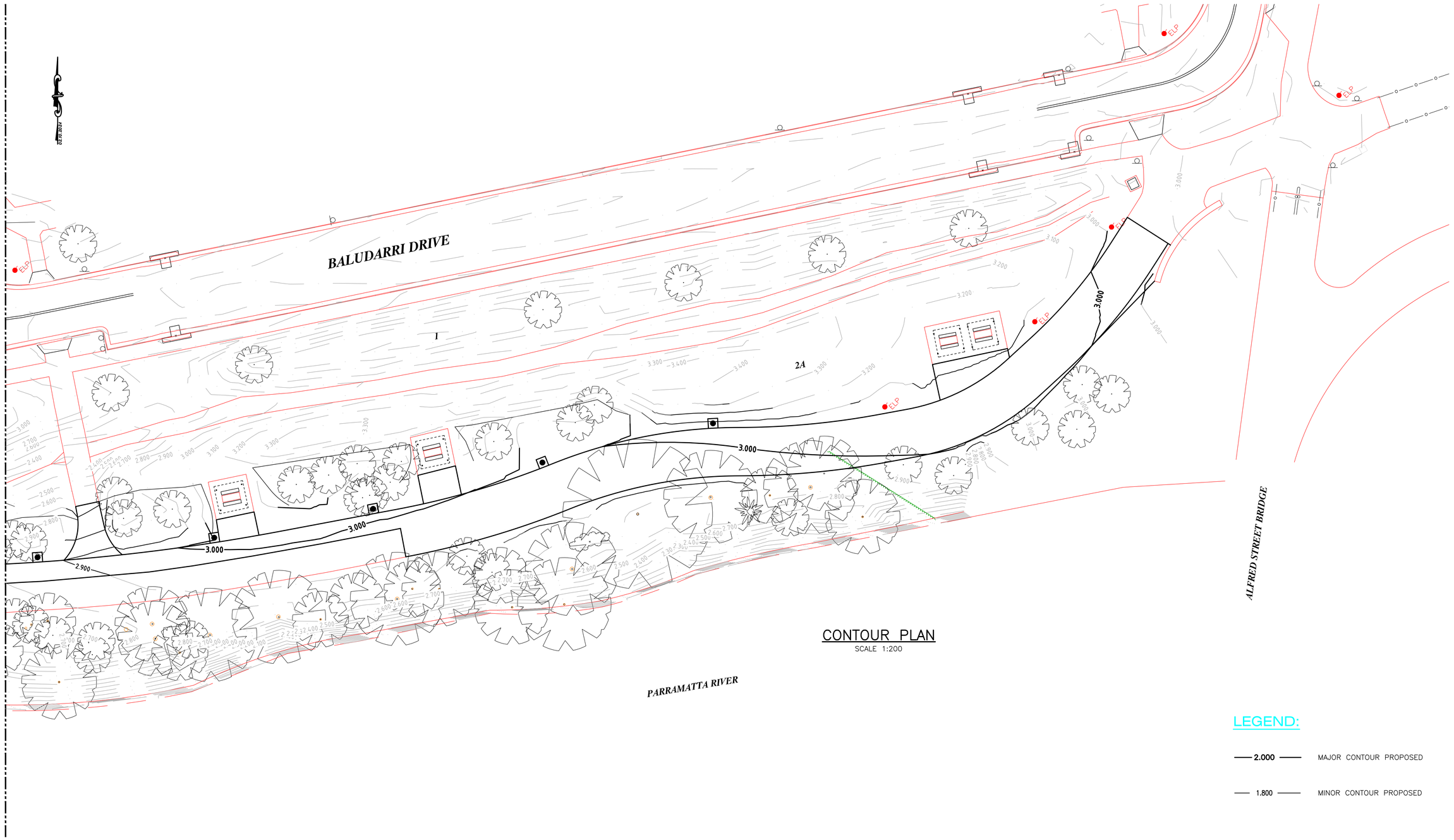
CONTOUR PLAN – 2

PLAN NUMBER 18034

Sheet No : 7

Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG



CONTOUR PLAN
SCALE 1:200

LEGEND:

2.000 — MAJOR CONTOUR PROPOSED

1.800 — MINOR CONTOUR PROPOSED

SCALE OF METRES 1:200

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UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS SPEC

PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

No.	AMENDMENTS DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25

APPROVED
Group Manager Capital Projects ...../...../.....

ACCEPTED
Client ...../...../.....

DESIGNED 30/06/25

DRAWN 30/06/25

DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:200
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

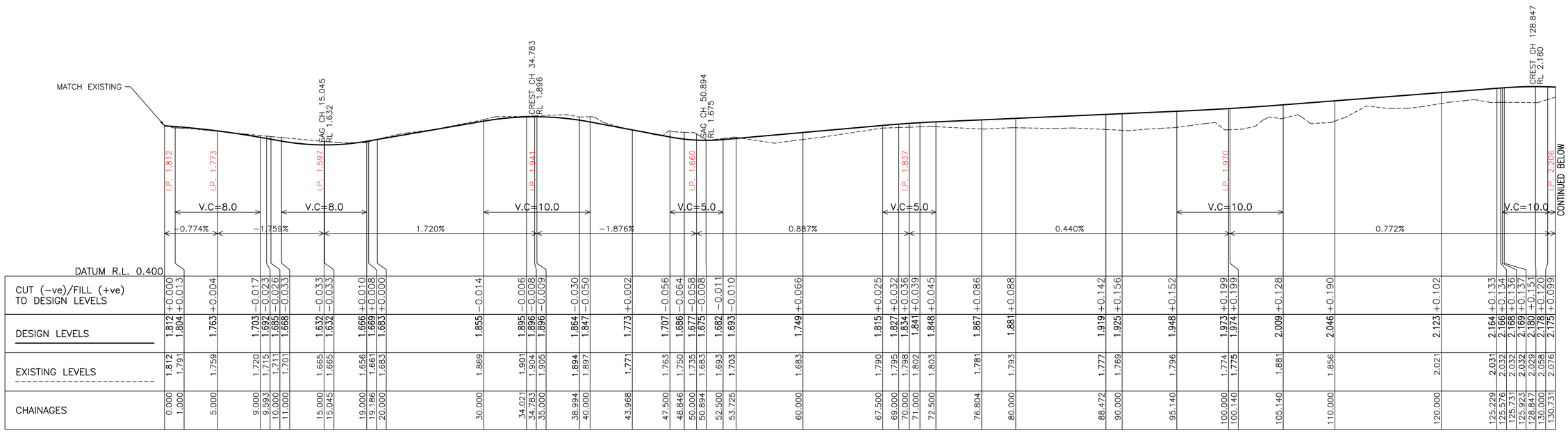
RANGIHOU RESERVE, PARRAMATTA
BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS
CONTOUR PLAN – 3

PLAN NUMBER 18034

Sheet No : 8

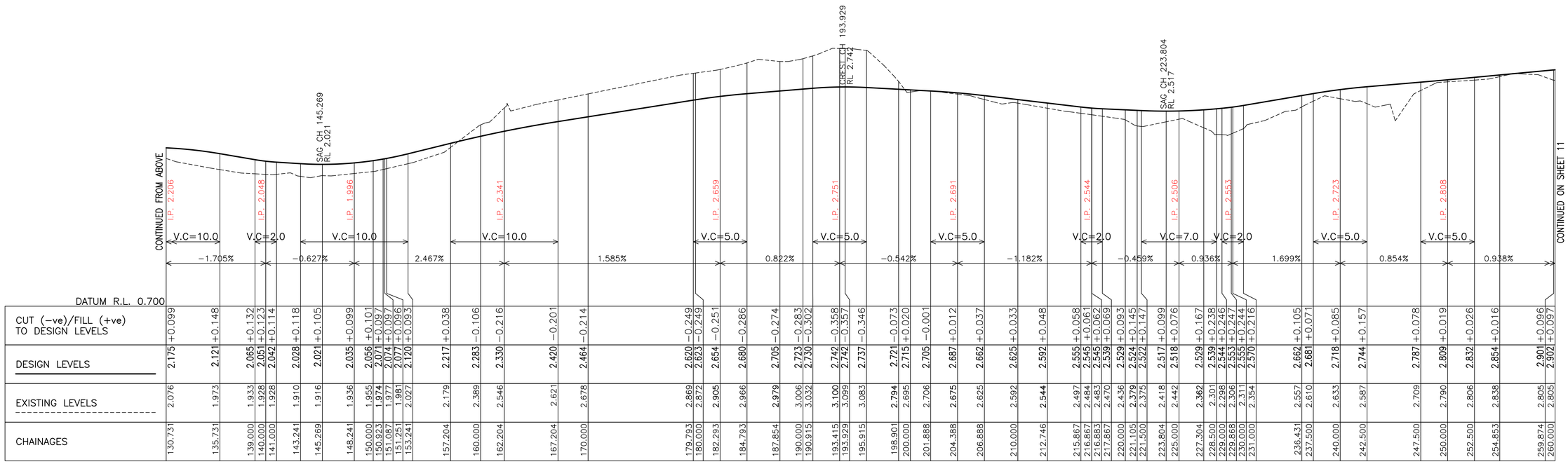
Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG



CHAINAGES	EXISTING LEVELS	DESIGN LEVELS	CUT (−ve)/FILL (+ve) TO DESIGN LEVELS
0.000	1.812	1.812	+0.000
1.000	1.791	1.804	+0.013
5.000	1.759	1.763	+0.004
9.000	1.720	1.703	−0.017
9.593	1.715	1.692	−0.023
10.000	1.711	1.685	−0.026
11.000	1.701	1.668	−0.033
15.000	1.665	1.632	−0.033
15.045	1.665	1.632	−0.033
19.000	1.656	1.666	+0.010
19.186	1.661	1.669	+0.008
20.000	1.683	1.683	+0.000
30.000	1.869	1.855	−0.014
34.021	1.901	1.895	−0.006
34.783	1.904	1.896	−0.008
35.000	1.905	1.896	−0.009
38.994	1.894	1.864	−0.030
40.000	1.897	1.847	−0.050
43.968	1.771	1.773	+0.002
47.500	1.763	1.707	−0.056
48.846	1.750	1.686	−0.064
50.000	1.735	1.677	−0.058
50.894	1.683	1.675	−0.008
52.500	1.693	1.682	−0.011
53.725	1.703	1.693	−0.010
60.000	1.683	1.749	+0.066
67.500	1.790	1.815	+0.025
69.000	1.795	1.827	+0.032
70.000	1.798	1.834	+0.036
71.000	1.802	1.841	+0.039
72.500	1.803	1.848	+0.045
76.804	1.781	1.867	+0.086
80.000	1.793	1.881	+0.088
88.472	1.777	1.919	+0.142
90.000	1.769	1.925	+0.156
95.140	1.796	1.948	+0.152
100.000	1.774	1.973	+0.199
100.140	1.775	1.974	+0.199
105.140	1.881	2.009	+0.128
110.000	1.856	2.046	+0.190
120.000	2.021	2.123	+0.102
125.229	2.031	2.164	+0.133
125.576	2.032	2.166	+0.134
125.731	2.032	2.168	+0.136
125.923	2.032	2.169	+0.137
128.847	2.029	2.180	+0.151
130.000	2.058	2.178	+0.120
130.731	2.076	2.175	+0.099

LONGITUDINAL SECTION – FP1
FROM CH 0.000 TO CH 130.731
SCALE: HORIZONTAL 1:200
VERTICAL 1:20



CHAINAGES	EXISTING LEVELS	DESIGN LEVELS	CUT (−ve)/FILL (+ve) TO DESIGN LEVELS
130.731	2.076	2.175	+0.099
135.731	1.973	2.121	+0.148
139.000	1.933	2.065	+0.132
140.000	1.928	2.051	+0.123
141.000	1.928	2.042	+0.114
143.241	1.910	2.028	+0.118
145.269	1.916	2.021	+0.105
148.241	1.936	2.035	+0.099
150.000	1.955	2.056	+0.101
150.923	1.974	2.071	+0.097
151.067	1.977	2.074	+0.097
151.251	1.981	2.077	+0.096
153.241	2.027	2.120	+0.093
157.204	2.179	2.217	+0.038
160.000	2.389	2.283	−0.106
162.204	2.546	2.330	−0.216
167.204	2.621	2.420	−0.201
170.000	2.678	2.464	−0.214
179.793	2.869	2.620	−0.249
180.000	2.872	2.623	−0.249
182.293	2.905	2.654	−0.251
184.793	2.966	2.680	−0.286
187.854	2.979	2.705	−0.274
190.000	3.006	2.723	−0.283
190.915	3.032	2.730	−0.302
193.415	3.100	2.742	−0.358
193.929	3.099	2.742	−0.357
195.915	3.083	2.737	−0.346
198.901	2.794	2.721	−0.073
200.000	2.695	2.715	+0.020
201.888	2.706	2.705	−0.001
204.388	2.675	2.687	+0.012
206.888	2.625	2.662	+0.037
210.000	2.592	2.625	+0.033
212.746	2.544	2.592	+0.048
215.867	2.497	2.555	+0.058
216.867	2.484	2.545	+0.061
216.883	2.483	2.545	+0.062
217.867	2.470	2.539	+0.069
220.000	2.436	2.529	+0.093
221.105	2.379	2.524	+0.145
221.500	2.375	2.522	+0.147
223.804	2.418	2.517	+0.099
225.000	2.442	2.518	+0.076
227.304	2.362	2.529	+0.167
228.500	2.301	2.539	+0.238
229.000	2.298	2.544	+0.246
229.868	2.306	2.553	+0.247
230.000	2.311	2.555	+0.244
231.000	2.354	2.570	+0.216
236.431	2.557	2.662	+0.105
237.500	2.610	2.681	+0.071
240.000	2.633	2.718	+0.085
242.500	2.587	2.744	+0.157
247.500	2.709	2.787	+0.078
250.000	2.790	2.809	+0.019
252.500	2.806	2.832	+0.026
254.853	2.838	2.854	+0.016
259.874	2.805	2.901	+0.096
260.000	2.805	2.902	+0.097

LONGITUDINAL SECTION – FP1
FROM CH 130.731 TO CH 260.000
SCALE: HORIZONTAL 1:200
VERTICAL 1:20

4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

0.4 0.2 0 0.4 0.8 1.2 1.6 2.0
SCALE OF METRES 1:20

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25
APPROVED Group Manager Capital Projects ...../...../.....
ACCEPTED Client ...../...../.....
DESIGNED 30/06/25
DRAWN 30/06/25
DRAWING REVIEW ...../...../.....

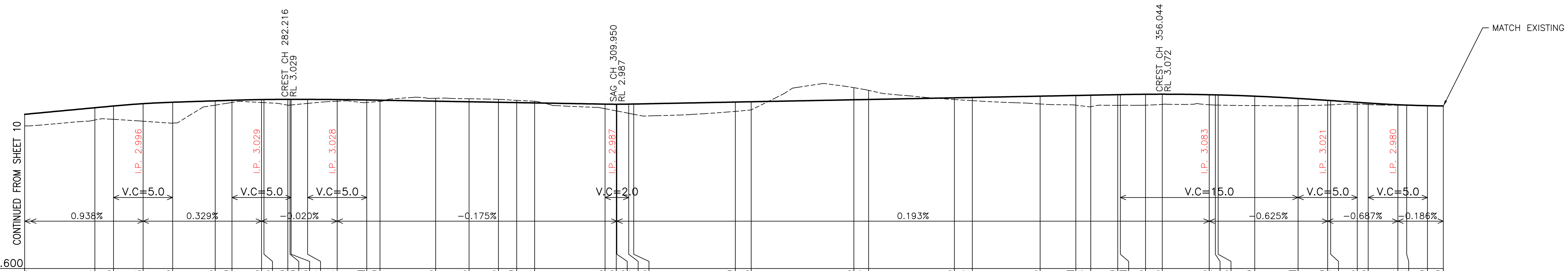
DATUM: AHD
CO-ORDS: MGA 94
RATIO: AS SHOWN
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA
BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS
LONGITUDINAL SECTION – FP1 CH0.000 TO CH260.000

PLAN NUMBER 18034
Sheet No : 9
Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG

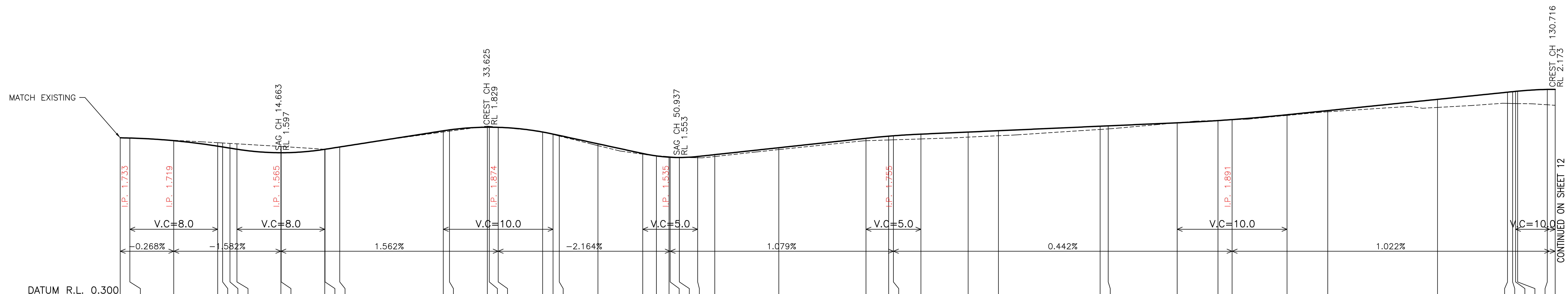


CHAINAGES	CUT (−ve)/FILL (+ve) TO DESIGN LEVELS	DESIGN LEVELS	EXISTING LEVELS
260.000	+0.097	2.902	2.805
265.926	+0.104	2.958	2.854
267.500	+0.113	2.973	2.860
270.000	+0.148	2.992	2.844
272.500	+0.175	3.004	2.829
276.088	+0.036	3.016	2.980
277.500	+0.019	3.021	3.002
280.000	+0.025	3.027	3.002
280.198	+0.026	3.027	3.001
282.216	+0.050	3.029	2.979
282.403	+0.049	3.029	2.980
282.500	+0.048	3.029	2.981
283.883	+0.034	3.028	2.994
286.383	+0.014	3.027	3.013
288.883	+0.021	3.023	3.002
290.000	+0.009	3.021	3.012
294.694	−0.025	3.013	3.038
297.516	−0.026	3.008	3.034
300.000	−0.025	3.004	3.029
301.539	−0.019	3.001	3.020
303.057	−0.014	2.999	3.013
309.000	+0.038	2.988	2.950
309.950	+0.055	2.987	2.932
310.000	+0.056	2.987	2.931
311.000	+0.077	2.988	2.911
311.421	+0.086	2.989	2.903
320.000	+0.079	3.006	2.927
321.336	+0.068	3.008	2.940
330.000	−0.103	3.025	3.128
331.251	−0.077	3.028	3.105
338.490	+0.015	3.042	3.027
340.000	+0.027	3.045	3.018
345.730	+0.066	3.056	2.990
348.744	+0.081	3.061	2.980
350.000	+0.097	3.064	2.967
352.284	+0.090	3.068	2.978
352.500	+0.091	3.069	2.978
354.630	+0.093	3.072	2.979
356.044	+0.086	3.072	2.986
360.000	+0.086	3.068	2.982
360.517	+0.087	3.067	2.980
360.753	+0.086	3.066	2.980
363.843	+0.080	3.056	2.976
367.500	+0.061	3.036	2.975
370.000	+0.039	3.020	2.981
370.260	+0.037	3.019	2.982
372.500	+0.016	3.004	2.988
373.425	+0.013	2.997	2.984
375.925	+0.004	2.983	2.979
376.678	+0.002	2.980	2.978
378.425	+0.000	2.975	2.975
379.765	+0.000	2.973	2.973

LONGITUDINAL SECTION – FP1

FROM CH 260.000 TO CH 379.765

SCALE: HORIZONTAL 1:200
VERTICAL 1:20



CHAINAGES	CUT (−ve)/FILL (+ve) TO DESIGN LEVELS	DESIGN LEVELS	EXISTING LEVELS
0.000	+0.000	1.733	1.733
0.879	+0.000	1.730	1.730
4.879	−0.004	1.706	1.710
8.879	−0.032	1.656	1.688
9.332	−0.036	1.649	1.685
10.000	−0.043	1.638	1.681
10.638	−0.050	1.628	1.678
14.638	−0.056	1.597	1.653
14.663	−0.056	1.597	1.653
18.638	+0.000	1.628	1.628
18.664	+0.000	1.628	1.628
20.000	+0.000	1.649	1.649
29.433	+0.011	1.796	1.785
30.000	+0.011	1.804	1.793
33.442	−0.009	1.829	1.838
33.625	−0.008	1.829	1.837
34.433	−0.001	1.828	1.829
38.481	−0.001	1.785	1.786
39.433	+0.004	1.766	1.762
40.000	+0.006	1.754	1.748
43.521	+0.017	1.678	1.661
47.601	+0.005	1.589	1.584
48.843	−0.003	1.567	1.570
50.000	−0.005	1.556	1.561
50.101	−0.004	1.556	1.560
50.937	−0.001	1.553	1.554
52.601	+0.011	1.562	1.551
54.165	+0.017	1.579	1.562
60.000	+0.017	1.642	1.625
67.940	+0.022	1.728	1.706
70.000	+0.035	1.747	1.712
70.440	+0.037	1.751	1.714
72.940	+0.044	1.766	1.722
77.244	+0.047	1.785	1.738
80.000	+0.046	1.797	1.751
89.267	+0.030	1.838	1.808
90.000	+0.028	1.841	1.813
96.289	+0.000	1.869	1.869
100.000	−0.002	1.889	1.891
101.289	+0.002	1.898	1.896
106.289	+0.006	1.942	1.936
110.000	+0.011	1.980	1.969
120.000	+0.073	2.082	2.009
126.379	+0.101	2.147	2.046
126.841	+0.107	2.152	2.045
127.111	+0.111	2.155	2.044
127.304	+0.113	2.157	2.044
130.000	+0.140	2.173	2.033
130.716	+0.143	2.173	2.030

LONGITUDINAL SECTION – FP2

FROM CH 0.000 TO CH 130.716

SCALE: HORIZONTAL 1:200
VERTICAL 1:20

4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

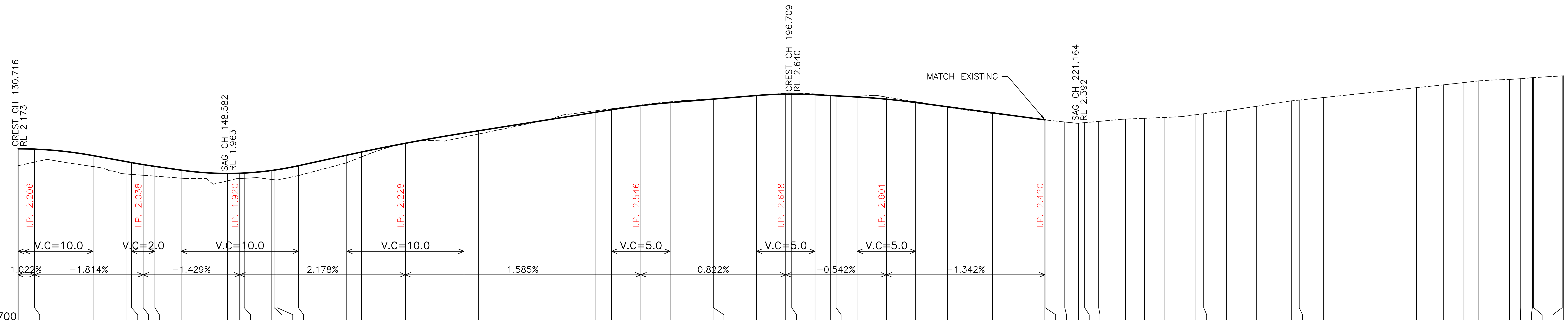
0.4 0.2 0 0.4 0.8 1.2 1.6 2.0
SCALE OF METRES 1:20

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25	DESIGNED 30/06/25	DATUM: AHD	**CITY OF PARRAMATTA COUNCIL**
APPROVED Group Manager Capital Projects ..../......../........	DRAWN 30/06/25	CO-ORDS: MGA 94	RANGIHOU RESERVE, PARRAMATTA
ACCEPTED Client ..../......../........	DRAWING REVIEW ..../......../........	RATIO: AS SHOWN	BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS
		TRIM No: N/A	LONGITUDINAL SECTIONS – FP1 CH260.000 TO CH379.765 AND FP2 CH0.000 TO CH130.716
		STATUS: **FINAL**	

PLAN NUMBER 18034
Sheet No : 10
Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG

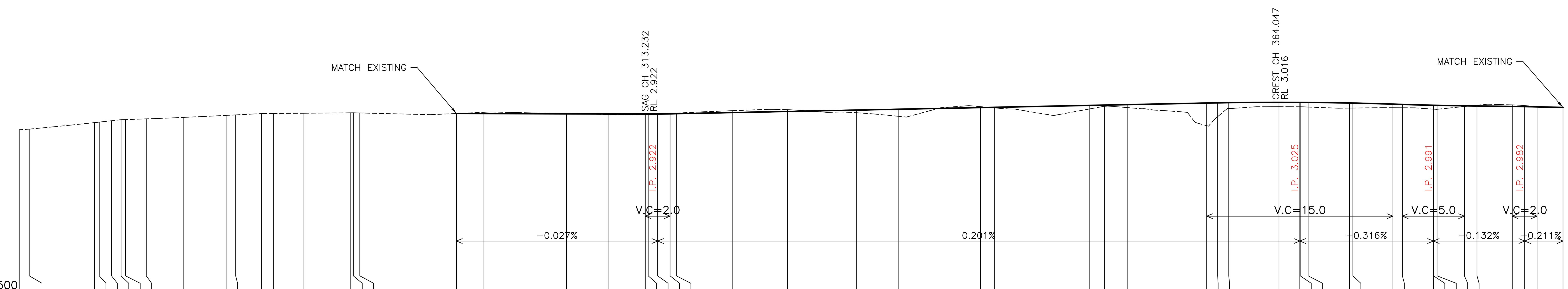


CHAINAGES	EXISTING LEVELS	DESIGN LEVELS	CUT (-ve)/FILL (+ve) TO DESIGN LEVELS
130.716	2.030	2.173	+0.143
132.111	2.060	2.171	+0.111
137.111	2.022	2.115	+0.093
140.000	1.958	2.063	+0.105
140.381	1.956	2.056	+0.100
141.381	1.948	2.039	+0.091
142.381	1.940	2.024	+0.084
144.622	1.924	1.992	+0.068
148.582	1.901	1.963	+0.062
149.622	1.920	1.965	+0.045
150.000	1.922	1.967	+0.045
152.304	1.913	1.988	+0.075
152.550	1.910	1.992	+0.082
152.796	1.907	1.995	+0.088
154.622	1.945	2.029	+0.084
158.749	2.055	2.119	+0.064
160.000	2.104	2.146	+0.042
163.749	2.219	2.221	+0.002
168.749	2.274	2.307	+0.033
170.000	2.300	2.327	+0.027
180.000	2.497	2.486	-0.011
181.337	2.514	2.507	-0.007
183.837	2.546	2.542	-0.004
186.337	2.574	2.567	-0.007
190.000	2.600	2.597	-0.003
190.016	2.600	2.597	-0.003
193.695	2.625	2.627	+0.002
196.195	2.648	2.639	-0.009
196.709	2.649	2.640	-0.009
198.695	2.641	2.634	-0.007
200.000	2.630	2.627	-0.003
200.489	2.625	2.625	+0.000
202.283	2.620	2.615	-0.005
204.783	2.614	2.596	-0.018
207.283	2.574	2.568	-0.006
210.000	2.528	2.531	+0.003
213.838	2.474	2.480	+0.006
218.302	2.420	2.420	+0.000
218.319	2.420	2.420	+0.000
220.000	2.402	2.402	+0.000
221.164	2.392	2.392	+0.000
221.696	2.396	2.396	+0.000
222.893	2.407	2.407	+0.000
225.186	2.427	2.427	+0.000
226.788	2.433	2.433	+0.000
228.538	2.441	2.441	+0.000
230.000	2.448	2.448	+0.000
231.186	2.464	2.464	+0.000
231.852	2.472	2.472	+0.000
233.784	2.497	2.497	+0.000
236.370	2.536	2.536	+0.000
239.358	2.582	2.582	+0.000
240.000	2.589	2.589	+0.000
242.089	2.610	2.610	+0.000
250.000	2.694	2.695	+0.001
252.323	2.718	2.719	+0.001
254.050	2.738	2.738	+0.000
255.323	2.752	2.752	+0.000
257.937	2.765	2.766	+0.001
258.896	2.770	2.773	+0.003
259.886	2.779	2.779	+0.000
260.000	2.780	2.780	+0.000
262.434	2.795	2.795	+0.000
262.563	2.795	2.795	+0.000

LONGITUDINAL SECTION – FP2

FROM CH 130.716 TO CH 262.563

SCALE: HORIZONTAL 1:200
VERTICAL 1:20



CHAINAGES	EXISTING LEVELS	DESIGN LEVELS	CUT (-ve)/FILL (+ve) TO DESIGN LEVELS
262.563	2.795	2.795	+0.000
263.368	2.800	2.800	+0.000
268.629	2.853	2.853	+0.000
269.010	2.857	2.857	+0.000
270.000	2.868	2.868	+0.000
270.767	2.876	2.876	+0.000
271.128	2.877	2.877	+0.000
272.797	2.883	2.883	+0.000
275.821	2.895	2.895	+0.000
279.232	2.911	2.911	+0.000
280.000	2.915	2.915	+0.000
282.075	2.925	2.925	+0.000
283.037	2.926	2.927	+0.001
285.497	2.928	2.928	+0.000
289.274	2.932	2.932	+0.000
289.477	2.932	2.932	+0.000
290.000	2.930	2.930	+0.000
297.788	2.926	2.926	+0.000
300.000	2.936	2.925	-0.011
306.643	2.925	2.923	-0.002
310.000	2.918	2.923	+0.005
312.994	2.917	2.922	+0.005
313.232	2.918	2.922	+0.004
313.994	2.922	2.922	+0.000
314.994	2.927	2.924	-0.003
315.499	2.929	2.925	-0.004
320.000	2.949	2.934	-0.015
324.460	2.957	2.943	-0.014
330.000	2.932	2.954	+0.022
333.422	2.903	2.960	+0.057
340.000	2.981	2.974	-0.007
341.114	2.972	2.976	+0.004
348.806	2.963	2.991	+0.028
350.000	2.981	2.994	+0.013
351.820	2.974	2.997	+0.023
358.225	2.828	3.010	+0.182
359.108	2.901	3.012	+0.111
360.000	2.967	3.013	+0.046
364.047	2.981	3.016	+0.035
365.725	2.980	3.016	+0.036
365.756	2.980	3.016	+0.036
366.396	2.978	3.015	+0.037
369.722	2.970	3.011	+0.041
370.000	2.970	3.010	+0.040
373.225	2.973	3.002	+0.029
373.986	2.972	2.999	+0.027
376.486	2.961	2.992	+0.031
376.495	2.961	2.992	+0.031
376.781	2.960	2.992	+0.032
378.986	2.982	2.988	+0.006
380.000	2.993	2.987	-0.006
382.841	2.995	2.983	-0.012
383.841	2.990	2.981	-0.009
384.841	2.979	2.979	+0.000
386.928	2.975	2.975	+0.000

LONGITUDINAL SECTION – FP2

FROM CH 262.563 TO CH 386.928

SCALE: HORIZONTAL 1:200
VERTICAL 1:20

SCALE OF METRES 1:200 (4 3 2 1 0 4 8 12 16 20)

SCALE OF METRES 1:20 (0.4 0.2 0 0.4 0.8 1.2 1.6 2.0)

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25
APPROVED — Group Manager Capital Projects ..../......../........
ACCEPTED — Client ..../......../........
DESIGNED 30/06/25
DRAWN 30/06/25
DRAWING REVIEW ..../......../........

DATUM: AHD
CO-ORDS: MGA 94
RATIO: AS SHOWN
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

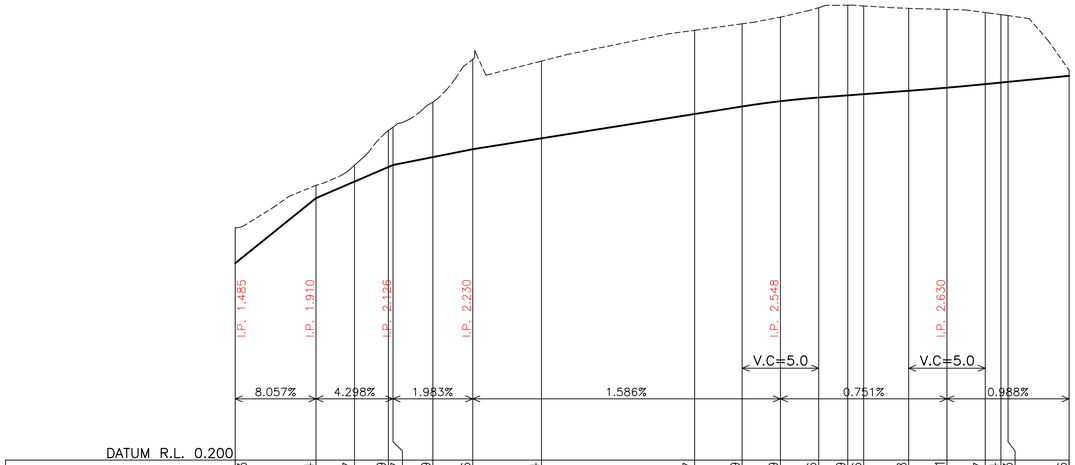
RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE
CYCLEWAY AND ASSOCIATED WORKS

LONGITUDINAL SECTION – FP2 CH130.716 TO CH386.928

PLAN NUMBER 18034
Sheet No : 11
Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG

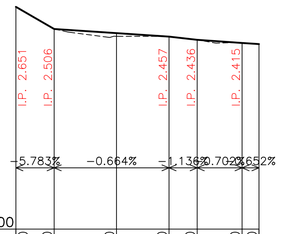


DATUM R.L. 0.200																							
CUT (−ve)/FILL (+ve) TO DESIGN LEVELS	−0.233	−0.084	−0.107	−0.239	−0.247	−0.359	−0.586	−0.504	−0.547	−0.539	−0.549	−0.586	−0.589	−0.576	−0.538	−0.511	−0.467	−0.444	−0.433	−0.036			
DESIGN LEVELS	1.485	1.910	2.018	2.113	2.126	2.178	2.230	2.301	2.459	2.509	2.543	2.567	2.581	2.589	2.611	2.631	2.655	2.665	2.669	2.709			
EXISTING LEVELS	1.718	1.994	2.125	2.352	2.373	2.537	2.816	2.805	3.006	3.048	3.092	3.153	3.170	3.165	3.149	3.142	3.122	3.109	3.102	2.745			
CHAINAGES	0.000	5.274	7.789	10.000	10.304	12.908	15.512	20.000	30.000	33.101	35.601	38.101	40.000	41.038	43.976	46.476	48.976	50.000	50.464	54.452			

LONGITUDINAL SECTION – STR1 SWALE INVERT

FROM CH 0.000 TO CH 54.452

SCALE: HORIZONTAL 1:200
VERTICAL 1:20

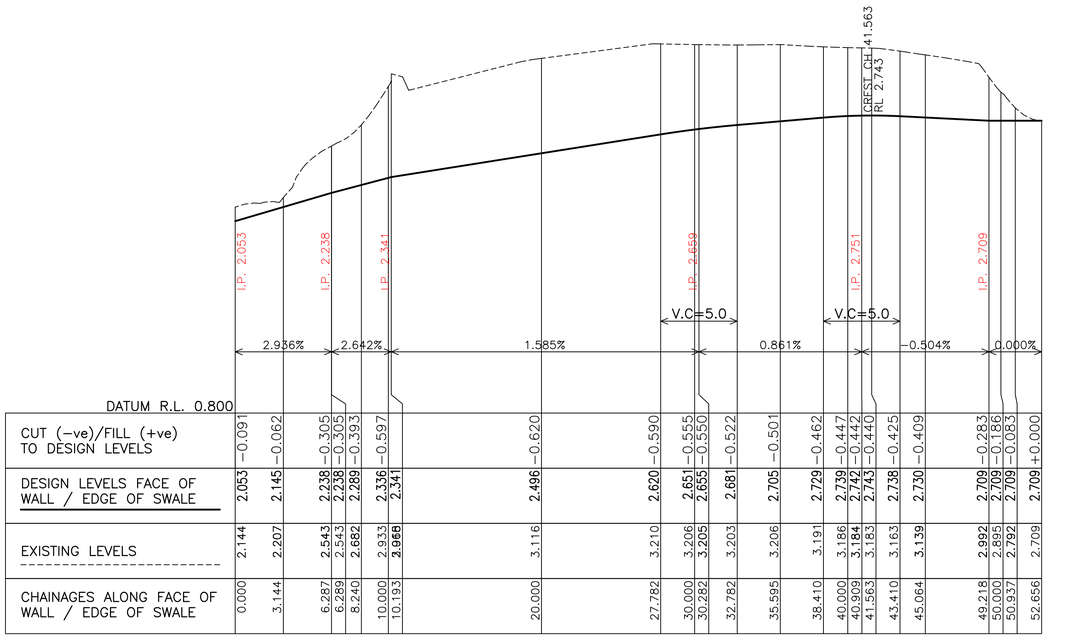


DATUM R.L. 1.200						
CUT (−ve)/FILL (+ve) TO DESIGN LEVELS	+0.000	+0.000	+0.020	+0.000	+0.000	+0.000
DESIGN LEVELS	2.651	2.506	2.479	2.457	2.436	2.415	2.408
EXISTING LEVELS	2.651	2.506	2.459	2.457	2.436	2.415	2.408
CHAINAGES	0.000	2.500	6.570	10.000	11.839	14.770	15.873

LONGITUDINAL SECTION – STR2 SWALE INVERT

FROM CH 0.000 TO CH 15.873

SCALE: HORIZONTAL 1:200
VERTICAL 1:20



DATUM R.L. 0.800																							
CUT (−ve)/FILL (+ve) TO DESIGN LEVELS	−0.091	−0.062	−0.305	−0.305	−0.393	−0.597	−0.620	−0.590	−0.555	−0.550	−0.522	−0.501	−0.462	−0.447	−0.442	−0.440	−0.425	−0.409	−0.283	−0.186	−0.083	+0.000	
DESIGN LEVELS FACE OF WALL / EDGE OF SWALE	2.053	2.145	2.238	2.238	2.289	2.336	2.341	2.496	2.620	2.651	2.655	2.681	2.705	2.729	2.739	2.742	2.743	2.738	2.730	2.709	2.709	2.709	2.709
EXISTING LEVELS	2.144	2.207	2.543	2.543	2.682	2.933	2.966	3.116	3.210	3.206	3.205	3.203	3.206	3.191	3.186	3.184	3.183	3.163	3.139	2.992	2.895	2.792	2.709
CHAINAGES ALONG FACE OF WALL / EDGE OF SWALE	0.000	3.144	6.287	6.289	8.240	10.000	10.193	20.000	27.782	30.000	30.282	32.782	35.595	38.410	40.000	40.909	41.563	43.410	45.064	49.218	50.000	50.937	52.656

LONGITUDINAL SECTION – STR3 BASE OF RETAINING WALL / EDGE OF SWALE

FROM CH 0.000 TO CH 52.656

SCALE: HORIZONTAL 1:200
VERTICAL 1:20

4 3 2 1 0 4 8 12 16 20

SCALE OF METRES 1:200

0.4 0.2 0 0.4 0.8 1.2 1.6 2.0

SCALE OF METRES 1:20

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25

APPROVED Group Manager Capital Projects ...../...../.....

ACCEPTED Client ...../...../.....

DESIGNED 30/06/25

DRAWN 30/06/25

DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: AS SHOWN
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

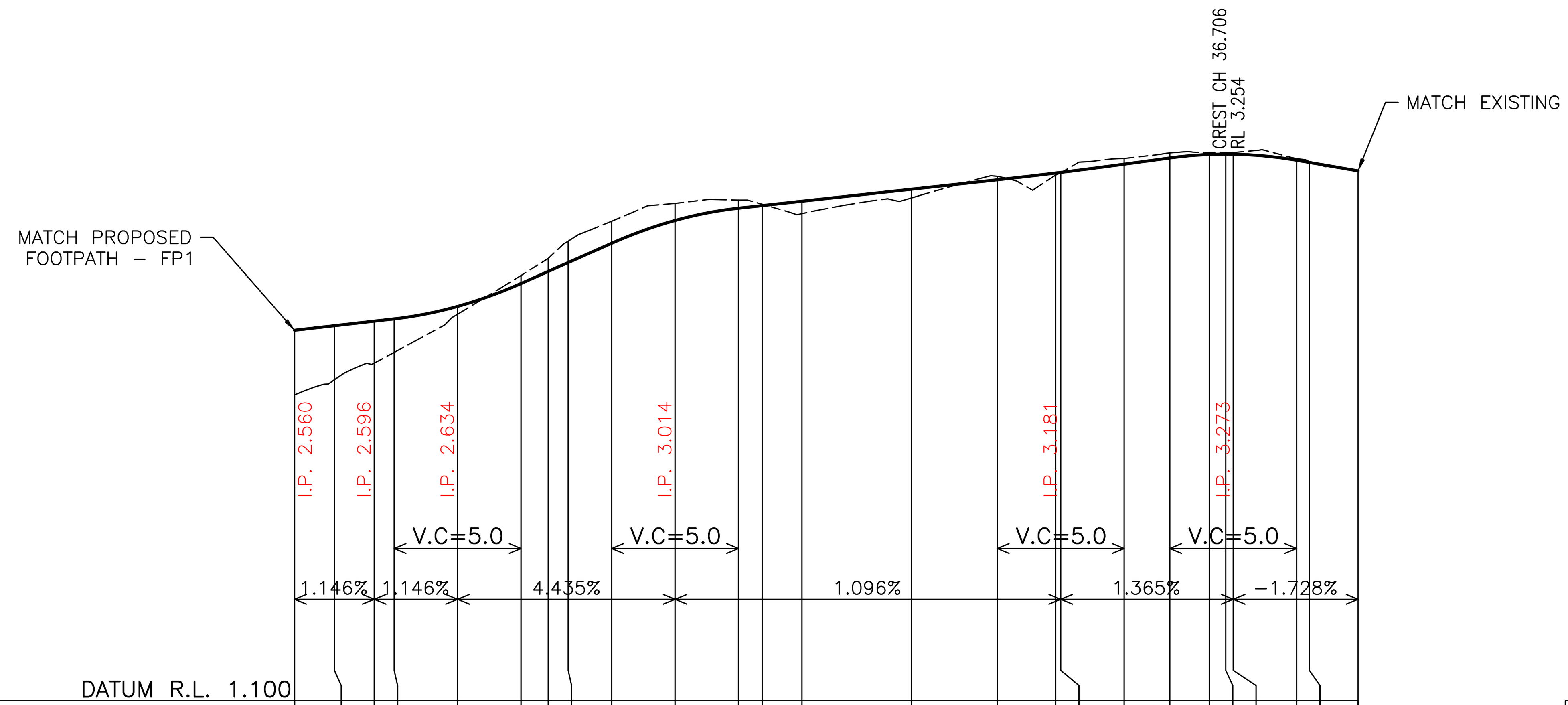
LONGITUDINAL SECTIONS – STR1, STR2 AND STR3

PLAN NUMBER 18034

Sheet No : 12

Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG



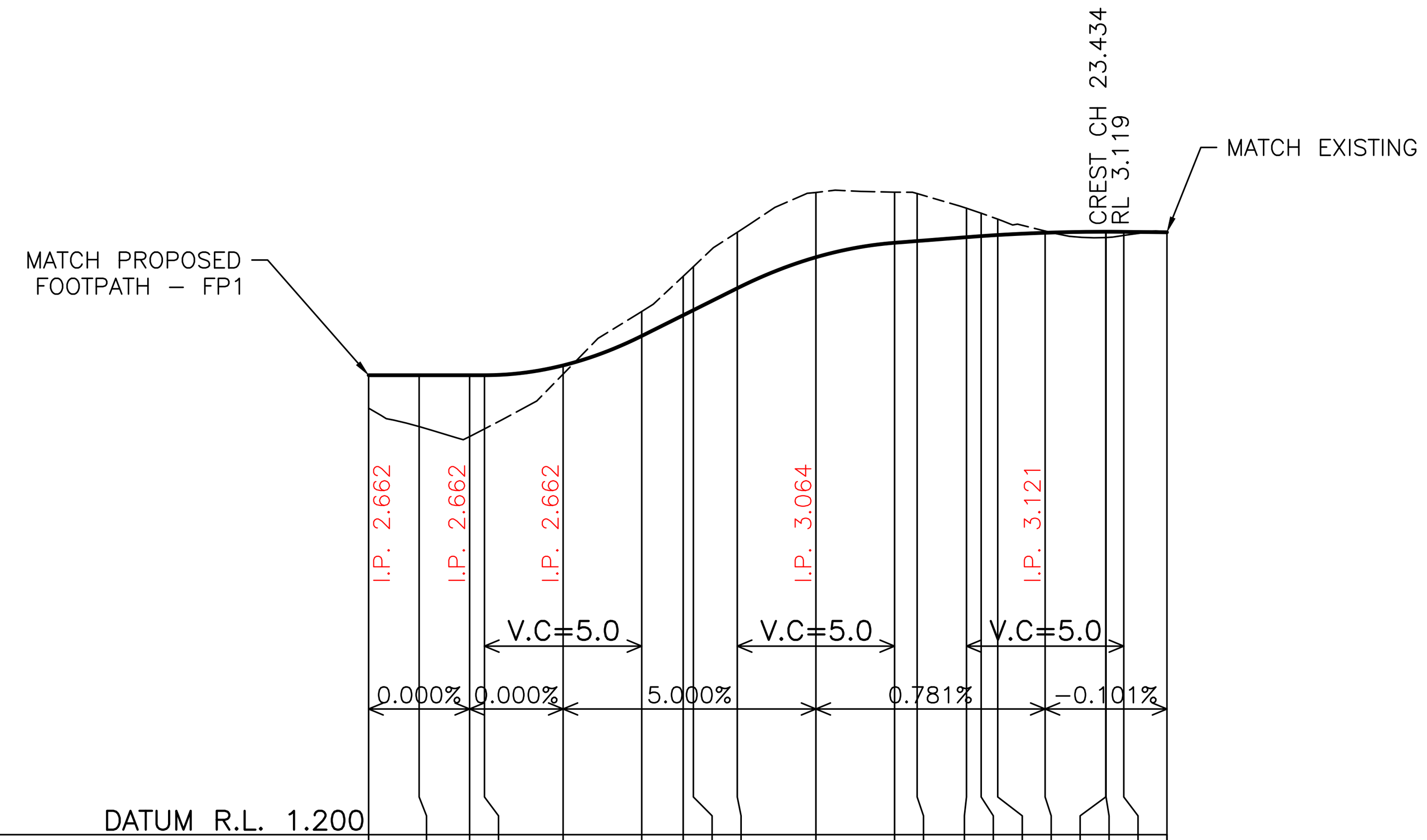
DATUM R.L. 1.100

CHAINAGES	EXISTING LEVELS	DESIGN LEVELS	CUT (−ve)/FILL (+ve) TO DESIGN LEVELS
0.000	2.306	2.560	+0.254
1.571	2.365	2.578	+0.213
3.142	2.431	2.596	+0.165
3.927	2.473	2.605	+0.132
6.427	2.623	2.654	+0.031
8.927	2.776	2.745	−0.031
10.000	2.843	2.792	−0.051
10.787	2.911	2.827	−0.084
12.500	2.990	2.903	−0.087
15.000	3.060	2.993	−0.067
17.500	3.073	3.041	−0.032
18.433	3.057	3.052	−0.005
20.000	3.020	3.069	+0.049
24.316	3.082	3.116	+0.034
27.700	3.167	3.153	−0.014
30.000	3.172	3.180	+0.008
30.200	3.181	3.182	+0.001
32.700	3.238	3.215	−0.023
34.500	3.259	3.239	−0.020
36.061	3.259	3.253	−0.006
36.706	3.259	3.254	−0.005
37.000	3.261	3.254	−0.007
39.500	3.237	3.230	−0.007
40.000	3.225	3.221	−0.004
41.922	3.188	3.188	+0.000

LONGITUDINAL SECTION – FP3

FROM CH 0.000 TO CH 41.922

SCALE: HORIZONTAL 1:200
VERTICAL 1:20



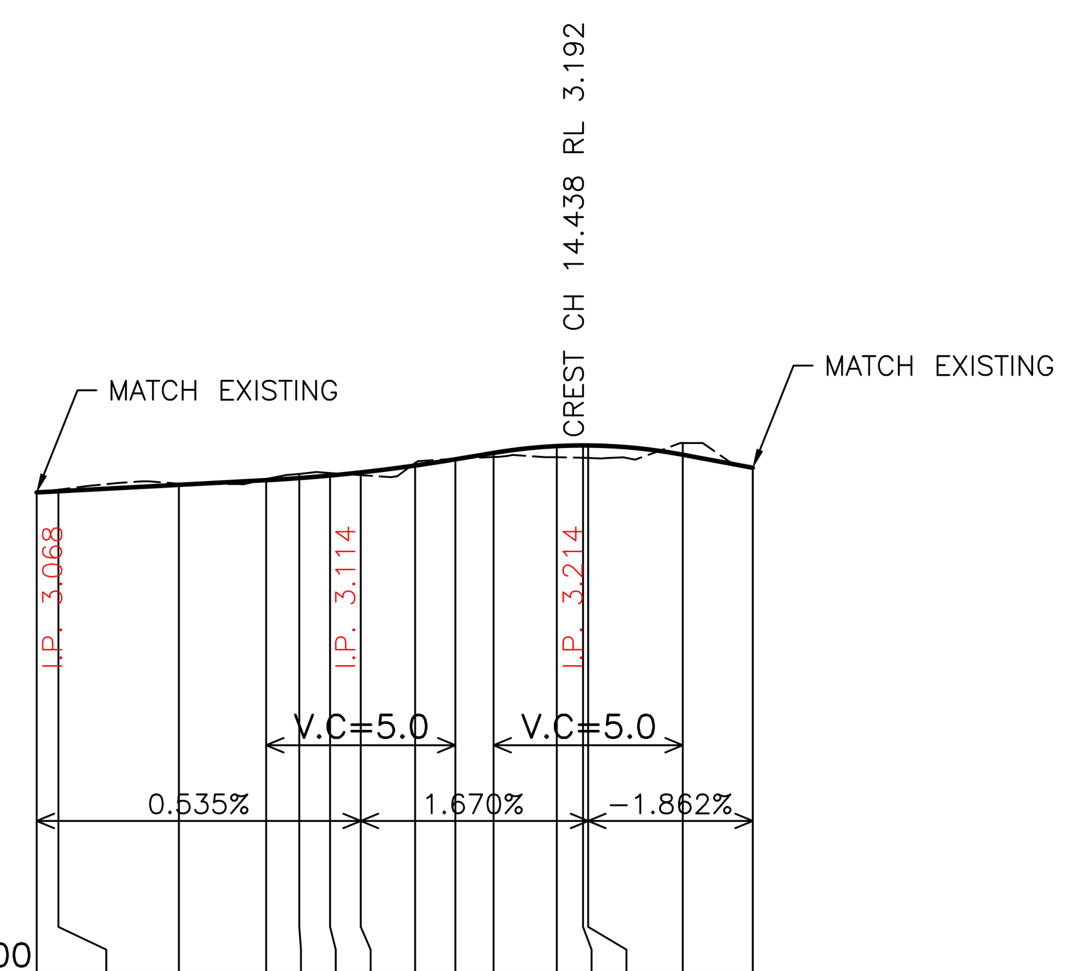
DATUM R.L. 1.200

CHAINAGES	EXISTING LEVELS	DESIGN LEVELS	CUT (−ve)/FILL (+ve) TO DESIGN LEVELS
0.000	2.557	2.662	+0.105
1.605	2.499	2.662	+0.163
3.210	2.467	2.662	+0.195
3.683	2.491	2.662	+0.171
6.183	2.665	2.693	+0.028
8.683	2.865	2.787	−0.078
10.000	2.977	2.853	−0.124
10.324	3.007	2.869	−0.138
11.720	3.117	2.939	−0.178
14.220	3.243	3.038	−0.205
16.720	3.244	3.083	−0.161
17.438	3.240	3.089	−0.151
19.007	3.193	3.101	−0.092
19.473	3.178	3.105	−0.073
20.000	3.159	3.108	−0.051
21.507	3.121	3.115	−0.006
23.434	3.100	3.119	+0.019
23.443	3.100	3.119	+0.019
24.007	3.107	3.118	+0.011
25.380	3.117	3.117	+0.000

LONGITUDINAL SECTION – FP4

FROM CH 0.000 TO CH 25.380

SCALE: HORIZONTAL 1:200
VERTICAL 1:20



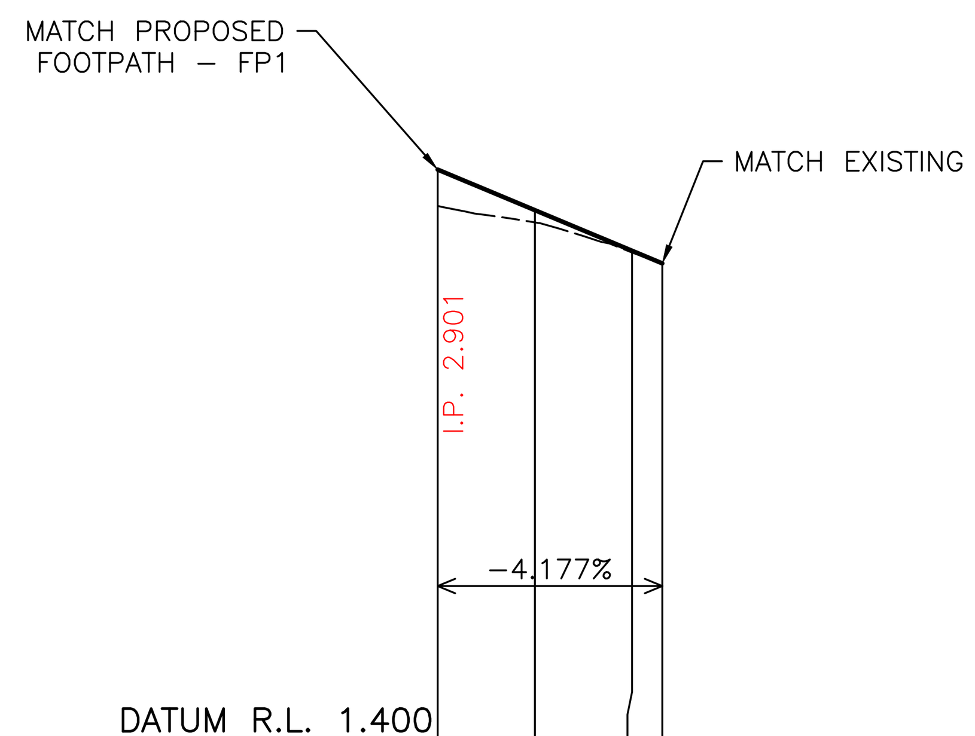
DATUM R.L. 1.800

CHAINAGES	EXISTING LEVELS	DESIGN LEVELS	CUT (−ve)/FILL (+ve) TO DESIGN LEVELS
0.000	3.068	3.068	+0.000
0.575	3.075	3.071	−0.004
3.758	3.091	3.088	−0.003
6.064	3.103	3.100	−0.003
6.940	3.117	3.106	−0.011
7.752	3.119	3.113	−0.006
8.564	3.114	3.121	+0.007
10.000	3.146	3.139	−0.007
11.064	3.157	3.155	−0.002
12.073	3.162	3.172	+0.010
13.744	3.161	3.190	+0.029
14.438	3.159	3.192	+0.033
14.573	3.159	3.192	+0.033
17.073	3.198	3.168	−0.030
18.923	3.133	3.133	+0.000

LONGITUDINAL SECTION – FP5

FROM CH 0.000 TO CH 18.923

SCALE: HORIZONTAL 1:200
VERTICAL 1:20



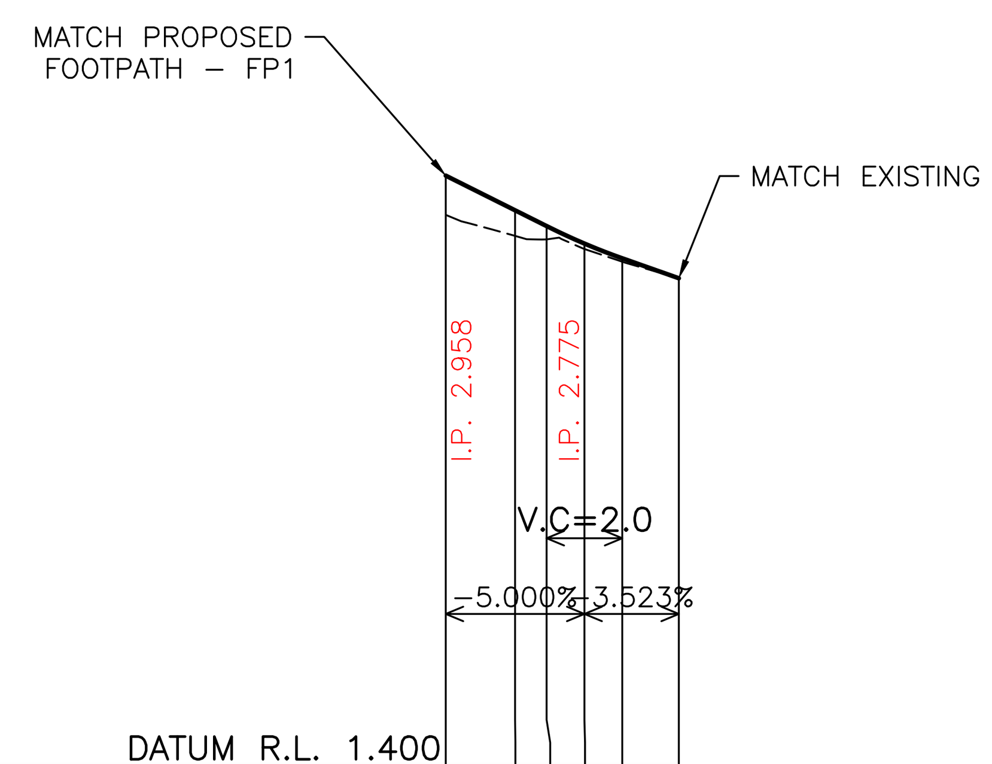
DATUM R.L. 1.400

CHAINAGES	EXISTING LEVELS	DESIGN LEVELS	CUT (−ve)/FILL (+ve) TO DESIGN LEVELS
0.000	2.805	2.901	+0.096
2.569	2.761	2.794	+0.033
5.138	2.682	2.686	+0.004
5.936	2.653	2.653	+0.000

LONGITUDINAL SECTION – FP6

FROM CH 0.000 TO CH 18.923

SCALE: HORIZONTAL 1:200
VERTICAL 1:20



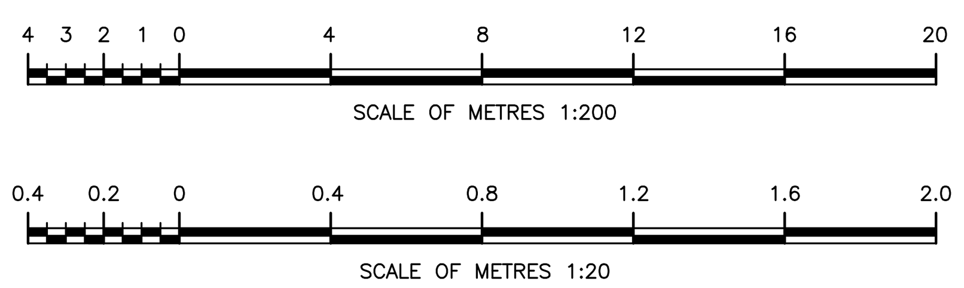
DATUM R.L. 1.400

CHAINAGES	EXISTING LEVELS	DESIGN LEVELS	CUT (−ve)/FILL (+ve) TO DESIGN LEVELS
0.000	2.854	2.958	+0.104
1.832	2.799	2.866	+0.067
2.664	2.790	2.825	+0.035
3.664	2.764	2.778	+0.014
4.664	2.731	2.740	+0.009
6.159	2.687	2.687	+0.000

LONGITUDINAL SECTION – FP7

FROM CH 0.000 TO CH 18.923

SCALE: HORIZONTAL 1:200
VERTICAL 1:20



AMENDMENTS

No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25
APPROVED — Group Manager Capital Projects ...../........./........
ACCEPTED — Client ...../........./........
DESIGNED 30/06/25
DRAWN 30/06/25
DRAWING REVIEW ...../........./........
DATUM: AHD
CO-ORDS: MGA 94
RATIO: AS SHOWN
TRIM No: N/A
STATUS: **FINAL**

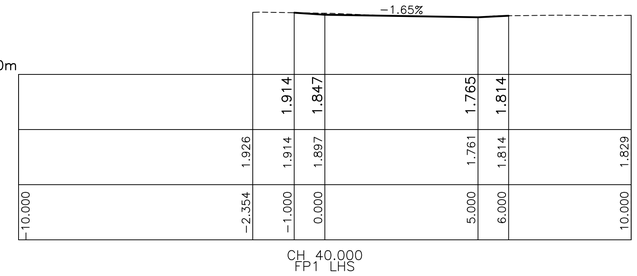
CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA
BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE
CYCLEWAY AND ASSOCIATED WORKS
LONGITUDINAL SECTIONS – FP3, FP4, FP5, FP6 AND FP7

PLAN NUMBER 18034
Sheet No : 13
Revision :

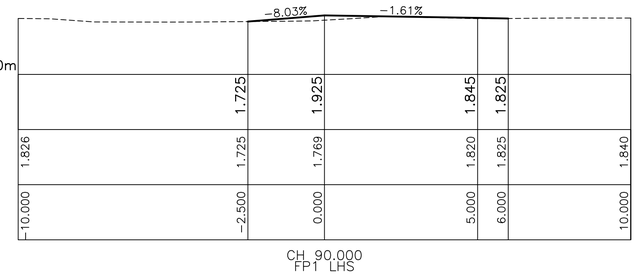
30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR–FINAL.DWG

DATUM R.L. −0.100m



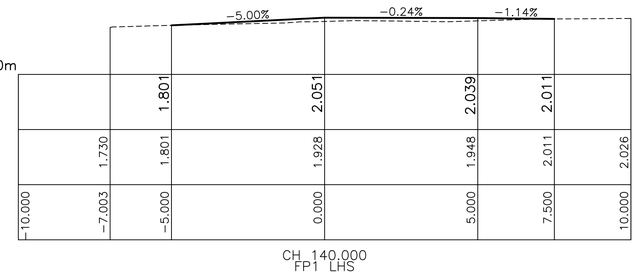
CH 40.000
FP1 LHS

DATUM R.L. 0.000m



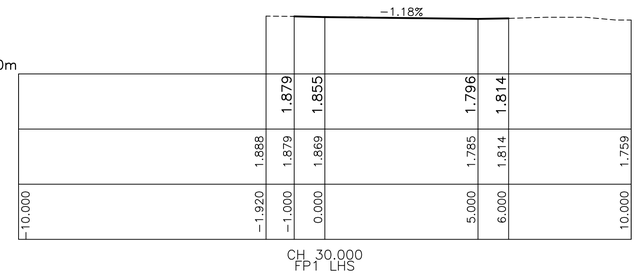
CH 90.000
FP1 LHS

DATUM R.L. 0.200m



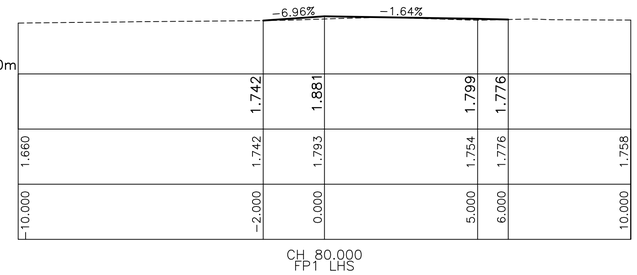
CH 140.000
FP1 LHS

DATUM R.L. 0.000m



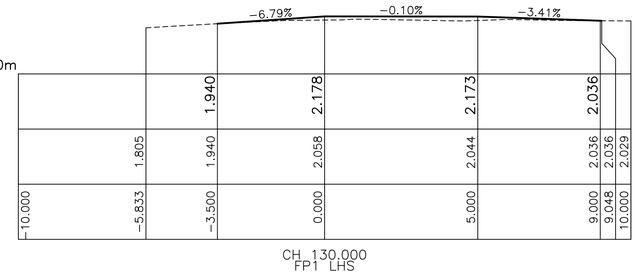
CH 30.000
FP1 LHS

DATUM R.L. 0.000m



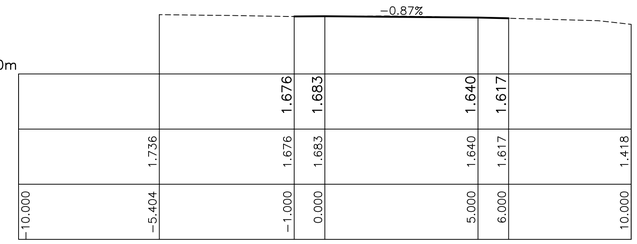
CH 80.000
FP1 LHS

DATUM R.L. 0.300m



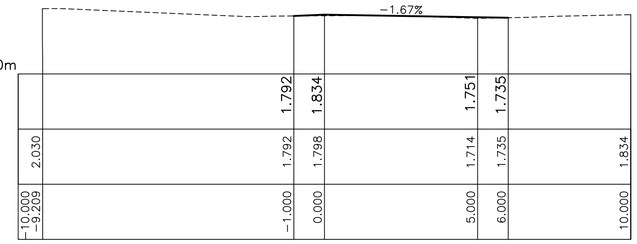
CH 130.000
FP1 LHS

DATUM R.L. −0.200m



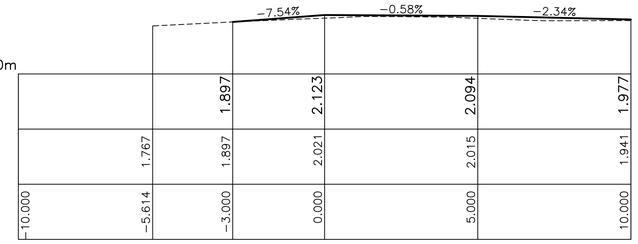
CH 20.000
FP1 LHS

DATUM R.L. −0.100m



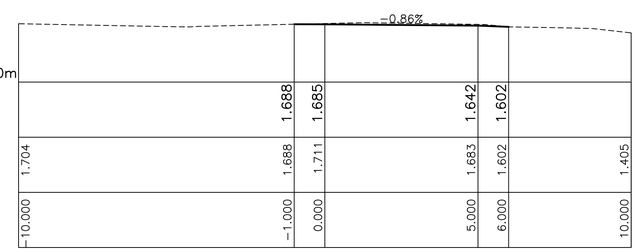
CH 70.000
FP1 LHS

DATUM R.L. 0.200m



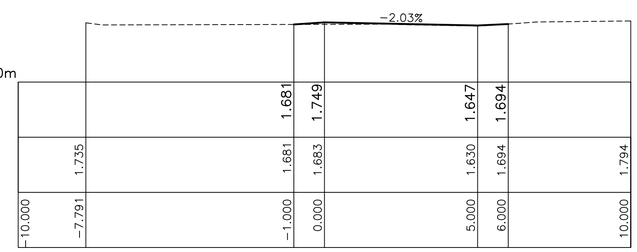
CH 120.000
FP1 LHS

DATUM R.L. −0.200m



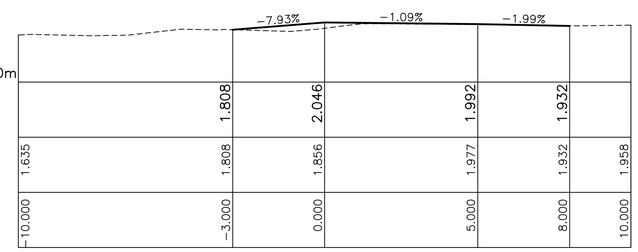
CH 10.000
FP1 LHS

DATUM R.L. −0.200m



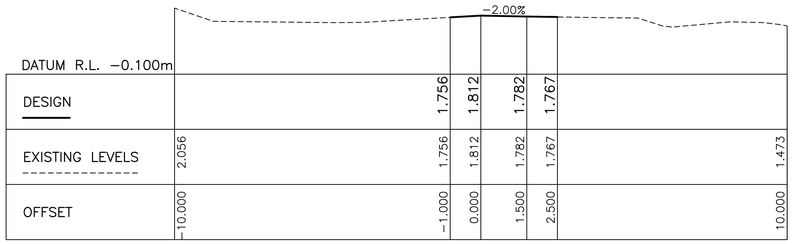
CH 60.000
FP1 LHS

DATUM R.L. 0.100m



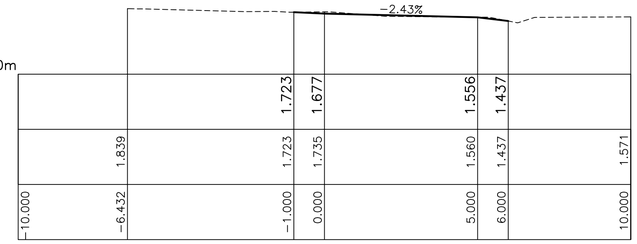
CH 110.000
FP1 LHS

DATUM R.L. −0.100m



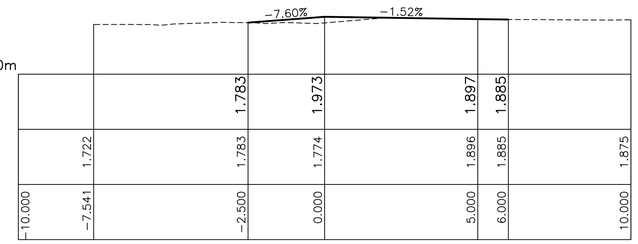
CH 0.000
FP1 LHS

DATUM R.L. −0.300m



CH 50.000
FP1 LHS

DATUM R.L. 0.100m



CH 100.000
FP1 LHS

SCALE OF METRES 1:100

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25

APPROVED
Group Manager Capital Projects ...../...../.....

ACCEPTED
Client ...../...../.....

DESIGNED 30/06/25

DRAWN 30/06/25

DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:100 (NAT)
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

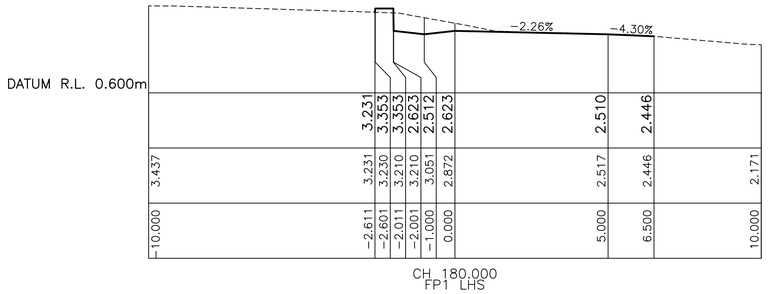
CROSS SECTIONS – FP1 – 1

PLAN NUMBER 18034

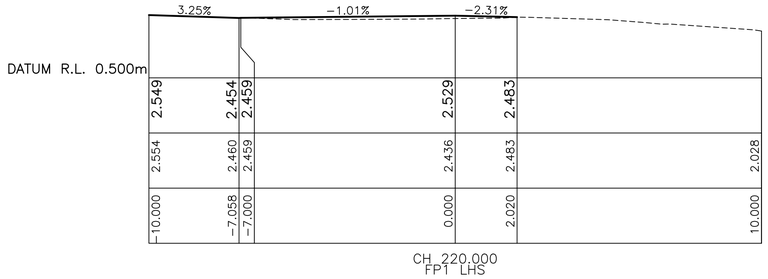
Sheet No : 14

Revision :

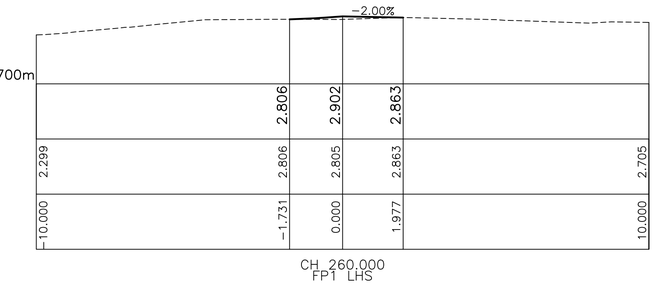
30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG



CH 180.000
FP1 LHS



CH 220.000
FP1 LHS



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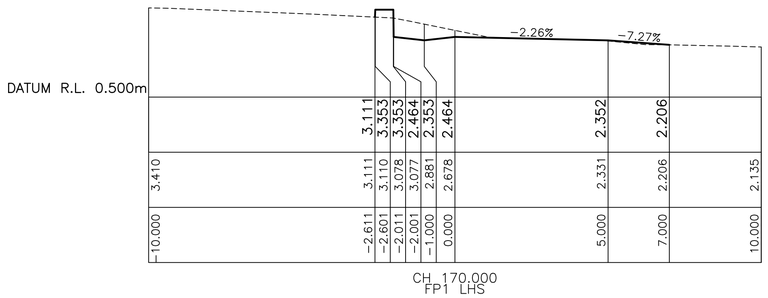

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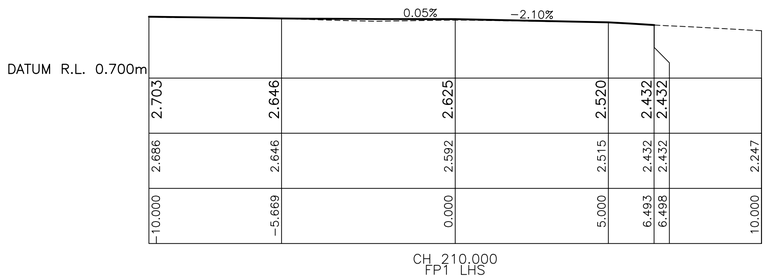

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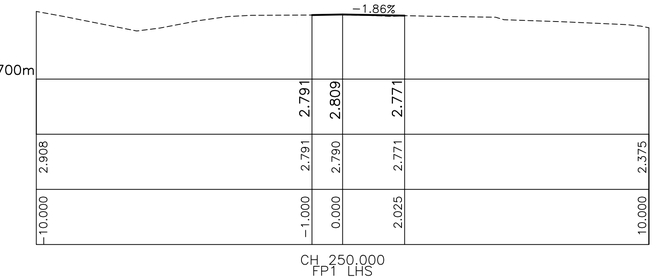

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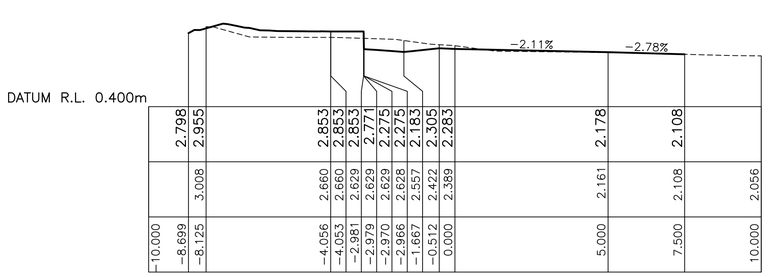

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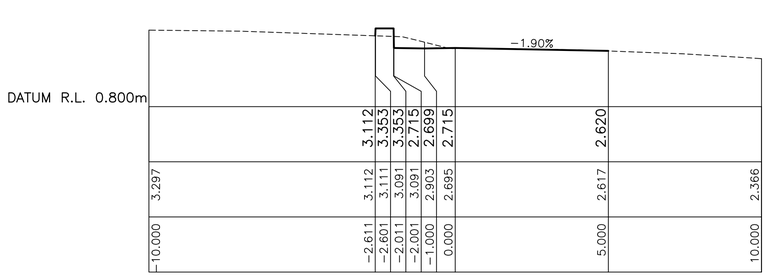

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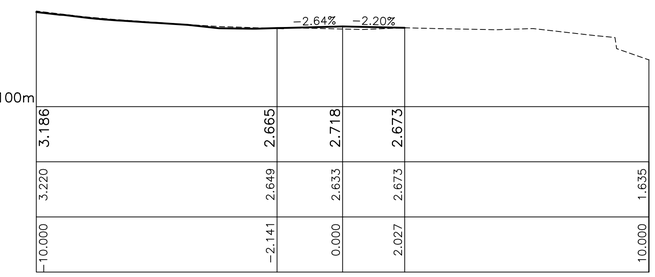

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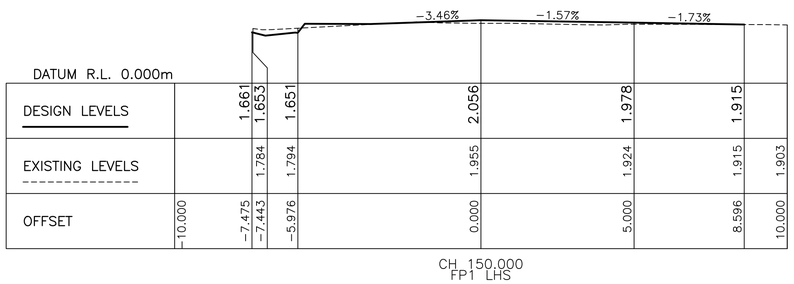

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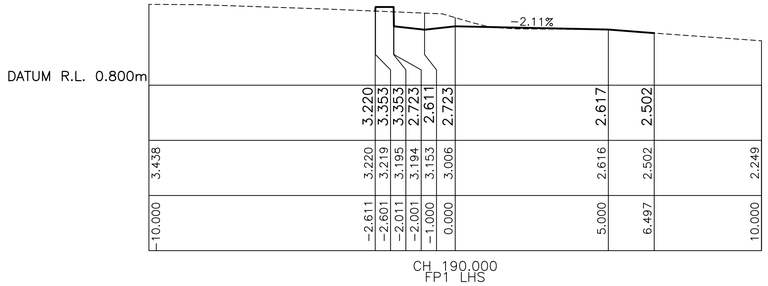

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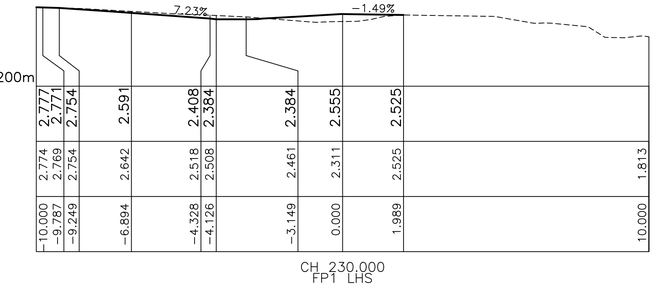

CH 230.000
FP1 LHS

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SCALE OF METRES 1:100

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

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APPROVED Group Manager Capital Projects ...../...../.....
ACCEPTED Client ...../...../.....
DESIGNED 30/06/25
DRAWN 30/06/25
DRAWING REVIEW ...../...../.....

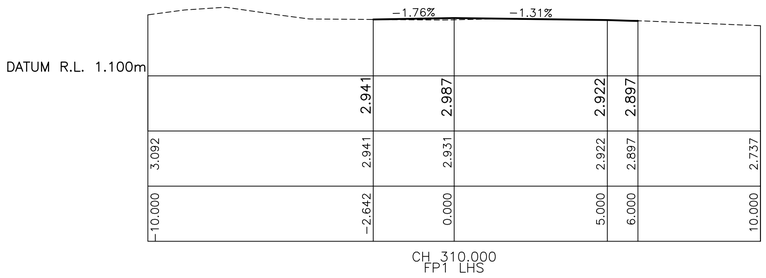
DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:100 (NAT)
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA
BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE
CYCLEWAY AND ASSOCIATED WORKS
CROSS SECTIONS – FP1 – 2

PLAN NUMBER 18034
Sheet No : 15
Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG



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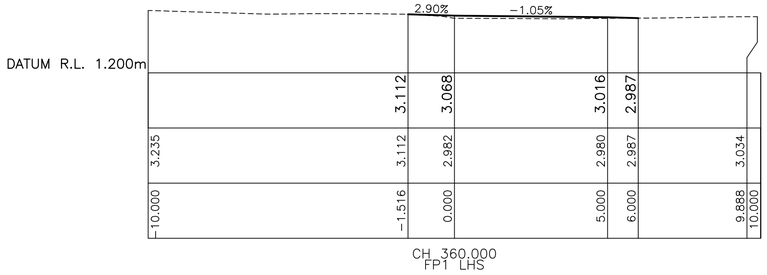

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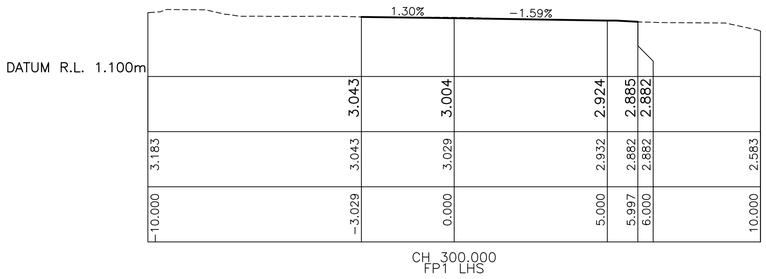

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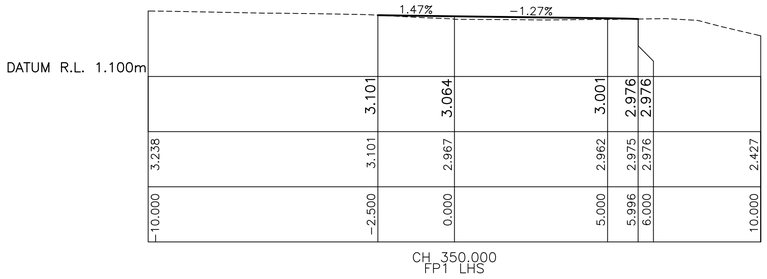

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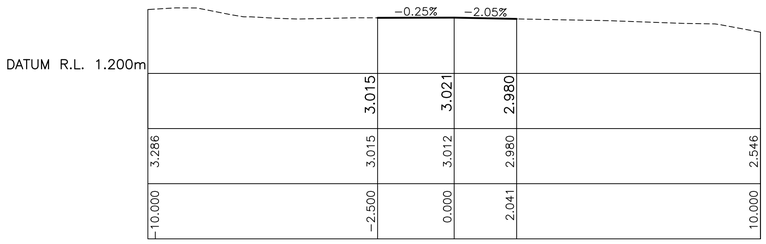

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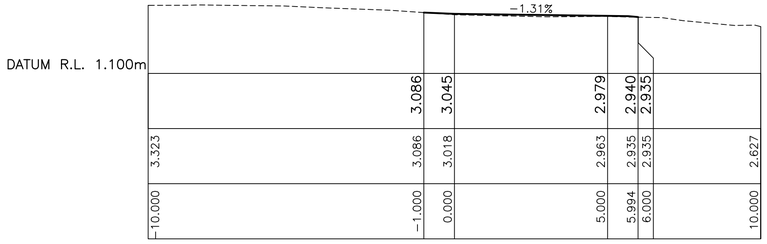

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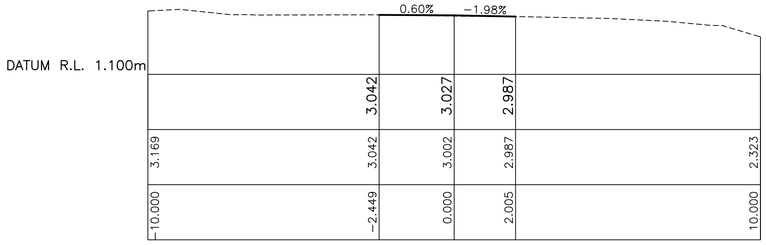

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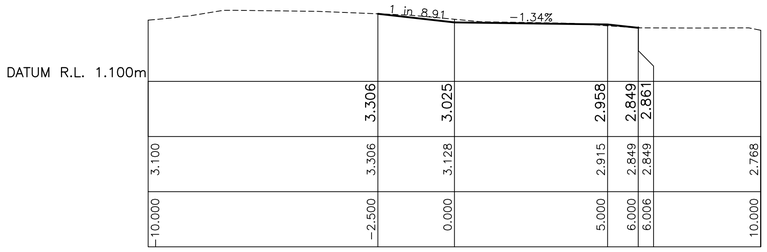

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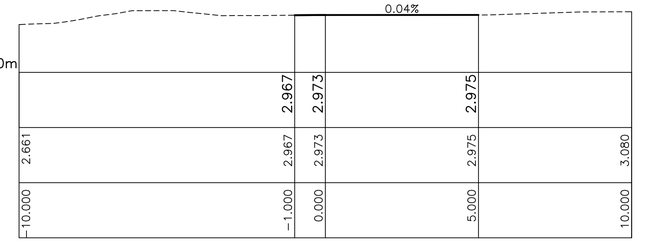

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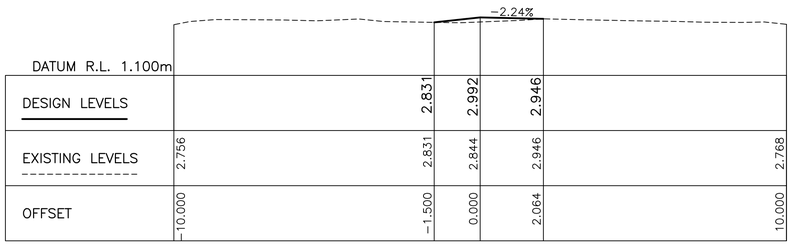

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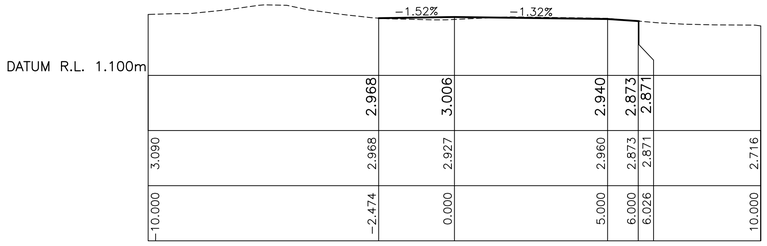

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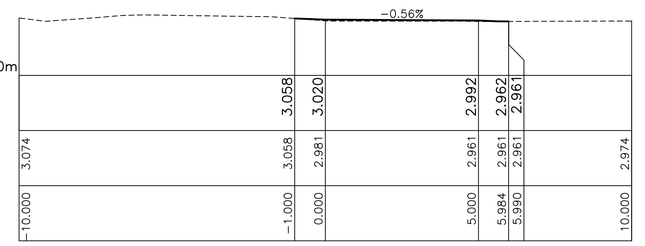


CH 370.000
FP1 LHS

2 1 0 2 4 6 8 10
SCALE OF METRES 1:100

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25
DESIGNED 30/06/25
APPROVED
Group Manager Capital Projects ...../...../.....
DRAWN 30/06/25
ACCEPTED
Client ...../...../.....
DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:100 (NAT)
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

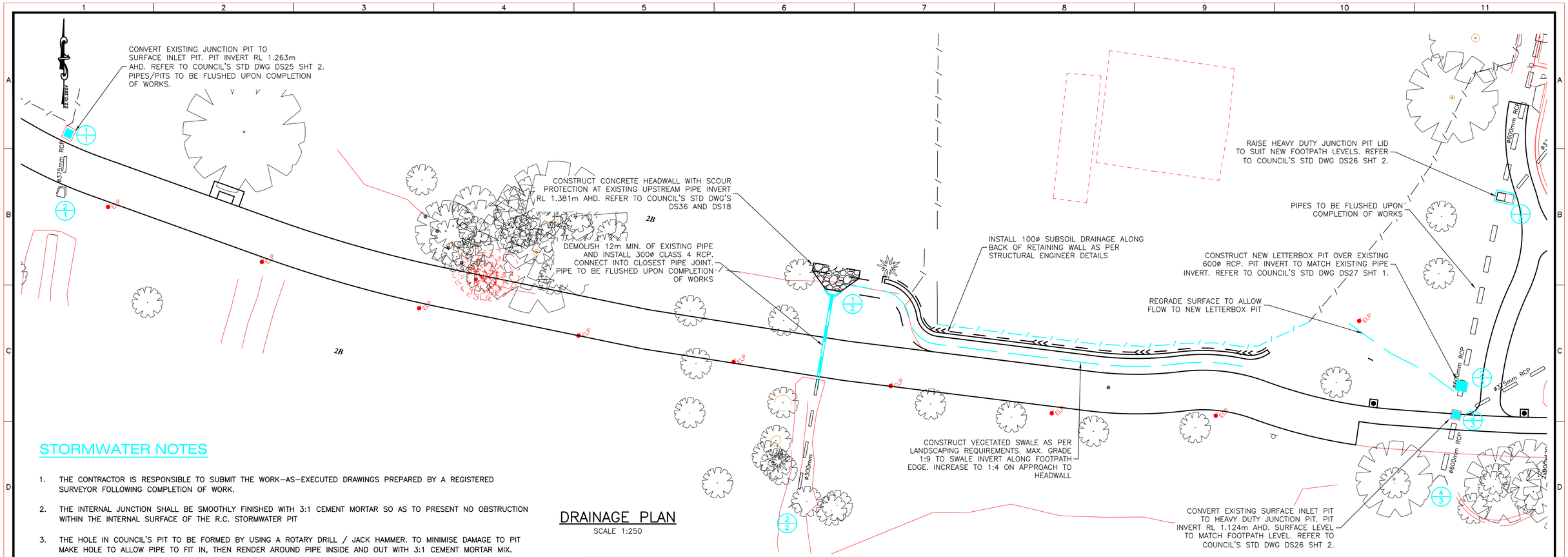
CROSS SECTIONS – FP1 –3

PLAN NUMBER 18034

Sheet No : 16

Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG



DRAINAGE PLAN

SCALE 1:250

STORMWATER NOTES

1. THE CONTRACTOR IS RESPONSIBLE TO SUBMIT THE WORK–AS–EXECUTED DRAWINGS PREPARED BY A REGISTERED SURVEYOR FOLLOWING COMPLETION OF WORK.
2. THE INTERNAL JUNCTION SHALL BE SMOOTHLY FINISHED WITH 3:1 CEMENT MORTAR SO AS TO PRESENT NO OBSTRUCTION WITHIN THE INTERNAL SURFACE OF THE R.C. STORMWATER PIT
3. THE HOLE IN COUNCIL'S PIT TO BE FORMED BY USING A ROTARY DRILL / JACK HAMMER. TO MINIMISE DAMAGE TO PIT MAKE HOLE TO ALLOW PIPE TO FIT IN, THEN RENDER AROUND PIPE INSIDE AND OUT WITH 3:1 CEMENT MORTAR MIX.
4. EXCAVATED TRENCH WALL WILL BE AT LEAST 150mm AWAY FROM EACH SIDE OF THE PIPE TO BE LAID. PIPES ARE TO BE LAID ALONG THE CENTRE LINE OF TRENCH. REFER TO COUNCIL'S STD DWG DS37 SHT1
5. MATERIAL FOR BEDDING TO BE 20mm ROAD BASE GRADED ACCORDING TO AS/NZS 3500.3:2021 AND AS/NZS. 3725:2007 (REFER TO COUNCIL'S STD DWG DS37 SHT1 FOR DRAINAGE PIPES AND DS37 SHT2 FOR SERVICE PIPE – RESIDENTIAL STREETS) MATERIAL FOR HAUNCH ZONES AND FILL AROUND THE PIPE TO BE 20mm NO FINES AGGREGATE MATERIAL FOR BED AND HAUNCH ZONES MUST CONSIST OF TYPE BH SELECT FILL. TYPE BH SELECT FILL MUST HAVE:
   a) A PARTICLE SIZE DISTRIBUTION, DETERMINED BY TfNSW TS 02799.02 (T201), WITHIN THE LIMITS SET OUT IN TABLE 3 IN AS/NZS 3725:2007 AND
   b) A PLASTICITY INDEX, DETERMINED BY TfNSW TS 02795.05 (T109), OF NOT MORE THAN 6
6. A FINE GRANULAR MATERIAL HAS TO BE USED FOR BACKFILLING. BACKFILLING MATERIAL SHOULD BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AND GRADED ACCORDING TO AS/NZS 3500.3:2021 AND AS/NZS 3725:2007.
7. COMPACTION OF BACKFILLING MATERIALS FOR STORMWATER DRAINAGE WORKS IS TO BE CARRIED OUT IN LAYERS NOT EXCEEDING 200mm LOOSE THICKNESS.
8. PRIOR TO PLACEMENT AND COMPACTION OF BACKFILLING MATERIAL INSPECTION AND APPROVAL OF SUPERVISING ENGINEER WILL BE REQUIRED.
9. ALL GRATES ON STORMWATER INLET PITS SHALL BE CYCLE PROOF GALVANIZED MILD STEEL UNLESS IT IS SPECIFIED OTHERWISE.
10. ALL STORMWATER DRAINAGE WORKS MUST BE LEFT UNCOVERED UNTIL CHECKING HAS BEEN DONE.
11. ALL STORMWATER DRAINAGE PIPES TO BE REINFORCED CONCRETE SPIGOT AND SOCKET RUBBER RING JOINTED PIPES TO THE CLASS NOMINATED ON DRAWINGS.
12. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN DENSITY TESTS OF THE PIPE BEDDING & BACKFILL FROM A NATA REGISTERED LABORATORY. TESTS ARE TO BE PERFORMED ACCORDING TO AS 1289.5.1.1:2017. TEST RESULTS SHALL BE SUBMITTED IN WRITING TO THE SUPERVISING ENGINEER.
13. THE CONTRACTOR SHALL ENSURE PROTECTION AGAINST ANY DAMAGE FROM EXISTING STRUCTURES LOCATED ADJACENT TO EXCAVATED TRENCHES. PARTICULAR CARE SHALL BE TAKEN NEAR THE FOOTING OF EXISTING STRUCTURES. CONSULTATION WITH AN EXPERIENCED GEOTECHNICAL ENGINEER SHALL BE UNDERTAKEN TO DETERMINE THE EXACT EXTENT OF EXCAVATION IN THE VICINITY OF EXISTING FOOTINGS.
14. CONTRACTOR WILL BEAR THE EXPENSES OF ALL TESTS TO BE CARRIED OUT.
15. THE EXACT LOCATION OF ALL SERVICES AND CONNECTIONS MUST BE VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.

PIT SCHEDULE

Pit No.	Design Pit Type	WAE Pit Type	Design Lintel/Grate Size	WAE Lintel/Grate Size	Length	Width	Easting	Northing	Outlet Dia. (Ø)	Outlet Invert RL	Design Depth	WAE Depth	Lid Level	Comment
					(mm)	(mm)	(m)	(m)	(mm)	(m)	(m)	(m)	(m)	
1/1	GSIP_Sag		1200x1200		1200	1200	316223.2350	6256561.287	375	1.263	0.512		1.775	Replace Junction Pit Lid with 1200x1200 Grated Surface Inlet Pit with Bike Safe Grate and Frame
1/2	Headwall		–		2000	700	316319.842	6256540.885	375	1.401	0.653		2.054	NEW HEADWALL REFER TO DETAILS
1/3	Junction Pit		900x900		2100	1050	316404.4110	6256553.279	600	1.611	1.463		3.074	Upgrade the Lid Level to match Design Surface Level
2/3	Letterbox_Pit		1200x1200		1200	1200	316399.492	6256529.349	600	1.206	1.178		2.384	Break Existing ø600mm RCP and Install New Pit. Invert Level of Pit to Match Invert Level of Outlet pipe
3/3	Junction Pit		900x900		900	900	316398.740	6256525.690	600	1.124	1.417		2.541	Existing Grated Surface Inlet Pit to be Converted to Junction Pit. Surface Level to Match Design Level

PIPE SCHEDULE

Pipe Label	Design Class	WAE Class	Design Dia (Ø)	WAE Dia. (Ø)	No. of Pipes	Design U/S Invert	WAE U/S Invert	Pipe Grade	Design D/S Invert	WAE D/S Invert	Design Length(Pit Centre to Centre)	WAE Length	Comments
			(mm)	(mm)	(mm)	(m)	(m)	(%)	(m)	(m)	(m)	(m)	
1/2 2/2	Class 4 RCP		300			1.401		1.1	1.273		12.000		FIRST 12m FROM HEADWALL 1/2 TOWARDS DOWNSTREAM TO BE FULLY REPLACED WITH RCP CLASS 4 ø375mm

5 4 3 2 1 0 5 10 15 20 25
SCALE OF METRES 1:250

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UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS SPEC

PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

No.	DETAIL	CHECKED	DATE
	AMENDMENTS		

DESIGN CHECKED AND APPROVED 30/06/25

APPROVED
Group Manager Capital Projects ...../...../.....

ACCEPTED
Client ...../...../.....

DESIGNED 30/06/25

DRAWN 30/06/25

DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: 1:250
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

DRAINAGE PLAN, STORMWATER NOTES AND PIT AND PIPE SCHEDULE

PLAN NUMBER 18034

Sheet No : 17

Revision :

30, June, 2025 8:13:41 a.m.
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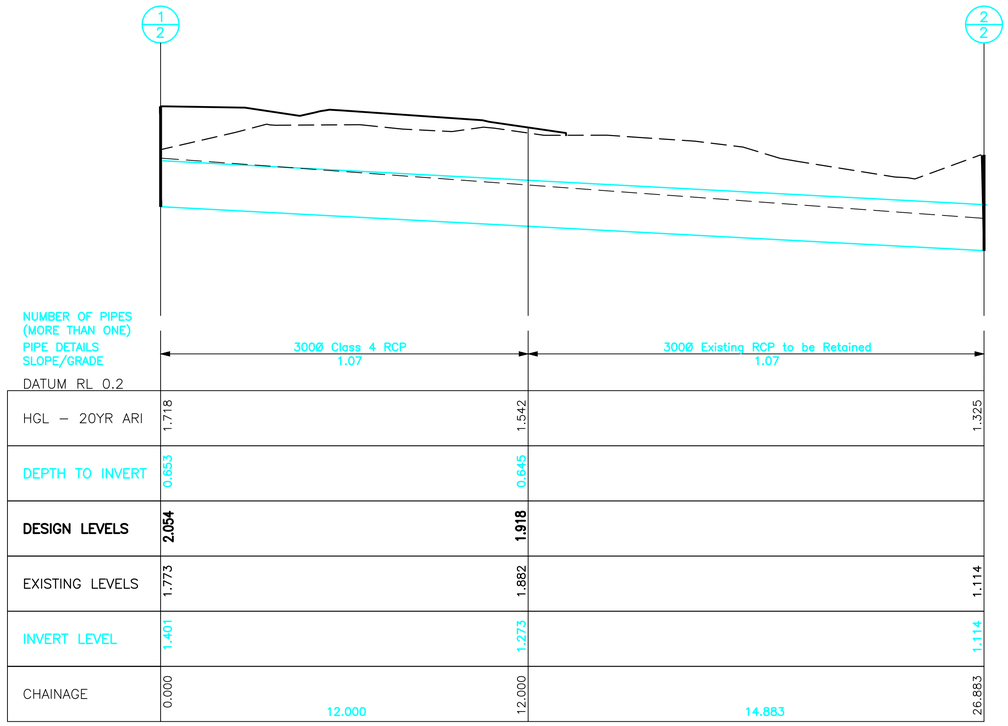
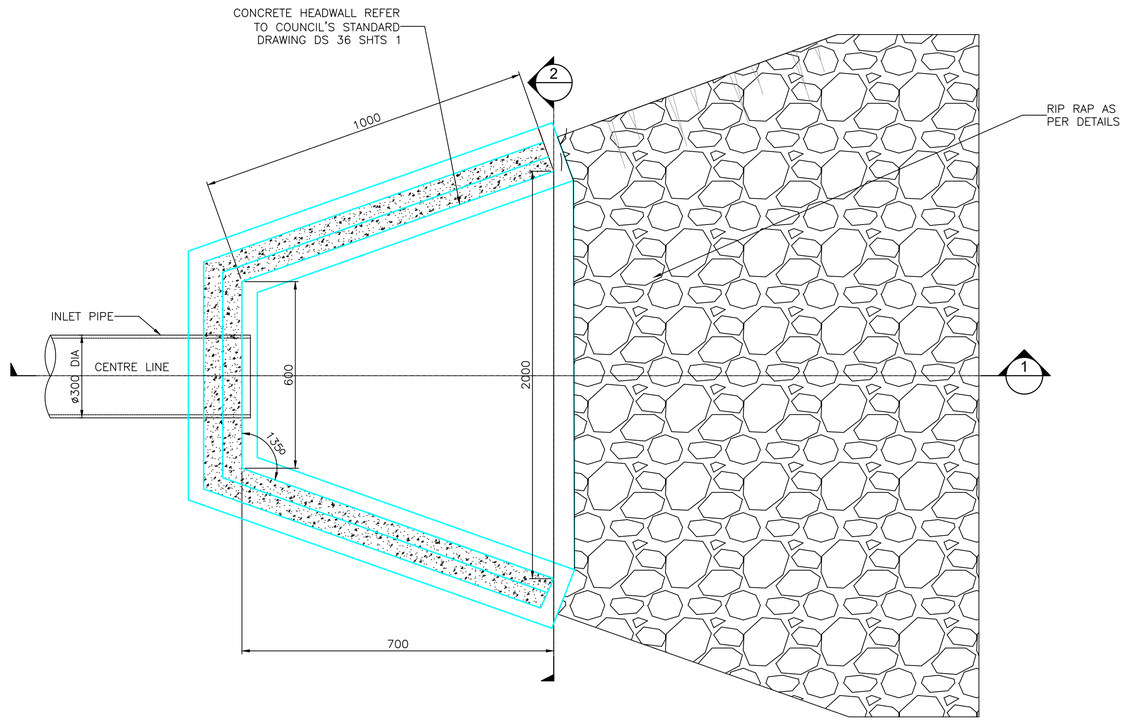


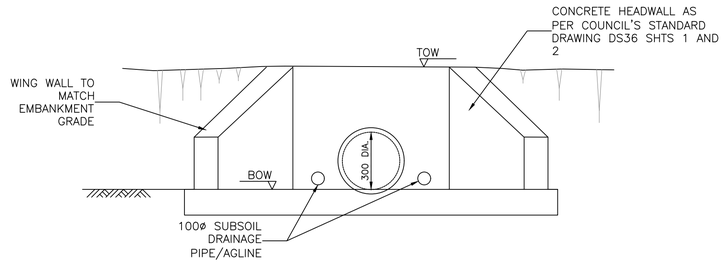
LONGITUDINAL SECTION
DRAINAGE LINE 2
FROM CH 0.000 TO CH 26.883

SCALE: HORIZONTAL 1:100
VERTICAL 1:20



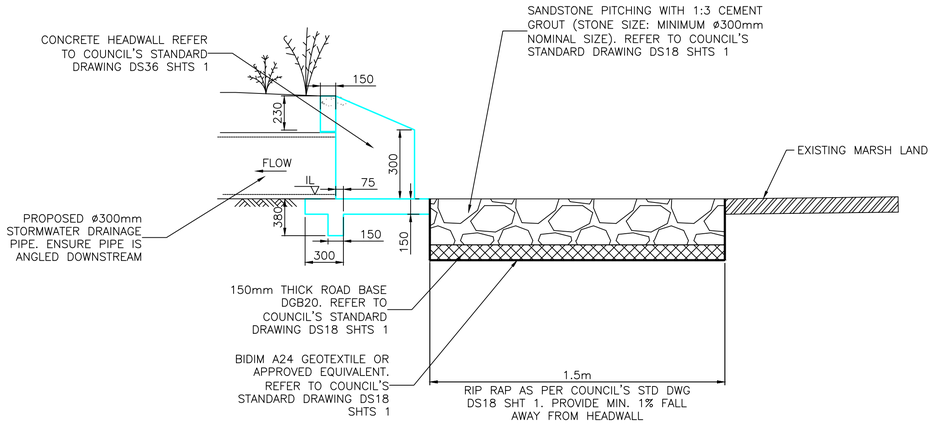
CONCRETE HEADWALL INSTALLATION
PLAN

SCALE: N.T.S.



CONCRETE HEADWALL INSTALLATION
SECTION 2

SCALE: N.T.S.



CONCRETE HEADWALL INSTALLATION
SECTION 1

SCALE: N.T.S.

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SCALE OF METRES 1:100

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SCALE OF METRES 1:20

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 30/06/25
APPROVED Group Manager Capital Projects ...../...../.....
ACCEPTED Client ...../...../.....

DESIGNED 30/06/25
DRAWN 30/06/25
DRAWING REVIEW ...../...../.....

DATUM: AHD
CO-ORDS: MGA 94
RATIO: AS SHOWN
TRIM No: N/A
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

RANGIHOU RESERVE, PARRAMATTA

BETWEEN MACARTHUR ST AND ALFRED ST BRIDGE CYCLEWAY AND ASSOCIATED WORKS

LONGITUDINAL SECTION – DRAINAGE LINE 2 AND HEADWALL SECTION AND ELEVATION

PLAN NUMBER 18034

Sheet No : 18

Revision :

30, June, 2025 8:13:41 a.m.
Drawing: 18034 RR-FINAL.DWG

HUGH
THE ARBORIST

Arboricultural Impact Assessment Report

Parramatta Cycleway Upgrades

CITY OF PARRAMATTA

Date Prepared: 23rd December 2024
Client Name: City of Parramatta Council
Site Address: Parramatta Cycleway NSW
Authors Details: Hugh Millington
Email: hugh@hughtheArborist.com.au
Phone: 0426836701

Table of Contents

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SUMMARY

A total of 302 trees have been assessed as part of this report. Trees have been included within approximately five metres of any proposed works across the five sites. The proposed works generally consist of upgrading, extending or relocating hard surfaces for the shared paths and cycleways. Therefore there is opportunity to minimize the associated impacts for the trees by constructing the hard surfaces via tree sensitive methods such as structures on or above the existing grade, pier and beam or bridging over sensitive areas. Of the 302 trees assessed across the sites, 34 trees have been identified as requiring removal, 178 trees will be retained under no encroachment, 48 trees will be retained subject to minor encroachment and 42 trees can be retained subject to tree sensitive construction methods. The following report contains a series of tables which summarizes the associated impacts across the sites to provide a more concise presentation of data and provides detailed recommendations on how to minimise development impacts. Table 7 of this report includes additional advice where modifications to the design could potentially enable the retention of additional trees in the event the modifications are achievable.

1. INTRODUCTION

1.1 Hugh The Arborist Pty Ltd have been instructed by Shane Lauger of City of Parramatta Council to provide an Arboricultural Impact Assessment Report to assess trees located at five sites along the Parramatta Cycleway that may be impacted by the proposed upgrades.

Table 1: Proposed Plans And Documents Used For The Assessment

Title	Author	Date	Reference on Document
Site Survey Plan	Unknown, DWG files provided only	Not stated	Not stated
Proposed Site Plans	City of Parramatta Council	September 2024	Rangihou Reserve Rev C Baludarri Wetland Rev B Reid Park Rev C Royal Shores Rev C sheets 1,2,3 George Kendall Riverside Park Rev C

1.2 The site assessment and tree data collection was carried out on 25th October 2024. Access was available to the subject public areas only. All tree data contained in this report was collected during this time.

1.3 The weather during of the site inspections was clear with average visibility.

2. SCOPE OF THE REPORT

2.1 **This report has been undertaken to meet the following objectives.**

2.1.1 Conduct a visual assessment from ground level of trees identified on the plans provided that may be affected by the proposed upgrade of the cycleway in five locations.

- George Kendall Riverside Park Ermington
- Rangihou Reserve Parramatta
- Reid Park Rydalmere
- Royal Shores Ermington
- Baludarri Wetland Parramatta

2.1.2 Determine the trees estimated contributing years, remaining useful life expectancy and award the trees a retention value.

2.1.3 Provide an assessment of the potential impact the proposed development is likely to have on the condition of the subject trees in accordance with AS4970 Protection of trees on development sites (2009).

2.1.4 Recommend methods to mitigate development impacts where appropriate.

2.1.5 Recommend tree protection measures for any tree to be retained in accordance with AS4970 Protection of Trees on Development Sites - 2009.

3. LIMITATIONS

3.1 The findings of this report are based on the observations and site conditions at the time inspection.

3.2 All observations were carried out from ground level. No detailed additional testing was carried out on trees or soil on site and none of the surrounding surfaces were lifted for investigation.

3.3 The tree identification icons shown on the survey plans and the proposed plans vary considerably and a significant volume of trees that have been assessed in this report are not shown on the survey plan provided. The trees included in this report have been surveyed using GPS and overlaid onto the survey plan then transferred to the proposed plans as accurately as possible. However, their locations and therefore the associated development impacts may vary.

3.4 Root decay can sometimes be present with no visual indication above ground. It is also impossible to know the extent of any root damage caused by mechanical damage such as underground root cutting during the installation of services without undertaking detailed root investigation. Any form of tree failure due to these activities is beyond the scope of this assessment.

3.5 The report reflects the subject tree(s) as found on the day of inspection. Any changes to the growing environment of the subject tree, or tree management works beyond those recommended in this report may alter the findings of the report. There is no warranty, expressed or implied, that problems or deficiencies relating to the subject tree, or subject site may not arise in the future.

3.6 Tree identification is based on accessible visual characteristics at the time of inspection. As key identifying features are not always available the accuracy of identification is not guaranteed. Where tree species is unknown, it is indicated with a spp.

3.7 All diagrams, plans and photographs included in this report are visual aids only and are not to scale unless otherwise indicated.

3.8 Hugh The Arborist neither guarantees, nor is responsible for, the accuracy of information provided by others that is contained within this report.

3.9 While an assessment of the subject trees estimated useful life expectancy is included in this report, no specific tree risk assessment has been undertaken for any of trees at the site.

3.10 The retention of trees subject to development impact is only feasible if all recommendations and specifications are followed accurately.

3.11 Sensitive methods of construction such as sub-surface boring, manual (or non-destructive excavation) and the use of structural soil for fill may have limitations where the engineering requirements of the design cannot be met using these methods or materials. These limitations include pipe diameters, compaction, allowable garage changes and drainage requirements. Recommendations made in this report relating to amended methodology or materials should be reviewed by a professional qualified in the relevant field.

3.12 The ultimate safety of any tree cannot be categorically guaranteed. Even trees apparently free of defects can collapse or partially collapse in extreme weather conditions. Trees are dynamic, biological entities subject to changes in their environment, the presence of pathogens and the effects of ageing. These factors reinforce the need for regular inspections. It is generally accepted that hazards can only be identified from distinct defects or from other failure-prone characteristics of a tree or its locality.

3.13 Alteration of this report invalidates the entire report.

4. METHODOLOGY

4.1 The following information was collected during the assessment of the subject tree(s).

4.1.1 Tree common name

4.1.2 Tree botanical name

4.1.3 Tree age class

4.1.4 DBH (Trunk/Stem diameter at breast height/1.4m above ground level) - millimetres.

4.1.5 Estimated height - metres

4.1.6 Estimated crown spread (Radius of crown) - metres

4.1.7 Health

4.1.8 Structural condition

4.1.9 Amenity value

4.1.10 Estimated remaining contribution years (SULE)[1]

4.1.11 Retention value (Tree AZ)[2]

4.1.12 Notes/comments

4.1.13 An assessment of the trees condition was made using the visual tree assessment (VTA) model (Mattheck & Breloer, 1994).[3]

4.1.14 Tree diameter was measured using a set of 400 millimetre metal callipers or a calculated DBH tape measure. All other measurements were estimations unless otherwise stated.

4.1.15 Tree locations have been plotted using Pocket GIS and the site plans prepared using PT Mapper Pro.

4.1.16 All DBH measurements, tree protection zones, and structural root zones were calculated in accordance with methods set out in AS4970 Protection of trees on development sites (2009) [4] and in some cases estimated. See appendices for information.

4.1.17 Details of how the observations in this report have been assessed are listed in the appendices.

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[1] Barrell Tree Consultancy, *SULE: Its use and status into the New Millennium*, TreeAZ/03/2001, http://www.treeaz.com/.

[2] Barrell Tree Consultancy, *Tree AZ version 10.10-ANZ*, http://www.treeaz.com/.

[3] Mattheck, C. & Breloer, H., *The body language of trees - A handbook for failure analysis*, The Stationary Office, London, England (1994).

[4] Council of Standards Australia, *AS4970 Protection of trees on development sites* (2009).

5. SITE LOCATIONS AND BRIEF DESCRIPTION OF PROPOSAL

5.1 The sites are located within the City of Parramatta Local Government Area (LGA)

5.2 This assessment has been carried out in accordance with the following policy and legislation.

5.2.1 Parramatta Local Environmental Plan (LEP) 2011

5.2.2 Parramatta Development Control Plan (DCP) 2011

5.2.3 State Environmental Planning Policy (Biodiversity and Conservation) 2021

5.1 Any heritage or ecological significance of the five sites should be referred to by the relevant professional in that field. This assessment will address the impacts on trees from the proposed works only.

5.2 The subject sites form part of a shared path and cycleway along the Parramatta river. The sites are generally well vegetated with multiple trees of varying maturity and value located either side of an existing bitumen pathways.

5.3 The proposal seeks to provide upgrades to the existing shared pathways, pedestrian pathways, cyclist pathways and the inclusion of environmentally sensitive lighting.

6. OBSERVATIONS AND GENERAL INFORMATION IN RELATION TO PROTECTING TREES ON DEVELOPMENT SITES

6.1 **Tree information**: Details of each individual tree assessed, including the observations taken during the site inspection can be found in the tree inspection schedule in appendix 2, where the indicative tree protection zone (TPZ) for the subject trees has been calculated. The TPZ and SRZ should be measured in radius from the centre of the trunk. Trees have been awarded a retention value based on site observations. The system used to award the retention value is Tree AZ. Tree AZ is used to identify higher value trees worthy of being a constraint to development and lower value trees that should generally not be a constraint to the development. A field sheet of Tree AZ categories sheet (Barrell Tree Consultancy) has been included at the end of the report to assist with understanding the retention values. The retention value that has been allocated to the subject trees in this report is not definitive and should only be used as a guideline.

6.2 **Site plans:** Refer to the Appendices section of this report for a full list of site plans. Each plan provided contains the tree identification numbers, canopy spread, Tree Protection Zone and Structural Root Zone overlaid onto proposed plans. No site plan has been prepared for Baludarri Wetlands, refer to section 10.

6.3 **Tree Inspection Schedules:** Data for each tree assessed can be located in the Appendices section where a tree schedule has been prepared for each site. No Tree Inspection Schedule has been prepared for Baludarri Wetlands, refer to section 10.

6.4 **Tree protection zone (TPZ)**: The TPZ is principle means of protecting trees on development sites and is an area required to maintain the viability of trees during development. It is commonly observed that tree roots will extend significantly further than the indicative TPZ, however the TPZ is an area identified AS4970-2009 to be the extent where root loss or disturbance will generally impact the viability of the tree. The TPZ is identified as a restricted area to prevent damage to trees either above or below ground during a development. Where trees are intended to be retained proposed developments must provide an adequate TPZ around trees. The TPZ is set aside for the tree's root zone, trunk and crown and it is essential for the stability and longevity of the tree. The tree protection also incorporates the SRZ (see below for more information about the SRZ). The TPZ of palms, other monocots, cycads and tree ferns has been calculated at one metre outside the crown projection.

6.5 **Structural Root Zone (SRZ)**: This is the area around the base of a tree required for the trees stability in the ground. An area larger than the SRZ always needs to be maintained to preserve a viable tree. There are several factors that can vary the SRZ which include height, crown area, soil type and soil moisture. It can also be influenced by other factors such as natural or built structures. Generally work within the SRZ should be avoided. Soil level changes should also generally be avoided inside the SRZ of trees to be retained. Palms, other monocots, cycads and tree ferns do not have an SRZ.

6.6 **Minor encroachment into TPZ**: Sometimes encroachment into the TPZ is unavoidable. Encroachment includes but is not limited to activities such as excavation, compacted fill and machine trenching. Minor encroachment of up to 10% of the overall TPZ area is normally considered acceptable, providing there is space adjacent to the TPZ for the tree to compensate and the tree is displaying adequate vigour/health to tolerate changes to its growing environment.

6.7 **Major encroachment into TPZ**: Where encroachment of more than 10% of the overall TPZ area is proposed an Arborist must investigate and demonstrate that the tree will remain in a viable condition. In some cases, tree sensitive construction methods such as pier and beam footings, suspended slabs, or cantilevered sections, can be utilised to allow additional encroachment into the TPZ by bridging over roots and minimising root disturbance. Major encroachment is only possible if it can be undertaken without severing significant size roots, or if it can be demonstrated that significant roots will not be impacted.

7. ASSESSEMENT OF CONSTRUCTION IMPACTS OF INDEVIDUAL SITES

7.1 The tables below contain a summary of the proposed development impact to trees affected by the proposed works at each site. Refer to Appendix 2 for full tree data.

Table 2: George Kendall Riverside Park, Ermington		
Encroachment/ Impact description	**Category A Tree Identification Numbers**	**Category Z Tree Identification Numbers**
Retained trees subject to major encroachment from proposed structures or new surfacing that may affect the viability of the tree where impacts can be minimised by tree sensitive construction methods.	3, 4 (Two trees)	0 (No trees)
Retained trees subject to minor encroachment from proposed structures or new surfacing that will not significantly affect the viability of the trees and does not require tree sensitive construction methods.	11 (One tree)	0 (No trees)
Retained trees subject to no encroachment – no new encroachment is proposed from structures or surfaces and trees will not be impacted by the proposed works.	1, 2, 5, 6, 7, 8, 9, 10 (Eight trees)	0 (No trees)
Trees to be removed – trees within the footprint of the proposed structures or surfacing or impacts from major encroachment which cannot be satisfactorily reduced or mitigated to enable the trees retention	0 (No trees)	0 (No trees)

Table 3: Rangihou Reserve, Parramatta		
Encroachment/ Impact description	**Category A Tree Identification Numbers**	**Category Z Tree Identification Numbers**
Retained trees subject to major encroachment from proposed structures or new surfacing that may affect the viability of the tree where impacts can be minimised by tree sensitive construction methods.	233, 234, 235, 237, 250, 254, 255, 258, 267, 268, 270, 271, 272, 274, 275, 287 (sixteen trees)	238 (One tree)
Retained trees subject to minor encroachment from proposed structures or new surfacing that will not significantly affect the viability of the trees and does not require tree sensitive construction methods.	233a, 247, 269, 283, 284, 285 (Six trees)	0 (No trees)
Retained trees subject to no encroachment – no new encroachment is proposed from structures or surfaces and trees will not be impacted by the proposed works.	230, 240, 241, 242, 243, 244, 245, 246, 249, 251, 259, 260, 263, 264, 286, 288 (Sixteen)	228, 229, 261, 262, 265 (Five trees)
Trees to be removed – trees within the footprint of the proposed structures or surfacing or impacts from major encroachment which cannot be satisfactorily reduced or mitigated to enable the trees retention	232, 239, 248, 252, 253, 256, 257, 266, 276, 277, 278, 279, 280, 281, 282 (Fifteen trees)	231, 236, 273 (Three trees)

Table 4: Reid Park Rydalmere		
Encroachment/ Impact description	**Category A Tree Identification Numbers**	**Category Z Tree Identification Numbers**
Retained trees subject to major encroachment from proposed structures or new surfacing that may affect the viability of the tree where impacts can be minimised by tree sensitive construction methods.	178, 182, 185, 189, 190, 192, 195, 224a, 225a, 226a, 227a, 228a (Twelve trees)	183, 184 (Two trees)
Retained trees subject to minor encroachment from proposed structures or new surfacing that will not significantly affect the viability of the trees and does not require tree sensitive construction methods.	174, 218 (Two trees)	0 (No trees)
Retained trees subject to no encroachment – no new encroachment is proposed from structures or surfaces and trees will not be impacted by the proposed works.	175, 176, 177, 187, 191, 193, 194, 196, 197, 198, 199, 200, 201, 202, 206, 207, 208, 209, 211, 212, 216, 217, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233 (Thirty-two trees)	186, 188, 203, 204, 205, 210, 213, 214, 215, 219, 220, 221, 222, 223 (Fourteen trees)
Trees to be removed – trees within the footprint of the proposed structures or surfacing or impacts from major encroachment which cannot be satisfactorily reduced or mitigated to enable the trees retention.	N/A	179, 180, 181 (Three trees)

Table 5: Royal Shores, Ermington		
Encroachment/ Impact description	**Category A Tree Identification Numbers**	**Category Z Tree Identification Numbers**
Retained trees subject to major encroachment from proposed structures or new surfacing that may affect the viability of the tree where impacts can be minimised by tree sensitive construction methods.	15, 16, 23, 41, 159, 165, 167, 171 (Eight Trees)	139 (One Tree)
Retained trees subject to minor encroachment from proposed structures or new surfacing that will not significantly affect the viability of the trees and does not require tree sensitive construction methods.	21, 25, 26, 27, 31, 42, 52, 67, 71, 72, 73, 74, 75, 76, 79, 90, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 107, 109, 111, 112, 113, 136, 145, 146, 154, 172, 173 (Thirty-nine trees)	0 (No trees)
Retained trees subject to no encroachment – no new encroachment is proposed from structures or surfaces and trees will not be impacted by the proposed works.	14, 18, 19, 20, 22, 28, 29, 30, 36, 43, 42a, 43a, 44, 45, 46, 47, 48, 49, 51, 53, 54, 55, 56, 57, 58, 59, 61, 62, 63, 65, 66, 68, 69, 70, 77, 78, 80, 81, 82, 83, 84, 85, 87, 88, 89, 106, 108, 114, 115, 116, 117, 118, 119, 120, 121, 123, 124, 125, 127, 128, 129, 130, 131, 132, 133, 134, 135, 137, 138, 141, 144, 147, 148, 152, 153, 156, 157, 158, 160, 161, 163, 168, 169 (Eighty-three trees)	32, 33, 34, 35, 37, 50, 60, 64, 86, 91, 92, 93, 122, 126, 140, 142, 143, 149, 162, 170 (Twenty trees)
Trees to be removed – trees within the footprint of the proposed structures or surfacing or impacts from major encroachment which cannot be satisfactorily reduced or mitigated to enable the trees retention	13, 17, 24, 40, 110, 150, 151, 155, 164, 166 (Ten trees)	12, 38, 39 (Three trees)

8. CONCLUSIONS AND RECCOMMENDATIONS

8.1 **Table 6:** The table below provides additional information on the recommendations arising from major and minor encroachments and their associated potential impacts.

Encroachment/ Impacts	Conclusions and Recommendations	Total number of trees across the sites
Major	Trees proposed to be retained subject to major encroachment greater than 10% within the Tree Protection Zones or any encroachment within the Structural Root Zones will require tree sensitive methods of construction to minimise development impacts. The dominant source of encroachment from the proposed works is hard surfacing which can potentially be carried out while retaining significant tree roots. Refer to section 9 for full specifications on how to retain tree roots and minimise the impacts below new hard surfacing.	**42**
Minor	Trees subject to minor encroachment of less than 10% within the Tree Protection Zone with no encroachment in the Structural Root Zone will not be subject to significant impacts and are therefore tree sensitive construction methods are not required and the trees are identified for retention.	**48**
None	Trees that will not be subject to encroachment and can be retained without development impact.	**178**
Remove	Trees subject to impacts from major encroachment that cannot be sufficiently mitigated by tree sensitive construction or are within the footprint of proposed hard surfacing and cannot be retained.	**34**

8.2 **Table 7:** The following table contains recommendations for specific trees that require modifications to the proposal to minimise the associated impact. The trees included in table 7 are generally of higher value and the modifications to design are considered a worthy consideration to reduce development impacts.

Location	Tree ID numbers and additional notes/recommendations
George Kendall Reserve	- **Tree 3**. Consider increasing the setback of the new section of cycleway to 2.6 metres from the centre of the trunk to avoid the SRZ area. - **Tree 4**. Consider increasing the setback of the new section of cycleway to 1.6 metres from the centre of the trunk to avoid the SRZ area.
Rangihou Reserve	- **Tree 268.** The proposed raised boardwalk is required to be constructed above the existing soil grade with piers located outside of the 2.8 metre SRZ. - **Tree 271.** The proposed raised boardwalk is required to be constructed above the existing soil grade with piers located outside of the 2 metre SRZ. - **Tree 272**. The proposed raised boardwalk is required to be constructed above the existing soil grade with piers located outside of the 2 metre SRZ. - **Tree 274 and 275.** Major encroachment into the SRZ area. Consider extending the pathway on the opposite side to the trees to minimise impacts.
Reid park	- **Tree 192.** The setback of the existing path is recommended to be maintained within 6.5 metres of the centre of the tree trunk. Alternatively the section of pathway should be bridged over the TPZ ad SRZ, refer to section 9. - **Tree 195**. The setback of the existing path is recommended to be maintained within 6.4 metres of the centre of the tree trunk. Alternatively the section of pathway should be bridged over the TPZ ad SRZ, refer to section 9.

Location	Tree ID numbers and additional notes/recommendations
Royal Shores	- **Livistona species.** Numerous individual Palm trees will be subject to major encroachment from the proposed new cycleway and shared paths. The roots systems of dicotyledonous and coniferous trees are characterised by large, multi-branched woody roots. In contrast, Palms have an adventitious root system composed of numerous, simple fibrous primary roots that arise independently and periodically from the Root Initiation Zone (RIZ) at the base of the trunk. Studies conducted by *Broschat and Donselman* (1984,1990) in regard to the severing of palm roots for the purpose of transplanting state, "most of a mature palms roots are found within 30cm of the trunk", and in conclusion found that most mature palms need only a root ball of 30cm radius from the trunk and 30cm soil depth to survive. Literature also shows that most palms are able to generate new root systems, with the production of new roots from the RIZ and / or branching and regrowth of roots severed during transplanting (*Pittenger et al 2005*). Although there are major encroachments to multiple Palm trees, with reference to the literature and the setbacks on the remaining sides of the TPZ the development should have a minimal impact on the long-term viability of the Palms. - **Tree 13.** The tree is located on an embankment proposed to be excavated for the new pathway and retaining wall which will encroach by up to 30% of the TPZ and the SRZ. Due to the proposed excavation, tree sensitive construction may not be achievable and a greater setback outside of the 2.7 metre SRZ area should be provided if the tree is to be retained. The tree is currently identified for removal. - **Tree 16.** Mangroves have been grouped into T16. They will not be affected by the proposed works as they are situated on a lower level than the proposed works supported by a retaining wall. - **Tree 110.** The plans provided identify T110 for removal. The proposed hard surfaces encroach by up to 30% in the TPZ and the SRZ indicating tree sensitive construction methods to retain significant tree roots could enable the retention of the tree. The tree is currently identified for removal as per the proposed plans. - **Trees 145 and 146.** Livistona Palm species. The proposed pathway is located within close proximity to the RIZ (refer to the notes above on RIZ) indicating the Palm may be impacted by the major encroachment. Allowing a greater setback from the trunk of up to 500mm will reduce the impact. The trees are currently identified for retention. - **Tree 165.** The proposed pathway location transects through the landscapes area containing significant trees. The existing levels are higher than the existing (and assumed proposed pathway) indicating grading will be required which will significantly impact the tree. A raised boardwalk section over the TPZ and SRZ will allow the retention of major tree roots and minimise the impact on the tree. The tree is currently identified for retention under tree sensitive construction methods.

9. TREE SENSITIVE CONSTRUCTION SPECIFICATIONS

9.1 **Tree Sensitive Construction Specification:** The dominant source of impact from the proposed upgrades is the installation of hard surfacing. To ensure that trees identified for retention are not adversely impacted by the construction, it must be demonstrated the following design and construction specifications can be implemented within the TPZ of the trees. If the construction cannot be completed in accordance with these specifications, the trees may not be viable for retention.

9.1.1 **Tree Sensitive Hard Surfacing Construction:** Hard surfacing within the TPZ of the trees should be constructed in a tree sensitive method. The hard surfacing should be constructed above existing grades in the TPZ of the trees. The diagram below (Image C) gives an example of a no-excavation method for constructing hard surfacing close to trees. The location of retaining pegs should be flexible, avoiding damage to structural roots.

If excavations are essential, they must not exceed 100mm below the existing grades. The excavations should be supervised by a project Arborist with a minimum AQF level 5 qualification. All excavations for the hard surfacing should be carried out manually to avoid impacting retained tree roots. All tree roots greater than 40mm in diameter should be retained unless the project arborist has assessed and advised that the pruning/severing of the root will not impact the condition or stability of the tree. Manual excavation may include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device.

Where tree roots greater than 40mm are encountered that must be retained, the hard surfacing should be elevated over the individual tree root to allow for its retention. Examples of methods that can be used to bridge individual tree roots have been included below (Image D and E). Using pier and beam bridges as per image E is the recommended/preferred method, as it will allow for future growth of the tree roots, reducing future damage to the surfacing from the roots.

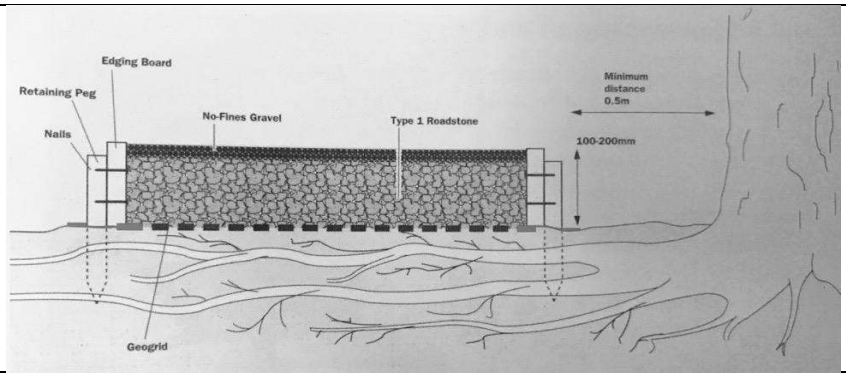


Image C: An image from 'Tree Roots in the Built Environment'[5], showing how to construct hard surfacing above a trees root system without excavation. Type 1 Roadstones are an example of blue metal or crushed sandstone.

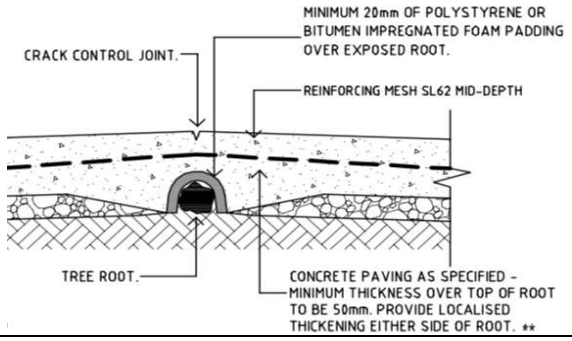


Image D: Example method for bridging concrete surfacing over tree roots provided in the Canterbury Bankstown Council standard drawings.[6]

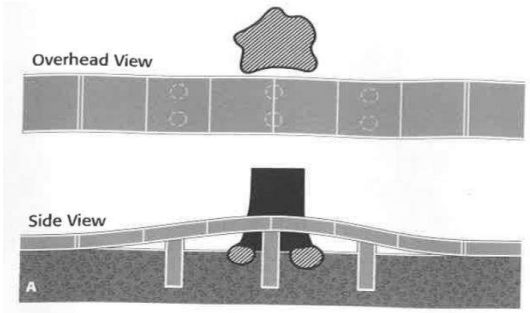


Image E: Example method from Reducing infrastructure damage by tree roots: A compendium of strategies.[7]

[5] Roberts, J., Jackson, N., & Smith, M., *Tree Roots in the Built Environment*, The Stationary Office, London, England (2006). Page 305 & 306.

[6] *Canterbury Bankstown Council standard drawing S-209 Existing street tree treatments*, https://www.cbcity.nsw.gov.au/development/planning-control-policies/council-standard-drawings, accessed 3 October 2019.

[7] Costello, L. R., & Jones, K. S, *Reducing infrastructure damage by tree roots: A compendium of strategies*, Western Chapter of the International Society of Arboriculture, 31883 Success Valley Drive, Porterville, CA (2003), page 27.

9.1.2 **Underground services:** AS4970 Protection of trees on development sites (2009) recommends that all underground services located inside the TPZ of any tree to be retained should be installed via tree sensitive techniques. This should include either directional drilling methods or manual excavations to minimise the impact to trees identified for retention.

If directional drilling is proposed, section 4.5.5 of AS4970-2009 says that 'The directional drilling bore should be at least 600 mm deep. The project Arborist should assess the likely impacts of boring and bore pits on retained trees'.[8]
If manual excavations are proposed, all excavations for the services should be carried out manually under the supervision of the project Arborist (minimum qualification AQF 5). Manual excavation may include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device. All roots greater than 40mm in diameter should be retained in the service trench. The service pipe should then be threaded below the retained roots where practical. Roots greater than 40mm within the alignment of the service pipe should only be severed/pruned under the approval of the project Arborist. All root pruning should be in accordance with AS4373 Pruning of amenity trees (2007). Open trenching in the SRZ of trees can be impractical without impacting significant roots, as often dense root growth is present in the SRZ. Open trenching should therefore be avoided in the SRZ. It is recommended that any section of pipe that is located in the SRZ of trees to be retained is installed via sub-surface boring/directional drilling methods only. The feasibility of sub-surface boring/directional drilling will need to be investigated by a sub-surface boring/directional drilling specialist. The project Arborist should provide advice and supervise excavations for bore pits, which must be carried out manually if located within the TPZ. The top of the pipe must be at least 600mm below the existing soil grade. The location of bore pits should be flexible in the TPZ to avoid significant roots, the project Arborist should assess and advise in writing the impact of any significant root severance to the condition of the tree.

9.1.3 **Tree Sensitive Pier Footings (decking and boardwalks)**: To minimise root loss in the TPZ of the trees, the footings of the structures must be located to avoid significant tree roots in the TPZ and SRZ. To ensure that significant tree roots are retained, it must be demonstrated that the following construction methods can be implemented;

- All decking boards/horizontal materials are to be located on or above existing soil grades. This will allow for the majority of the root system to be retained between the posts, minimising root loss.

[8] Council Of Standards Australia, *AS 4970 Protection of trees on development sites* (2009) page 18.

- Excavations in the TPZ should be for pier footings only. All excavations for piers must be carried out manually under the supervision of the project Arborist (see section 11 for details of manual excavation and project Arborist).
- The location of piers must be flexible to avoid significant roots (roots greater than 40mm in diameter). If practical, it is recommended that piers are located to avoid the SRZ of the trees.
- All roots greater than 40mm in diameter must be retained unless the project arborist has assessed and approved in writing that the root(s) are not critical to the health or stability of the tree.

9.1.4 **Root investigations:** Where major TPZ encroachments require demonstrating the viability of trees the following method for root investigations is to be used. Non-destructive excavations are to be carried out along the outer edge of proposed or existing structures within the TPZ (excavation methods include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device). Excavations generally consist of a trench to a depth dictated by the location of significant roots, bedrock, unfavourable conditions for root growth, or the required depth for footings up to 1 metre. The investigation is to be carried out by AQF5 consulting Arborist who is to record all roots greater than 40 millimetres in diameter and produce a report discussing the significance of the findings. No roots 40 millimetres in diameter are to be frayed or damaged during excavation and the trench is to be backfilled as soon as possible to reduce the risk of roots drying out. In the event roots must be left exposed they are to be wrapped in hessian sack and regularly irrigated for the duration of exposure.

9.2 All construction activity is recommended to comply with Australian Standard AS4970 Protection of Trees on Development Sites (2009), sections 7, 10 and 11 of this report.

9.3 This report does not provide approval for tree removal or pruning works. All recommendations in this report are subject to approval by the relevant authorities and/or tree owners. This report should be submitted as supporting evidence with any tree removal/pruning or development application.

10. BALUDARRI WETLANDS

10.1 The works proposed in this location that affects trees is the cleaning and upgrade of the sandstone block walls at each end of the reserve which show the name of the reserve. The other proposed works consist of installing environmentally sensitive lighting that will not impact trees.

10.2 At the eastern side of the site, one small *Callistemon viminalis* is proposed to be removed: the tree is approximately 1 metre tall and is multi stemmed. The tree is considered to be easily replaceable.

10.3 To the western end of the site, two *Lomandra* grasses are proposed to be removed and one young Eucalypt Spp. The eucalypt is estimated to be less than five years old and has a height of approximately 3 metres and a stem diameter of 50 millimetres. Both the *Eucalypt* and the *Lomandra* are considered to be easily offset with replacement planting. Refer to the images below.

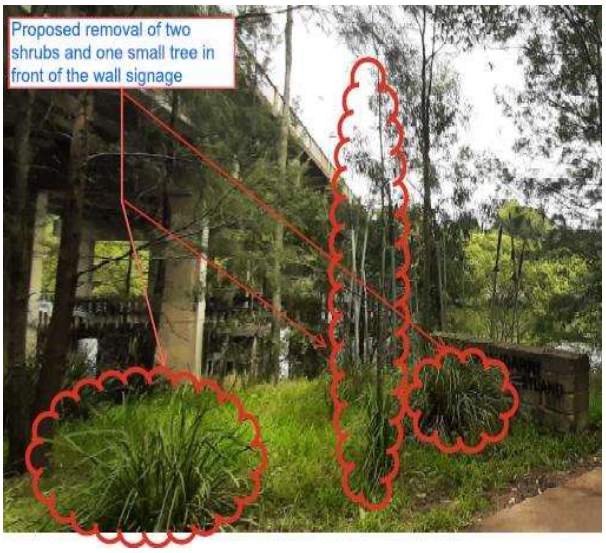


Image A: Eastern site of Baludarri Wetland and proposed vegetation removal.

Image A: Western site of Baludarri Wetland and proposed vegetation removal.

11. ARBORICULTURAL WORK METHOD STATEMENT (AMS) AND TREE PROTECTION REQUIREMENTS

11.1 **Use of this report:** All contractors must be made aware of the tree protection requirements prior to commencing works at the site and be provided a copy of this report.

11.2 **Project Arborist:** Prior to any works commencing at the site a project Arborist should be appointed. The project Arborist should be qualified to a minimum AQF level 5 and/or equivalent qualifications and experience, and should assist with any development issues relating to trees that may arise. If at any time it is not feasible to carryout works in accordance with this, an alternative must be agreed in writing with the project Arborist.

11.3 **Tree work:** All tree work must be carried out by a qualified and experienced Arborist with a minimum of AQF level 3 in arboriculture, in accordance with NSW Work Cover Code of Practice for the Amenity Tree Industry (1998) and AS4373 Pruning of amenity trees (2007).

11.4 **Initial site meeting/on-going regular inspections:** The project Arborist is to hold a pre-construction site meeting with principle contractor to discuss methods and importance of tree protection measures and resolve any issues in relation to tree protection that may arise. In accordance with AS4970-2009, the project Arborist should carryout regular site inspections to ensure works are carried out in accordance with this document throughout the development process. I recommend regular site inspections on a frequency based on the longevity of the project, this is to be agreed in the initial meeting.

11.5 **Tree protection Specifications:** It is the responsibility of the principle contractor to install tree protection prior to works commencing at the site (prior to demolition works) and to ensure that the tree protection remains in adequate condition for the duration of the development. The tree protection must not be moved without prior agreement of the project Arborist. The project Arborist must inspect that the tree protection has been installed in accordance with this document and AS4970-2009 prior to works commencing.

11.6 **Protective fencing:** Where it is not feasible to install fencing at the specified location due to factors such restricting access to areas of the site or for constructing new structures, an alternative location and protection specification must be agreed with the project Arborist. Where the installation of fencing in unfeasible due to restrictions on space, trunk and branch protection will be required (see below). The protective fencing must be constructed of 1.8 metre ‘cyclone chainmesh fence’. The fencing must only be removed for the landscaping phase and must be authorised by the project Arborist. Any modifications to the fencing locations must be approved by the project Arborist.

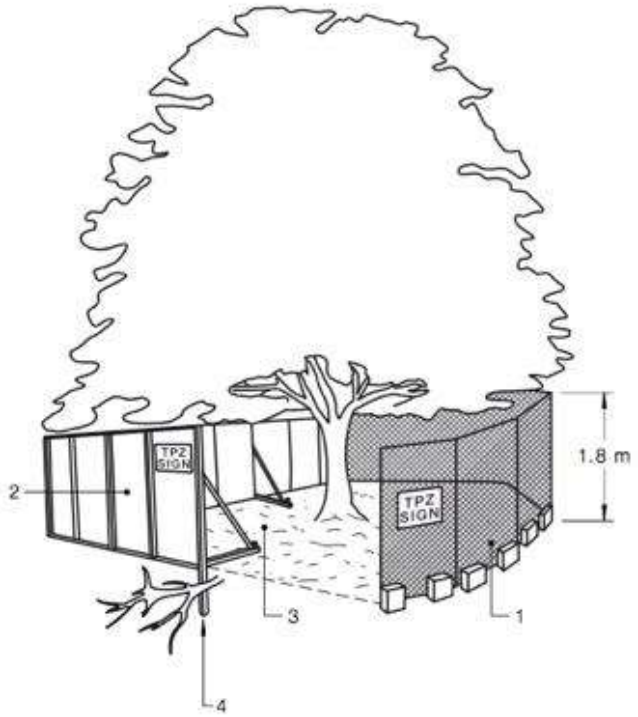
11.7 **TPZ signage:** Tree protection signage is to be attached to the protective fencing, displayed in a prominent position and the sign repeated at 10 metres intervals or closer where the fence changes direction. Each sign shall contain in a clearly legible form, the following information:

- Tree protection zone/No access.
- This fence has been installed to prevent damage to the tree/s and their growing environment both above and below ground. Do not move fencing or enter TPZ without the agreement of the project Arborist.
- The name, address, and telephone number of the developer/builder and project Arborist

11.8 **Trunk and Branch Protection:** The trunk must be protected by wrapped hessian or similar material to limit damage. Timber planks (50mm x 100mm or similar) should then be placed around tree trunk. The timber planks should be spaced at 100mm intervals, and must be fixed against the trunk with tie wire, or strapping and connections finished or covered to protect pedestrians from injury. The hessian and timber planks must not be fixed to the tree in any instance. The trunk and branch protection shall be installed prior to any work commencing on site and shall be maintained in good condition for the entire development period.

11.9 **Mulch:** Any areas of the TPZ located inside the subject site (only trees to be retained directly adjacent to site works must be mulched to a depth of 75mm with good quality composted wood chip/leaf mulch.

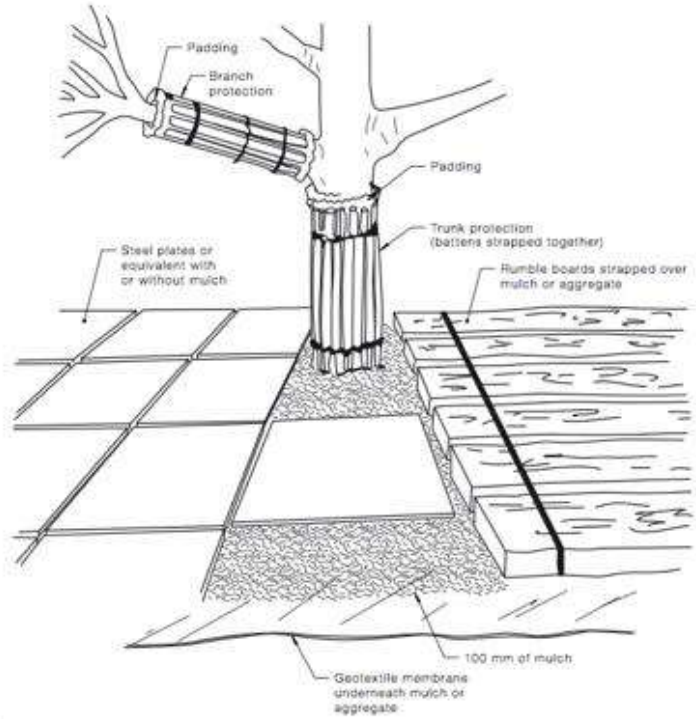
11.10 **Ground Protection:** Ground protection is required to protect the underlying soil structure and root system in areas where it is not practical to restrict access to whole TPZ, while allowing space for construction. Ground protection must consist of good quality composted wood chip/leaf mulch to a depth of between 150-300mm, laid on top of geo textile fabric. If vehicles are to be using the area, additional protection will be required such as rumble boards or track mats to spread the weight of the vehicle and avoid load points. Ground protection is to be specified by the project Arborist as required.



LEGEND:
1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

An image from AS4970-2009,[9] with example tree protection.

[9] Council of Standards Australia, *AS4970 Protection of trees on development sites* (2009), page 16.



NOTES:

1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.

2 Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

An image from AS4970-2009,[10] with example tree protection.

11.11 **Restricted activities inside TPZ:** The following activities must be avoided inside the TPZ of all trees to be retained unless approved by the project Arborist. If at any time these activities cannot be avoided an alternative must be agreed in writing with the project Arborist to minimise the impact to the tree.

A) Machine excavation.
B) Ripping or cultivation of soil.
C) Storage of spoil, soil or any such materials
D) Preparation of chemicals, including preparation of cement products.
E) Refueling.
F) Dumping of waste.
G) Wash down and cleaning of equipment.
H) Placement of fill.
I) Lighting of fires.

[10] Council of Standards Australia, *AS4970 Protection of trees on development sites* (2009), page 17.

J) Soil level changes.
K) Any physical damage to the crown, trunk, or root system.
L) Parking of vehicles.

11.12 **Demolition:** The demolition of all existing structures inside or directly adjacent to the TPZ of trees to be retained must be undertaken in consultation with the project Arborist. Any machinery is to work from inside the footprint of the existing structures or outside the TPZ, reaching in to minimise soil disturbance and compaction. If it is not feasible to locate demolition machinery outside the TPZ of trees to be retained, ground protection will be required. The demolition should be undertaken inwards into the footprint of the existing structures, sometimes referred to as the 'top down, pull back' method.

11.13 **Excavations and root pruning:** The project Arborist must supervise and certify that all excavations and root pruning are in accordance with AS4373-2007 and AS4970-2009. For excavations within the TPZ, manual excavation is required along the edge of the structures closest to the subject trees. Manual excavation should be a depth of 1 metre (or to unfavourable root growth conditions such as bed rock or heavy clay, if agreed by project Arborist). Next roots must be pruned back in accordance with AS4373-2007. After all root pruning is completed, machine excavation is permitted within the footprint of the structure. For tree sensitive footings, such as pier and beam, all excavations inside the TPZ must be manual. Manual excavation may include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device. No pruning of roots greater 30mm in diameter is to be carried out without approval of the project arborist. All pruning of roots greater than 10mm in diameter must be carried out by a qualified Arborist/Horticulturalist with a minimum AQF level 3. Root pruning is to be a clean cut with a sharp tool in accordance with AS4373 Pruning of amenity trees (2007).[11] The tree root is to be pruned back to a branch root if possible. Make a clean cut and leave as small a wound as possible.

11.14 **Landscaping:** All landscaping works within the TPZ of trees to be retained are to be undertaken in consultation with a consulting Arborist to minimize the impact to trees. General guidance is provided below to minimise the impact of new landscaping to trees to be retained.

New footpaths and hard surfaces should be minimised, as they can limit the availability of water, nutrients and air to the trees root system. Where they are proposed, they should be constructed on or above existing soil grades to minimise root disturbance and consider using a permeable surface. Footpath should be located outside the SRZ.

[11] Council Of Standards Australia, *AS 4373 Pruning of amenity trees* (2007) page 18

The location of new plantings inside the TPZ of trees to be retained should be flexible to avoid unnecessary damage to tree roots greater than 30mm in diameter.

Sediment and Contamination: All contamination run off from the development such as but not limited to concrete, sediment and toxic wastes must be prevented from entering the TPZ at all times.

11.15 **Tree Wounding/Injury:** Any wounding or injury that occurs to a tree during the construction process will require the project Arborist to be contacted for an assessment of the injury and provide mitigation/remediation advice. It is generally accepted that trees may take many years to decline and eventually die from root damage. All repair work is to be carried out by the project Arborist, at the contractor's expense.

11.16 **Completion of Development Works:** After all construction works are complete the project Arborist should assess that the subject trees have been retained in the same condition and vigour. If changes to condition are identified the project Arborist should provide recommendations for remediation.

12. HOLD POINTS

12.1 **Hold Points:** Below is a sequence of hold points requiring project Arborist certification throughout the development process. It provides a list of hold points that must be checked and certified. All certification must be provided in written format upon completion of the development. The final certification must include details of any instructions for remediation undertaken during the development.

Hold Point	Stage	Responsibility	Certification	Complete Y/N and date
Project Arborist to hold pre construction site meeting with principle contractor to discuss methods and importance of tree protection measures and resolve any issues in relation to feasibility of tree protection requirements that may arise.	Prior to work commencing.	Principle contractor	Project Arborist	
Project Arborist To supervise all pruning works to retained trees.	Prior to works commencing	Principal Contractor	Project Arborist	
Project Arborist to assess and certify that tree protection has been installed in accordance with section 11 and AS4970-2009 prior to works commencing at site.	Prior to development work commencing.	Principle contractor	Project Arborist	
In accordance with AS4970-2009 the project arborist should carry out regular site inspections to ensure works are carried out in accordance with the recommendations. I recommend site inspections on a monthly frequency.	Ongoing throughout the development	Principle contractor	Project Arborist	
Project Arborist to supervise all manual excavations and demolition inside the TPZ of any tree to be retained.	Construction	Principle contractor	Project Arborist	

Hold Point	Stage	Responsibility	Certification	Complete Y/N and date
Project Arborist to certify that all pruning of roots greater than 40mm in diameter has been carried out in accordance with AS4373-2007. All root pruning must be carried out by a qualified Arborist/Horticulturalist with a minimum AQF level 3.	Construction	Principle contractor	Project Arborist	
Project Arborist to certify that all underground services including storm water inside TPZ of any tree to be retained have been installed in accordance with AS4970-2009.	Construction	Principle contractor	Project Arborist	
All landscaping works within the TPZ of trees to be retained are to be undertaken in consultation with the project Arborist to minimize the impact to trees.	Landscape	Principle contractor	Project Arborist	
After all construction works are complete the project Arborist should assess that the subject trees have been retained in the same condition and vigor and authorize the removal of protective fencing. If changes to condition are identified the project Arborist should provide recommendations for remediation.	Upon completion of construction	Principle contractor	Project Arborist	
Any wounding or injury that occurs to a tree during the demolition/construction process will require the project arborist to be contacted for an assessment of the injury and provide mitigation/remediation advice. All remediation work is to be carried out by the project arborist, at the contractor's expense.	Ongoing throughout the development	Principle contractor	Project Arborist	

13. BIBLIOGRAPHY/REFERENCES

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- Parramatta Local Environmental Plan (LEP) 2011
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14. LIST OF APPENDICES

The following are included in the appendices that have been provided as separate documents to this report:

Appendix 1 - Proposed Site Plans
Appendix 2 – Tree Inspection Schedules
Appendix 3 – Health
Appendix 4 – Amenity/Landscape Value
Appendix 5 – Age Class
Appendix 6 – Structural Condition
Appendix 7 – SULE Categories
Appendix 8 – Tree AZ Values
Appendix 9 – TPZ Encroachment

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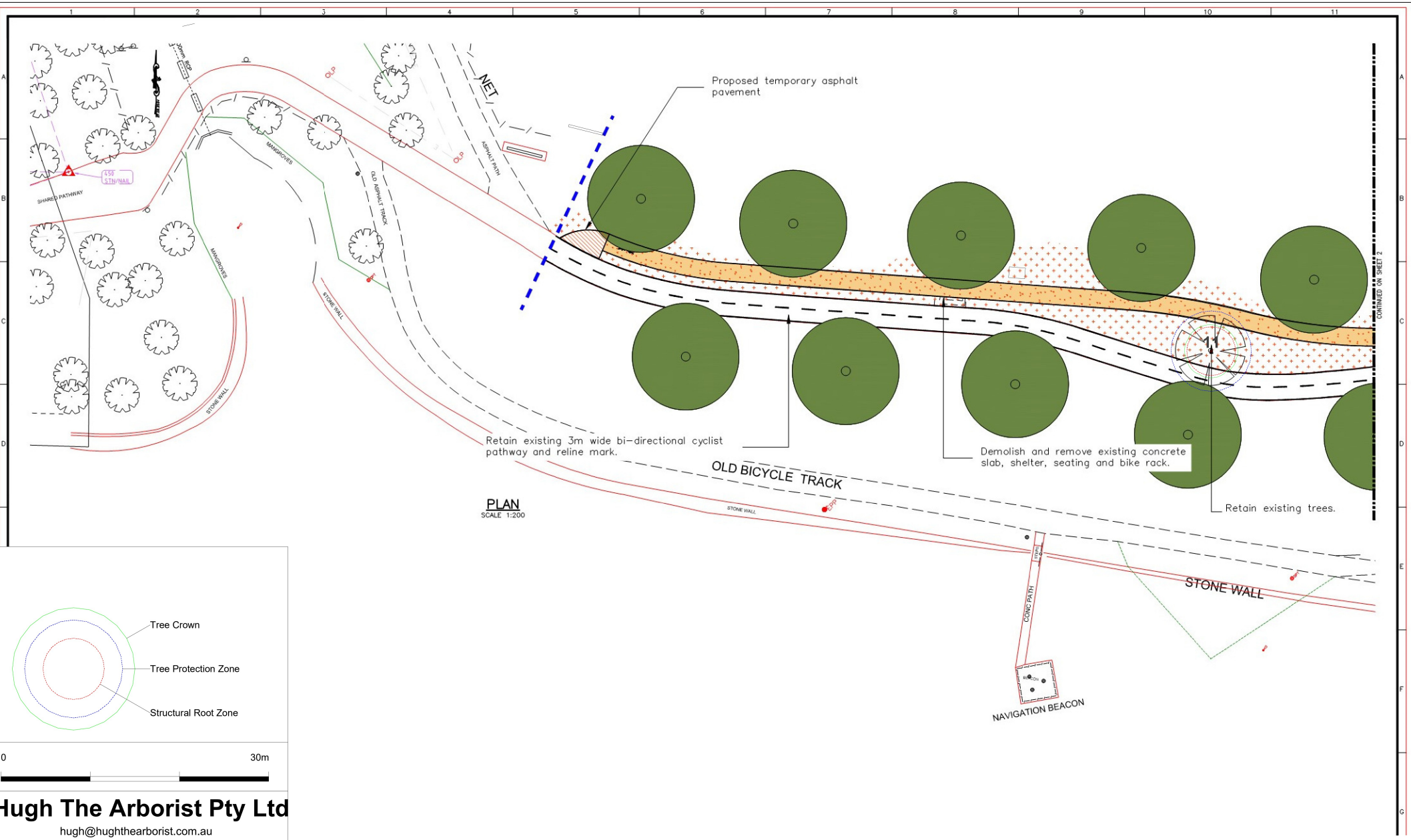

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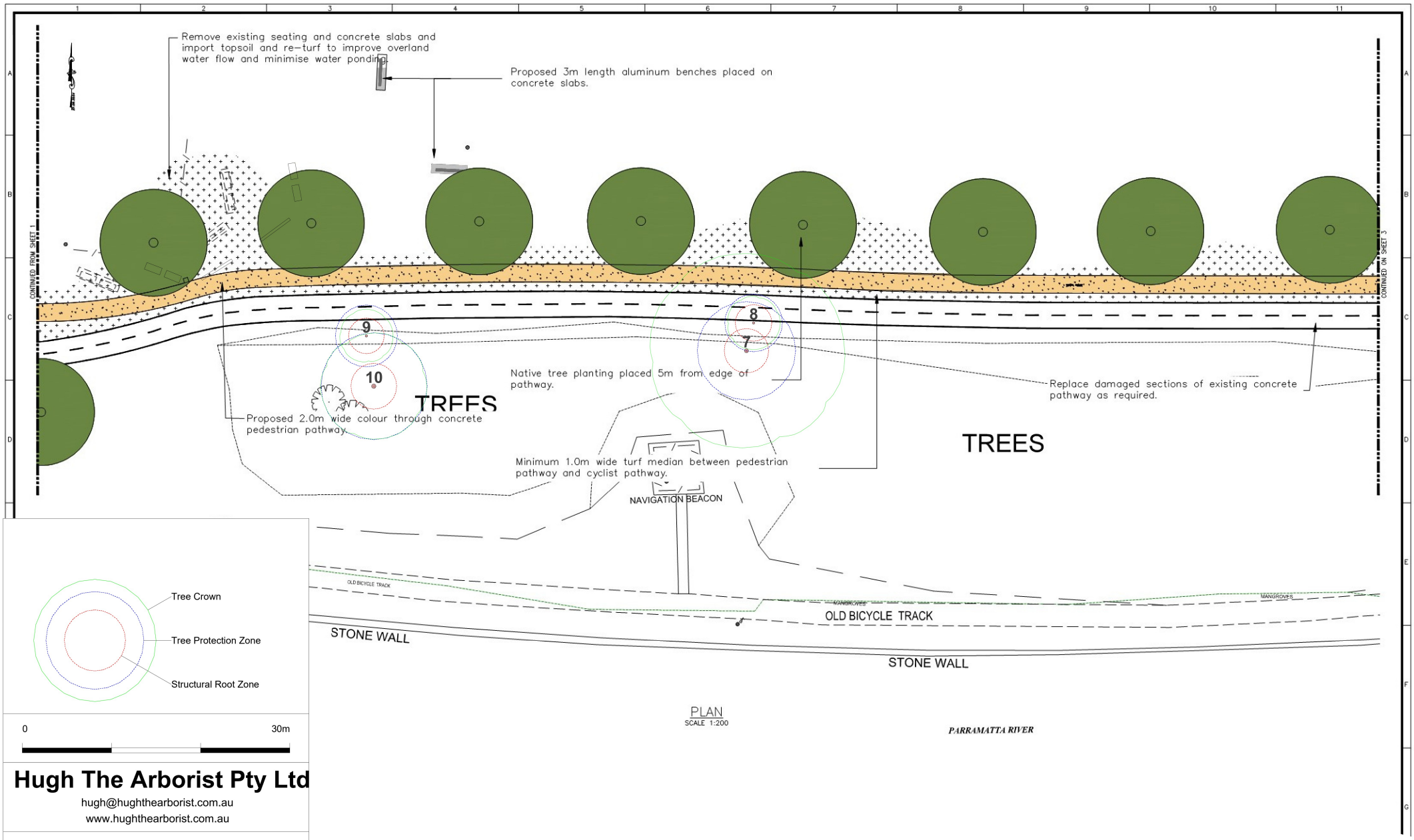
HUGH THE ARBORIST

Prepared by Hugh Millington



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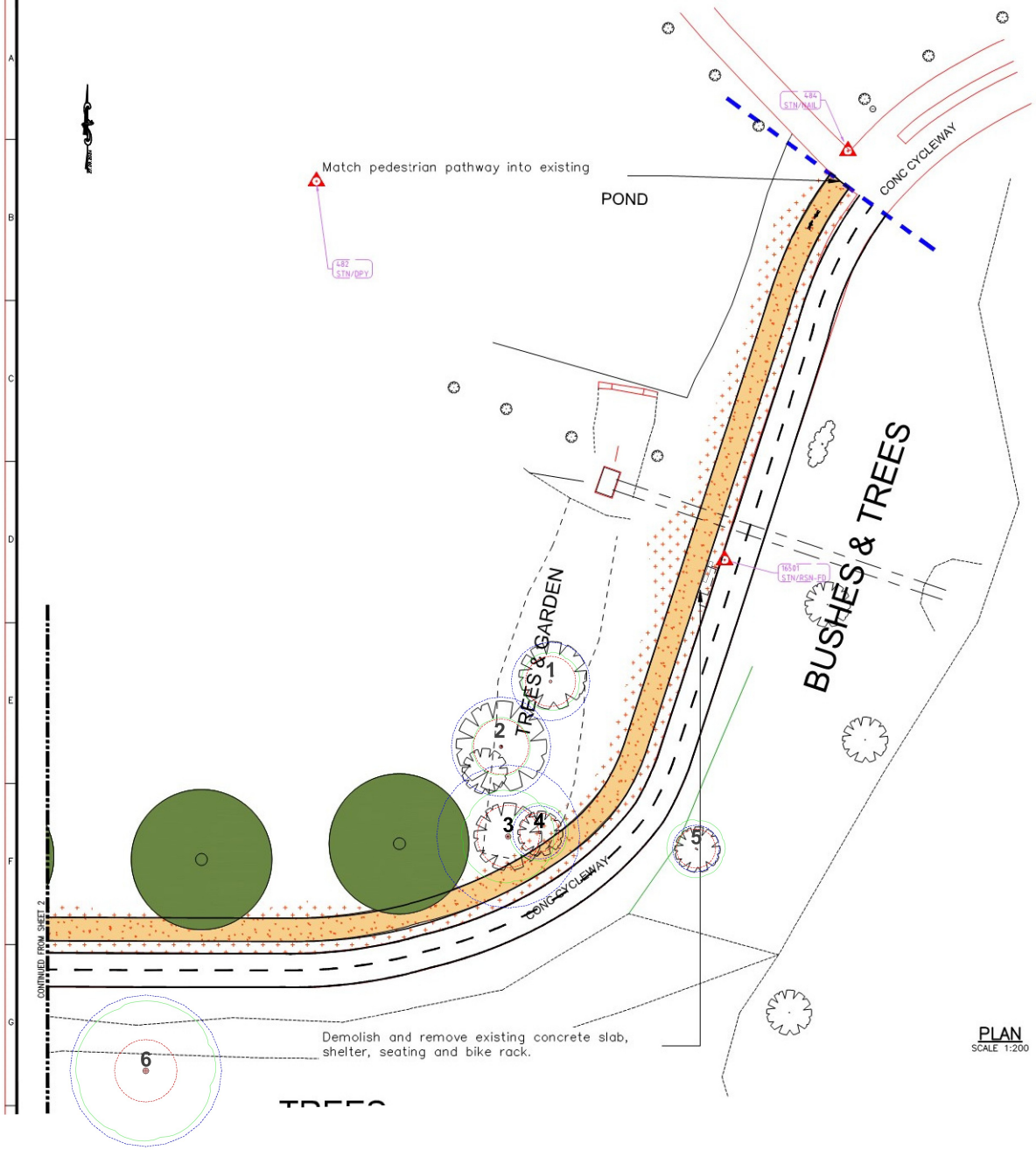

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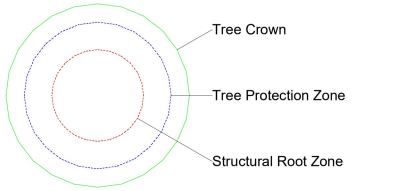

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Prepared by Hugh Millington

Appendix 2 - Tree Inspection Schedule

Tree ID	Common Name	Botanical Name	Age Class	Height (m)	Canopy Spread Radius (m)	Stem 1 (mm)	Stem 2 (mm)	Stem 3	Stem 4	Stem 5	Stem 6	DBH (mm)	DAB (mm)	Health	Structure	Landscape Value	SULE	Trees AZ Value	TPZ Radius (m)	SRZ Radius (m)	Notes
1	Cabbage Gum	*Eucalyptus ampifolia*	Semi-mature	7	2.5	280						280	360	Fair	Good	Medium	2. Medium	A2	3.4	2.2	
2	Turpentine	*Syncarpia glomulifera*	Semi-mature	7	2.5	280	100	150	120			354	450	Good	Good	High	1. Long	A1	4.2	2.4	
3	Eucapyptus Spp.	*Eucalyptus Spp.*	Semi-mature	8	4	360	361					510	600	Fair	Good	Medium	2. Medium	A2	6.1	2.7	
4	Swamp Oak	*Casuarina glauca*	Semi-mature	7	2.5	190						190	200	Good	Fair	Medium	2. Medium	A2	2.3	1.7	Suppressed
5	Parramatta Wattle	*Acacia parramatensis*	Semi-mature	6	2.5	120	90					150	200	Good	Good	High	1. Long	A1	2.0	1.7	
6	Spotted Gum	*Corymbia maculata*	Semi-mature	12	6	540						540	600	Good	Good	High	1. Long	A1	6.5	2.7	
7	Grey Gum	*Eucalyptus punctata*	Semi-mature	10	11	460						460	508	Good	Fair	Medium	2. Medium	A1	5.5	2.5	One low branch extension over ex path GC 3 outer edge
8	Parramatta Wattle	*Acacia parramatensis*	Mature	9	3	270						270	320	Good	Good	High	1. Long	A1	3.2	2.1	
9	Swamp Mahogany	*Eucalyptus robusta*	Semi-mature	7	3	290						290	300	Good	Good	High	1. Long	A1	3.5	2.0	
10	Swamp Mahogany	*Eucalyptus robusta*	Semi-mature	9	6	500						500	550	Good	Good	High	1. Long	A1	6.0	2.6	
11	Queensland Brushbox	*Lophostemon confertus*	Semi-mature	6	3	170	200	180	200			376	630	Good	Good	High	1. Long	A1	4.5	2.7	

Explanatory Notes

Tree Species - Botanical name followed by common name in brackets. Where species is unknown it is indicated with an '*spp'.*
Age Class - Over mature (OM), Mature (M), Early mature (EM), Semi mature (SM), Young (Y), Dead (D).
Diameter at Breast Height (DBH) - Measured with a DBH tape or estimated at approximately 1.4m above ground level. Where DBH has been estimated it is indicated with an 'est'.
Diameter Above root Buttresses (DAB): Measured with a DBH tape or estimated above root buttresses (DAB) for calculating the SRZ.
Height - Height from ground level to top of crown. All heights are estimated unless otherwise indicated.
Spread - Radius of crown at widest section. All tree spreads are estimated unless otherwise indicated.
Tree Protection Zone (TPZ) - DBH x 12. Measured in radius from the centre of the trunk. Rounded to nearest 0.1m. For monocots, the TPZ is set at 1 metre outside the crown projection.
Structural Root Zone (SRZ) - $(DAB \times 50)^{0.42} \times 0.64$. Measured in radius from the centre of the trunk. Rounded up to nearest 0.1m.
Health - Good/Fair/Poor/Dead
Structure - Good/Fair/Poor
Safe Useful Life Expectancy (SULE) - 1. Long (40+years), 2. Medium (15 - 40 years), 3. Short (5 - 15 years), 4. Remove (under 5 years), 5. Small/young.
Amenity Value - Very High/High/Medium/Low/Very Low.
(x) Indicates the measurement taken for the diameter at tree base above the buttress roots.
(E) Indicates estimated measurements.

Appendix 3 – Assessment of Health

Category	Example condition	Summary
Good	• Crown has good foliage density for species. • Tree shows no or minimal signs of pathogens that are unlikely to have an effect on the health of the tree. • Tree is displaying good vigour and reactive growth development.	• The tree is in above average health and condition and no remedial works are required.
Fair	• The tree may be starting to dieback or have over 25% deadwood. • Tree may have slightly reduced crown density or thinning. • There may be some discolouration of foliage. • Average reactive growth development. • There may be early signs of pathogens which may further deteriorate the health of the tree. • There may be epicormic growth indicating increased levels of stress within the tree.	• The tree is in below average health and condition and may require remedial works to improve the trees health.
Poor	• The may be in decline, have extensive dieback or have over 30% deadwood. • The canopy may be sparse or the leaves may be unusually small for species. • Pathogens or pests are having a significant detrimental effect on the tree health.	• The tree is displaying low levels of health and removal or remedial works may be required.
Dead	• The tree is dead or almost dead.	• The tree should generally be removed.

Appendix 4 Landscape Value

RATING	HERITAGE VALUE	ECOLOGICAL VALUE	AMENITY VALUE
1. SIGNIFICANT	The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance or is listed on Council's Significant Tree Register	The subject tree is scheduled as a Threatened Species as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999	The subject tree has a very large live crown size exceeding 300m² with normal to dense foliage cover, is located in a visually prominent position in the landscape, exhibits very good form and habit typical of the species
	The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has a known or documented association with that item	The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species	The subject tree makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity
	The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to Commemorate an important historical event	The subject tree is a Remnant Tree, being a tree in existence prior to development of the area	The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance
2. VERY HIGH	The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site.	The tree is a locally--indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site.	The subject tree has a very large live crown size exceeding 200m²; a crown density exceeding 70% (normal--dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area
3. HIGH	The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence	The tree is a locally--indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value	The subject tree has a large live crown size exceeding 100m²; The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% normal); The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area
4. MODERATE	The tree has no known or suspected historical association, but does not detract or diminish the value of the item and is sympathetic to the original era of planting.	The subject tree is a non--local native or exotic species that is protected under the provisions of this DCP.	The subject tree has a medium live crown size exceeding 40m²;The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crowndensity of more than 50% (thinning to normal); and The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms. The tree makes a fair contribution to the visual character and amenity of the area.
5. LOW	The subject tree detracts from heritage values or diminishes the value of a heritage item	The subject tree is scheduled as exempt (not protected) under the provisions of this DCP due to its species, nuisance or position relative to buildings or other structures.	The subject tree has a small live crown size of less than 40m² and can be replaced within the short term (5--10 years) with new tree planting
6. VERY LOW	The subject tree is causing significant damage to a heritage Item.	The subject tree is listed as an Environment Weed Species in the Local Government Area, being invasive, or is a known nuisance species.	The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% (sparse).
7. INSIGNIFICANT	The tree is completely dead and has no visible habitat value	The tree is a declared Noxious Weed under the Noxious Weeds Act (NSW) 1993 within the relevant Local Government Area.	The tree is completely dead and represents a potential hazard.

Ref: *Determining the retention value of trees of development sites,* presentation handouts at TAFE NSW Ryde College, March 2012

Appendix 5 - Age class

Determining the exact age of a tree is difficult without carrying out potentially invasive testing. The age class of the subject tree has been estimated using the definitions below.

Category	Description
Young/Newly planted	• Young or recently planted tree.
Semi Mature	• Up to 20% of the usual life expectancy for the species.
Early mature/Mature	• Between 20% - 80% of the usual life expectancy for the species.
Over mature	• Over 80% of the usual life expectancy for the species.
Dead	• Tree is dead or almost dead.

Appendix 6 - Structural condition

Category	Example condition	Summary
Good	• Branch unions appear to be strong with no sign of defects. • There are no significant cavities. • The tree is unlikely to fail in usual conditions. • The tree has a balanced crown shape and form.	• The tree is considered structurally good with well developed form.
Fair	• The tree may have minor structural defects within the structure of the crown that could potentially develop into more significant defects. • The tree may a cavity that is currently unlikely to fail but may deteriorate in the future. • The tree is an unbalanced shape or leans significantly. • The tree may have minor damage to its roots. • The root plate may have moved in the past but the tree has now compensated for this. • Branches may be rubbing or crossing.	• The identified defects are unlikely cause major failure. • Some branch failure may occur in usual conditions. • Remedial works can be undertaken to alleviate potential defects.
Poor	• The tree has significant structural defects. • Branch unions may be poor or weak. • The tree may have a cavity or cavities with excessive levels of decay that could cause catastrophic failure. • The tree may have root damage or is displaying signs of recent movement. • The tree crown may have poor weight distribution which could cause failure.	• The identified defects are likely to cause either partial or whole failure of the tree.

Appendix 7 - Safe Useful Life Expectancy (SULE), (Barrel, 2001)

A trees safe useful life expectancy is determined by assessing a number of different factors including the health and vitality, estimated age in relation to expected life expectancy for the species, structural defects, and remedial works that could allow retention in the existing situation.

Category	Description
1. Long	Useful life expectancy over 40 years
2. Medium	Useful life expectancy 15 to 40 years
3. Short	Useful life expectancy 5 to 15 years
4. Remove	Useful life expectancy under 5 years
5. Small/Young	Trees that could be transplanted or replaced with similar specimen.
6. Unstable	Tree has become hazardous or structurally unstable.

TreeAZ Categories (Version 10.04-ANZ)

CAUTION: TreeAZ assessments must be carried out by a competent person qualified and experienced in arboriculture. The following category descriptions are designed to be a brief field reference and are not intended to be self-explanatory. They must be read in conjunction with the most current explanations published at www.TreeAZ.com.

Category Z: Unimportant trees not worthy of being a material constraint

Local policy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species	
Z1	Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc
Z2	Too close to a building, i.e. exempt from legal protection because of proximity, etc
Z3	Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc
High risk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure	
Z4	Dead, dying, diseased or declining
Z5	Severe damage and/or structural defects where a high risk of failure cannot be satisfactorily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc
Z6	Instability, i.e. poor anchorage, increased exposure, etc
Excessive nuisance: Trees that are likely to be removed within 10 years because of unacceptable impact on people	
Z7	Excessive, severe and intolerable inconvenience to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. dominance, debris, interference, etc
Z8	Excessive, severe and intolerable damage to property to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. severe structural damage to surfacing and buildings, etc
Good management: Trees that are likely to be removed within 10 years through responsible management of the tree population	
Z9	Severe damage and/or structural defects where a high risk of failure can be temporarily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc
Z10	Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc
Z11	Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc
Z12	Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc

NOTE: Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as ZZ. ZZ trees are likely to be unsuitable for retention and at the bottom of the categorization hierarchy. In contrast, although Z trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

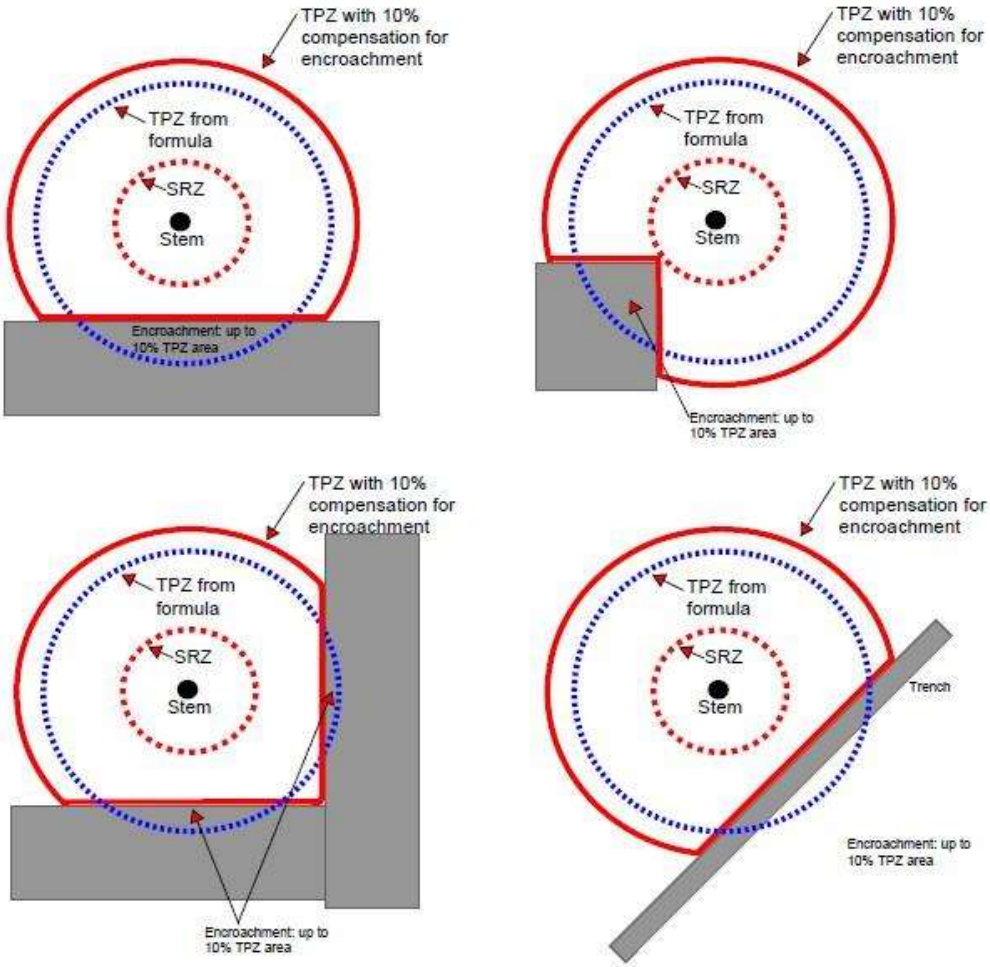
Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

A1	No significant defects and could be retained with minimal remedial care
A2	Minor defects that could be addressed by remedial care and/or work to adjacent trees
A3	Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years
A4	Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment)

NOTE: Category A1 trees that are already large and exceptional, or have the potential to become so with minimal maintenance, can be designated as AA at the discretion of the assessor. Although all A and AA trees are sufficiently important to be material constraints, AA trees are at the top of the categorization hierarchy and should be given the most weight in any selection process.

Appendix 9 – Examples of TPZ Encroachment

Encroachment into the Tree Protection Zone is sometimes unavoidable. The following diagram shows examples of acceptable levels of encroachment and how they may be compensated for by providing additional space contiguous to the TPZ area.



Note: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

Flora and Fauna Assessment

Eastern Parramatta River & CBD Precinct Cycleway

East Coast Ecology

Prepared for: City of Parramatta Council
Report Date: March 2025

Document Control

Project Title: Flora and Fauna Assessment – Eastern Parramatta River & CBD Precinct Cycleway

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East Coast Ecology Pty Ltd (ABN: 66 652 418 623)

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GLOSSARY

Abbreviation	Definition
amsl	Above mean sea level
BAM	Biodiversity Assessment Method 2020
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BDAR	Biodiversity Development Assessment Report
BOM	Bureau of Meteorology
DBH	Diameter at Breast Height
DCCEEW	Department of Climate Change, the Environment and Water
DPE	Department of Planning and Environment
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment
ECE	East Coast Ecology
EP&A Act	*Environmental Planning & Assessment Act 1979* (NSW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FFA	Flora and Fauna Assessment
FM Act	*Fisheries Management Act 1994*
ha	Hectares
km	Kilometres
LGA	Local Government Area
Locality	The same meaning when describing a local population of a species or local occurrence of an ecological community.
m	metres
mm	millimetres
MNES	Matters of National Environmental Significance
NSW	New South Wales
PCT	Plant Community Type
SEPP	State Environmental Planning Policy
SIS	Species Impact Statement
Subject Land	The land depicted in **Figure 1** - **Figure 6.**
TEC	Threatened Ecological Community
TfNSW	Transport for NSW

1. INTRODUCTION

1.1 The Proposed Activity

The City of Parramatta Council proposes to upgrade the existing Eastern Parramatta River and CBD Precinct Cycleway. The current cycleway stretches over 15km alongside the Parramatta River and is an important asset and public facility of the Parramatta CBD. The proposal is concentrated within the following five separate site locations along the existing cycleway:

- Rangihou Reserve, Parramatta
- Baludarri Wetlands, Parramatta
- Ried Park, Rydalmere
- Royal Shores, Ermington, and
- George Kendall Riverside Park, Ermington.

These areas been identified as high priority for upgrade due to an increase in cyclist and pedestrian usage.

Key features of the proposed activity would include the following scope of works:

- Resurfacing and widening of the existing pathway
- Installation of new public seating
- Replacement of existing fencing with sandstone retaining walls, and
- Installation of new light poles and LED handrail lights.

To facilitate the proposed activity, removal of native vegetation will be required. East Coast Ecology Pty Ltd (ECE) was commissioned by City of Parramatta Council to prepare a Flora and Fauna Assessment (FFA) to assess the works associated with the proposed activity.

1.2 The Subject Land

The area assessed within this report is referred to as the 'Subject Land' and has been defined by the extent of construction including proposed path extensions and lighting upgrades as depicted in the Concept Design Plans (City of Parramatta Council, 2024) (**Appendix A**).

The location of the proposed activity is depicted in **Figure 1- Figure 6.**

Figure 1. The Subject Land (Rangihou Reserve).

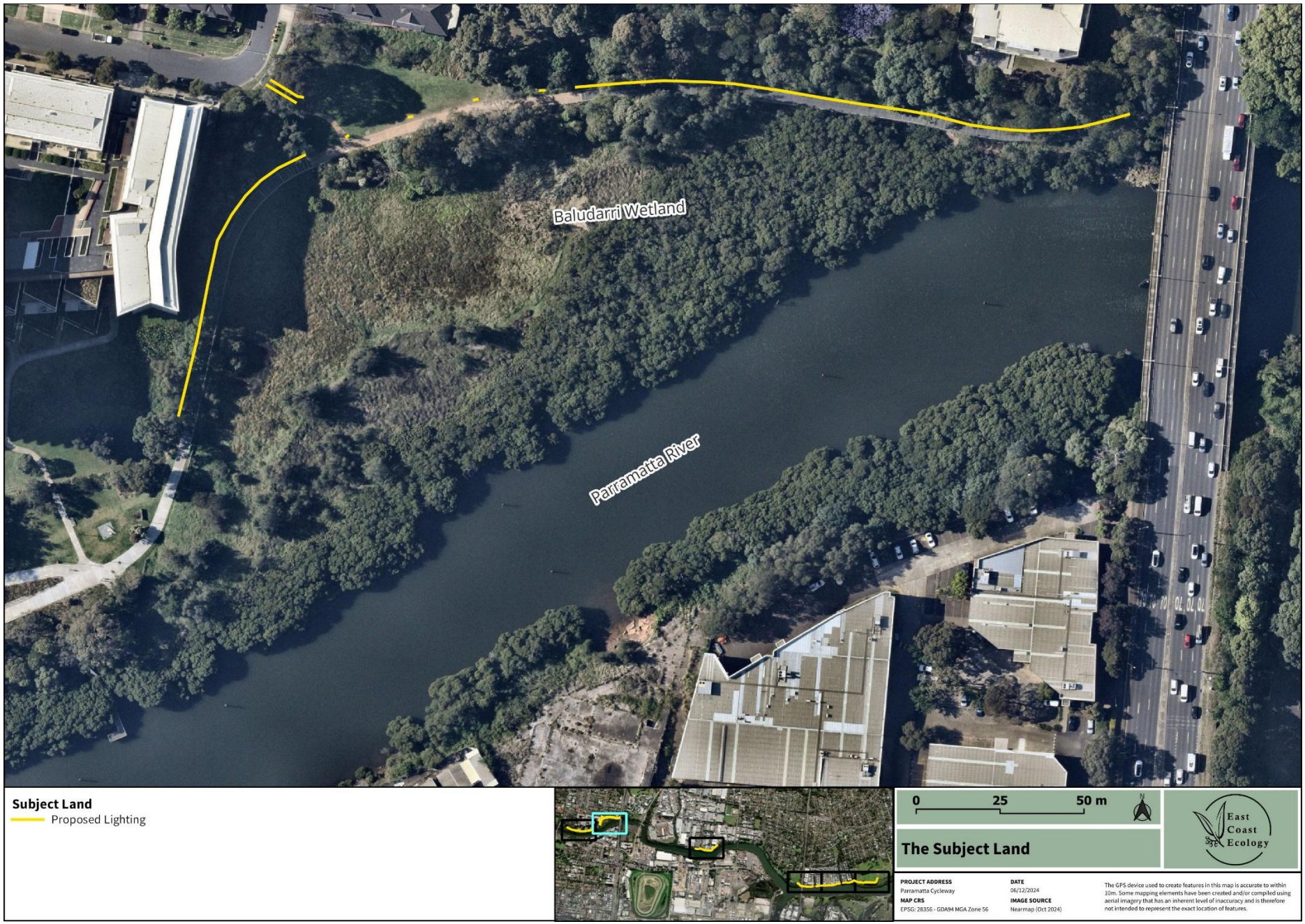

Figure 2. The Subject Land (Baludarri Wetland).

Figure 3. The Subject Land (Reid Park).

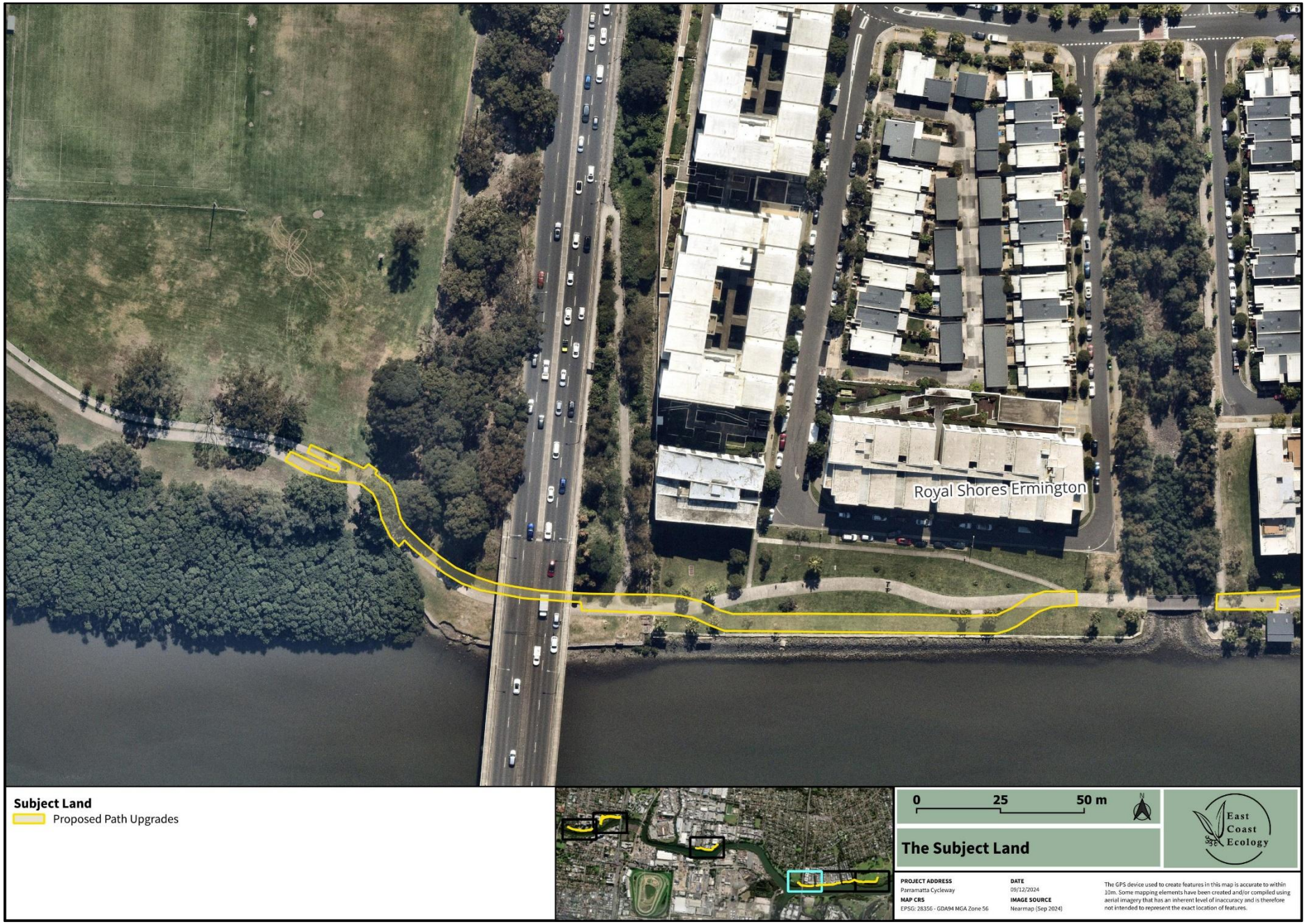

Figure 4. The Subject Land (Royal Shores Ermington).

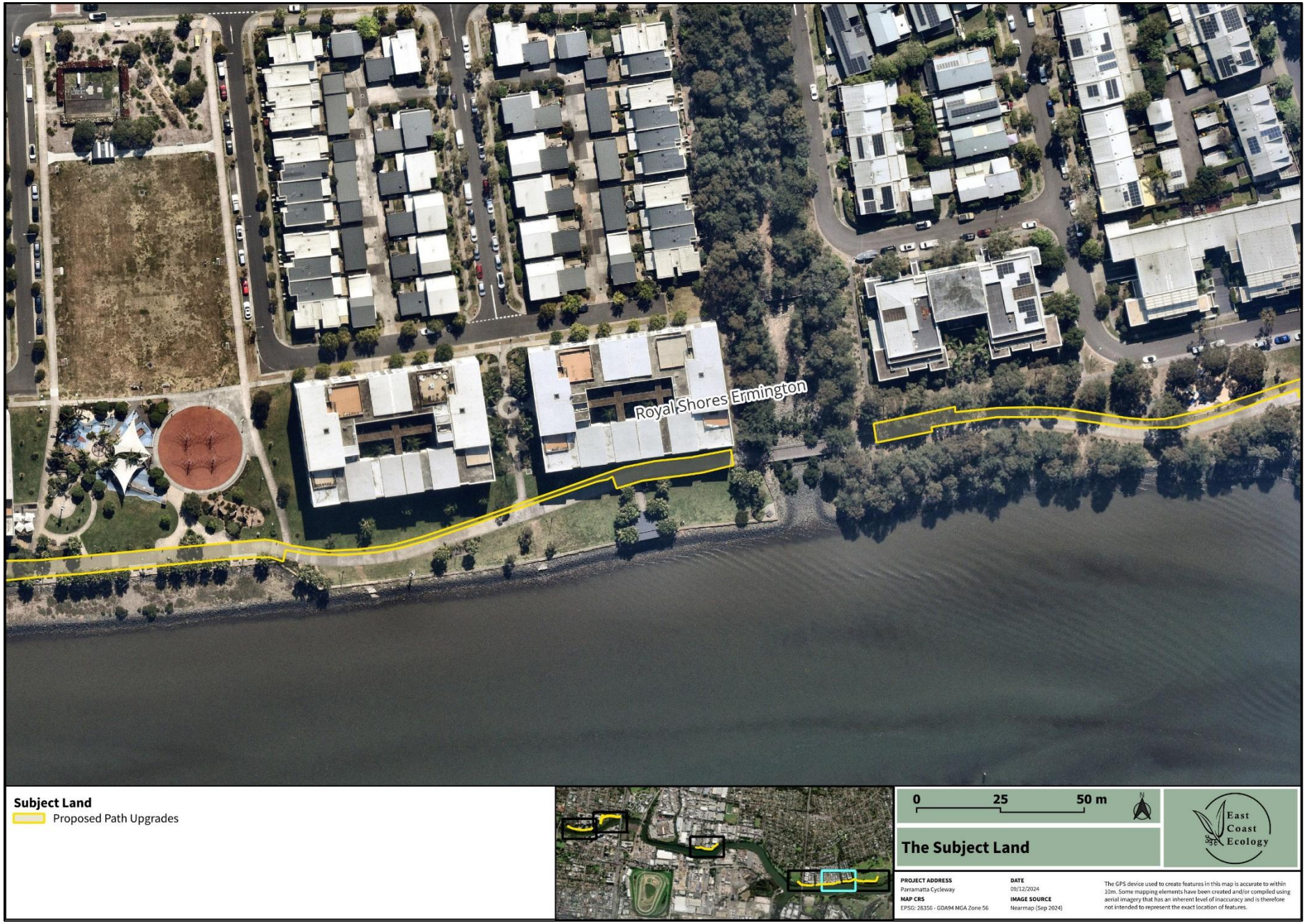

Figure 5. The Subject Land (Royal Shores Ermington).

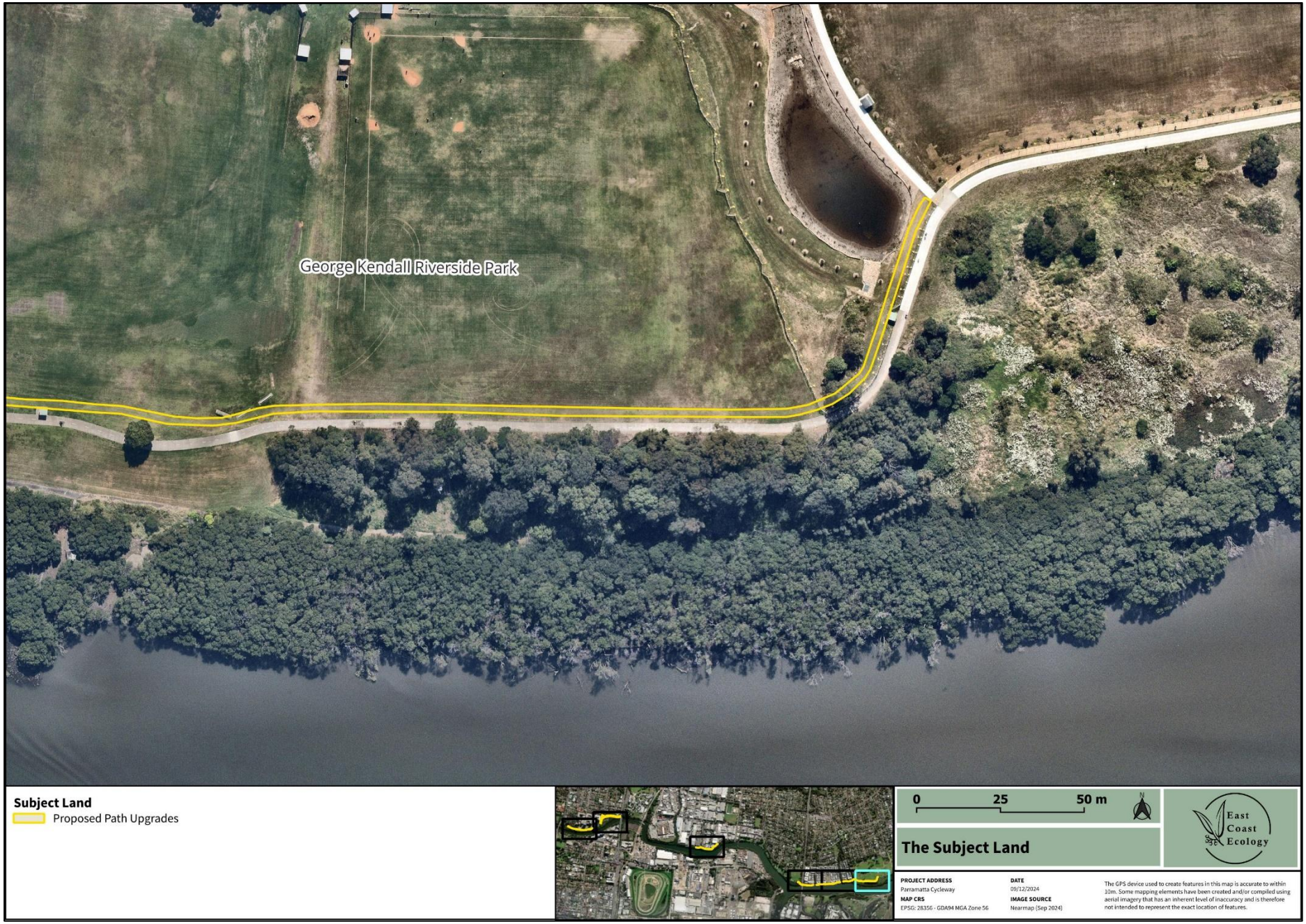

Figure 6. The Subject Land (George Kendall Riverside Park).

1.3 Legislative Context

1.3.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The Commonwealth EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places which are considered Matters of National Environmental Significance (MNES). Under the EPBC Act, approval is required for actions that have, will have, or are likely to have a significant impact on MNES.

Several EPBC listed threatened species have potential to utilise the Subject Land. The proposed activity will not result in a 'significant impact' on any MNES and a referral to the Australian Government Minister for the Environment is not required.

1.3.2 *Environmental Planning and Assessment Act 1979*

The *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) establishes the system of environmental planning and assessment in NSW. The proposed activity is being assessed under Division 5.1 of the EP&A Act via a Review of Environment Factors (REF). This report provides input into the REF and environmental impact assessment process by providing assessment specific to matters of biodiversity.

1.3.3 *Biodiversity Conservation Act 2016*

The BC Act (NSW) seeks to conserve biological diversity and promote ecologically sustainable development, to prevent extinction and promote recovery of threatened species, populations and ecological communities and to protect areas of outstanding biodiversity value.

Several BC Act listed threatened species have the potential to occur within, or utilise, the Subject Land. The BC Act requires that the significance of the impact on threatened species, populations and threatened ecological communities is assessed using the test listed in Section 7.3 of the BC Act. Where a significant impact is likely to occur, a Species Impact Statement (SIS) must be prepared in accordance with the Environment Agency Head's requirements, or a Biodiversity Development Assessment Report (BDAR) must be prepared by an accredited assessor in accordance with the Biodiversity Assessment Method (BAM) (DPE, 2020a). The proposed activity will not result in a 'significant impact' on any threatened entities and therefore the Biodiversity Offset Scheme is not triggered (**Appendix C**). As such, an SIS or a BDAR is not required. The Subject Land is not located within any Areas of Outstanding Biodiversity Value.

1.3.4 Biosecurity Act 2015

The *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks posed by an activity as a matter of biosecurity. As defined in Part 3, section 23 of this Act, any non-conformance by an individual is defined as guilty of an offence.

No priority weeds for the Greater Sydney Region were identified within the Subject Land.

Suitable mitigation measures (**Section 7.2**) have been provided to manage weeds within the impact areas in accordance with the *Biosecurity Act 2015*, should they be identified in future.

1.3.5 Water Management Act 2000

The main objective of the *Water Management Act 2000* (NSW) (WM Act) is to manage NSW water in a sustainable and integrated manner that will benefit today's generations without compromising future generations' ability to meet their needs. Section 91E of the Act establishes an approval regime for controlled activities within waterfront land. However, clause 41 of the Water Management (General) Regulation 2018 provides an exemption for public authorities in relation to all controlled activities on waterfront land. Therefore, approval under the WM Act is not required.

1.3.6 Fisheries Management Act 1994

The *Fisheries Management Act 1994* (NSW) (FM Act) aims to conserve, develop and share the fishery resources of NSW for the benefit of present and future generations including conserving fish stocks and key fish habitats and promoting ecologically sustainable development. No Key Fish Habitat (KFH) was identified within the Subject Land. The closest KFH is mapped within the Parramatta River, immediately adjoining the Subject Land, however, no impact to KFH is expected.

1.3.7 State Environmental Planning Policy (Biodiversity and Conservation) 2021

On 1 March 2022, the State Environmental Planning Policy (Biodiversity Conservation) 2021 (Biodiversity Conservation SEPP) came into effect, consolidating and repealing several former State Environmental Planning Policies (SEPPs) and Regional Environmental Plans (REPs) relating to biodiversity in NSW. Specifically, Chapters 3 and 4 of the Biodiversity Conservation SEPP incorporate the Koala SEPP 2020 and Koala SEPP 2021, respectively. Neither Chapter 3, nor Chapter 4 of the Biodiversity Conservation SEPP apply to the Hills Shire LGA.

Chapter 2 aims to protect the biodiversity values of trees and other vegetation in non-rural areas of the State, and to preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation. Chapter 2 does apply to City of Parramatta, however, as the proposal does not require development consent in accordance with the State Environmental Planning Policy (Transport and Infrastructure) 2021, the Biodiversity Conservation SEPP does not apply to the proposal. Regardless, this document has been considered when assessing potential impacts on trees and vegetation.

1.3.8 State Environmental Planning Policy (Resilience and Hazards) 2021

The State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) commenced on the 1st of March 2022 and replaces the following former SEPPs:

- State Environmental Planning Policy (Coastal Management) 2018
- State Environmental Planning Policy 33 – Hazardous and Offensive Development, and
- State Environmental Planning Policy 55 – Remediation of Land.

The Subject Land is situated within land mapped under the following areas:

- 'Coastal Use Area'
- 'Coastal Environment Area' and,
- 'Proximity to coastal wetlands or littoral rainforest'.

Compliance with the controls listed under Division 4 – Coastal Use Area are discussed in the REF. The following subsections details the criteria (biodiversity specific) of this SEPP that applies.

1.3.8.1 Development on land within the coastal environment area

(1) Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:

(a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment

(b) coastal environmental values and natural coastal processes

(c) the water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,

(d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,

(e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,

(f) Aboriginal cultural heritage, practices and places,

(g) the use of the surf zone

(2) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:

(a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or

(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or

(c) if that impact cannot be minimised—the development will be managed to mitigate that impact

The proposed activity is an extension of an existing pathway within a highly modified landscape. Any further degradation of the coastal environmental values and natural coastal processes is unlikely given the existing state of the Subject Land. Subject to mitigation measures, no further impacts to the coastal environment area are anticipated as a result of the proposal.

1.3.8.2 Development on land in proximity to coastal wetlands or littoral rainforest

Development consent must not be granted to development on land identified as “proximity area for coastal wetlands” or “proximity area for littoral rainforest” on the Coastal Wetlands and Littoral Rainforests Area Map unless the consent authority is satisfied that the proposed development will not significantly impact on

(a) the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or

(b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.

The proposed activity has been specifically designed to avoid impacts to Coastal Wetlands. Given the proposed activity is an extension of an existing pathway within a highly modified landscape, no changes to the quantity and quality of surface and groundwater flows that feed adjoining coastal wetlands are expected. The biophysical, hydrological and ecological integrity of the Coastal Wetlands will not be adversely affected by the proposed activity.

2. METHODOLOGY

2.1 Background Research

A thorough literature review of local information relevant to the Subject Land was undertaken. Searches using NSW Wildlife Atlas (BioNet) (NSW DCCEEW, 2024a) and the Commonwealth Protected Matters Search Tool (PMST) (DCCEEW, 2024) were conducted to identify all current threatened flora and fauna, as well as migratory fauna records, within a 5km radius of the Subject Land. These data were used to assist in establishing the presence or likelihood of any ecological values as occurring on or adjacent to the Subject Land and helped inform our ecologists on what to look for during the site assessment.

Soil landscape and geological mapping, as well as existing vegetation mapping, were examined to assist in determining whether any threatened flora or ecological communities could be present. The following technical resources were comprised in the preparation of this report:

- State and Commonwealth datasets:
  - EPBC Protected Matters Search Tool (DCCEEW, 2024)
  - NSW BioNet. The website of the Atlas of NSW Wildlife (NSW DCCEEW, 2024a)
  - NSW BioNet. Threatened Biodiversity Data Collection (NSW DCCEEW, 2024b)
  - NSW BioNet. Vegetation Classification System (NSW DCCEEW, 2024c)
  - NSW Government Spatial Services: Search and Discovery - Historical, Aerial and Satellite Imagery (Spatial Services, 2024a)
  - NSW Government Spatial Services: Six Maps Clip & Ship (Spatial Services, 2024b)
  - Key Fish Habitat Maps – Sydney Metro (DPI, 2024b)
- Vegetation and soil mapping:
  - The NSW State Vegetation Type Map (NSW DCCEEW, 2024d)
  - eSPADE v2.2.0 (NSW DCCEEW, 2024f)
- NSW State guidelines:
  - Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method (DPE, 2020a)
  - Threatened Species Survey and Assessment: Guidelines for developments and activities. Working Draft (DEC, 2004)

Species from both the BioNet and PMST online searches were combined to produce a list of threatened species, populations and communities that are likely to occur within the Subject Land (**Appendix B**).

2.2 Scope of Assessment

The overarching objective of this assessment was to evaluate the ecological values that occur within the Subject Land and identify how the proposed activity satisfies the relevant planning framework. This report discerns the likelihood of occurrence of any threatened entities (i.e. ecological communities and species) listed under the *Biodiversity Conservation Act 2016* (NSW) (BC Act) and the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The full scope of the assessment included:

- Background research to determine the likelihood for NSW and/ or Commonwealth threatened biota to occur within the Subject Land during any point of their lifecycle
- Assess any potential impacts to species and/ or communities listed under the BC Act and EPBC Act, including the Long-nosed bandicoot, North Head - endangered population,
- Establishing the likelihood of occurrence of migratory species and threatened ecological communities (TEC) as listed under the BC Act and/ or the EPBC Act
- Identifying and mapping the distribution of vegetation communities within the Subject Land
- Recording presence and the extent of any known or potential fauna habitat features such as nests, dreys, caves, crevices, culverts, pools, soaks, flowering trees, fruiting trees or hollow-bearing trees and provide recommendations for on-going management of these habitat features and any fauna present
- Determining potential ecological impacts or risks that may result due to the proposed works, and
- Recommendation of any controls or additional actions to be taken to protect or improve environmental outcomes of the activity.

2.3 Limitations

Not all flora and fauna species could be directly surveyed for during the site assessment. These species include nocturnal fauna and cryptic flora with flowering times outside of the survey period. The presence of nocturnal and cryptic species was assessed based on habitat constraints and historical records

2.4 Native Vegetation, Threatened Ecological Communities and Vegetation Integrity Methods

2.4.1 Existing Information

A review of the State Vegetation Type Map (NSW DCCEEW, 2024d) was used to assist in the identification of Plant Community Types (PCTs) within and surrounding the Subject Land. The PCT of 'best-fit' was determined based on the floristic descriptions within the Vegetation Classification System database (NSW DCCEEW, 2024c).

2.4.2 Mapping Native Vegetation Extent

The extent of native vegetation within the Subject Land was determined through a field assessment with the aid of a GPS-enabled tablet.

2.5 Threatened Flora Survey Methods

2.5.1 Review of Existing Information

Threatened flora with potential to occur within the Subject Land and immediate surrounds were identified following review of BioNet and the PMST. Soil mapping (NSW DCCEEW, 2024e) and topography (Google Earth) were also used to provide further context on habitat constraints for threatened flora.

2.5.2 Field Surveys

To determine whether any threatened flora or their habitats were present, a survey was undertaken using parallel field traverses in accordance with the 'Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method' (DPE, 2020a).

2.6 Threatened Fauna Survey Methods

2.6.1 Review of Existing Information

Threatened fauna with potential to occur within the Subject Land and immediate surrounds were identified following review of BioNet and the PMST. Soil mapping (NSW DCCEEW, 2024e) and topography (Google Earth) were also used to provide further context on habitat constraints for threatened fauna.

2.6.2 Habitat Constraints

A field survey was undertaken to identify any habitat constraints (e.g. waterbodies, rocky areas, tree hollows), including microhabitat, present within the Subject Land and immediate surrounds. Potential habitat constraints within the broader area (500m buffer) were assessed using Google Earth, historical aerial imagery (Spatial Services, 2024a), soil landscape mapping (NSW DCCEEW, 2024e) and recent vegetation mapping (NSW DCCEEW, 2024b).

2.6.3 Field Surveys

No targeted surveys for fauna were undertaken. To determine whether any threatened fauna species were present, targeted habitat surveys were undertaken using parallel field traverses.

2.7 Weather Conditions

Surveys were undertaken on 3rd December 2024 within and immediately surrounding the Subject Land. Weather conditions taken from the nearest weather station (Parramatta (station 066124) in the lead up and during the field survey are outlined in **Table 1**.

Table 1. Weather conditions taken from the nearest weather stations (Station number 066124) in the lead up and during the field survey (BOM, 2024).

Timing/activities	Date	Day	Temperature (°C)		Rainfall (mm)
			Min	Max	
Lead up to the survey	26/12/2024	Tuesday	19	37.5	0
	27/12/2024	Wednesday	19.8	37	0
	28/12/2024	Thursday	21.8	29.2	2
	29/12/2024	Friday	21	22.8	3.8
	30/12/2024	Saturday	20.5	26	14.6
	01/12/2024	Sunday	20.2	31.5	1.4
	02/12/2024	Monday	18.8	36	5.2
Site Assessment	03/12/2024	Tuesday	20.5	32.5	0

2.8 Permits and Licences

The biodiversity assessment was conducted under the terms of ECE's Scientific Licence issued by the NSW Department of Planning and Environment (SL102667). Fauna survey was conducted under approval RVF22/2367 from the NSW Animal Care and Ethics Committee.

3. SITE CONTEXT

3.1 Landscape Features

3.1.1 IBRA Bioregion and subregion

The Subject Land is situated within the Parramatta Local Government Area (LGA) and lies partly within the Cumberland and the Pittwater Interim Biogeographic Regionalisation for Australia (IBRA) Subregions, within the Sydney Basin IBRA Bioregion.

3.1.2 Rivers, streams, estuaries and wetlands

The Subject Land does not intersect with any mapped or unmapped watercourses.

Parramatta River, a fourth-order stream, adjoins to the south of the Subject Land. The Subject Land is therefore located within its associated 40m riparian buffer zone.

3.1.3 Topography, Geology and Soils

The Subject Land occurs on a consistent gradient across all areas of 7m above sea level (asl). The Subject Land is mapped as occurring on the 'Lucas Heights' soil landscape, characterised by gently undulating crests and ridges of interbedded shale on plateau surfaces of the Mittagong formation.

3.1.4 Karst, Caves, Crevices, Cliffs, Rocks or Other of Geological Features of Significance

The Subject Land did not contain areas of geological significance (karsts, caves, cliffs and crevices). The Subject Land, and surrounding area (500m buffer), is mapped as occurring on acid sulfate soils and/or having a risk/ probability of exhibiting occurrence of acid sulfate soils.

3.1.5 Areas of Outstanding Biodiversity Value

No Areas of Outstanding Biodiversity Value (AOBV) occur within the Subject Land.

3.1.6 NSW (Mitchell) Landscapes

Mitchell Landscapes (Mitchell, 2002) groups ecosystems into meso-ecosystems representing larger natural entities based on topography and geology. The naming of ecosystems and meso-ecosystems was standardised so that each name provided location information and a meaningful descriptive landscape term. The Subject Land occurs within the 'Port Jackson Basin' and 'Ashfield Plains 'Mitchell Landscape Ecosystem.

3.1.6.1 Port Jackson Basin

Deep elongated harbour with steep cliffed margins on horizontal Triassic quartz sandstone. Small pocket beaches and more extensive Quaternary estuary fill of muddy sand at the head of most tributary streams. General elevation 0 to 80m, local relief 10 to 50m. Sandstone slopes and cliffs have patches of uniform or gradational sandy soil on narrow benches and within joint crevices that support forest and woodland of Sydney Peppermint (*Eucalyptus piperita*), Smooth-barked Apple (*Angophora costata*), Red Bloodwood (*Corymbia gummifera*) and Blackbutt (*Eucalyptus pilularis*). Sheltered gullies contain some Turpentine

(*Syncarpia glomulifera*), Coachwood (*Ceratopetalum apetalum*) and Water Gum (*Tristaniopsis laurina*). Estuarine sands were originally dominated by saltmarsh but have been taken over by Grey Mangrove (*Avicennia marina*) in the past century.

3.1.6.2 Ashfield Plains

Undulating hills and valleys on horizontal Triassic shale and siltstone, occasional quartz sandstones especially near the margin of the Port Jackson landscape. Coastal extension of the Cumberland Plain landscape. Red and brown texture-contrast soils on crests grading to yellow harsh texture-contrast soils in valleys. Open forest of Broad-leaved Ironbark (*Eucalyptus fibrosa ssp. fibrosa*), Grey Box (*Eucalyptus moluccana*), with Tea-tree (*Leptospermum sp.*) along creeks and forests of Turpentine (*Syncarpia glomulifera*), Red Mahogany (*Eucalyptus resinifera*), Grey gum (*Eucalyptus punctata*), Sydney Blue Gum (*Eucalyptus saligna*) and Blackbutt (*Eucalyptus pilularis*) with a grassy understorey of Kangaroo Grass (*Themeda triandra*) on moister sites.

4. RESULTS: NATIVE VEGETATION

4.1 Plant Community Types

4.1.1 Historically Mapped Vegetation

The State Vegetation Type Map (NSW DCCEEW, 2024d) indicated the presence of four Plant Community Types (PCT) in proximity to the Subject Land:

- PCT 3595: Sydney Coastal Sandstone Gully Forest
- PCT 4028: Estuarine Swamp Oak Twig-rush Forest
- PCT 4091: Grey mangrove-River Mangrove Forest, and
- PCT 4097: Samphire Saltmarsh

The following PCTs are associated with the below threatened ecological communities (TEC):

- PCT 4028:
  - Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions (BC Act Listed; Endangered)
  - Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and Southeast Queensland ecological community (EPBC Act Listed; Endangered)
- PCT 4097:
  - Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions (BC Act Listed; Endangered), and
  - Subtropical and Temperate Coastal Saltmarsh (EPBC Act Listed; Vulnerable)

The State Vegetation Type Map is presented in **Figure 7** - **Figure 12**.

4.1.2 Field-validated Vegetation

Site assessment determined the presence of one PCT within the Subject Land:

- PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest

Native vegetation within the Subject Land has been assessed as aligning with the BioNet Vegetation Classification PCT identified within **Table 2**. A detailed description of the PCT is provided in the following subsections. One novel vegetation type was allocated to exotic and/or planted vegetation that could not be assigned to a PCT:

- Exotic/Ornamental Grasses

The vegetation within the Subject Land is detailed in **Table 3** and presented in **Figure 13- Figure 18**.

Table 2. PCT identified within the Subject Land.

PCT ID	PCT Scientific Name	Area within the Subject Land
4006	Northern Paperbark Swamp Mahogany Saw-sedge Forest	31 trees (0.09ha)

Figure 7. Vegetation Communities within and surrounding the Subject Land (Rangihou Reserve).

Figure 8. Vegetation Communities within and surrounding the Subject Land (Baludarri Wetland).

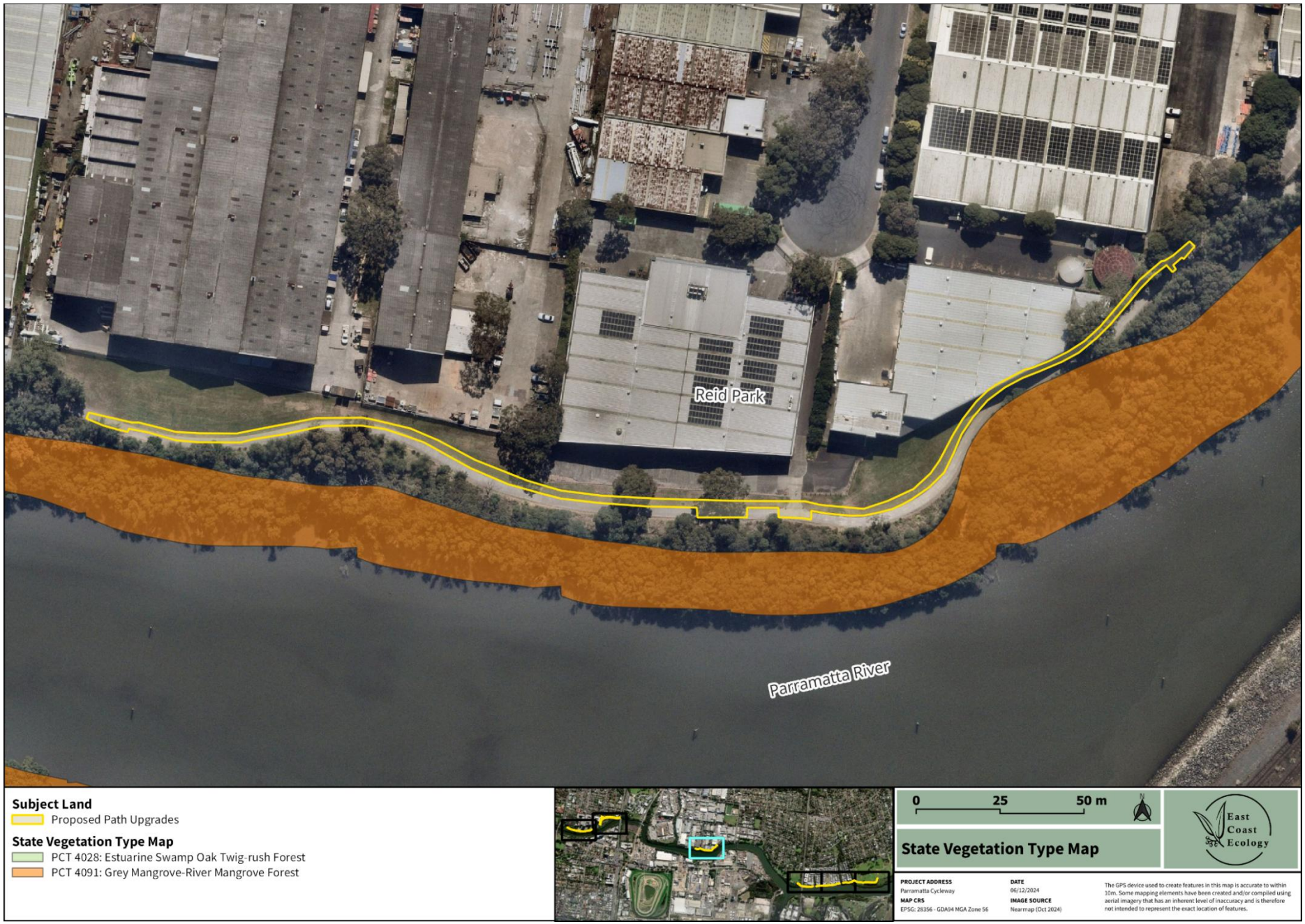

Figure 9. Vegetation Communities within and surrounding the Subject Land (Reid Park).

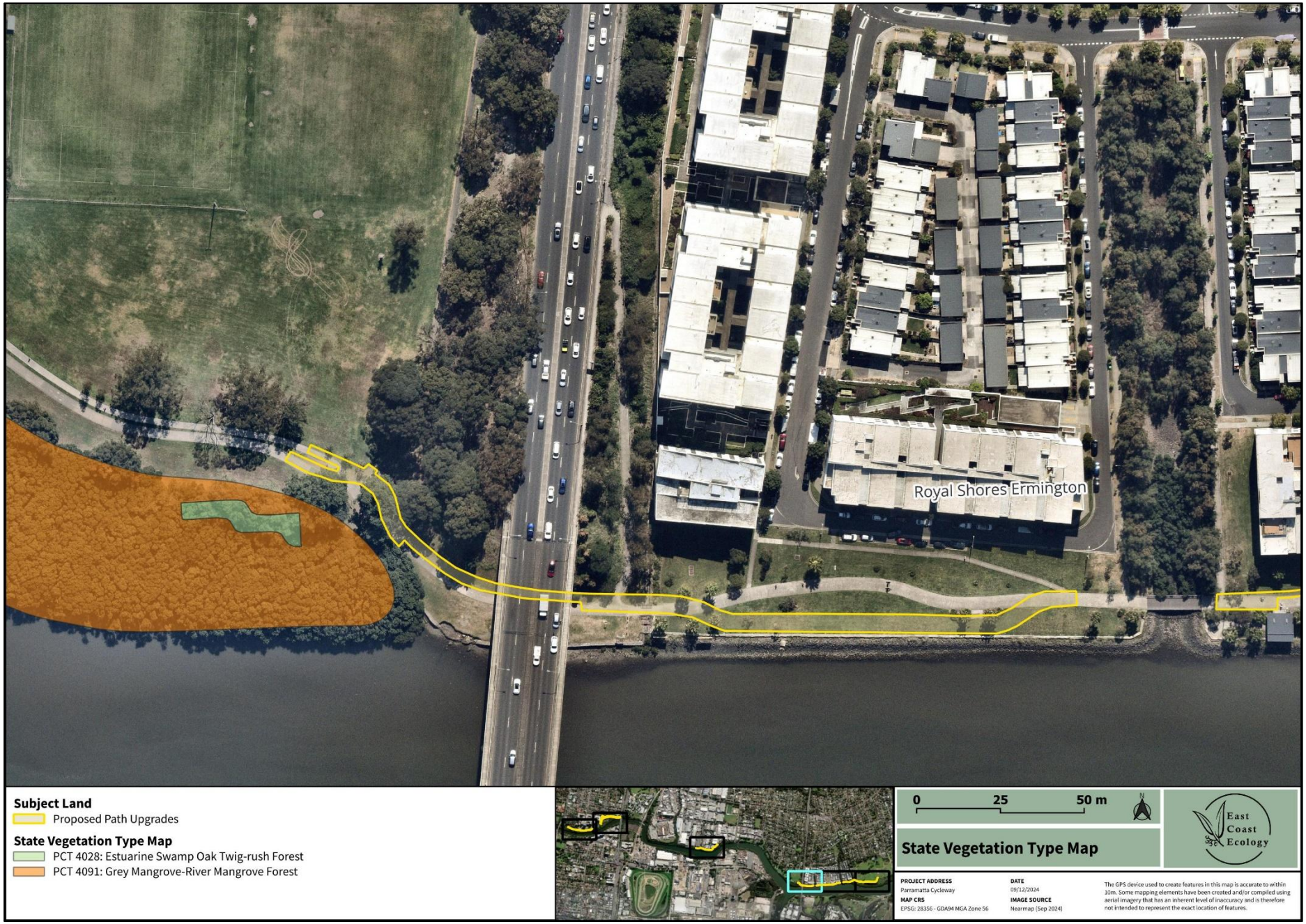

Figure 10. Vegetation Communities within and surrounding the Subject Land (Royal Shores Ermington).

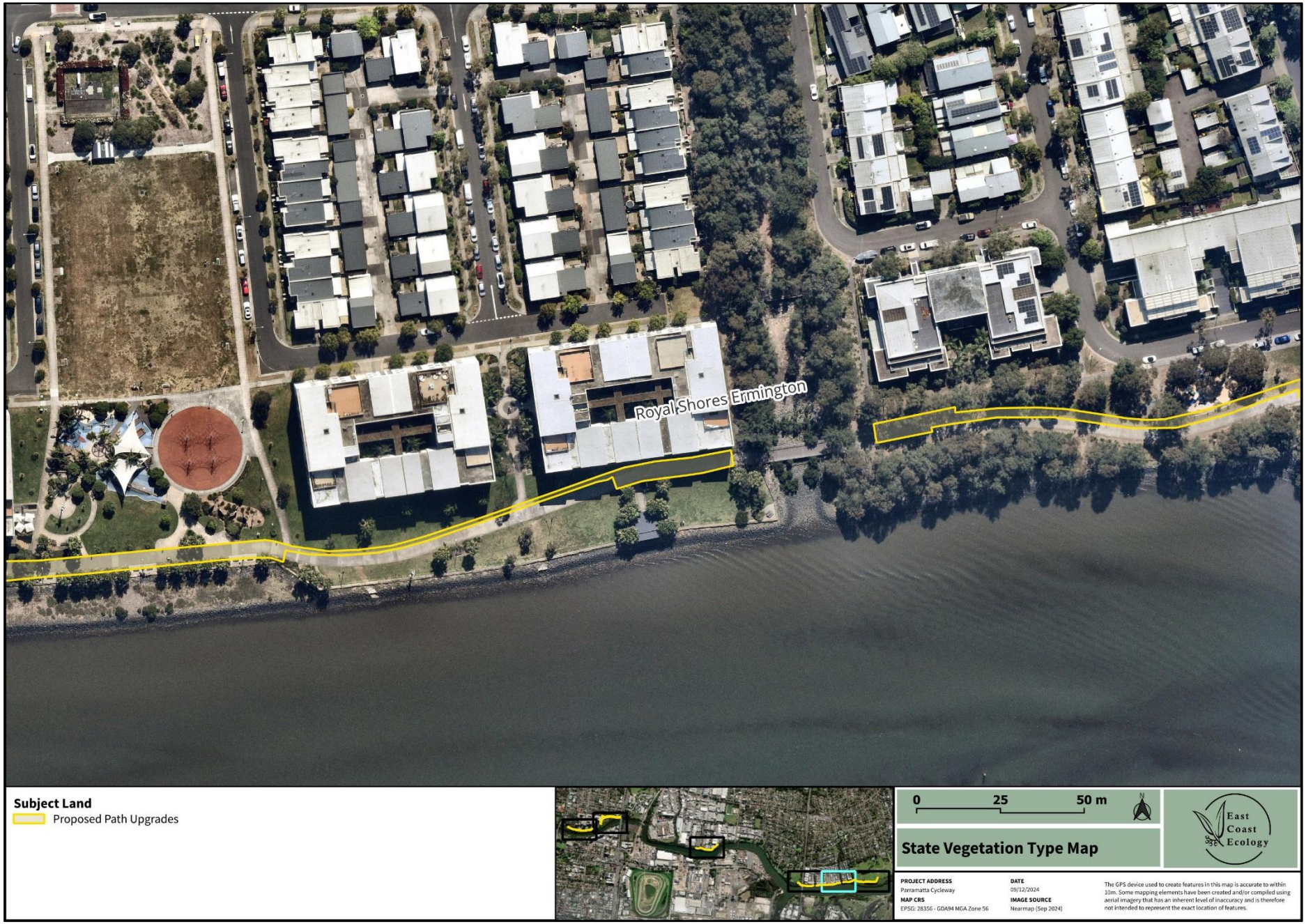

Figure 11. Vegetation Communities within and surrounding the Subject Land (Royal Shores Ermington).

Figure 12. Vegetation Communities within and surrounding the Subject Land (George Kendall Riverside Park).

Table 3. Description of vegetation within the Subject Land, that will be impacted by the activity.

PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest	
	
Vegetation Formation	Forested Wetlands
Extent within Subject Land (approximate)	31 trees (0.09ha)
Description of the Vegetation within the Subject Land	
Within the Subject Land, this PCT was highly modified, characterised by trees, on a mostly absent native ground and midstorey. The following trees, characteristic of PCT 4006, are proposed for removal: ▪ 2 x *Corymbia citriodora* (T12, T253) ▪ 1 x *Allocasuarina torulosa* (T13) ▪ 3 x *Corymbia maculata* (T17, T24, T231) ▪ 4 x *Angophora costata* (T39, T110, T150 – T151) ▪ 9 x *Casuarina glauca* (T40, T232, T276 – T282) ▪ 1 x *Livistona australis* (T155) ▪ 5 x *Casuarina cunninghamiana* (T164, T166, T252, T256 – T257) ▪ 1 x *Glochidion ferdinandi* (T236) ▪ 2 x *Melaleuca quinquenervia* (T239, T248) ▪ 2 x *Melaleuca styphelioides* (T179, T273) ▪ 1 x *Eucalyptus spp.* (T180), and ▪ Occasional native shrubs and groundcovers.	

PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest	
The locations of these trees are depicted in **Figure 13** - **Figure 18**. Nearby to the Subject Land, good condition patches of this PCT were represented with the same upper canopy species, with a sparse mid stratum layer dominated by *Leptospermum laevigatum*, *Kunzea ambigua, Acacia parramattensis* and *Homalanthus populifolius*. The ground layer was dominated by common coastal grass and grasslike species including*, Juncus usitatus, Lomandra longifolia, Dianella caerulea, Themeda triandra, Imperata cylindrica* and *Bromus spp.*.	
Description of PCT 4006 in BioNet	
A mid-high to very tall mixed eucalypt and Melaleuca open to closed forest with a sparse mid-stratum of mesophyll small trees and palms and a dense ground layer of sedges and ferns. This PCT occurs on low-lying coastal alluvial swamps and depressions and back barrier sand flats between Sydney and Yamba, Central Coast and north coast. The tree canopy very frequently includes both *Melaleuca quinquenervia* and *Eucalyptus robusta*, rarely with other eucalypts. The vine *Parsonsia straminea* is very frequently recorded in the canopy or mid-stratum. The mid-stratum is otherwise sparse, however often layered with small trees that very frequently includes *Glochidion ferdinandi*, occasionally *Livistona australis* and *Casuarina glauca*, and rarely *Melaleuca linariifolia*. A patchy cover of smaller sclerophyll shrubs occasionally includes *Acacia longifolia* and *Breynia oblongifolia*. The ground layer is very often dense and almost always includes a high cover of the tall sedge *Gahnia clarkei* together with the ferns *Telmatoblechnum indicum*, *Pteridium esculentum*, *Hypolepis muelleri* and *Calochlaena dubia*. Other species include grasses such as Entolasia marginata, which is common and occasionally sedges *Machaerina rubiginosa*, *Machaerina articulata* or *Carex appressa*. This PCT occurs on very low-lying alluvium, estuarine deposits, back barrier flats, back swamps and rarely sand swales, at elevations almost always below 20 metres asl. It is mainly constrained to within a few kilometres of the coastline, although spatial outliers occur on coastal floodplains that extend some way inland. This community partially overlaps with a range of coastal swamp forests of the central and north coasts, each varying in the frequency and duration of inundation, and substrate characteristics.	
Groundwater Dependent Ecosystems (GDE)	Assessment of the potential for the Subject Land to support groundwater dependent ecosystems was carried out using the Commonwealth's Bureau of Meteorology Groundwater Dependent Ecosystems Atlas (BOM, 2024a). This PCT is associated with a Groundwater Dependent Ecosystems.
BC Act 2016 Status	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions (Endangered) (**Section 4.2.1**).
EPBC Act 1999 Status	Coastal Swamp Sclerophyll Forest of New South Wales and Southeast Queensland (Endangered) Does not meet eligibility criteria (**Section 4.2.2**).

4.2 Threatened Ecological Communities

4.2.1 Listing under the Biodiversity Conservation Act 2016 - Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions – endangered ecological community listing

The NSW Scientific Committee (2011) has determined that the EEC, Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and Southeast Corner bioregions, is associated with:

- The Sydney Basin Bioregion, including the Parramatta LGA
- Humic clay loams and sandy loams, on waterlogged or periodically inundated alluvial flats and drainage lines associated with coastal floodplains, and
- An upper storey that is usually dominated by a tree layer of Eucalypts and Paperbarks; *Eucalyptus robusta*, *Melaleuca quinquenervia*, *Melaleuca styphelioides* and, south from Sydney, *Eucalyptus botryoides* and *Eucalyptus longifolia* with other scattered trees species present including *Callistemon salignus* and *Casuarina glauca*.

The vegetation within the Subject Land is dominated by *E. robusta*, with occasional *Melaleuca spp.* and occurs in the Sydney Basin Bioregion along a drainage line associated with a coastal floodplain. Although the vegetation proposed for removal is severely degraded, it has been determined to loosely conform to the Final Determination (Scientific Committee, 2011) and has therefore been determined to form a part of the endangered ecological community.

4.2.2 Listing under the *Environmental Protection and Biodiversity Conservation Act 1999* – Coastal Swamp Sclerophyll Forest of New South Wales and Southeast Queensland ecological community

The vegetation within the Subject Land was determined to loosely conform to the EPBC Act listed Endangered Ecological Community, Coastal Swamp Sclerophyll Forest of New South Wales and Southeast Queensland ecological community on the basis of the following criteria:

- The vegetation is isolated and part of a patch is at least 0.5ha, and
- Contains a mostly native ground cover.

Although the ground layer assessed within the Subject Land was mostly planted and highly limited in variety, the vegetation within the areas to be impacted meet the minimum conditions for the EEC listing. The impacts to the EEC are anticipated to be of low significance and very minimal if any. The results from the assessment of significance are provided in **Appendix D**.

Table 4. Description of vegetation within the Subject Land, that will be impacted by the activity.

Exotic/Ornamental Grasses	
	
Extent within Subject Land (approximate)	0.38ha
Description of the Vegetation within the Subject Land	
This novel vegetation type dominated by exotic, ornamental lawn species such as *Axonopus fissifolius* amidst occasional environmental weeds, including *Trifolium repens*. This vegetation type occurred the length of the proposed activity, occasionally beneath the canopy of PCT 4006.	
BC Act 2016 Status	Not listed.
EPBC Act 1999 Status	Not listed.

Figure 13. Field-validated Vegetation Mapping within the Subject Land (Rangihou Reserve)

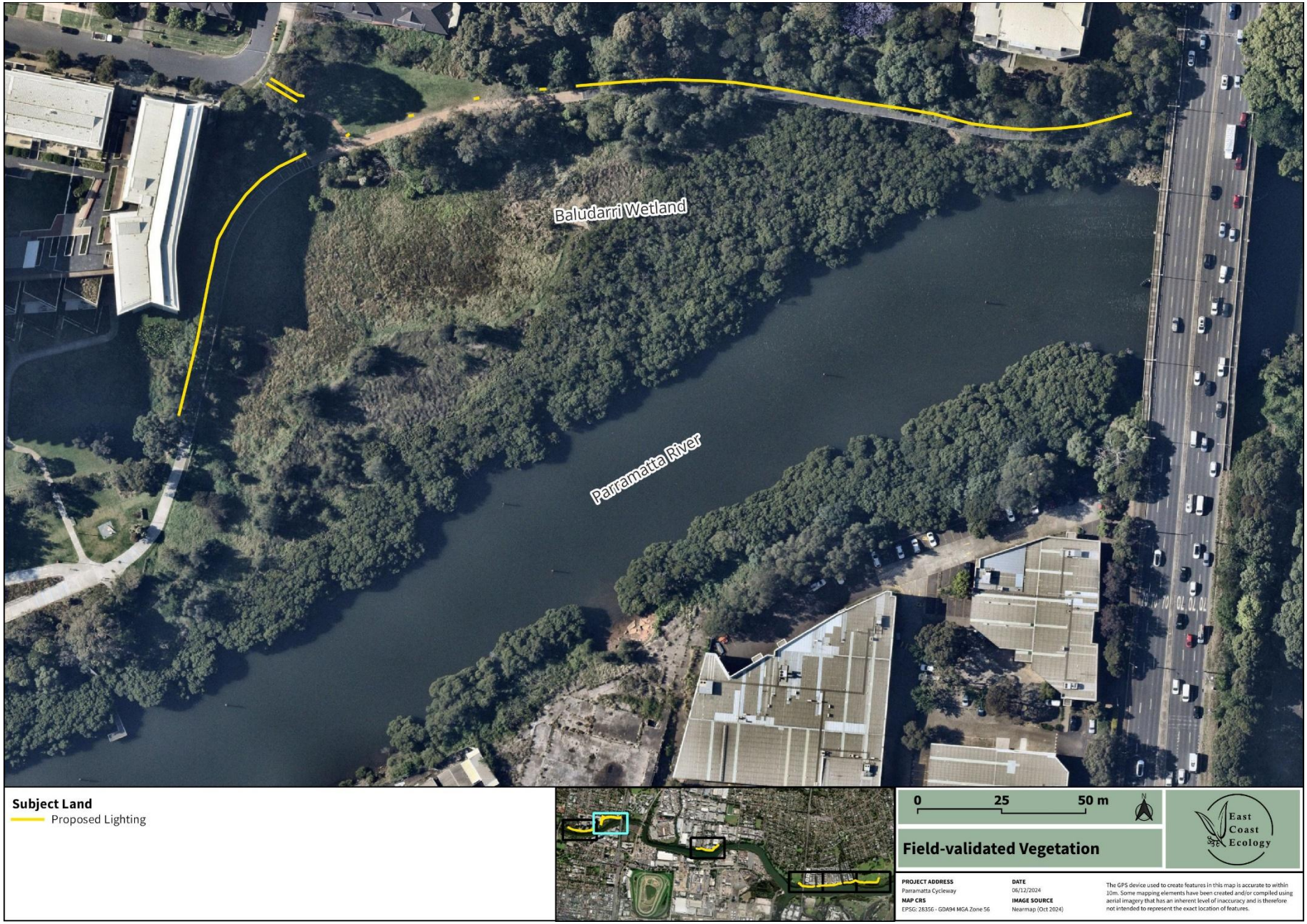

Figure 14. Field-validated Vegetation Mapping within the Subject Land (Baludarri Wetland)

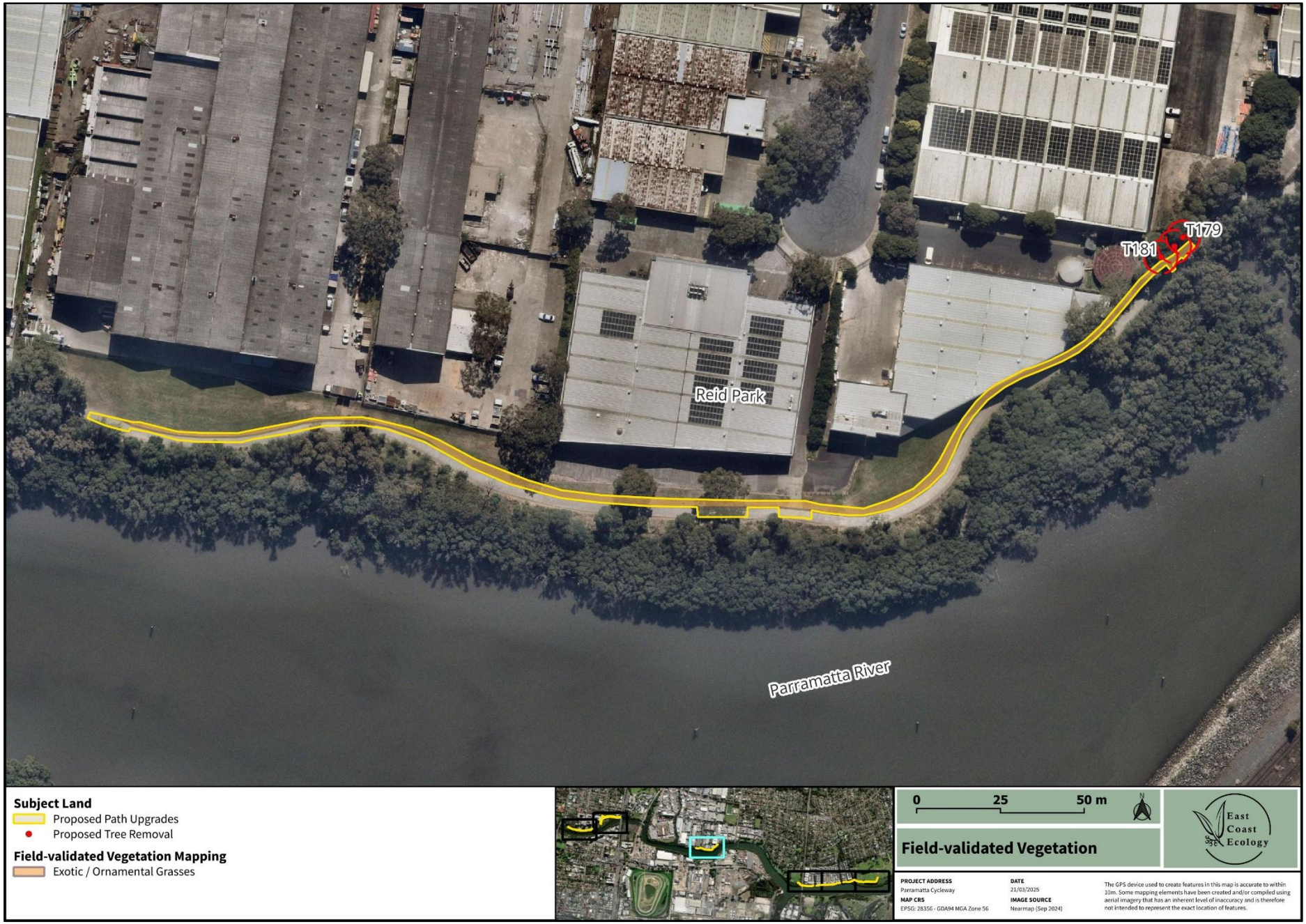

Figure 15. Field-validated Vegetation Mapping within the Subject Land (Reid Park)

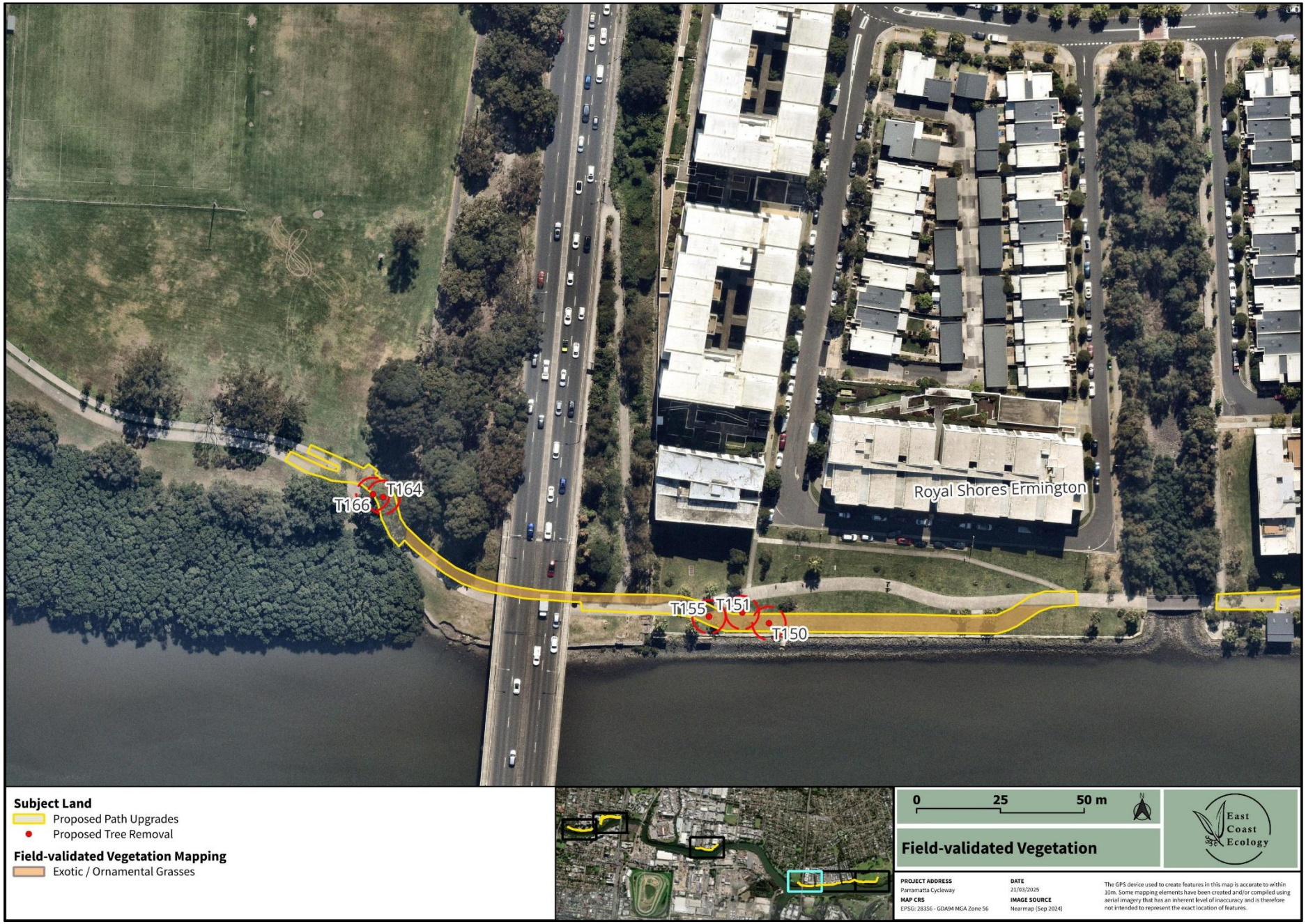

Figure 16. Field-validated Vegetation Mapping within the Subject Land (Royal Shores Ermington)

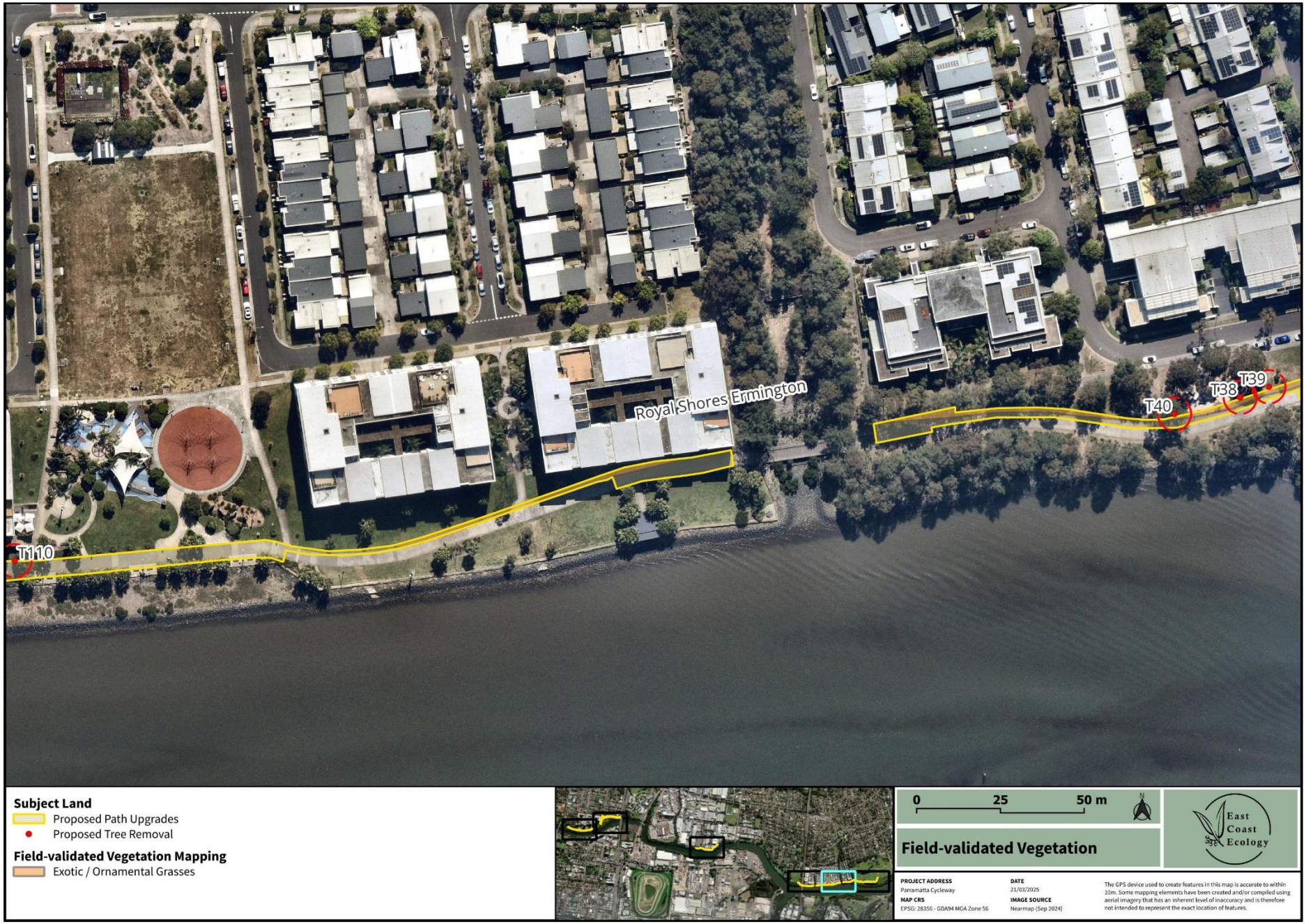

Figure 17. Field-validated Vegetation Mapping within the Subject Land (Royal Shores Ermington)

Figure 18. Field-validated Vegetation Mapping within the Subject Land (George Kendall Riverside Park).

5. RESULTS: THREATENED SPECIES

5.1 Threatened Flora

Database searches revealed 18 threatened flora have potential to occur within a ~5km radius of the Subject Land (**Table 5**).

Table 5. Threatened flora with potential to occur within the Subject Land.

Scientific Name	Common Name	BC Act	EPBC Act	Records within 5km
Acacia pubescens	Downy Wattle	V	V	56
Callistemon linearifolius	Netted Bottle Brush	V	-	6
Dillwynia tenuifolia	-	V	-	2
Epacris purpurascens var. purpurascens	-	V	-	52
Grammitis stenophylla	Narrow-leaf Finger Fern	E	-	1
Isotoma fluviatilis subsp. fluviatilis	-	-	X	2
Macadamia integrifolia	Macadamia Nut	-	V	2
Persicaria elatior	Tall Knotweed	V	V	1
Pimelea curviflora var. curviflora	-	V	V	9
Pimelea spicata	Spiked Rice-flower	E	E	2
Pomaderris prunifolia	P. prunifolia in the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas	E	-	8
Rhodamnia rubescens	Scrub Turpentine	E	CE	4
Syzygium paniculatum	Magenta Lilly Pilly	E	E	6
Tetratheca glandulosa	-	V	-	1
Triplarina imbricata	Creek Triplarina	E	E	4
Wahlenbergia multicaulis	Tadgell's Bluebell in the local government areas of Auburn, Bankstown, Baulkham	E	-	8

Scientific Name	Common Name	BC Act	EPBC Act	Records within 5km
	Hills, Canterbury, Hornsby, Parramatta and Strathfield			
Wilsonia backhousei	Narrow-leafed Wilsonia	V	-	100
Zannichellia palustris	-	E	-	6

V – Vulnerable; E – Endangered; EP – Endangered Population; CE – Critically Endangered; X – Extinct

No threatened flora species were identified within the Subject Land. Based on habitat constraints and targeted surveys, no threatened flora species were considered likely to occur within the Subject Land. It is not expected that the proposed activity would pose a significant impact to a nearby viable local population, on the basis that all mitigation measures proposed in this report are adhered to (**Section 7.2**). Further assessment is provided in **Appendix B** of this report.

5.2 Threatened Fauna

Database searches revealed 54 threatened fauna occur, or have potential to occur, within a ~5km radius of the Subject Land (**Table 6**).

Table 6. Threatened fauna with potential to occur within the Subject Land.

Scientific Name	Common Name	BC Act	EPBC Act	Records within 5km
Anthochaera phrygia	Regent Honeyeater	E	CE	7
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-	35
Botaurus poiciloptilus	Australasian Bittern	E	E	13
Calidris canutus	Red Knot	-	E	14
Calidris ferruginea	Curlew Sandpiper	E	CE	438
Calidris tenuirostris	Great Knot	V	V	2
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	3
Chalinolobus dwyeri	Large-eared Pied Bat	E	E	3
Circus assimilis	Spotted Harrier	V	-	12
Daphoenositta chrysoptera	Varied Sittella	V	-	4
Dasyurus maculatus	Spotted-tailed Quoll	V	E	3

Scientific Name	Common Name	BC Act	EPBC Act	Records within 5km
Epthianura albifrons	White-fronted Chat population in the Sydney Metropolitan Catchment Management Area	E	-	437
Epthianura albifrons	White-fronted Chat	V	-	437
Falco subniger	Black Falcon	V	-	1
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	11
Gallinago hardwickii	Latham's Snipe	V	V	1965
Glossopsitta pusilla	Little Lorikeet	V	-	21
Haematopus longirostris	Pied Oystercatcher	E	-	1
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	-	743
Hieraaetus morphnoides	Little Eagle	V	-	18
Hirundapus caudacutus	White-throated Needletail	V	V	51
Ixobrychus flavicollis	Black Bittern	V	-	6
Lathamus discolor	Swift Parrot	E	CE	7
Limicola falcinellus	Broad-billed Sandpiper	V	V	2
Limosa limosa	Black-tailed Godwit	V	E	17
Litoria aurea	Green and Golden Bell Frog	E	V	17069
Meridolum corneovirens	Cumberland Plain Land Snail	E	-	3
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	11
Miniopterus australis	Little Bent-winged Bat	V	-	11
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	96
Myotis macropus	Southern Myotis	V	-	53
Neophema pulchella	Turquoise Parrot	V	-	2

Scientific Name	Common Name	BC Act	EPBC Act	Records within 5km
Ninox connivens	Barking Owl	V	-	6
Ninox strenua	Powerful Owl	V	-	306
Numenius madagascariensis	Eastern Curlew	E	CE	40
Oxyura australis	Blue-billed Duck	V	-	2
Pandion cristatus	Eastern Osprey	V	-	13
Petauroides volans	Southern Greater Glider	E	E	1
Petroica boodang	Scarlet Robin	V	-	5
Petroica phoenicea	Flame Robin	V	-	2
Phascolarctos cinereus	Koala	E	E	1
Pommerhelix duralensis	Dural Land Snail	E	E	39
Pseudophryne australis	Red-crowned Toadlet	V	-	2
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	902
Rostratula australis	Australian Painted Snipe	E	E	10
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	14
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	7
Sternula albifrons	Little Tern	E	C	7
Stictonetta naevosa	Freckled Duck	V	-	3
Tringa nebularia	Common Greenshank	E	E	334
Tyto longimembris	Eastern Grass Owl	V	-	2
Tyto novaehollandiae	Masked Owl	V	-	3
Tyto tenebricosa	Sooty Owl	V	-	1
Xenus cinereus	Terek Sandpiper	V	V	1

V – Vulnerable; E – Endangered; EP – Endangered Population; CE – Critically Endangered.

No threatened fauna species were identified within the Subject Land however, this does not rule out the potential for threatened species to still exist within the Subject Land, particularly given no targeted surveys were undertaken.

Based on habitat constraints and the urban nature of the Subject Land (**Appendix B**), no threatened fauna were considered likely to occur and no further assessment was required. Details of the threatened fauna habitat recorded within the Subject Land are included in **Table 7**.

Table 7. Fauna habitat values identified within the Subject Land.

Habitat component	Subject Land
Coarse woody debris	Absent.
Rock outcrops and bush rock	Absent.
Caves, crevices and overhangs	Absent.
Culverts, bridges, mine shafts, or abandoned structures	Absent.
Nectar/lerp-bearing Trees	Present throughout – *Melaleuca* spp.
Nectar-bearing shrubs	Present nearby – *Acacia spp.*
Large stick nests	Absent.
Sap and gum sources	Present – *Eucalyptus spp.*
She-oak fruit	Present throughout – *Casuarina spp.*
Seed-bearing trees and shrubs	Present throughout – *Casuarina spp.*
Soft-fruit-bearing trees/shrubs	Absent.
Dense shrubbery and leaf litter	Present throughout.
Tree hollows	Absent- Nestboxes located outside the Subject Land.
Decorticating bark	Absent.
Wetlands, soaks, and streams	Present nearby – Baludarri Wetland.
Open water bodies	Present nearby – Parramatta River..
Estuarine, beach, mudflats, and rocky foreshores	Absent.

5.3 Migratory Species

Database searches revealed seven migratory terrestrial species, or their habitat, are known to occur within the Subject Land (**Table 8**). These species do not breed in Australia.

Table 8. Migratory terrestrial species with potential to occur in the Subject Land.

Species	EPBC Act Status
Cuculus optatus (Oriental Cuckoo)	Migratory, CAMBA, JAMBA, ROKAMBA
Hirundapus caudacutus (White-throated Needletail)	Vulnerable, Migratory, CAMBA, JAMBA, ROKAMBA
Monarcha melanopsis (Black-faced Monarch)	Migratory, Bonn

Monarcha trivirgatus (Spectacled Monarch)	Migratory, Bonn
Motacilla flava (Yellow Wagtail)	Migratory, CAMBA, JAMBA, ROKAMBA
Myiagra cyanoleuca (Satin Flycatcher)	Migratory, Bonn
Rhipidura rufifrons (Rufous Fantail)	Migratory, Bonn

CAMBA = China-Australia Migratory Bird Agreement, JAMBA = Japan-Australia Migratory Bird Agreement, ROKAMBA = Republic of Korea-Australia Migratory Bird Agreement and Bonn = Convention on the Conservation of Migratory Species of Wild Animals.

Figure 19. Threatened species records in proximity to the Subject Land (Rangihou Reserve).

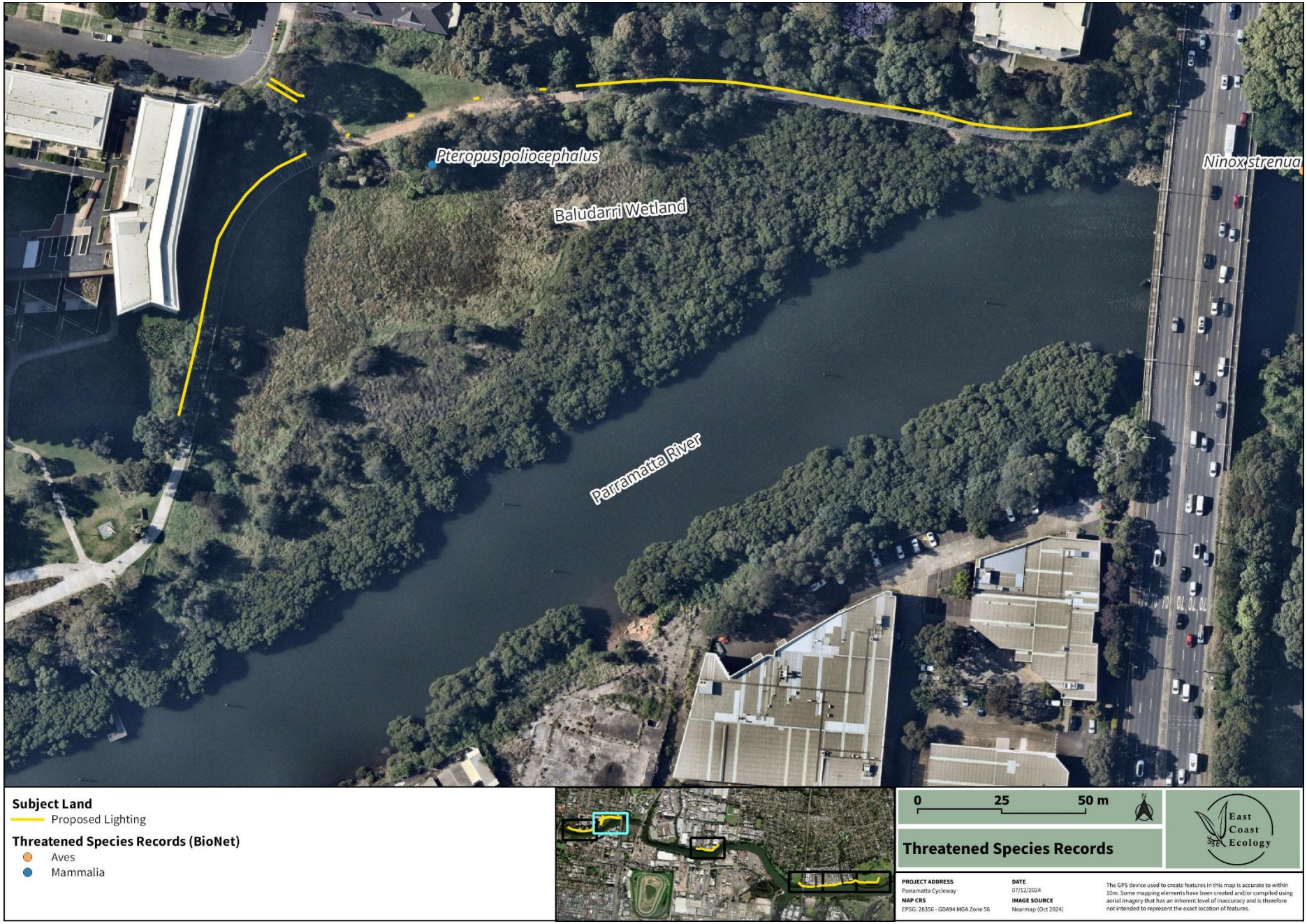

Figure 20. Threatened species records in proximity to the Subject Land (Baludarri Wetland).

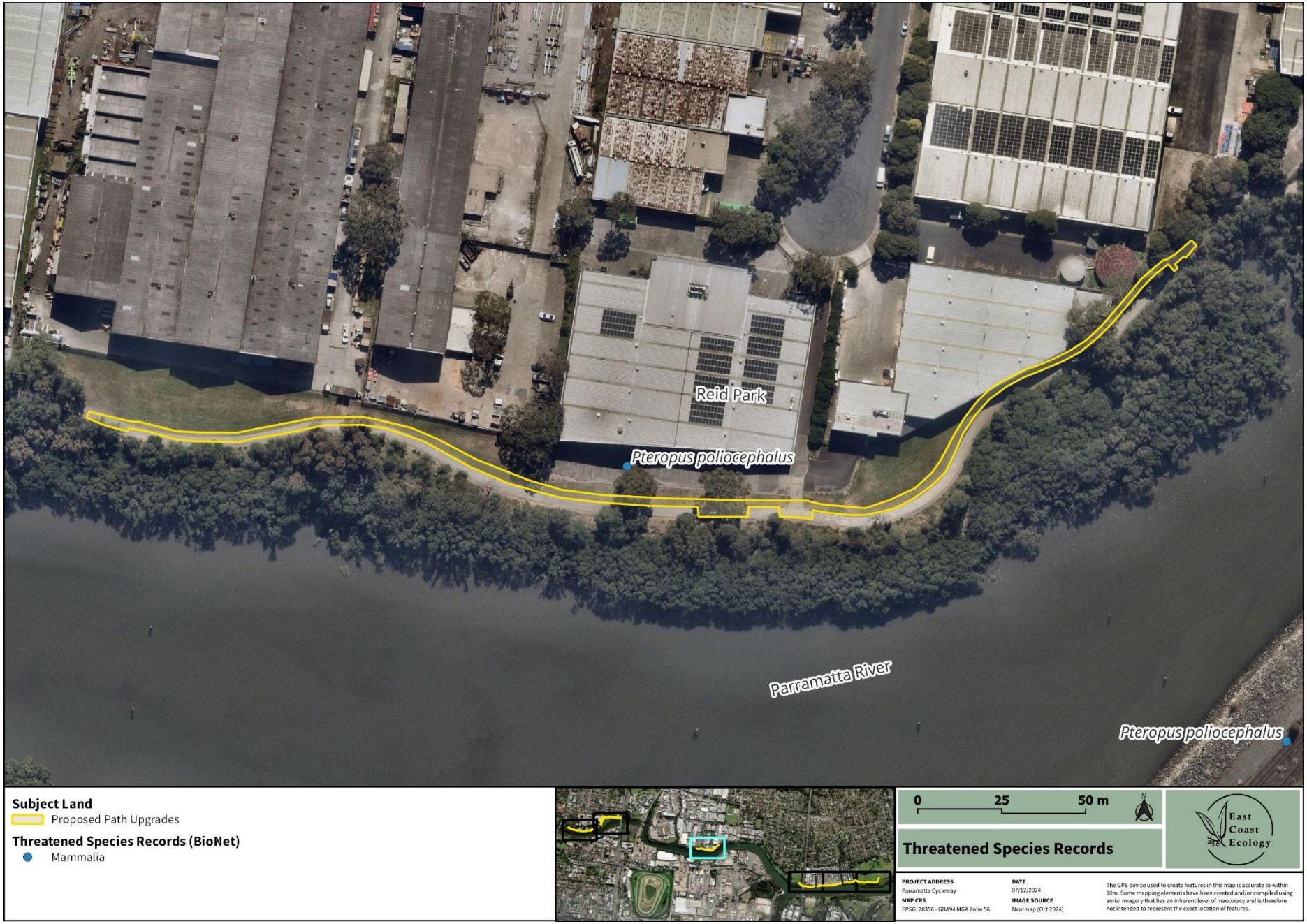

Figure 21. Threatened species records in proximity to the Subject Land (Reid Park).

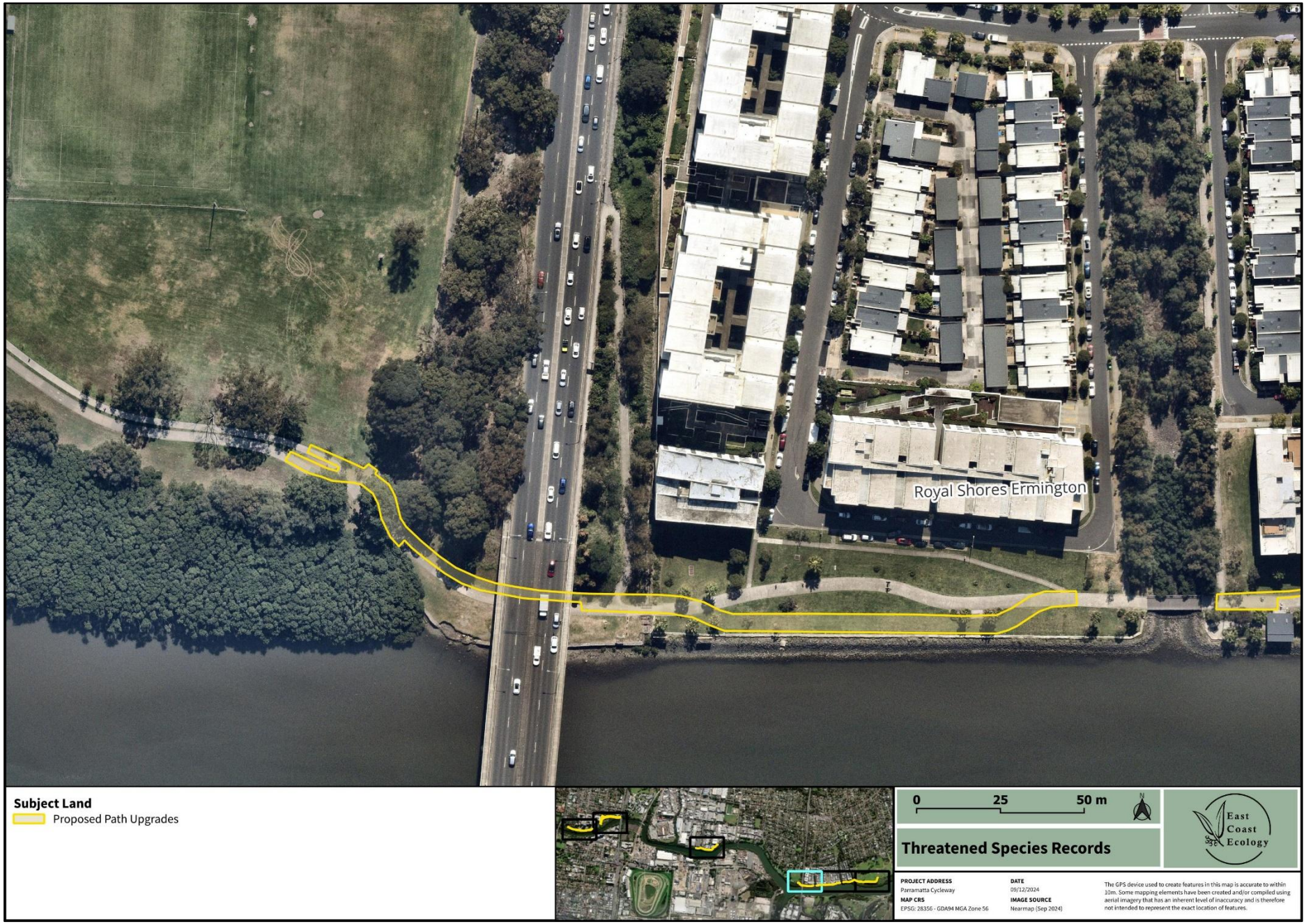

Figure 22. Threatened species records in proximity to the Subject Land (Royal Shores Ermington).

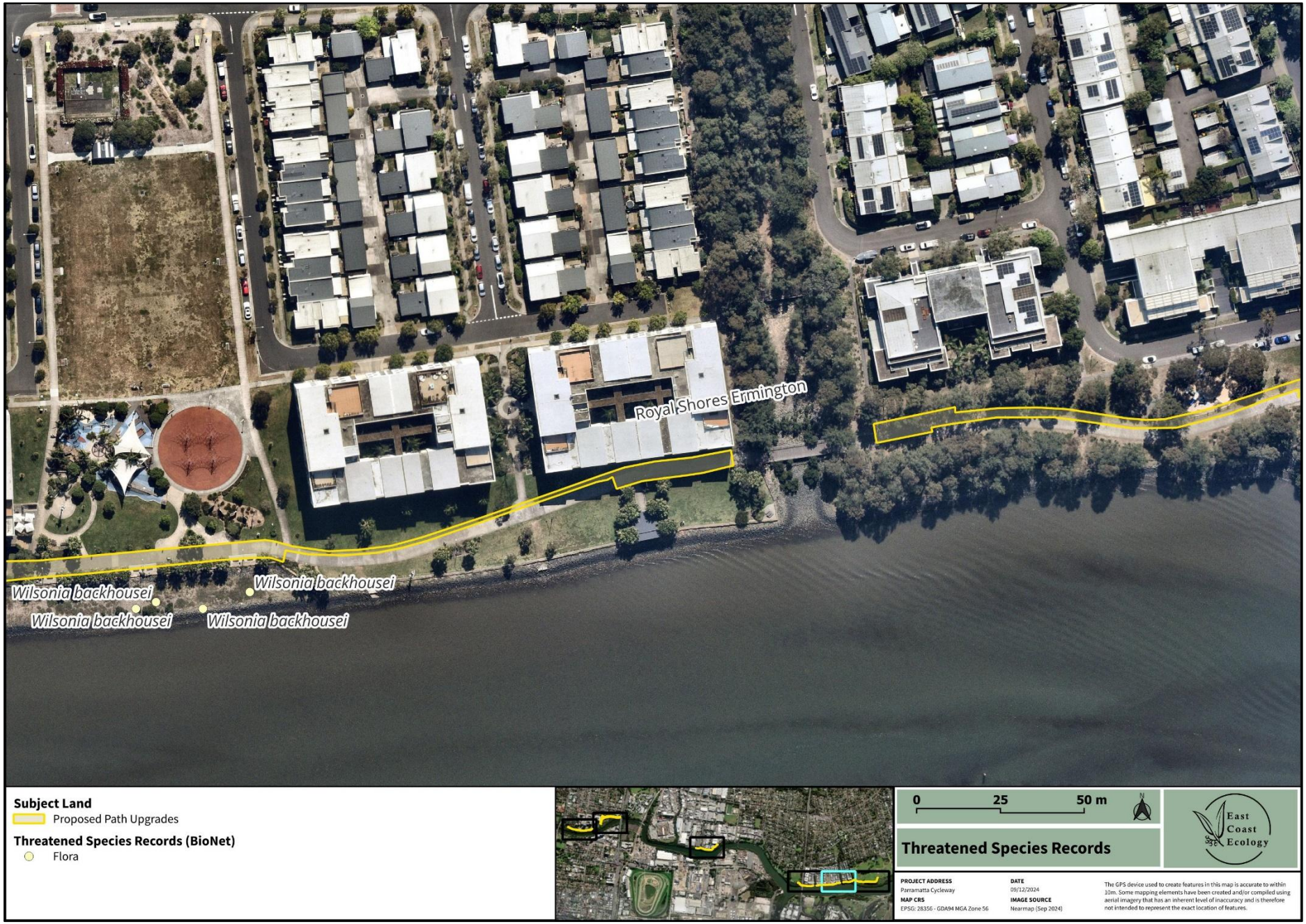

Figure 23. Threatened species records in proximity to the Subject Land (Royal Shores Ermington).

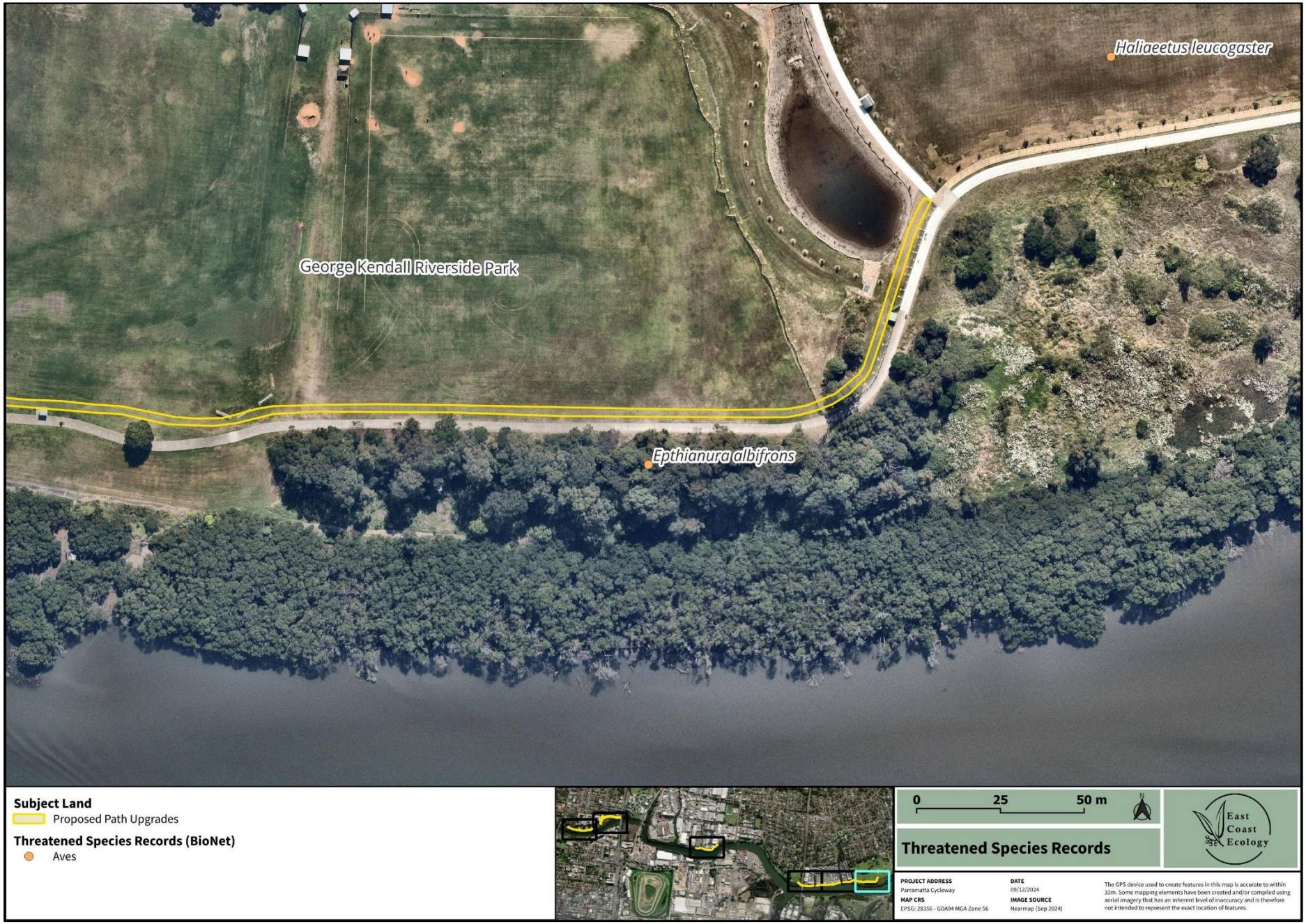

Figure 24. Threatened species records in proximity to the Subject Land (George Kendall Riverside Park).

6. IMPACT SUMMARY

6.1 Direct Impacts

6.1.1 Impacts to Plant Community Types

The primary direct ecological impact of the proposed activity is clearing of 31 native trees. The following trees, characteristic of PCT 4006, are proposed for removal:

- 2 x *Corymbia citriodora* (T12, T253)
- 1 x *Allocasuarina torulosa* (T13)
- 3 x *Corymbia maculata* (T17, T24, T231)
- 4 x *Angophora costata* (T39, T110, T150 – T151)
- 9 x *Casuarina glauca* (T40, T232, T276 – T282)
- 1 x *Livistona australis* (T155)
- 5 x *Casuarina cunninghamiana* (T164, T166, T252, T256 – T257)
- 1 x *Glochidion ferdinandi* (T236)
- 2 x *Melaleuca quinquenervia* (T239, T248)
- 2 x *Melaleuca styphelioides* (T179, T273)
- 1 x *Eucalyptus spp.* (T180), and
- Occasional native shrubs and groundcovers.

Based on the location (i.e. in garden beds), all trees have likely been planted but still provide a modified form representative of PCT 4006 within the Subject Land.

Additionally, the following three exotic species also require removal from within the Subject Land to facilitate the proposal:

- 1 x *Pistacia chinensis* (T38)
- 1 x *Phoenix canariensis* (T226), and
- 1 x *Olea europaea subsp. cuspidata* (T181).

6.1.2 Impacts to Protected Fauna

All vegetation proposed for removal and/or pruning provides minor foraging habitat for a suite of protected fauna species. Sensitive and/ or specialist fauna habitats (e.g. nectar/lerp-bearing trees and sap and gum sources) were present within the Subject Land. No hollow-bearing trees were present within the Subject Land at the time of the assessment.

In addition, a compliance permit has been acquired by City of Parramatta that allows for all proposed lighting and handrail construction within the Baludarri Wetlands areas of the project. It is predicted that adjacent habitat outside the Subject Land is likely to experience a negligible increase to indirect impacts created by noise, dust and light spill, during construction and operation of the future development of the Subject Land.

Site lighting will be designed to minimise glare and light spillage into adjoining properties and vegetation and be consistent with the requirements of Australian Standards and Guidelines 4282-2019 Control of the

obtrusive effects of outdoor lighting. Additional control measures are to be installed to minimise glare and light spillage into adjoining vegetation to minimise potential impacts to fauna species and lighting is to be installed in a direction oriented away from the vegetation within the Baludarri Wetlands. These indirect impacts will be managed via best practices outlined in an approved Construction Environmental Management Plan. The Subject Land already occurs within a disturbed landscape where light and noise pollution is already moderate. These impacts are not likely to substantially increase due to the proposed activity.

6.1.3 Impacts to Threatened Species and Communities

The proposed activity will result in the removal of 31 native trees characteristic the following BC & EPBC Act Listed TEC;

- Swamp Sclerophyll Forest of the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions (endangered).

Each of these trees belong to a now highly modified landscape. The result of a Test of Significance (5-Part Test) under the BC Act was that the proposed activity will not result in a 'significant impact' on any threatened entities and therefore the Biodiversity Offset Scheme is not triggered (**Appendix C** & **Appendix D**).

Although all areas of native vegetation within the Subject Land may be considered minor, potential habitat for threatened fauna; based on the minor nature of the impacts, no threatened fauna species were considered likely to be significantly impacted by the proposed activity. No threatened flora were identified within the Subject Land. A likelihood of occurrence table for threatened flora and fauna species within the Subject Land is presented in **Appendix B**.

Based on a lack of suitable habitat constraints, or the minor nature of the impact (i.e. select tree removal) no significant impact is likely and no further assessment was required. As such, an SIS or a BDAR is not required. The proposed activity will not result in a 'significant impact' on any MNES and a referral to the Australian Government Minister for the Environment is not required.