

# COMMONWEALTH AVENUE BRIDGE RENEWAL PROJECT

ARCHITECTURE, LANDSCAPE ARCHITECTURE  
AND URBAN DESIGN

90% DETAILED DESIGN REPORT

September 2025



Australian Government  
National Capital Authority



smm

TonkinZulaikhaGreer



# COMMONWEALTH AVENUE BRIDGE RENEWAL PROJECT

## ARCHITECTURE, LANDSCAPE ARCHITECTURE AND URBAN DESIGN 90% DETAILED DESIGN REPORT

Prepared for :



Prepared by :



On behalf of :



| ISSUE                     | REVISION | DATE       |
|---------------------------|----------|------------|
| 50% CONCEPT DESIGN REPORT | A        | 25-06-2025 |
| 90% CONCEPT DESIGN REPORT | B        | 19-09-2025 |
|                           |          |            |
|                           |          |            |
|                           |          |            |
|                           |          |            |
|                           |          |            |



spackman mossop michael's PTY. LTD.  
ABN 65 065 578 985

15 Foster Street  
Surry Hills NSW 2010  
Sydney - Australia

T. 02 9361 4549  
smm.studio



TABLE OF CONTENTS

INTRODUCTION ..... 1

1.1 Executive summary2

1.2 Key project requirements2

1.3 Methodology3

1.4 Relevant planning policies and supporting documents3

SITE AND CONTEXT ANALYSIS ..... 5

2.1 Urban planning context6

2.2 Project site context7

2.3 Heritage8

2.4 Canberra landform9

2.5 Canberra open space11

2.6 Roads & impervious surfaces13

2.7 Cultural and civic places14

2.8 Key views and vistas - to Bridge15

2.9 Key views and vistas - from Bridge16

2.10 Movement and circulation17

2.11 Planting considerations21

DESIGN FRAMEWORK AND STRATEGY ..... 23

3.1 INTRODUCTION24

3.2 Design principles24

3.3 Design background27

3.4 Design considerations27

3.5 Site specific opportunities27

3.6 Planting Strategy28

DESIGN DEVELOPMENT ..... 29

4.1 Introduction30

4.2 Bridge extension31

4.3 Bridge barriers and balustrades33

4.4 Bridge abutments35

4.5 Bridge approaches40

4.6 Planting Design57

MATERIAL AND PLANT PALETTE ..... 61

5.1 Bridge extension materials and finishes62

5.2 Landscape elements66

5.3 Plant Palette69

5.4 Watering Requirements for Vegetation72



TABLE OF FIGURES

|                                                                               |    |                                                                                            |    |
|-------------------------------------------------------------------------------|----|--------------------------------------------------------------------------------------------|----|
| Figure 1: The Bridge was constructed in early 1960s                           | 2  | Figure 27: City Hill                                                                       | 14 |
| Figure 2: Project management methodology.                                     | 3  | Figure 29: Key views and vistas towards Commonwealth Avenue Bridge                         | 15 |
| Figure 3: A selection of relevant policies, guidelines and studies            | 4  | Figure 30: Key views and vistas from Commonwealth Avenue Bridge                            | 16 |
| Figure 4: Parliamentary Precinct                                              | 6  | Figure 31: Extract from Transport Canberra Network Map                                     | 17 |
| Figure 5: Main Avenues                                                        | 6  | Figure 32: Extract of Canberra cycle network map in relation to Commonwealth Avenue        | 18 |
| Figure 7: Griffin plan for Canberra, drawing by Marion Mahony Griffin         | 7  | Figure 33: Movement and circulation on the northern side of the Bridge                     | 19 |
| Figure 6: Project site within the context of the National Triangle            | 7  | Figure 34: Movement and circulation on the southern side of the Bridge                     | 20 |
| Figure 8: Heritage Listing summary map                                        | 8  | Figure 35: ACT projected climate changes                                                   | 21 |
| Figure 9: Canberra landform                                                   | 9  | Figure 36: Planting opportunities                                                          | 22 |
| Figure 10: Views of Canberra City from Black Mountain                         | 10 | Figure 37: An iterative, collaborative, multi-disciplinary development of principles       | 24 |
| Figure 11: Lake Burley Griffin, Commonwealth Avenue Bridge and Black Mountain | 10 | Figure 38: The Bridge from the 'Australian of the Year' walk                               | 24 |
| Figure 12: Views to Parliament Hill from the Mount Ainslie lookout            | 10 | Figure 39: Bridge character, form, colours, materials and details                          | 25 |
| Figure 13: The Captain Cook Memorial Jet runs daily                           | 10 | Figure 40: Design principle themes                                                         | 26 |
| Figure 14: Commonwealth Avenue Bridge nestled amongst recreational parklands  | 11 | Figure 41: Three main components of the Project                                            | 27 |
| Figure 15: Henry Rolland Park on the north-western side of the Bridge         | 12 | Figure 42: Densely planted slopes in Henry Rolland Park                                    | 28 |
| Figure 17: Parklands on the south-western side of the Bridge                  | 12 | Figure 43: Overall plan of the proposed design within the project study area boundary      | 30 |
| Figure 16: Commonwealth Park on the north-eastern side of the Bridge          | 12 | Figure 44: Existing Bridge architectural form - 3D illustration                            | 31 |
| Figure 18: Parklands on the south-eastern side of the Bridge                  | 12 | Figure 45: Bridge extension study, including potential future light rail Bridge            | 31 |
| Figure 19: Commonwealth Avenue facing north to City Hill                      | 13 | Figure 46: Different viewpoints under the northbound Bridge looking south                  | 31 |
| Figure 20: Intersection with Flynn Drive view from King Edward Terrace        | 13 | Figure 47: Proposed Bridge architectural form - 3D illustration                            | 32 |
| Figure 21: Commonwealth Avenue facing south to Parliament House               | 13 | Figure 49: Proposed bridge cross section                                                   | 33 |
| Figure 22: Open space occupied by road infrastructure                         | 13 | Figure 48: Typical bridge cross section - Existing conditions                              | 33 |
| Figure 23: The National Carillon on Lake Burley Griffin                       | 14 | Figure 50: Detail of bridge extension section                                              | 34 |
| Figure 24: Garema Place civic space north of Commonwealth Avenue Bridge       | 14 | Figure 51: Detail of internal bridge edge                                                  | 34 |
| Figure 25: National Museum of Australia on western side of the Bridge         | 14 | Figure 52: Proposed viewing platform balustrade similar to existing in Bowen Place lookout | 34 |
| Figure 26: The National Library in autumn                                     | 14 | Figure 53: 3D illustration of NE Lookout from top of Abutment                              | 35 |
| Figure 28: Annual Floriade event in Commonwealth Park                         | 14 | Figure 54: 3D illustration of NE Abutment and Lookout from Barrine Drive                   | 35 |



|                                                                          |    |                                                                                                |    |
|--------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------------|----|
| Figure 55: SW Abutment and Lookout Plan (Scale 1:150)                    | 36 | Figure 82: South-west approach (scale 1:400)                                                   | 51 |
| Figure 56: NW Abutment and Lookout Plan (Scale 1:150)                    | 36 | Figure 83: South-west quadrant cross sections 9 and 10 (Scale 1:200)                           | 52 |
| Figure 57: SE Abutment and Lookout Plan (Scale 1:150)                    | 37 | Figure 84: South-west accessible shared path ramp typical section                              | 52 |
| Figure 58: NE Abutment and Lookout Plan (Scale 1:150)                    | 37 | Figure 85: South-east approach existing conditions                                             | 53 |
| Figure 59: South Abutments north elevation (Scale 1:200)                 | 38 | Figure 86: South-east approach existing conditions diagram                                     | 53 |
| Figure 60: SW Abutment west elevation (Scale 1:200)                      | 38 | Figure 87: South-east approach (scale 1:400)                                                   | 54 |
| Figure 61: SE Abutment east elevation (Scale 1:200)                      | 38 | Figure 89: South-east accessible shared path ramp typical sections                             | 55 |
| Figure 63: NE Abutment east elevation (Scale 1:200)                      | 39 | Figure 90: South-east staircase typical section                                                | 55 |
| Figure 62: North Abutments south elevation (Scale 1:200)                 | 39 | Figure 91: South-east quadrant cross sections 13 and 14 (Scale 1:200)                          | 56 |
| Figure 64: NW Abutment west elevation (Scale 1:200)                      | 39 | Figure 92: Australian of the Year walk with dense canopy and areas of exotic understory plants | 57 |
| Figure 65: Four major site approaches                                    | 40 | Figure 93: Existing planting character and proposed planting schemes                           | 58 |
| Figure 66: Existing active transport routes                              | 41 | Figure 94: Proposed landscape typologies and microclimates                                     | 59 |
| Figure 67: Proposed rationalised and safer pedestrian and cyclist routes | 41 | Figure 95: Tree canopy coverage proposed in each quadrant                                      | 60 |
| Figure 68: North-west approach existing site conditions                  | 42 | Figure 96: Existing and new material locations                                                 | 62 |
| Figure 69: North-west approach existing site conditions diagram          | 42 | Figure 97: Proposed planting palette - Trees                                                   | 69 |
| Figure 70: North-west approach (scale 1:1000)                            | 43 | Figure 98: Planting palette details - Shrubs and Feature Perennials                            | 70 |
| Figure 71: Detail of north-west approach (scale 1:400)                   | 43 | Figure 99: Planting palette details - Strappy Leaf Feature Plants and Native Grasses           | 71 |
| Figure 72: North-west quadrant cross sections 1 to 3 (Scale 1:200)       | 44 |                                                                                                |    |
| Figure 73: North-east approach existing site conditions                  | 45 |                                                                                                |    |
| Figure 74: North-east approach existing site conditions diagram          | 45 |                                                                                                |    |
| Figure 75: North-east approach (scale 1:1000)                            | 46 |                                                                                                |    |
| Figure 76: Detail of north-east approach (scale 1:400)                   | 47 |                                                                                                |    |
| Figure 77: North-east quadrant cross sections 4 and 5 (Scale 1:200)      | 47 |                                                                                                |    |
| Figure 78: North-east quadrant cross sections 6 and 7 (Scale 1:200)      | 48 |                                                                                                |    |
| Figure 79: North-east quadrant cross section 8 (Scale 1:200)             | 49 |                                                                                                |    |
| Figure 80: South-west approach existing site conditions                  | 50 |                                                                                                |    |
| Figure 81: South-west approach existing site conditions diagram          | 50 |                                                                                                |    |





1.

INTRODUCTION



# 1.1 Executive summary

This report presents the design process and 90% architecture, landscape architecture and urban design detailed design for the Commonwealth Avenue Bridge Renewal (CABR) Project, herein referred to as the Project, and is to be read in conjunction with the main report and the previous Design Options report.

This report builds upon the previous CABR Design Report prepared in December 2023 for the National Capital Authority (NCA), which formed part of the tender documentation for the current Design and Construction (D&C) stage of the project.

This report provides a comprehensive review of the Project objectives, current context and future conditions, guiding to propose a vision, design objectives and principles which frame the design development. Due to the complexity of the Project, this report has identified the components of the Project to facilitate the readability of the proposal. The combination of all the components identified and described in following sections forms the basis of the final proposed concept design.

The report is structured into several sections, as follows:

**Section 1: Introduction** – Introduces the Project, its aims and objectives, proposes a Project methodology and reviews relevant policies and supporting documents.

**Section 2: Site analysis and context** – Offers a brief overview of the planning and policy frameworks relevant to the Project, provides physical analysis of the site at both a broader urban and detailed scale and analyses the active transport routes across the Project site, summarising key insights, site constraints and challenges.

**Section 3: Design framework and strategy** – Provides an overview of the Project vision, objectives and comprehensive design strategies and principles developed collaboratively from a multi-disciplinary approach.

**Section 4: Design development** – Describes the design development of the concept design carried out up to the 90% Detailed Design phase of the project. The 90% design solution has been achieved through an iterative process of options analysis with key presentations to the National Capital Authority along the way to ensure a design solution that aligns with the key client objectives and project requirements.

**Section 5: Materials and plant palette** – Provides a summary of the proposed materials and finishes for project elements, along with a planting palette.

# 1.2 Key project requirements

The Project outlines the design process and 90% concept design solution for the renewal of the Commonwealth Avenue Bridge to widen and strengthen the existing Bridge, upgrade vehicle and pedestrian safety barriers and accommodate improved shared path connections to and from the bridge.

## 1.2.1 Project aim

The Commonwealth Avenue Bridge Renewal Project will:

- Increase the load-bearing capacity of the Bridge to T44 Bridge loading requirements to meet current and forecast traffic load demands, and to extend the Bridge asset and functional design life (by at least 50 years) and to match the load rating of the road network surrounding the Bridge;
- Widen the shared pedestrian and cycleway paths on both sides of the Bridge to improve safety and comply with Austroads guidelines;
- Replace all barriers on both Bridge spans to meet code requirements and improve safety for all users of the Bridge including consideration of integrated lighting into proposed barrier solutions; and
- Make improvements to the Bridge approach ramps to provide better access to the Bridge for all users and to better integrate with the wider shared path network.



Figure 1: The Bridge was constructed in early 1960s

## 1.2.2 Key Project objectives

Key Project objectives identified in the Project brief include:

- Renewal of the existing Bridge to cater for current and future traffic loads;
- Ensuring the Project is effectively coordinated and developed with consideration to other strategic Projects in the corridor;
- Meeting the business needs of the Australian Government for the delivery of NCA functions;
- Delivering the best value to the Australian Government for its investment over the asset's whole of life;
- Delivering in accordance with Australian Standards; and
- Ensuring full compliance with relevant Australian government legislation, policies and procedures.

## 1.2.3 Key design requirements

Key design elements identified in the Project brief include:

- Strengthen the Bridge to accommodate T44 loads to match the load rating of the feeder road network;
- Widen the existing road carriageway to 10.7 metres (comprising two 3.7-metre- wide outside traffic lanes and a 3.3-metre-wide centre traffic lane);
- Widen the shared pedestrian and cycle paths by 2.6 metres from 2.4 metres to 5 metres clear width, consistent with Austroads standards;
- Implement medium performance, low transmitted force barriers, with a design that has negated the need for additional strengthening of the carriageways;
- Upgrade access pathways to comply with the requirements of the DD Act and to integrate into existing path and road networks;
- Upgrade and adjustment of the existing drainage, lighting and utility services that also consider future proofing of a light rail corridor and infrastructure impacts;
- Prepare heritage and urban designs sympathetic to the existing Bridge and urban and landscape design; and
- Prepare temporary works designs that consider traffic management and the minimisation of disruption to users, environmental management, safety during construction, integrity of the existing structure, construction staging impacts and visual amenity impacts during construction.



# 1.3 Methodology

The Commonwealth Avenue Bridge is a core component of the Parliamentary Triangle and a key landmark in Walter Burley Griffin's plan for Canberra, therefore the Project site has considerable cultural and heritage value. In congruence with the site's context, the Project has a strong commitment to design excellence and a series of design options have been developed through collaboration and consultation with a multi-disciplinary team, including:

- External technical advisers:
  - **Seymour Whyte:** project management (lead)
  - **BG&E:** road and bridge/structural design, engineering technical requirements and lighting design consultants
  - **Spackman Mossop Michaels:** landscape architecture, active transport and urban design specialist
  - **Tonkin Zulaikha Greer:** architecture and heritage specialist.
- NCA internal stakeholders included:
  - Infrastructure and Transport
  - Planning & Heritage
- Australian Public stakeholders included:
  - Australian Capital Territory Government (ACT)
  - ACT Parliamentary Works Committee (PWC)
- Key stakeholders included.
  - Pedal Power ACT

## Project management methodology

The methodology for developing the Project design has involved the following steps (refer to **Figure 2**):

- Review previous work and identify statutory frameworks
- Explore opportunities and challenges and identify a vision, objectives and principles to guide the design proposal
- Prepare and present options and assess those in light of the identified principles
- Select a preferred option and develop the 50% design
- Present documentation for Parliamentary Works Committee (PWC) Referral and Parliamentary and EPBC approvals if required.

# 1.4 Relevant planning policies and supporting documents

A number of existing urban planning and design frameworks are of relevance at this stage. The ACT Government, National Capital Authority (NCA) and Austroads have produced a comprehensive range of policies and guidelines aimed at achieving high quality design outcomes.

In addition, several studies of Commonwealth Avenue Bridge have also been previously prepared by specialist consultants. The design principles and options proposed in this report have been developed to align with or build upon these existing documents, including, but not limited to:

## National Policies

- The National Cycling Strategy
- The National Road Safety Strategy
- The National Disability Strategy

## ACT Government/NCA Policies

- National Capital Plan (NCA, 2021 Revision)
- ACT Transport Strategy 2020 (ACT Government, 2020)
- Canberra Living Infrastructure Plan
- Kings and Commonwealth Avenue Draft Design Strategy (NCA, 2017)
- NCA Design Quality Manual (NCA, 2012)
- NCA Outdoor Lighting Policy (NCA, 2012)
- Guidelines for Commemorative Works in the National Capital (NCA, 2002)
- Municipal Infrastructure Standards. Part 25 Plant Species for Urban Landscape Projects (ACT, 2021)

## Heritage Management Plans

- *Commonwealth Avenue Bridge Renewal Project - Heritage Framework* (Tonkin Zulaikha Greer, 2022)
- *Parliament House Vista Area Heritage Management Plan* (NCA, 2010)

## Other Relevant Studies and Guidelines

- Commonwealth Avenue Bridges Options Study (Oxygen, 2018)
- Austroads
- Australian Standards

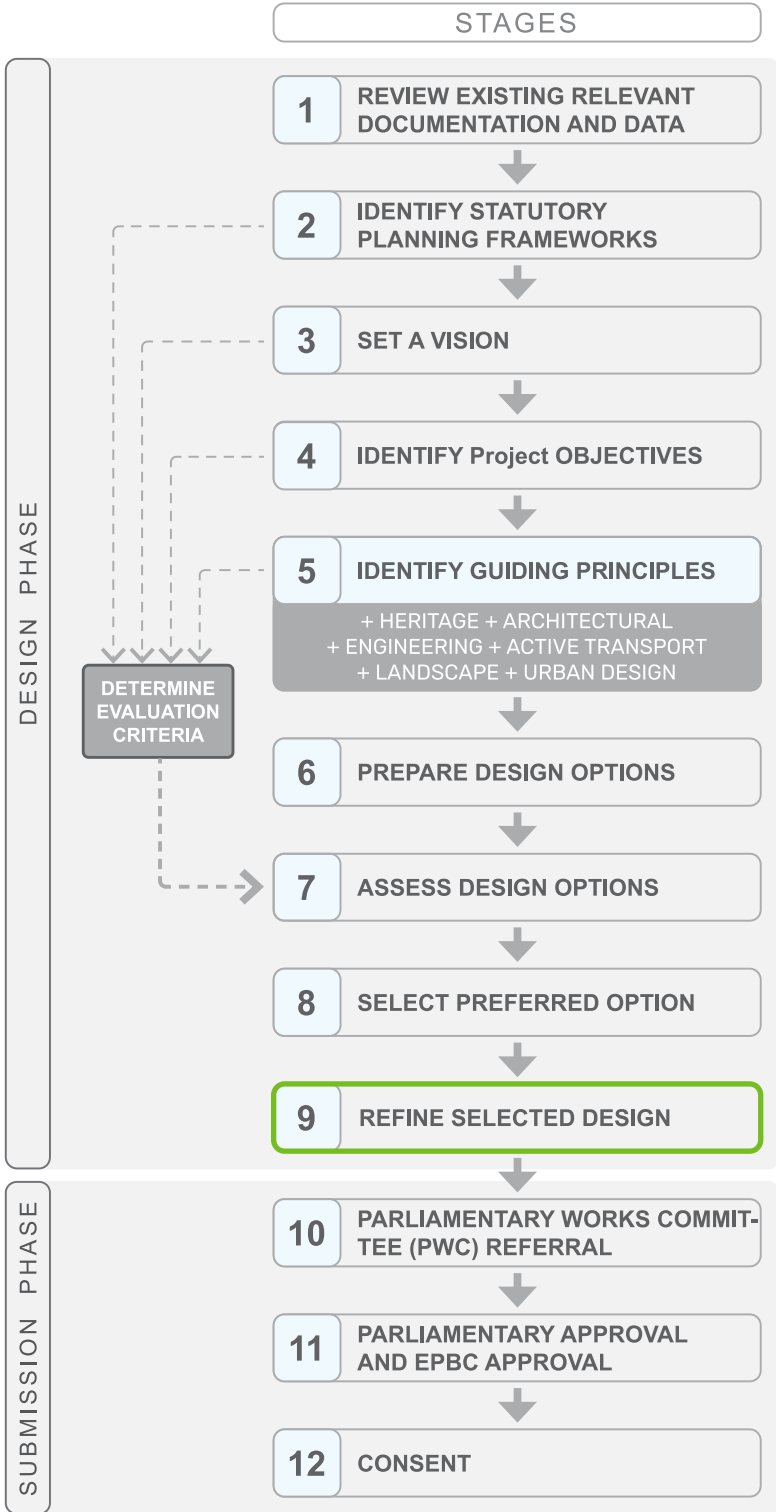


Figure 2: Project management methodology.  
  Current phase of the project



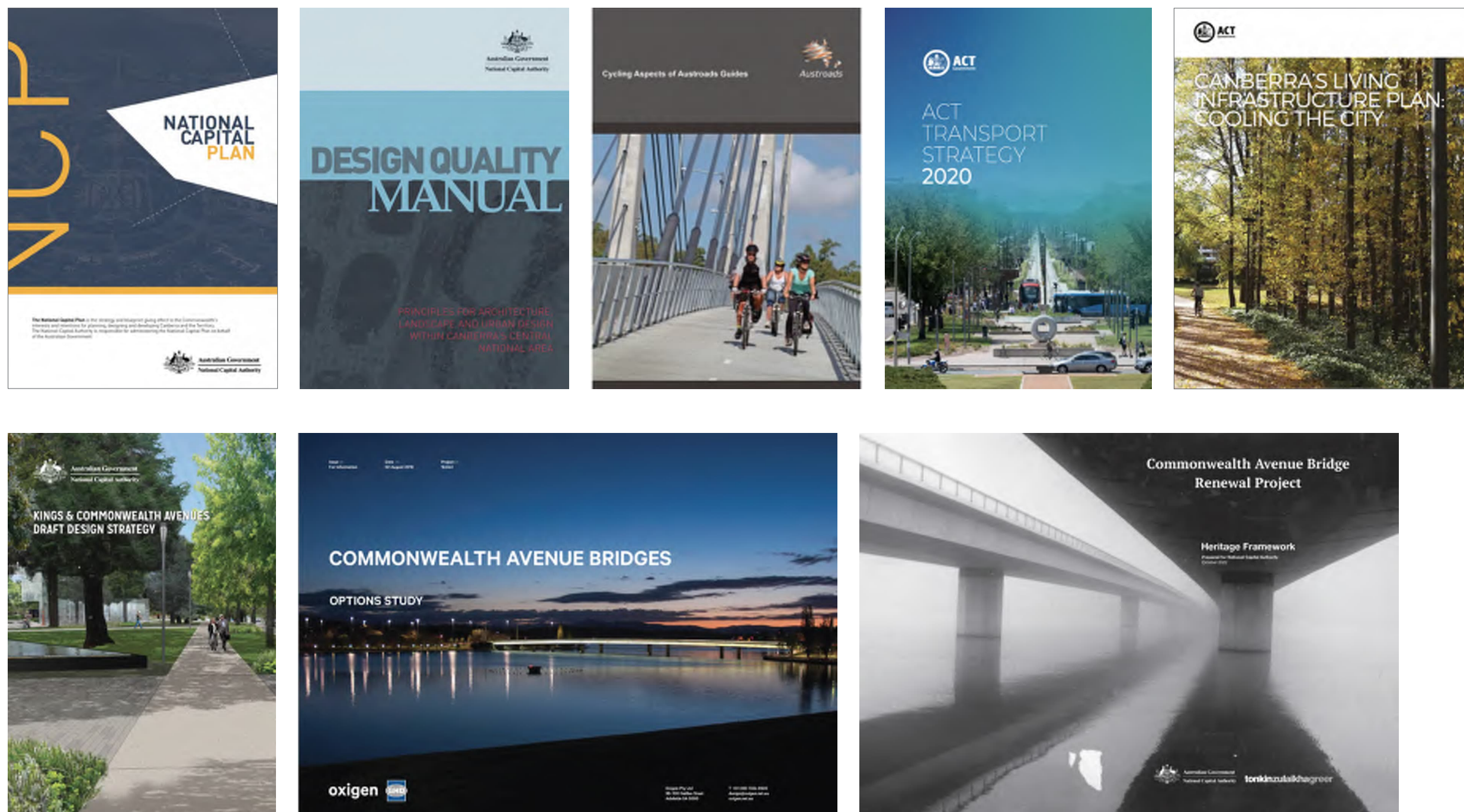


Figure 3: A selection of relevant policies, guidelines and studies





2.

SITE AND CONTEXT ANALYSIS



## 2.1 Urban planning context

This section offers valuable insights in relation to the context and setting within which the Commonwealth Avenue Bridge resides. These findings have informed the design process across different stages of the project.

### National Capital Plan

The National Capital Plan (NCP) is an overarching statutory document that governs the planning and design of urban space within Canberra. The NCP defines Designated Areas and Precincts with special character along with their corresponding planning objectives and conditions.

Within the NCP, the Parliamentary Precinct (Figure 4) includes the eastern side of Commonwealth Avenue, south of the lake. The entire length of Commonwealth Avenue is also deemed a Main Avenue by the NCP (Figure 5) and forms the western axis of the National Triangle, arising from Walter Burley Griffin's formal plan for Canberra. As such, high standards of design quality are required to reinforce the importance and significance of this avenue.

### Kings and Commonwealth Avenues Draft Design Strategy

Commonwealth Avenue, along with Kings Avenue and Constitution Avenue form the structural axes of the National Triangle around which the city is organised. Over time, the formality and significance of these main avenues has become diluted through inconsistent design approaches and a bias towards supporting vehicular traffic. The Kings and Commonwealth Avenues Draft Design Strategy aims to address this concern and offers a long-term strategy for future development within these avenues.

The document provides a clear vision for the avenues, along with four key design principles as follows:

- A unified expression of the National Triangle
- Effective movement and connections for all
- High quality urban streetscapes, befitting their status and use
- A robust landscape character that is consistent and sustainable.

In addition, a series of design templates have been provided that will guide the design of roadways, medians and verges including their spatial arrangements and material treatments. Design guidance has also been provided for park edges, transport crosslinks and the maintenance of views, vistas and axes. These design principles and templates have been incorporated into the Project design principles and objectives.

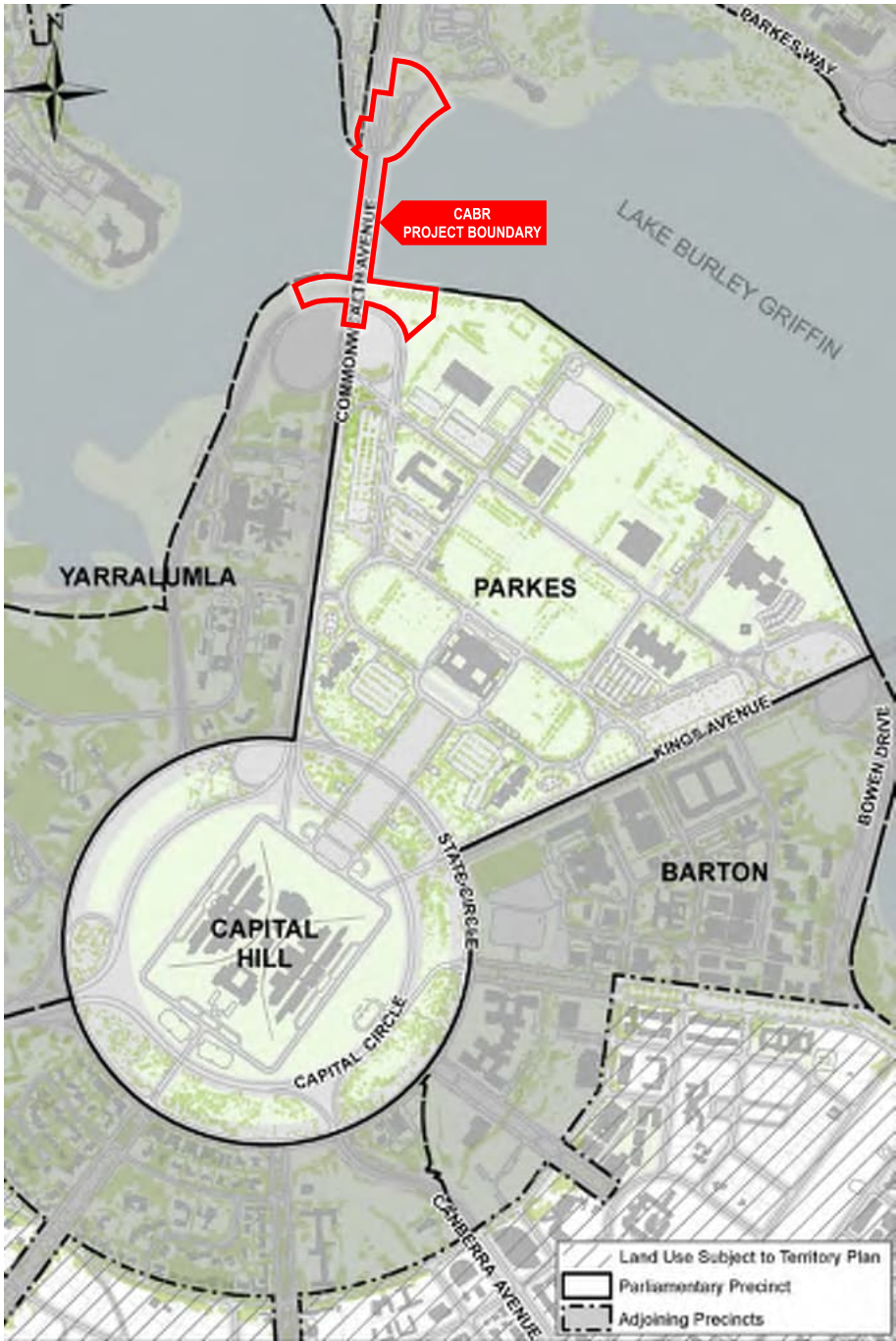


Figure 4: Parliamentary Precinct

| Source: National Capital Plan (NCA)



Figure 5: Main Avenues

| Source: National Capital Plan (NCA)



## 2.2 Project site context

Commonwealth Avenue, Kings Avenue and Constitution Avenue form the three major axes of the National Triangle (Figure 6), a core structural component of the Walter Burley Griffin plan for Canberra (Figure 7). Each avenue provides a direct link between key functional zones of Canberra, including Capital Hill (the Parliamentary precinct), City Hill (the Civic precinct) and Russell (the Defence precinct)

Commonwealth Avenue is the western axis of the National Triangle and Commonwealth Avenue Bridge (the Project site) is one of two major crossings over Lake Burley Griffin. Commonwealth Avenue Bridge provides a critical transport link across the lake for motor vehicles, cyclists and pedestrians with connections into the Lake Burley Griffin Circuit and lakeside recreational activities. The Bridge also offers expansive and spectacular views of the city, its heritage and cultural institutions and the surrounding mountain ranges.

Henry Rolland Park and Commonwealth Park straddle the northern approach to the Bridge whilst the southern approach is dominated by the Flynn Drive entry and exit ramps and open space.

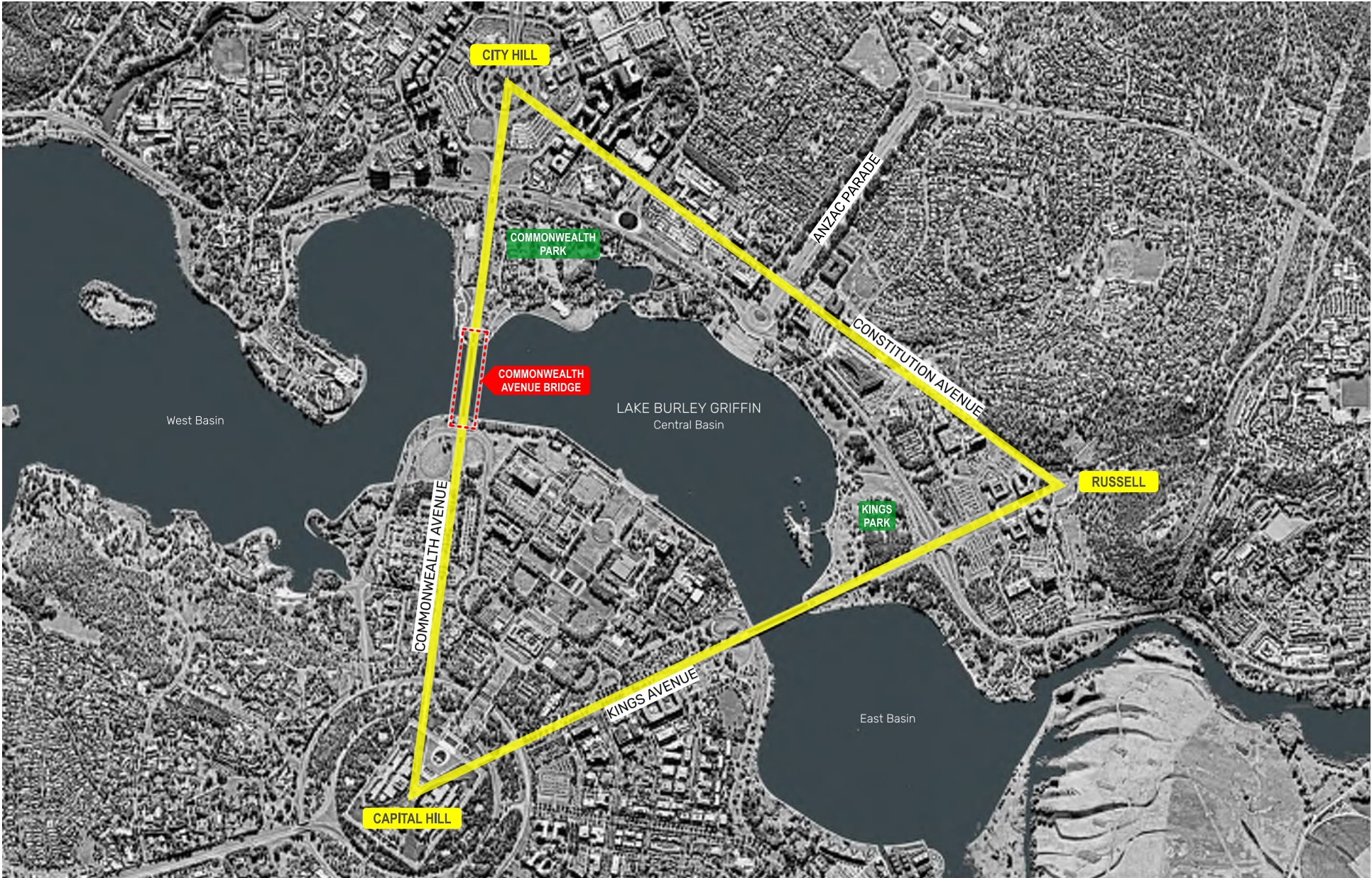


Figure 6: Project site within the context of the National Triangle

Figure 7: Griffin plan for Canberra, drawing by Marion Mahony Griffin | Source: National Archives of Australia (NAA: A710, 38)



## 2.3 Heritage

The Commonwealth Avenue Bridge Renewal (CABR) Project - Heritage Framework (Tonkin Zulaikha Greer, 2022) provides an overview of the heritage status of Commonwealth Avenue Bridge and its surrounds.

The report outlines that Commonwealth Avenue Bridge is not currently listed as an individual heritage item, however it is located within the curtilage of Lake Burley Griffin and Adjacent Lands and forms the western boundary of the Parliament House Vista, both of which are Commonwealth Heritage Listed items. Numerous other heritage items from the National Heritage List and ACT Heritage Register are located within the vicinity of the Bridge including the Australian War Memorial, the High Court of Australia and National Gallery (Figure 8).

The Commonwealth Avenue Bridge has heritage value in its own right. The Heritage Assessment prepared by GML in 2020 concluded that the Bridge meets the criteria for Commonwealth Heritage Listing. According to GML, key factors that promote its heritage value include its significant contribution to "...Canberra's planning history, landscape design and development" and its contribution to rare architecture being an early example of a "precast, post-tensioned, concrete Bridge, embodying multiweb box segments".

The Commonwealth Avenue Bridge and its surrounding setting are rich in cultural significance. In response, the Heritage Framework provides Design Principles which aim to guide the renewal of the Bridge with minimal heritage impacts. The heritage design principles are outlined in **Section 3.2.1** and have been adopted within the design elements described in **Section 4**.

For further details on heritage recommendations for the Project, refer to the CABR Project - Heritage Framework document.

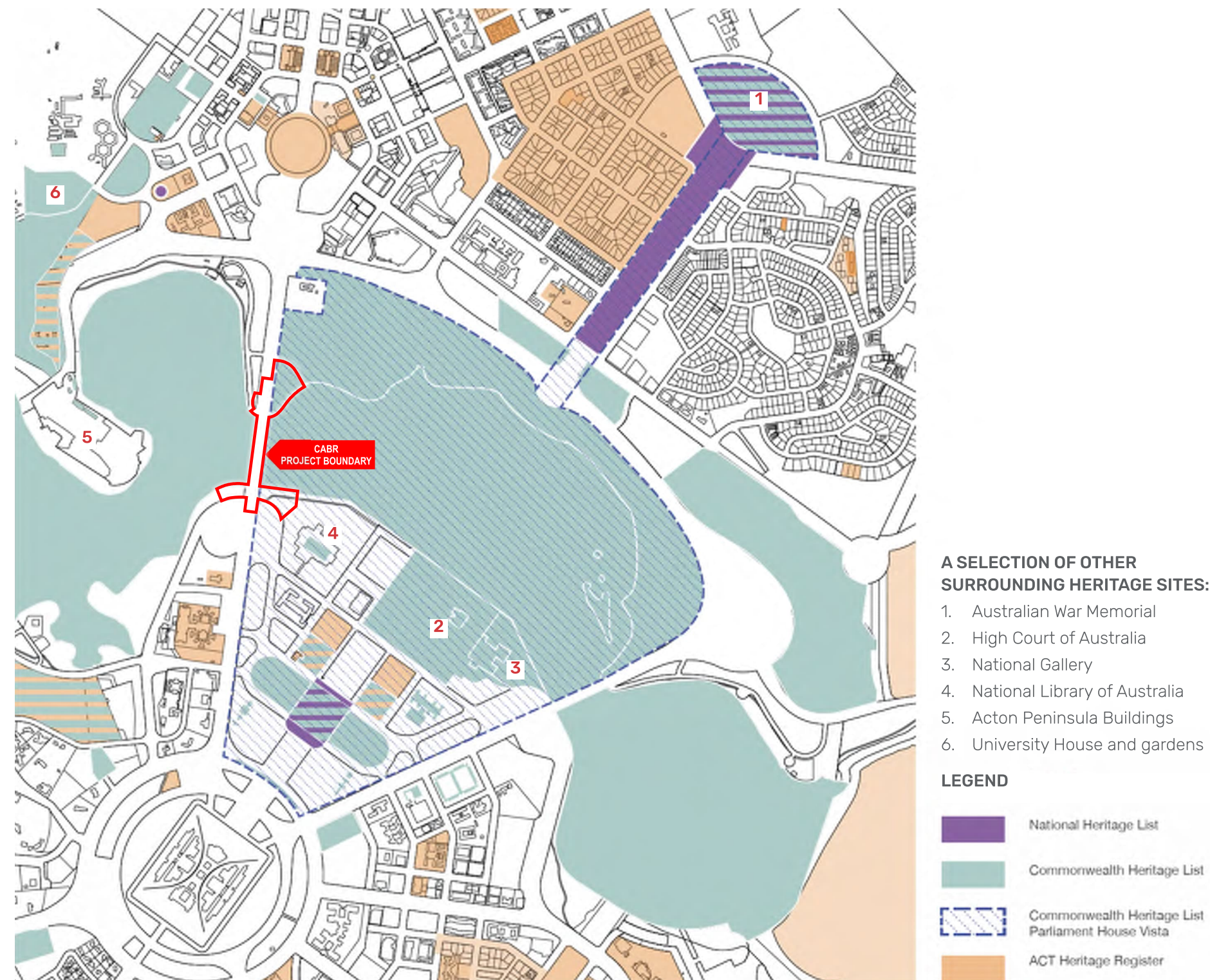


Figure 8: Heritage Listing summary map

| Source: CABR Project - Heritage Framework (Tonkin Zulaikha Greer, 2022)



## 2.4 Canberra landform

### 2.4.1 Hills, Molonglo Valley

The city of Canberra is centred in the flood plain of the Molonglo River. It is bounded by 3 distinct hills, namely Black Mountain and Mount Ainslie to the north, with Red Hill and Mount Mugga Mugga to the south. The surrounding hills provide a vertical backdrop to the majority of views within central Canberra.

Lake Burley Griffin sits at approximately 556m (AHD). Areas around the lake are relatively flat with a mildly undulating form. Elevations gradually increase to around 750m near Red Hill in the south. In the north, elevations rise to around 840m near Mount Ainslie and 810m at Black Mountain.

### 2.4.2 Lake Burley Griffin

The Molonglo River flows through Canberra, travelling from east to west. The damming of the river in 1963 through the implementation of Scrivener Dam enabled the formation of Lake Burley Griffin. Water levels in the lake are managed via the dam and this has significantly reduced flooding risk within central Canberra. The lake is around 9kms long and has an average depth of 4m.

The lake is comprised of a series of basins, including the Central Basin, West Basin, East Basin, West Lake, Tarcoola Reach and Yarramundi Reach.

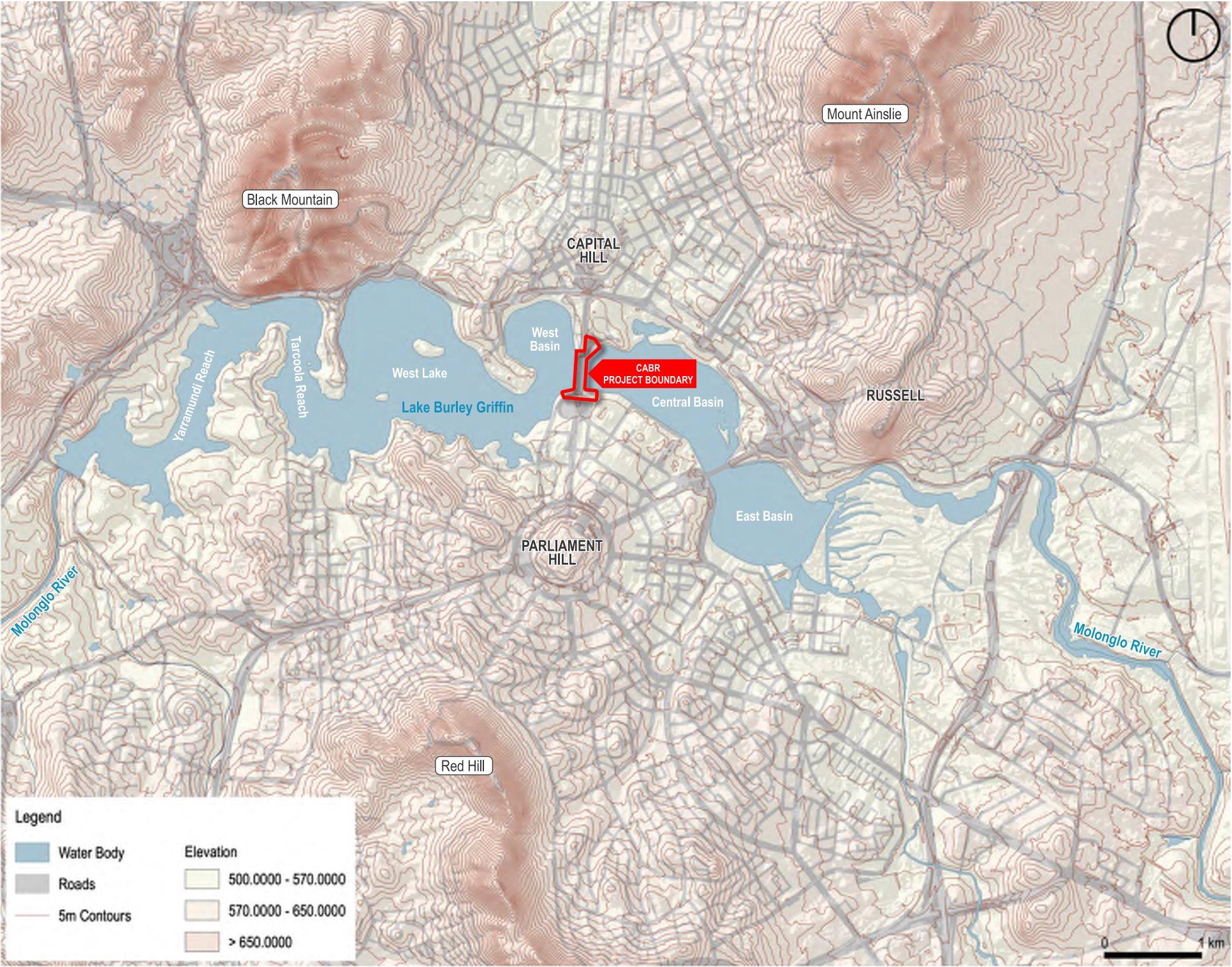


Figure 9: Canberra landform





Figure 10: Views of Canberra City from Black Mountain

| Source: A Hikers Friend,  
Photo: Hans-Joerg Kraus



Figure 12: Views to Parliament Hill from the Mount Ainslie lookout

| Source: Canberra Excursions



Figure 11: Lake Burley Griffin, Commonwealth Avenue Bridge and Black Mountain (background)

| Source: ABC News



Figure 13: The Captain Cook Memorial Jet runs daily

| Source: The Canberra Times



## 2.5 Canberra open space

### 2.5.1 The Lake Burley Griffin parklands

Lake Burley Griffin and the surrounding parklands sit at the heart of the National Capital, offering nature based recreational activities and stunning vistas of the city and beyond.

The numerous parklands offer activities such as walking and cycling circuits, picnic and barbecue facilities. Activities such as swimming, sailing, kayaking and fishing are also popular on the Lake.

The parklands immediately adjacent to the Commonwealth Avenue Bridge are Henry Rolland Park and Commonwealth Park in the north, offering views across the water to Parliament House and the National Library. Stirling Park, Canberra Nara Peace Park and the Patrick White Lawns provide walkways and recreational spaces on the southern side of the Bridge.

### 2.5.2 Cultural plantings

The English horticulturalist Charles Weston devised the landscape vision for Canberra, which included the National Triangle and main avenues such as Commonwealth Avenue. Between 1913 and 1926, Weston planted out over 2 million trees, adopting a largely exotic palette with some indigenous species. The species palette was chosen to provide formality and seasonal colour, but also to provide shade, protect against the cold winters and minimise soil erosion and the hot dusty winds of summer.

Whilst this vision was achieved in some areas, it has not been adopted consistently through the National Triangle and the Main Avenues, and therefore is a key focus within the Kings & Commonwealth Avenues Draft Design Strategy prepared by the NCA.

Cultural plantings dominate the inner city landscape and parklands. In contrast, intact indigenous vegetation communities are no longer present within the central areas of Canberra and can only be found in the surrounding hills and nature reserves, such as Mount Ainslie Nature Reserve and Red Hill Nature Reserve.

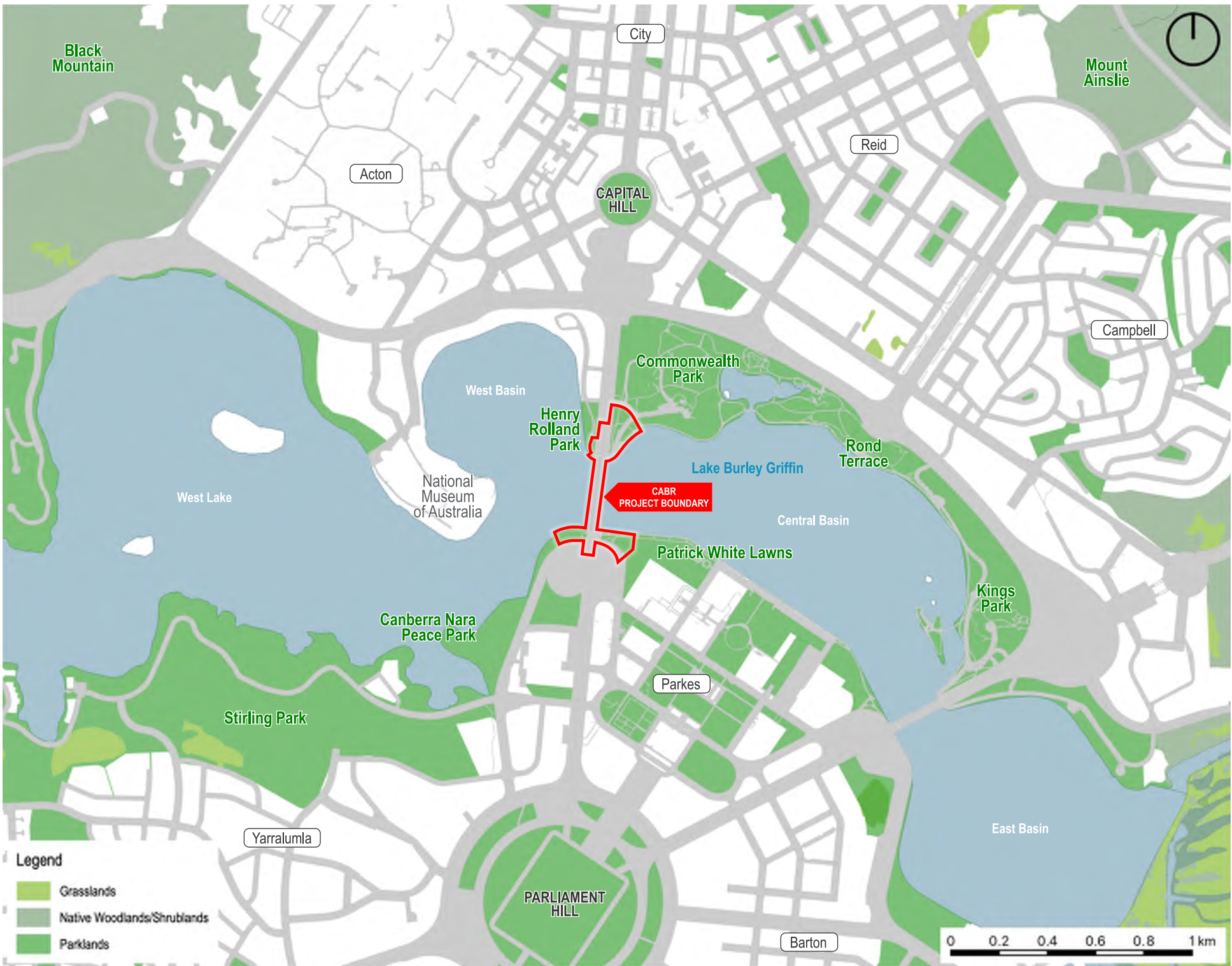


Figure 14: Commonwealth Avenue Bridge nestled amongst recreational parklands





Figure 15: Henry Rolland Park on the north-western side of the Bridge



Figure 16: Commonwealth Park on the north-eastern side of the Bridge



Figure 17: Parklands on the south-western side of the Bridge



Figure 18: Parklands on the south-eastern side of the Bridge



2.6 Roads & impervious surfaces

The road network is a prominent feature within the Canberra city landscape. The three main avenues forming the National Triangle and major connecting roads such as Parkes Way incorporate dual carriageways, occupying wide expanses of the ground plane.

Sweeping and circular access ramps onto Commonwealth Avenue such as Flynn Drive also occupy large areas of land which could otherwise provide additional amenity or programmed activities for the community.



Figure 19: Commonwealth Avenue facing north to City Hill



Figure 21: Commonwealth Avenue facing south to Parliament House



Figure 20: Intersection with Flynn Drive view from King Edward Terrace | Source: Google Earth



Figure 22: Open space occupied by road infrastructure



2.7 Cultural and civic places

Many of Canberra’s cultural institutions and places reside within or around the National Triangle and Lake Burley Griffin. Several are within walking distance from Commonwealth Avenue Bridge and can be viewed from the Bridge,



Figure 23: The National Carillon on Lake Burley Griffin | Source: Australian Traveller



Figure 25: National Museum of Australia on western side of the Bridge | Source: National Museum of Australia



Figure 27: City Hill | Source: Parks ACT



Figure 24: Garema Place civic space north of Commonwealth Avenue Bridge | Source: The Canberra Times



Figure 26: The National Library in autumn | Source: The Canberra Times



Figure 28: Annual Floriade event in Commonwealth Park | Source: ACT Government



2.8 Key views and vistas - to Bridge



Figure 29: Key views and vistas towards Commonwealth Avenue Bridge



2.9 Key views and vistas – from Bridge



Figure 30: Key views and vistas from Commonwealth Avenue Bridge



2.10 Movement and circulation

2.10.1 Public transport

BUSES

Five rapid bus routes (R4, R5, R6, R7 and R10) traverse Commonwealth Avenue Bridge (Figure 31) and connect areas south of Lake Burley Griffin to the Parliamentary Precinct and the Central Precincts, terminating at City Interchange (R4 excepted). City Interchange is a major transfer point between the bus and light rail network and is approximately 2kms north of the Bridge.

The Bridge provides the primary transport route over Lake Burley Griffin and links two major commercial precincts, therefore provides critical infrastructure for the city of Canberra.

THE LIGHT RAIL - CANBERRA METRO

Construction of Canberra’s Light Rail network is progressing and offers a zero-emissions public transport mode that creates a north-south travel spine through the city. Stage 1 of the light rail network is now in operation and provides connectivity between Gungahlin and Canberra’s City centre. Stage 2 will provide a link from the City to Woden, requiring new light rail infrastructure that travels over Lake Burley Griffin along Commonwealth Avenue.

The *Commonwealth Avenue Bridges Options Study (Oxigen, 2018)* provides several alternatives that accommodate the light rail between the existing Commonwealth Avenue Bridges, either as a new standalone Bridge or integrated into the existing Bridge infrastructure. In either case, consideration should be given to the incorporation of the light rail into the transport ecosystem and the impacts this may have on movement, both on, and around the Bridge.

At the time of writing this report, detailed Stage 2 Light rail plans were not available for analysis, however it is anticipated that they may be available during subsequent stages of the concept design.

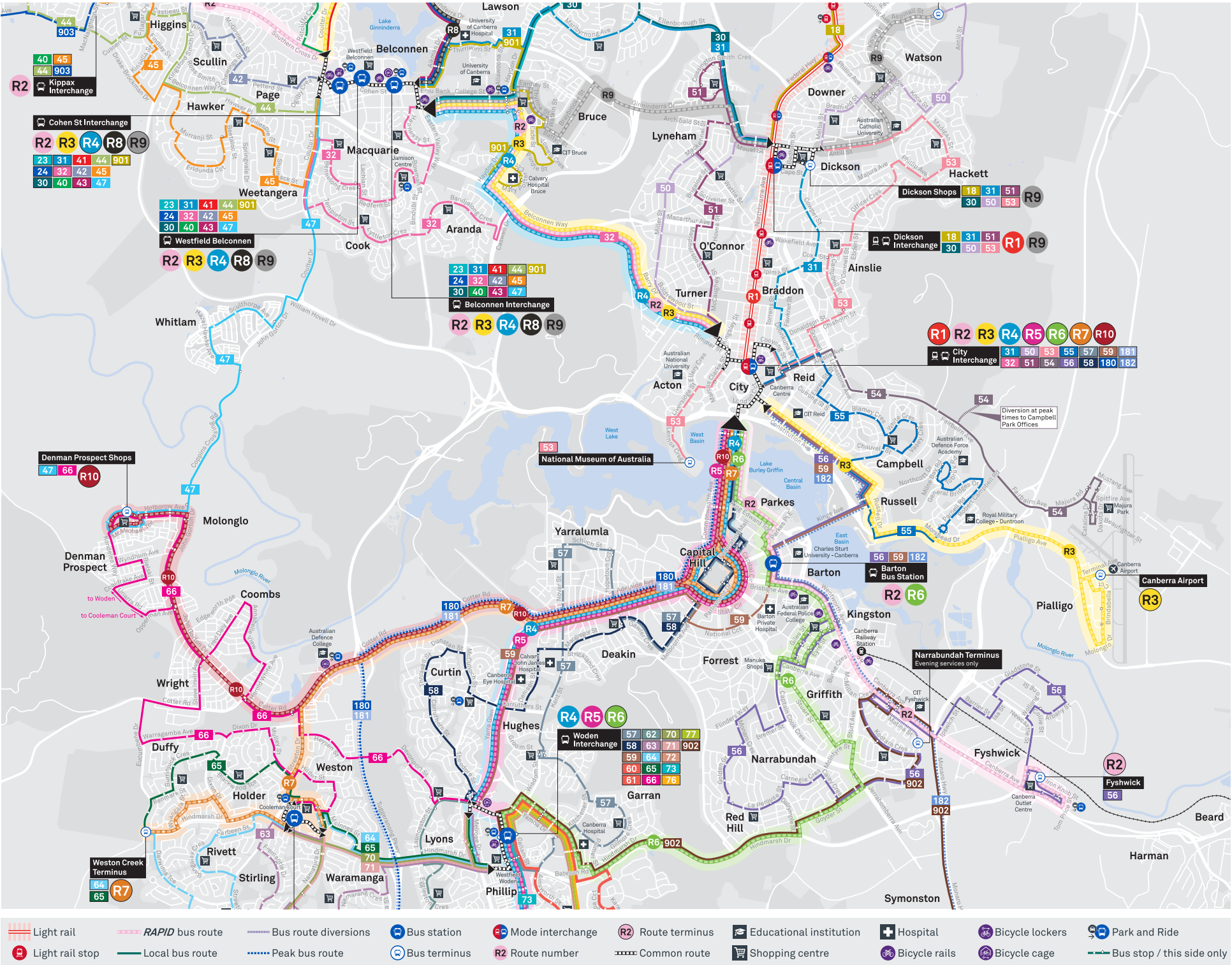


Figure 31: Extract from Transport Canberra Network Map

| Source: ACT Government



2.10.2 Active transport

A key priority within the ACT Transport Strategy 2020 is to support and enable “Walkable Places”, where pedestrians will have increased priority in the streetscape. This will be achieved through improved footpaths and shared paths, additional seating for rest along the journey, additional street tree canopy for shade and improved safety elements, particularly for crossings and intersections.

Canberra also has an extensive network of cycling paths, however they don't always provide connectivity to key destinations that commuters wish to travel to. In response, the ACT Government aims to deliver additional cycle routes that support connectivity, and to provide safer off road cycle paths, whilst also enhancing wayfinding and signage.

Commonwealth Avenue including Commonwealth Avenue Bridge (Figure 32) form part of a principle cycle route (C4) between the City and Tuggeranong via Woden. This route also provides connection into the Lake Burley Griffin Circuit (LBG), a major recreational walking and cycling circuit in the heart of the city. The C4 route also joins with the City - Queanbeyan (C2) route in the east. As such, the safety and accessibility of shared paths on and surrounding the Bridge are critically important for the community.

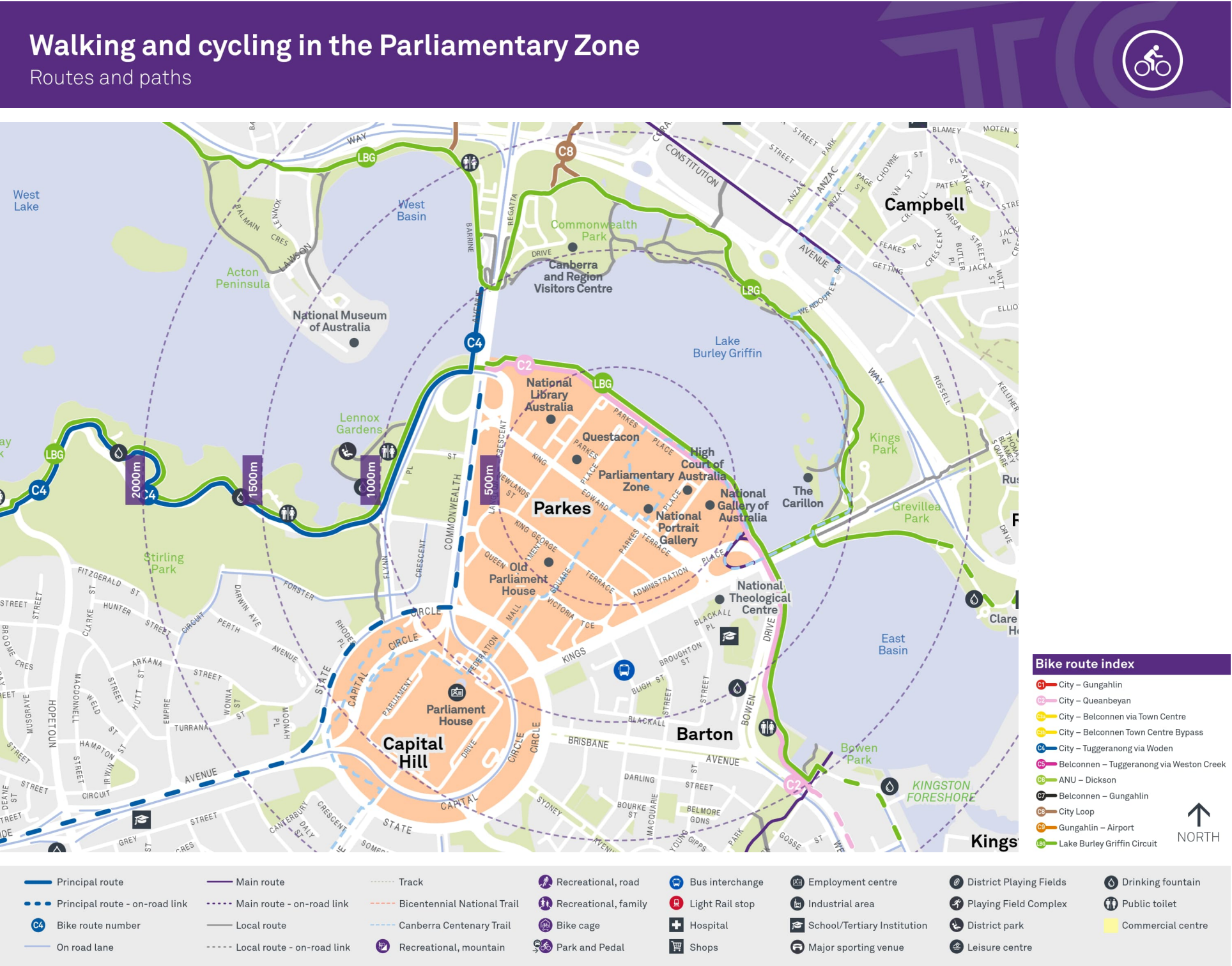


Figure 32: Extract of Canberra cycle network map in relation to Commonwealth Avenue | Source: ACT Government



2.10.3 Bridge approaches on the northern foreshore

The Lake Burley Griffin Circuit and Local Bike Routes connect with the northern approaches to the Commonwealth Avenue Bridge.

Existing Bicycle Lanes on the northbound and southbound carriageways intersect with shared paths on the bridge near the abutments, creating pinch points where collisions could occur.

For further details on northern foreshore design elements, refer to **Section 4.5.3** and **Section 4.5.3**.



Figure 33: Movement and circulation on the northern side of the Bridge



2.10.4 Bridge approaches on the southern foreshore

On the southern side of the Bridges, safe and efficient cycling connections are required between the City-Queanbeyan Route and the City-Tuggeranong Route, which also traverse part of the LBG Circuit. Similarly, safe and accessible entry/exit ramps are required for pedestrians to move between the Bridge and the southern foreshore areas.

For further details on southern foreshore design elements, refer to **Section 4.5.4** and **Section 4.5.5**.

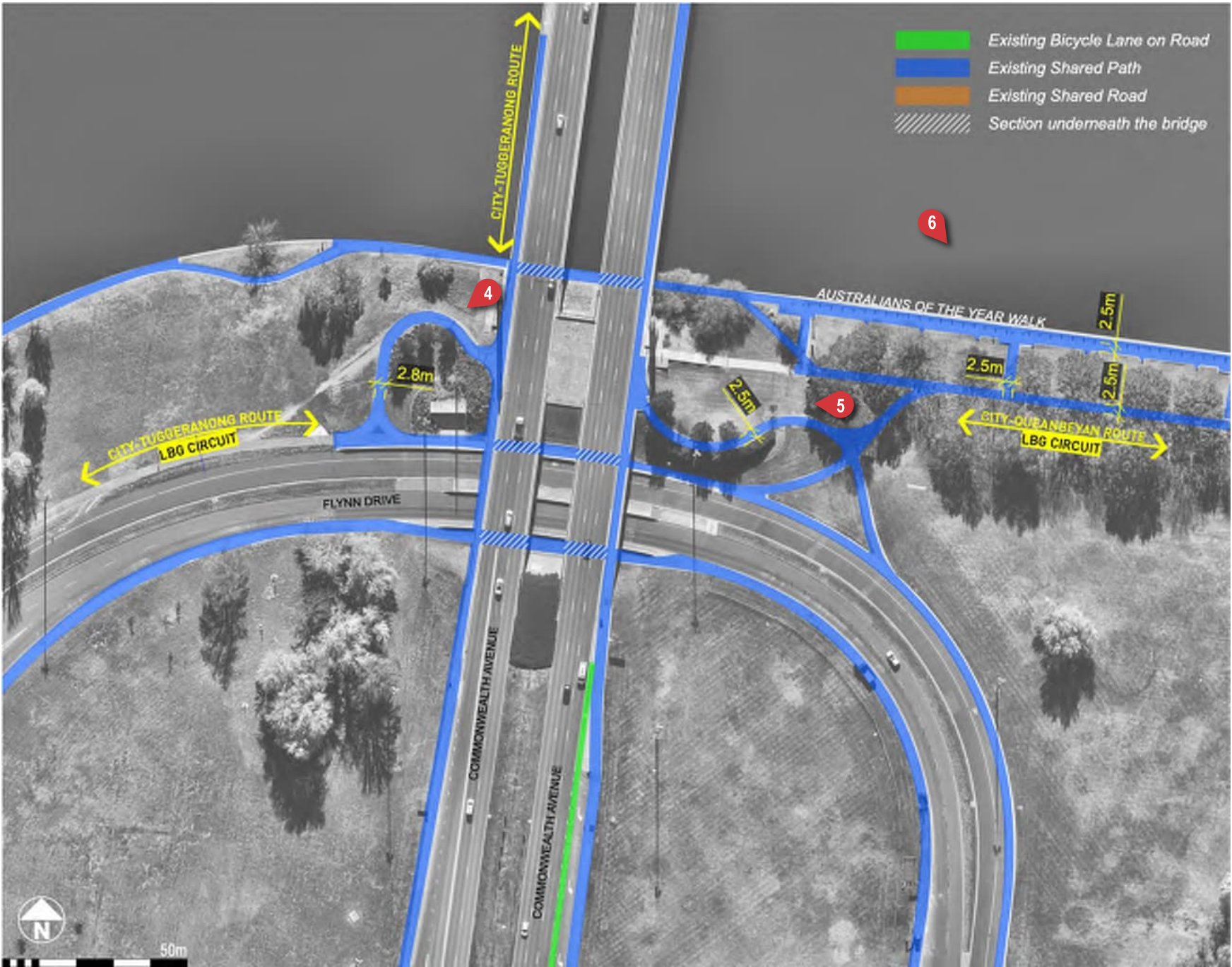


Figure 34: Movement and circulation on the southern side of the Bridge



## 2.11 Planting considerations

### 2.11.1 Canberra climate

The A.C.T climate is typically categorised as cool temperate. Canberra resides in the north of the territory, which is generally dryer and warmer compared with the southern and alpine areas of the territory.

Climate characteristics that have informed the planting strategy include:

- Canberra's climate is relatively dry, with rainfall ranges from 400–800 mm in the north and east of the territory
- Average daily temperatures in summer range from 20–22°C in northern parts of the territory. During winter, average daily temperatures range from 6–8°C in the north.
- The ACT experiences less than 10 hot days (over 35°C) per year, however climate projections indicate that Canberra will see an increase of 1–5 hot days in the near future (by 2039) and 10–20 more hot days by 2070 (ACT Climate Change Snapshot, ACT Government, 2014).
- There are an average of 70–90 cold nights (below 2°C) per year which would can result in frosts. By 2030, the number of cold nights is forecast to decrease by 10–13 nights. By 2070, the number of cold nights is forecast to decrease by 43 nights. However in the short term, regular frosts are to be expected during the cooler months.

Given the above statistics and future climate predictions for Canberra, the planting palette should incorporate trees and plants that:

- Are frost hardy or at least moderately frost tolerant
- Have low water requirements and be relatively drought tolerant.

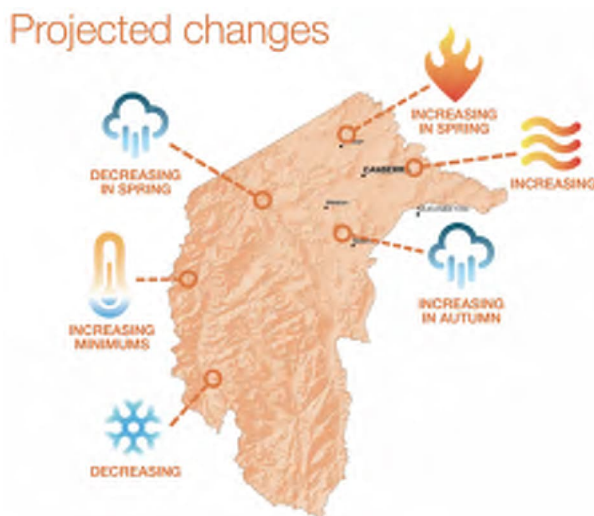


Figure 35: ACT projected climate changes  
Source: ACT Climate Change Snapshot, ACT Government, 2014

### 2.11.2 Canberra's Treescape

Since the adoption of Griffin's plan for Canberra, trees have played a pivotal role in strengthening the geometry of the Land Axis and in formalising the main avenues that define the National Triangle. Similarly, trees play an essential role in defining Canberra's character as the 'bush capital', complementing and enhancing the setting of parklands, streets and public spaces. Trees have an important status in the capital city, with some being recognised in heritage listings, however heritage status is not applicable to any trees affected by this Project.

In addition to their cultural value, trees also play a key environmental role and aid in urban heat mitigation and climate change adaptation. Within Canberra's Living Infrastructure Plan: Cooling the City (ACT Government, 2019), a tree canopy target of 30% by 2045 has been set to respond to the growing challenges of urbanisation and urban heat. This target has served as a baseline for the Project, however, effort has been made to retain and increase tree cover where possible, without the loss of key views and vistas.

A tree health assessment has been performed by the NCA to determine the health and longevity of NCA managed trees within the Project area. Where trees are nearing their useful life expectancy (ULE), are in poor condition or are deemed weedy species, recommendations have been made for their replacement as part of this Project.

### 2.11.3 Planting policy pre-requisites

Several existing policies and strategies provide guidance on planting character within the National Capital. These are outlined below.

#### NATIONAL CAPITAL PLAN

Numerous references are made to tree planting and planting character within the National Capital Plan. Most specifically, the Parliamentary Precinct has the following policies listed in relation to tree planting:

- Tree planting should attract native birdlife and create shelter, scale, interest and special character
- Utilisation of colour to define special routes or points of interest

#### PARLIAMENT HOUSE VISTA AREA HERITAGE MANAGEMENT PLAN

This documents provides a detailed historical account of the planting strategies employed over the last century by the lead horticultural advisors of the time. Key elements that have been incorporated into the the planting strategy include:

- The symmetrical compositions of Charles Weston leveraging fastigate/sentinel trees such as the Lombardy Poplar to aid in framing views and vistas.
- The Parliament House Vista "plays upon the quality of contrast". Contrasts between exotic and native vegetation, deciduous and evergreen, flowering and form. As such, the planting palette will also seek to bring about constrast in plant form, foliage, flowering colour, scent and seasonal characteristics.

#### KINGS AND COMMONWEALTH AVENUE DESIGN STRATEGY

The Kings and Commonwealth Avenue Draft Design Strategy also provides some overarching design strategies for these major avenues, including:

- To retain existing trees of value but supplement them with new trees and to replace those in poor health or those that only relatively short-lived
- To plant for the future, choosing species that are very long-lived
- To make connections with adjacent open spaces and planted areas
- To plant large trees in scale with the wide corridor and the height of adjacent buildings to use deciduous and evergreen trees to create light and shade, with an aim to unifying the avenues while also creating variety.

The two avenues are currently planted with a mixture of cedars (original Weston plantings) and English elms and Chinese elms (planted later in the 1960s) amongst other species. The elm plantings have been less successful and will gradually be replaced with oaks.

#### COMMONWEALTH AVENUE BRIDGE REPLACEMENT PROJECT BRIEF

The NCA also stipulates the following requirements in relation to plantings within the Commonwealth Avenue Bridge Replacement Project Brief:

- Plant species selection should complement existing areas. Plant material must ensure clear sight lines for maximum passive surveillance and safety.



2.11.4 Planting opportunities



*Sloped areas without dense plantings are unsightly and experience erosion*



*Areas that enable cut-throughs between formal paths result in desire lines and turf die-back*



*Areas without dense plantings create opportunities for weeds to flourish*



*Some trees have senesced due to a lack of successional planting, leaving fallen branches and barren trunks.*



*Slopes that are densely planted (such as the north-west area of the bridge) can offer erosion control, greater biodiversity and visual interest*

Figure 36: Planting opportunities





3.

DESIGN FRAMEWORK AND STRATEGY



### 3.1 INTRODUCTION

This report builds upon the 'Architecture, Landscape Architecture and Urban Design Options Report' that studied a range of different options for each component of the Project and provides comprehensive analysis of the presented options to facilitate further selection. Preferred options were selected for each component to allow design development to progress into the current 50% Concept Design stage of the project. The design presented in this report is based on the preferred options selected and informed by key assumptions described below.

#### 3.1.1 Key assumptions

Key assumptions which underpin the design:

- As per the design brief, the bridge extension is to be a cantilevered solution that extends off the existing bridge structure
- Future light rail is outside of the scope of this report. It is assumed to be accommodated on a new bridge structure between the two Commonwealth Avenue bridges
- Commonwealth Avenue is not on the Heavy Vehicle network
- Existing concrete pylons are to remain due to heritage and cost considerations
- Speed limits across the Commonwealth Avenue bridge are to be lowered to 60km/hr
- Bridge is to be strengthened to T44/L44 loading
- Pole top lighting on the bridge is not desirable due, to heritage and structural considerations
- Accessible paths of travel is not required on all four pedestrian approaches from lakeside to the bridge level. Only the southeast and northeast have been provided allowing accessible connections along the existing Lake Loop
- Pedestrian and cyclist pathways to follow Austroad guidelines
- Improving pedestrian/cyclist safety and amenity are to be the leading consideration when upgrading pathways.

#### 3.1.2 Vision

The highlighted vision that has been driven the design process during previous stages of the project still remains as follows:

*We see the Commonwealth Avenue Bridge not only as an elegant piece of infrastructure retaining its function as a critical component of the transport network of Canberra, but also as a core asset to upgrade the site from a motorway environment to a pleasant and enjoyable open civic street character.*

### 3.2 Design principles

Project design principles complement the above described objectives and have guided the development of the design elements to ensure they fulfil the Project objectives and overall Project vision. These guiding principles have been refined utilising an iterative and collaborative process with inputs from all disciplines that provide expertise into this Project, as shown in Figure 37.

The proposed design principles will form the basis of the development of the Bridge renewal Project, including the successful integration of engineering and architectural requirements with the civic and historical context.

The principles are grouped below under the following five headings:

- Heritage context
- Environmental and social sustainability
- Amenity
- Users movement and circulation
- Quality and constructability.

They will be used to develop design proposals and form the basis for evaluating the design options presented in following sections of this report.



Figure 37: An iterative, collaborative, multi-disciplinary development of principles

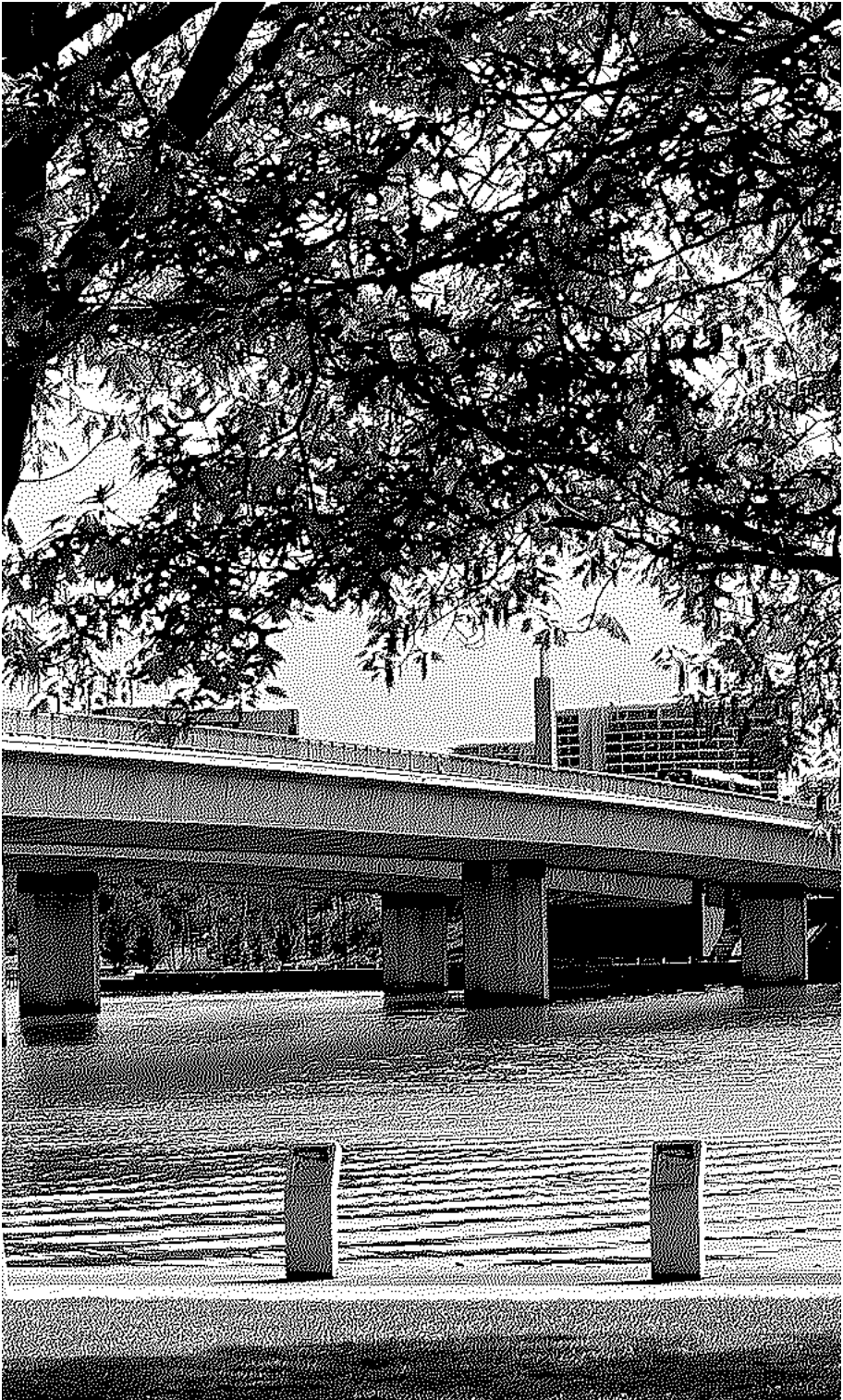


Figure 38: The Bridge from the 'Australian of the Year' walk



3.2.1 Heritage design principles

The CABR Project Heritage Framework (Tonkin Zulaikha Greer, 2022) provides a comprehensive suite of urban design and heritage principles. They constitute Project considerations in respect of the unique character of the site, connections to history and place and the opportunity to deliver best practice urban design and sustainability outcomes.

The CABR Project Heritage Framework outlines the need for the Project to take into account an understanding of the heritage significance of the place and the relative significance of the components of built fabric and their tolerance for change.

An analysis of the site and its context along with the relevant Heritage Listings and Heritage Management Plans leads to the following heritage design principles which would apply to the proposed renewal of the Commonwealth Avenue Bridge. The new elements should not be eye catching, rather sympathetic and compatible, as the Bridge defines the western edge of the Parliament House Vista. New elements should generally defer to the original elements of the Bridge, reading as secondary elements, to minimise heritage impacts:

CHARACTER

- Complementary

New elements should be complementary to the original built form.

- Contemporary

New elements should be identifiably new upon closer inspection to avoid confusion between old and new fabric.

- Simple, elegant aesthetic

A simple, elegant aesthetic should be adopted for new elements which complements the original design of the Bridge.

- Horizontal emphasis

New elements should reinforce the horizontal emphasis of the original Bridge when viewed from afar.

- Mirrored pair - singular expression

The existing Bridge comprises a pair of mirror reversed matching elements which read together as one. This should be retained in the design of new elements.

- Simple, transparent balustrades.

The existing balustrades are simple repetitive elements which have a high degree of transparency and read as secondary elements to the primary form of the concrete Bridge. This should be retained in the new design.

- Landscape elements to respond to surrounding context

The landscape design of the approaches should be recessive in respect to the Bridge and the Parliament House Vista.

SITING

- Minimise impacts on views

Any changes to the Bridge and the landscape approaches should be sited to avoid or minimise impacts on key views.

- Connect to surrounding landscape

The landscape approaches should be carefully sited to connect to the surrounding landscape.

SCALE

- Bridge edge condition

The new Bridge edge condition should be similar in scale to the existing edge condition, and taper to create similar shadows on the vertical face, to minimise impacts on views.

- Balustrade and crash barrier heights

The height of balustrades and crash barriers should be minimised to minimise visual impacts. Lowering the speed limit would lower the required height of crash barriers. NCA to assess risks associated with alternative options.

FORM

- Linear horizontal emphasis

The linear horizontal emphasis of the Bridge should be retained, with integrated lighting in the balustrades.

- Bridge edge condition

The renewed edge condition should be similar to the existing edge condition, with the overall form of Bridge widened.

- Minimise vertical elements

The Bridge pylons should remain the only vertical elements on the Bridge. Vertical light poles should be avoided on the Bridge, and located as far as possible from the pylons if required on the land north and south of the abutments.

- Balustrades and crash barriers

Finer elements such as balustrades and crash barriers should be designed to read as secondary elements to the primary form of the Bridge.

MATERIALS AND COLOUR

- Bridge extension

The material of the Bridge extension should be light in colour to respond to the existing white precast with exposed Quartz aggregate.

- Balustrades and crash barriers

The existing balustrades and crash rails should also be light in colour - the existing are white and silver.

- Abutments

The abutments are constructed of precast concrete with dark aggregate and Tarana granite cladding. This should be retained and conserved. A similar palette of materials should be used for any alterations.

- Pylons

The existing pylons feature white painted concrete and Tarana granite. This should be retained and conserved.

DETAILING

- Simple contemporary detailing

The detailing of architectural elements should be simple and contemporary, and based on an understanding of the original design intent.

- Dialogue between old and new

The detailing of new elements should be based on a clear understanding of the original detailing. Establish a dialogue between the old and the new fabric through detailing.

- Concealed engineering upgrades

Engineering upgrades required for Bridge strengthening should be concealed where possible. Where exposed a simple clean aesthetic should be adopted, which is coordinated with the architectural response.



Figure 39: Bridge character, form, colours, materials and details



### 3.2.2 Environmental and social sustainability design principles

The design should provide a model public domain and piece of infrastructure that demonstrate the benefits of innovative environmentally sustainable approach and offers flexible spaces to accommodate a wide range of present and future uses and activities.

1. Encouraging more trips to be undertaken by bicycle and walking including local and commuter trips
2. The Project infrastructure itself is to be designed to include best-practice sustainability measures including materials selection, potential water management and low energy consumption
3. Seek to improve the natural landscape through the Project
4. Evaluate economic benefits of increasing cycling and walking trips for health and transport capacity
5. Design to maximise microclimate comfort, reduce urban heat island effect and mitigate climate change risks
6. Provide an inclusive and accessible environment that integrates with the existing fabric
7. Integrate formal and informal environments that reflect the existing landscape character and enhance the existing views from and towards the lake and the Bridge.



Figure 40: Design principle themes

### 3.2.3 Amenity design principles

The design should facilitate day and night activities offering a flexible and diverse choice of entertainment and amenities.

1. Enhance existing amenity for the residents, commuters and visitors
2. Enhance the opportunities for users to appreciate the panoramic land and lake views from the Bridge and adjoining foreshore
3. Respond to the high level of existing public domain amenity around the Bridge and elevate areas of lower amenity to the same high quality
4. Minimise visual and physical clutter
5. Maximise environmental amenity through tree planting, permeable ground and reduce urban heat where possible
6. Minimise net loss of publicly accessible green spaces
7. Utilise landform, structures and furniture as expressions of identity and place and to activate adjoining open spaces.



### 3.2.4 Movement and circulation design principles

The design should provide an easily accessed destination and thoroughfare where people have priority and a safe and pleasing open civic character is facilitated.

1. Make trips safer and more comfortable for both pedestrians and cyclists
2. Increase using the Bridge viability, accessibility and equity for more pedestrians and riders
3. Make cycling an attractive choice for local and regional trips
4. Support new tourism and visitation opportunities
5. Improve adjacent streets, shared paths, footpaths and cycleways that connect to the Bridge
6. Establish a safe and efficient link to the Bridge and beyond from existing routes around the lake
7. Consider links and relationship to destinations within the broader area
8. Better connect local communities living within the vicinity of either side of the Bridge and increase access to nearby public spaces, events, venues and parks.



### 3.2.5 Quality and constructability design principles

The CABR Project Heritage Framework provides a comprehensive suite of urban design and heritage principles. They constitute Project considerations in respect of the unique character of the site, connections to history and place and the opportunity to deliver best practice urban design and sustainability outcomes.

1. Consider whole of life – design life, durability and low maintenance
2. Deliver an innovative and highly considered design solution that suits the location and context
3. Design to consider an architectural and aesthetic response that is sensitive to and respectful of the heritage values, architecture and urban scale of the site
4. Ensure structural engineering is refined and articulate and that the resultant built form is discrete, elegant, consistent and minimises impacts to existing views.
5. Ensure that the design produces value for money and fits into the Project budget





### 3.3 Design background

Prior to this report being written, the NCA has undertaken a number of investigations into the condition of Commonwealth Avenue Bridge due to the age of the Bridge, evolving Bridge design standards and growing demand for a variety of different modes of transport.

An Initial Business Case was prepared in 2018 and more recently, a Detailed Business Case was prepared in 2020 that sought to provide design requirements of the bridge strengthening and widening and other requirements to be addressed that would bring the Bridge up to the necessary engineering standards, whilst improving safety and capacity for all modes of transport.

Figure 41 below shows the three main components of the Project.

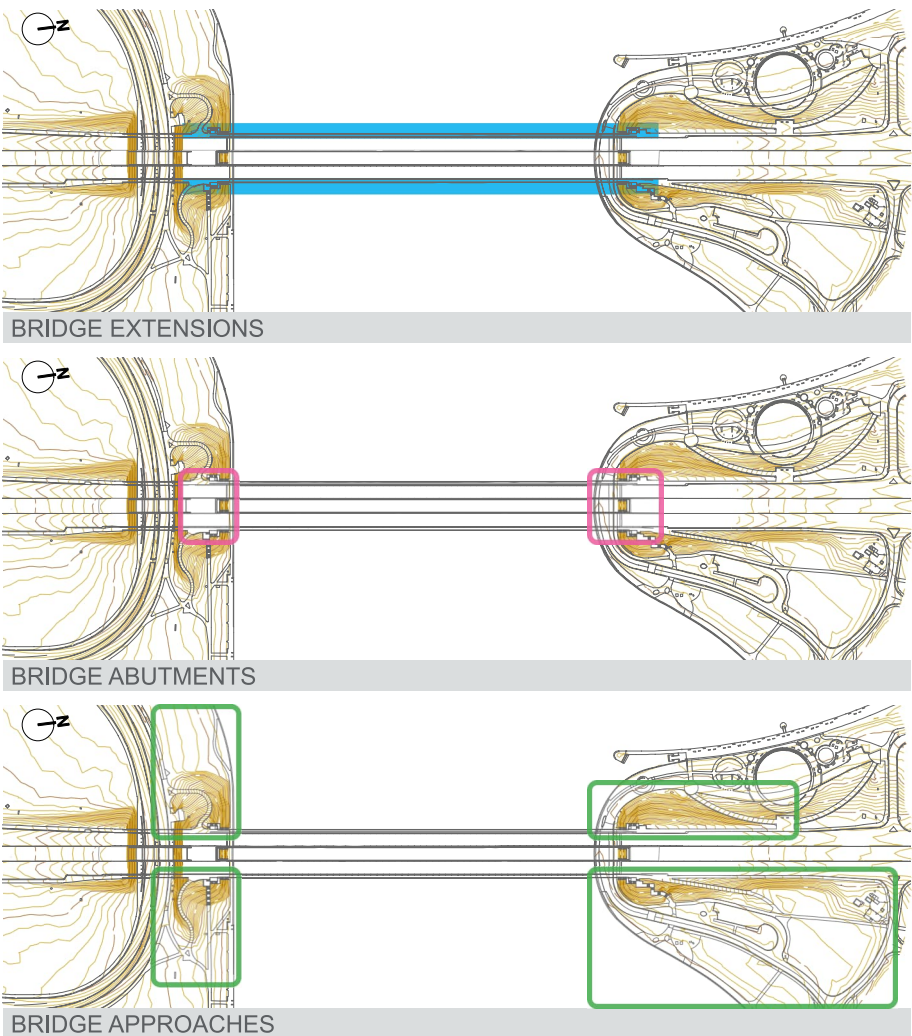


Figure 41: Three main components of the Project

### 3.4 Design considerations

The development and evaluation of design options for the Project has considered a range of architectural, urban design and landscape factors. These are outlined below.

#### Motor vehicle movement

- Clear sightlines and orientation
- Moderate to slow design speed environment
- Reduce potential for conflict
- Create a calm and enjoyable journey
- Facilitate the appreciation of the surrounding landscape

#### Pedestrian and cyclist safety, ease of movement and amenity

- Direct routes
- Space to rest/take in the view
- Reduce conflict/pinch points/blind spots
- CPTED requirements

#### Catering for the range of users and their different requirements

- Disability access
- Commuters
- Tourists
- Recreational users

#### Bridge Setting and Character

- Horizontal and low structure in an open landscape
- Slim lines and simple detailing
- Open/transparent visual quality
- Smooth and curved soffit
- Dense groupings of trees surrounding the Bridge approaches and abutments
- Undulating parkland landscape surrounding the abutments

#### Architectural and landscape heritage

- Lake Burley Griffin and adjacent lands
- Bridge design integrity
- Views and vistas to and from the Bridge
- Formal avenue experience of Commonwealth Avenue defined by City and Parliament Hills.

### 3.5 Site specific opportunities

In addition to the design considerations outlined, additional site specific opportunities have been identified and listed below.

#### Bridge form and function

- Optimise Bridge flow and path alignment
- Develop sympathetic Bridge extensions form
- Minimise the complexity/visibility in the form and scale of Bridge barriers and balustrades
- Minimise visibility of Bridge lighting whilst maximising lighting performance
- Rationalise and enhance Bridge abutments with elegant and simple design solutions
- Maintain/enhance views/outlook along and across the Bridge
- Maximise the ceremonial/civic street character with reduced clutter and a slower speed environment
- Maximise user amenity and safety for all modes of transport.

#### Northern and Southern Foreshores

- Fit into the landform and minimise additional structures
- Minimise tree removal
- Maximise movement flow and directness to facilitate the major desire lines
- Maximise ease of orientation through logical path directions and intersections
- Reduce conflicts with safe intersections, clear sightlines and sufficient path widths
- Maximise improvements to landscape and amenity for all users
- Incorporate additional public domain facilities to enhance a variety of uses
- Capitalise on the visual qualities and views into the surrounding lake and parklands.



## 3.6 Planting Strategy

### 3.6.1 Overview

In keeping with Charles Weston’s original intention for the Canberra landscape, the planting strategy aims to reinforce the formality and complement the character of the National Triangle, whilst enhancing human comfort and framing key views across the lake and to the surrounding hills.

The planting palette will also offer a rich tapestry of colour and texture to create seasonal interest and delight, aiding in creating diverse spaces and microclimates for people to relax and enjoy. A mixture of deciduous and evergreen trees will be utilised to optimise light, shade and wind buffering throughout the seasons. The planting scheme on each side of the bridge will take its cues from the adjacent landscape, however unifying design elements such as landscape typologies and colour, will provide cohesion across the four entry quadrants to the bridge.

Slopes within the project area will be revegetated with low growing shrubs, grasses and ground covers that provide soil stabilisation and retain moisture within soils. All plant and tree species will aid in supporting biodiversity, by offering habitat or year round flowering, supporting the lifecycle needs of insects, birds, bats and other lakeside wildlife.

### 3.6.2 Planting Objectives

The following planting objectives have been developed for the Project. These incorporate the relevant pre-requisites captured in **Section 2.11.3**.

#### ENVIRONMENTAL OBJECTIVES

To ensure the long-term viability and positive ecological impact of this initiative, we must give special consideration to the successful establishment of the proposed species. The goal is to maximize its chances of flourishing, ensuring the introduction becomes a sustainable, self-sufficient part of the ecosystem rather than a temporary measure. To achieve that the following objectives have been identified:

- Ensure plant species have low water requirements and are relatively drought and frost hardy
- Retain existing mature, healthy trees where possible
- Introduce a diverse mix of exotic and native tree species, both deciduous and evergreen to offer varying levels of light, shade and wind buffering through hot and cold season. Include fastigate tree forms to frame key views and act as sentinel plantings

- Introduce a broad mix of shrubs, grasses and ground cover species that offer year-round flowering to support biodiversity and increase seasonal interest for visitors, whilst reducing erosion and run-off on slopes.

#### PLACEMAKING, WAYFINDING AND VIEWS

- Planting should augment and enhance the new seating areas and access routes being provisioned around Commonwealth Avenue Bridge
- The planting scheme must also support the transition from the bridge to surrounding areas of Lake Burley Griffin, blending into the planting character around the lake foreshore.
- Planting design should aid in delineating circulation and seating areas, whilst accenting points of interest and framing key views. However, clear sight lines must be maintained for safety and passive surveillance
- Densely planted drifts of low planting will border and frame paths. This will guide movement and limit the creation of new desire lines and the landscape degradation resulting from them



Figure 42: Densely planted slopes in Henry Rolland Park





4.

DESIGN DEVELOPMENT



# 4.1 Introduction

In previous stages of this project a range of options have been studied and assessed. Those options were presented in the 'COMMONWEALTH AVENUE BRIDGE RENEWAL PROJECT - ARCHITECTURE, LANDSCAPE ARCHITECTURE AND URBAN DESIGN OPTIONS REPORT' (December 2022).

Figure 43 shows the preferred option at 90% detailed design development stage. Further details can be found in the following sections of this report.



Figure 43: Overall plan of the proposed design within the project study area boundary



# 4.2 Bridge extension

## Existing conditions

Commonwealth Avenue Bridge comprises dual carriageways, each being an independent bridge that accommodates northbound and southbound traffic respectively. The parallel carriageways are separated by a 10m gap, with each structure spanning north-south across Lake Burley Griffin supported by abutments at their ends and 4 intermediate piers. Along the Bridge's longitudinal axis, the carriageways are symmetrical both within their own form and in relation to each other. While the Bridge is linear in plan, it rises approximately 2 metres in elevation to a gentle crest at its centre.

The main structure of each carriageway is constructed of approximately 100 matching precast concrete modules, which cantilever east and west from the centrally located piers. The precast modules are rotated incrementally along the length of the bridge to cater for the gradual change in elevation. The vertical outer faces of each carriageway are clad with non-structural precast concrete panels.

## Design considerations and opportunities

- The existing Bridge has a simple, yet elegant aesthetic characterised by its repetitious modular construction, horizontality, true linear forms and symmetrical composition.
- The existing footpath is approximately 2.4m wide, which is insufficient to comfortably accommodate the required flow of pedestrians and cyclists.
- The surface of the footpath is in poor condition.
- The voids within the primary precast girder structure are used for reticulation of services that will need to remain operational throughout construction.

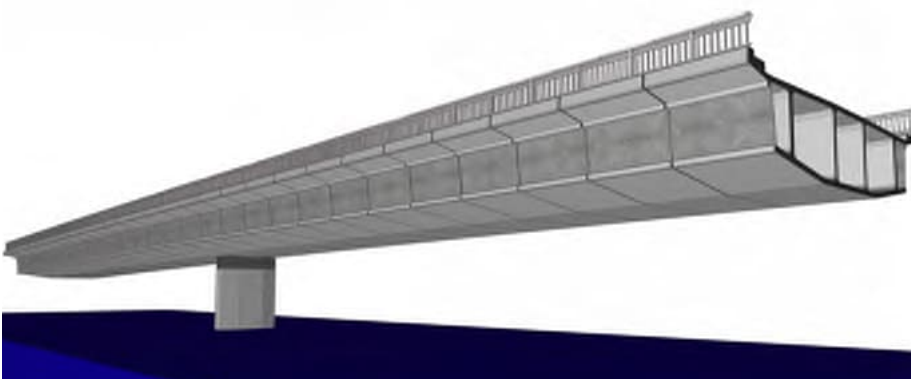


Figure 44: Existing Bridge architectural form - 3D illustration

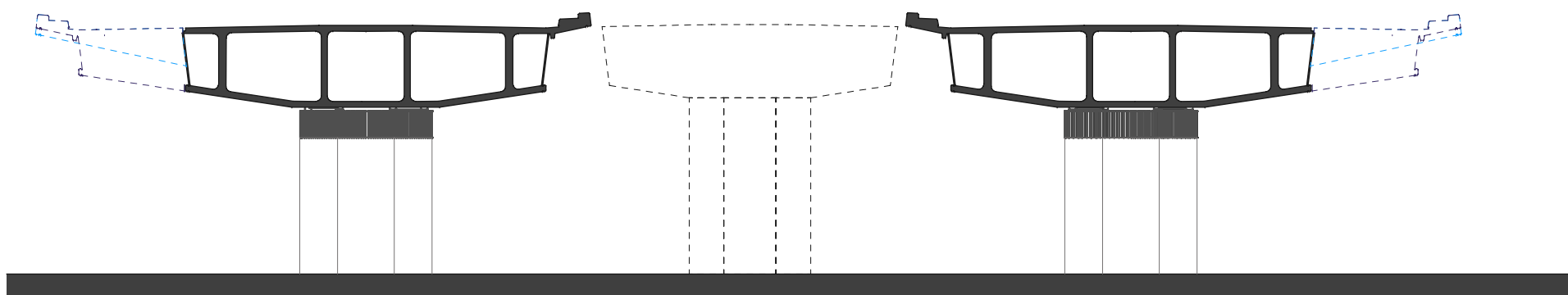


Figure 45: Bridge extension study, including potential future light rail Bridge



Figure 46: Different viewpoints under the northbound Bridge looking south



### Design Proposal

Numerous form studies were undertaken to test suitable profiles for the bridge extensions, in accordance with the agreed Heritage Design Principles. The final proposal is generated as a literal extension of the original outwards-facing profile of each carriageway: the surface of each carriageway's soffit is projected outwards to achieve the required increase in width. The inner faces remain as originally constructed, apart from renewed safety barriers, and thus preserve examples of the original design.

This approach ensures that the twinned Bridge retains its clean horizontal emphasis and shadow profile when viewed from afar, but does lead to a slight reduction in the height of the outermost vertical kerb of each structure. The chamfered bottom edges of the existing soffits are repeated in corresponding details along the new extensions, resulting in continuous 'V' joints that run the length of each of the twin bridges, thus clearly distinguishing between old and new fabric in accordance with the Heritage study. Although the proposal necessarily cannot maintain the individual symmetry of each structure, the extensions replicate the profile of the existing edges to acknowledge and interpret the importance of this feature in the overall composition of the Bridge. This enables the carriageways to maintain a consistent language along both their inner and outer edges and minimises the visual impact of the modified geometry, particularly when viewing the overall form from a distance. The additions to each carriageway are proposed to be identical to ensure that the Bridge, in its entirety, retains its symmetrical arrangement and unified expression..



Figure 47: Proposed Bridge architectural form - 3D illustration - The design extends the existing shape of the soffit of the bridge to the required width and does replicate the existing edge detailing



### 4.3 Bridge barriers and balustrades

#### Existing conditions

The outer edges of each carriageway are protected by original anodised aluminium balustrades comprised by a sculptural handrail atop regularly spaced posts and vertical balusters. The balustrades have integrated lighting to illuminate the roadways and footpaths. Alongside the roadways, there are two different varieties of crash barriers, which have likely been modified since the bridge was originally constructed.

#### Design considerations and opportunities

- The existing balustrades are non-compliant with current building codes.
- The use of the barriers to provide an integrated lighting solution removes the requirement for vertical lighting poles, maintaining the horizontality of the overall bridge geometry.
- The existing vehicle barriers are mismatched and detract from the overall symmetry of the carriageways.

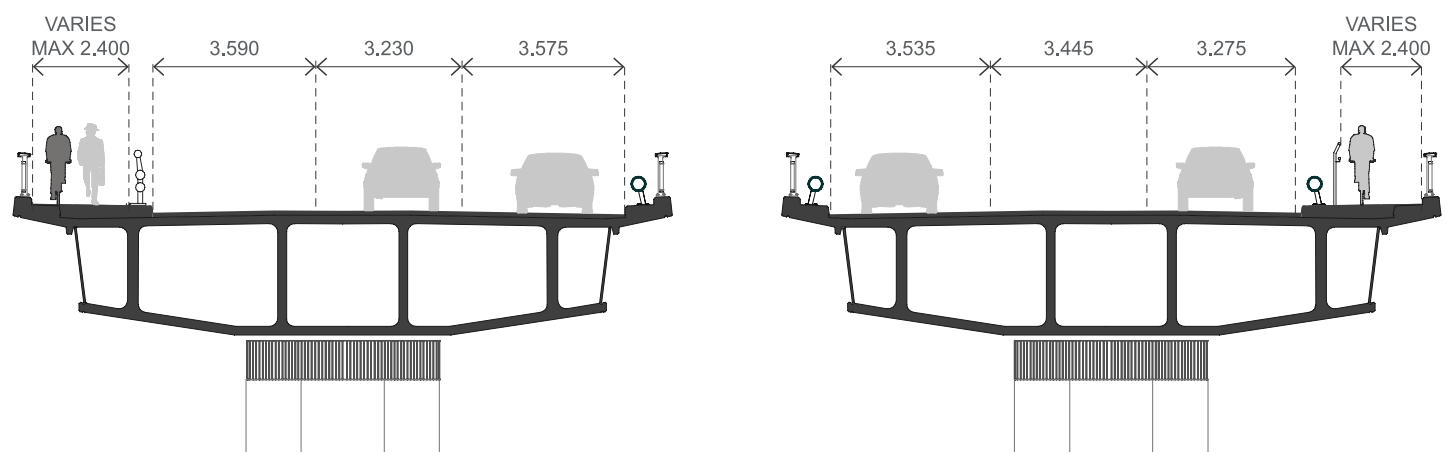


Figure 48: Typical bridge cross section - Existing conditions

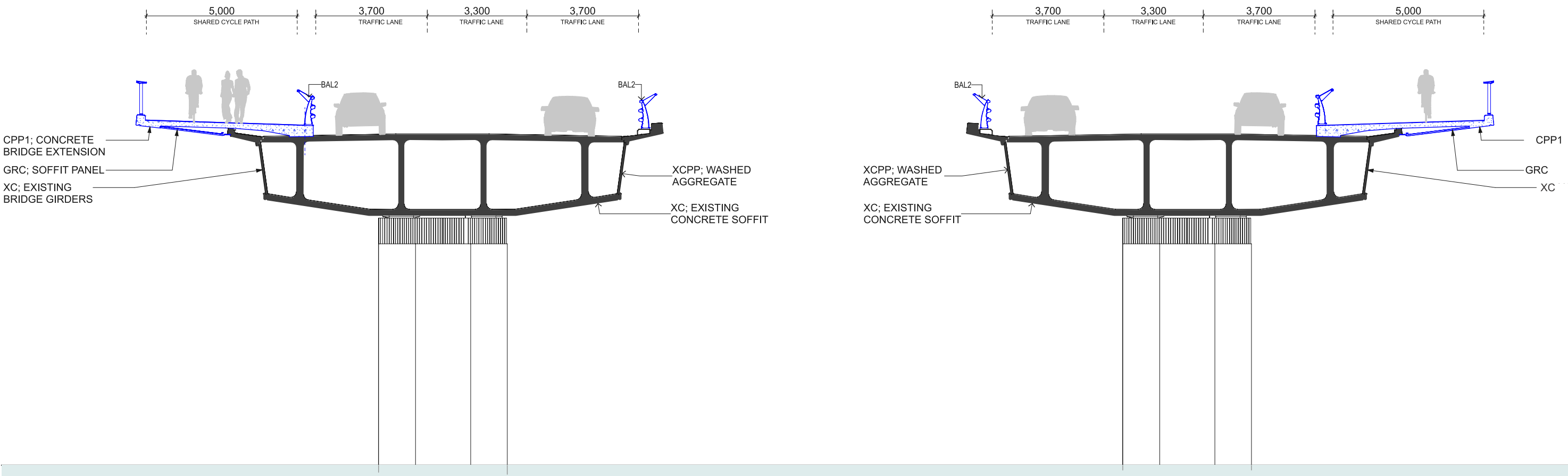


Figure 49: Proposed bridge cross section



**Design proposal**

The proposal includes new compliant balustrades along the outer edges of the widened shared paths. As per the Heritage Design Principles, these elements are design to read as secondary elements to the primary bridge forms. The proposed balustrade design does not replicate the existing configuration, but rather presents a contemporary version that adopts essential features of the original design. Such features include the dominant horizontal handrail with integrated strip lighting, along with a finer vertical expression of secondary

elements. The proposal minimizes the visual hierarchy between posts and balusters by using the thinnest possible posts that can still accommodate electrical conduits for the top rail's LED lighting. This approach provides for a streamlined language that is complementary to the overall bridge aesthetic and presents clearly as a contemporary element.

The vehicle barriers are proposed to be replaced with a consistent design alongside both roadways and incorporate additional integrated strip lighting to improve lighting conditions on both the shared paths and the roadways.

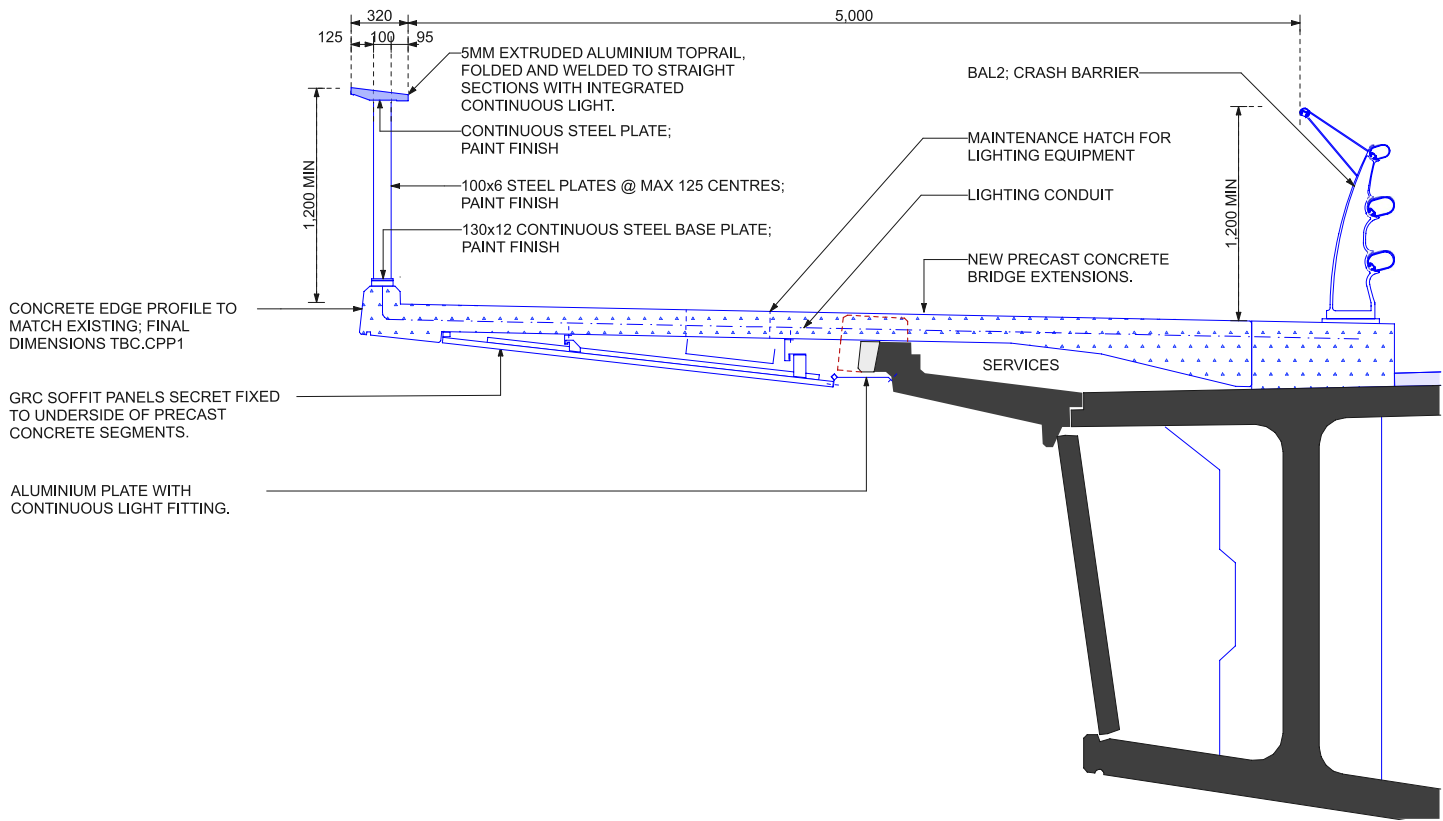


Figure 50: Detail of bridge extension section

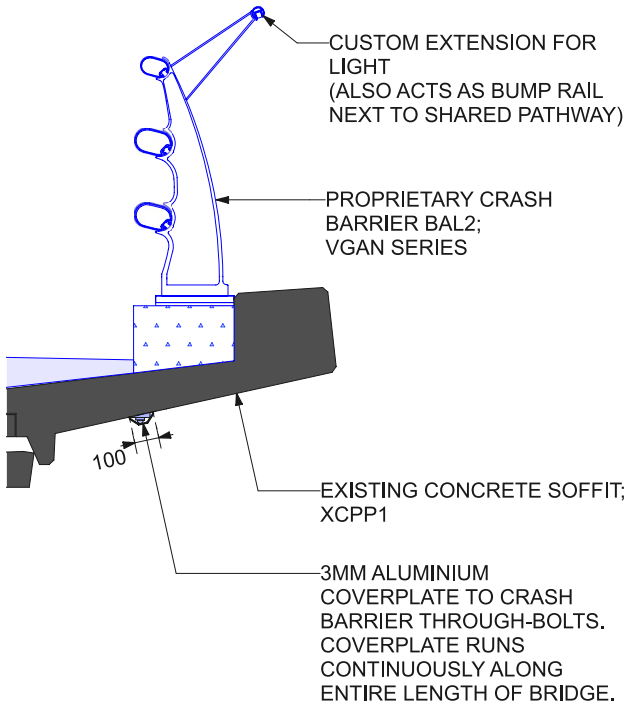


Figure 51: Detail of internal bridge edge



Figure 52: Proposed viewing platform balustrade similar to existing in Bowen Place lookout



# 4.4 Bridge abutments

## Existing conditions

On the northern and southern ends of the Bridge, each carriageway terminates at a reinforced concrete abutment. The existing abutments are simple, rectilinear forms clad with vertically proportioned exposed aggregate precast panels arranged in a staggered pattern. Each abutment is completed by a tall and slender granite-clad pylon and plinth, which form a pair at either end of the Bridge and provide a visually significant 'gateway' at the entry points to the carriageways.

## Design considerations and opportunities

- Opportunity to provide pedestrians and cyclists with a place to rest and appreciate the significant and distinct vistas across Canberra from each individual abutment.
- Existing pylons divide the widened shared paths and create potential hazards at the intersections.
- The plinths of the existing pylons are not flush with the level of the surrounding footpath.



Figure 53: 3D illustration of NE Lookout from top of Abutment

## Design proposal

The proposed design includes the widening of each abutment to accommodate the extension of each carriageway. The abutment extensions are set back from the alignment of the existing abutments to increase the legibility between old and new forms. Moreover, while still simple and rectilinear in form, the walls of the abutment extensions are slightly canted to increase their integration with the surrounding topography and provide primacy to the existing vertical abutment walls.

The new abutment cladding adopts a similar pattern to the existing abutment cladding, however with a modified scale - again, this is intended to highlight the distinction between original and new fabric, whilst still maintaining a harmonious relationship between all elements.

Each abutment extension includes a new cantilevered viewing platform. The viewing platforms are designed as minimal concrete forms with clean, angular geometry that establishes a comfortable dialogue with the adjacent bridge form.

The highly significant pylons are retained, while the location of their plinths is interpreted by integrating the granite paving from the top of their plinths within the new ground surface of the abutment.



Figure 54: 3D illustration of NE Abutment and Lookout from Barrine Drive



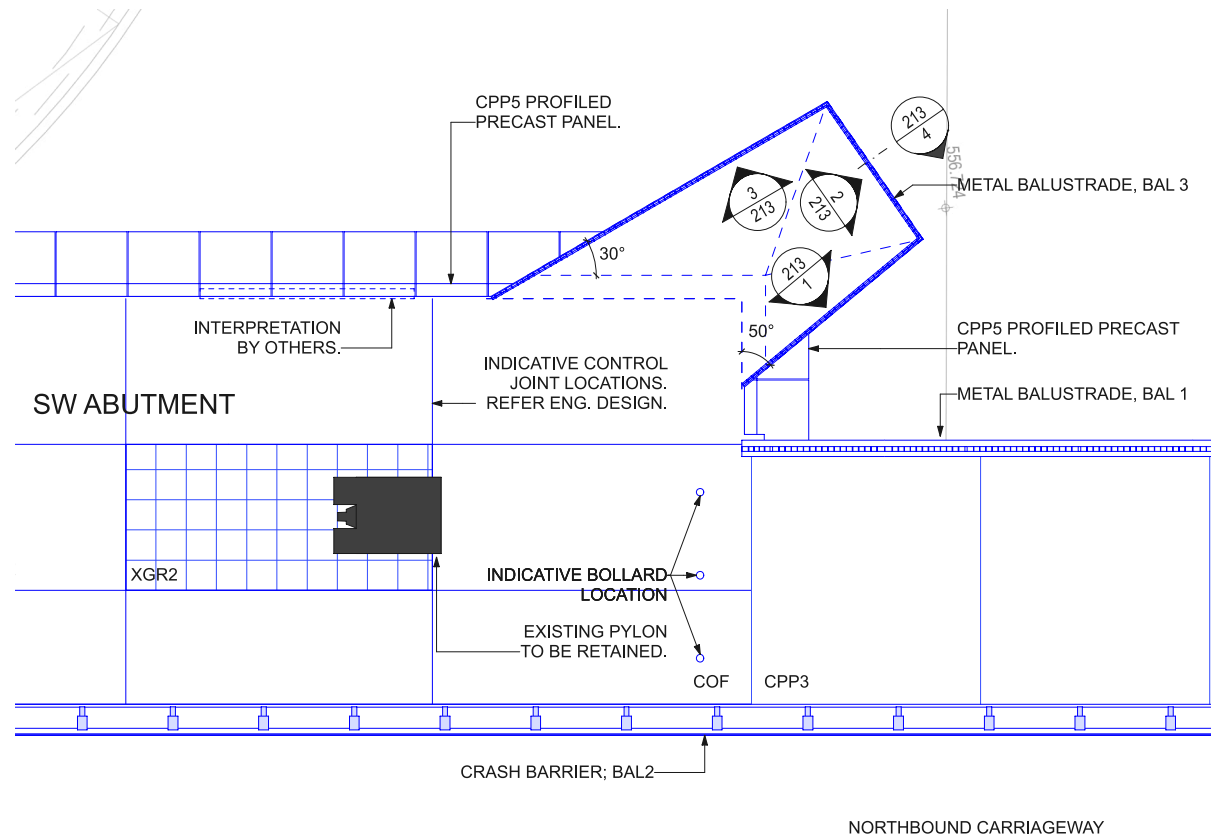


Figure 55: SW Abutment and Lookout Plan (Scale 1:150)

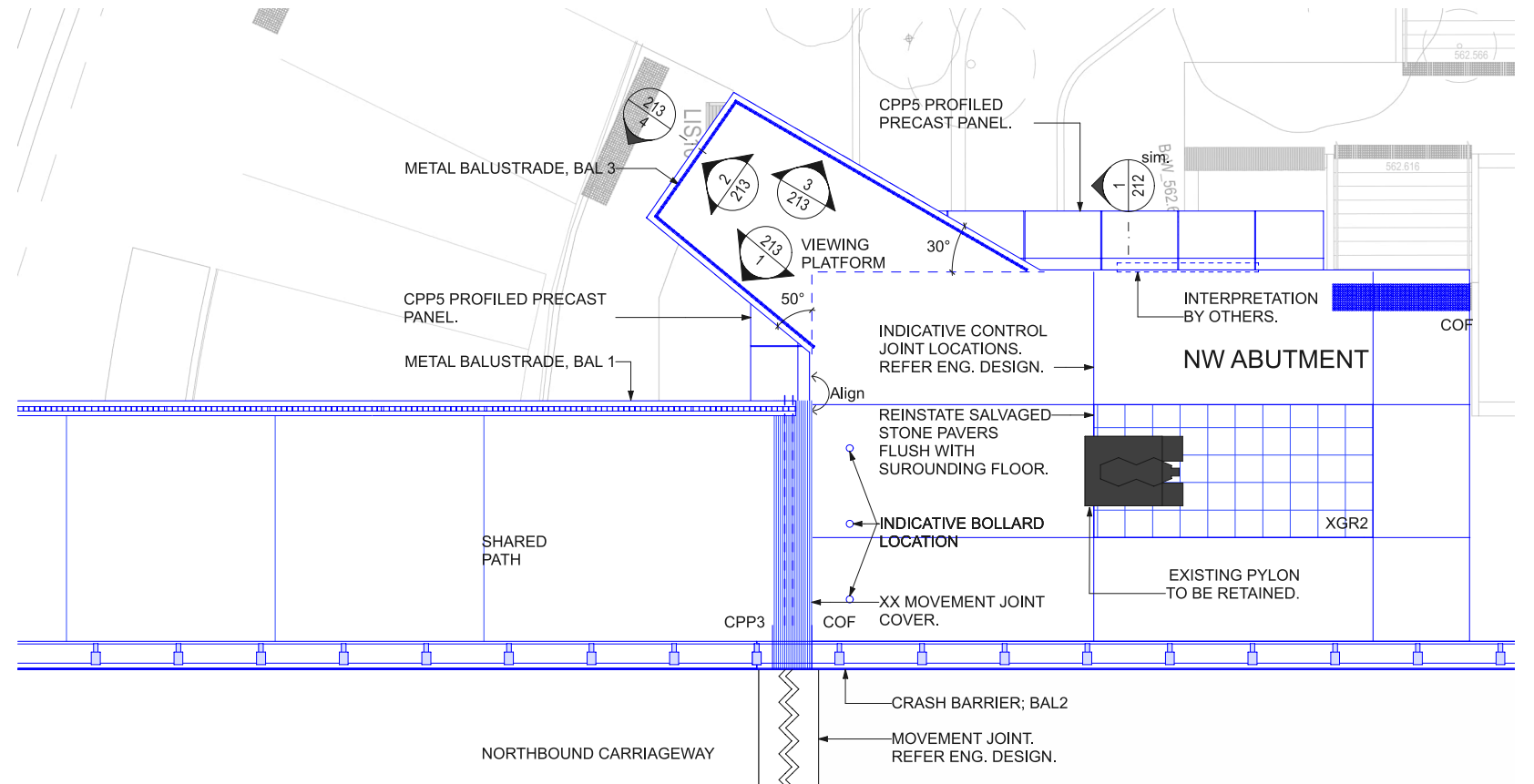


Figure 56: NW Abutment and Lookout Plan (Scale 1:150)



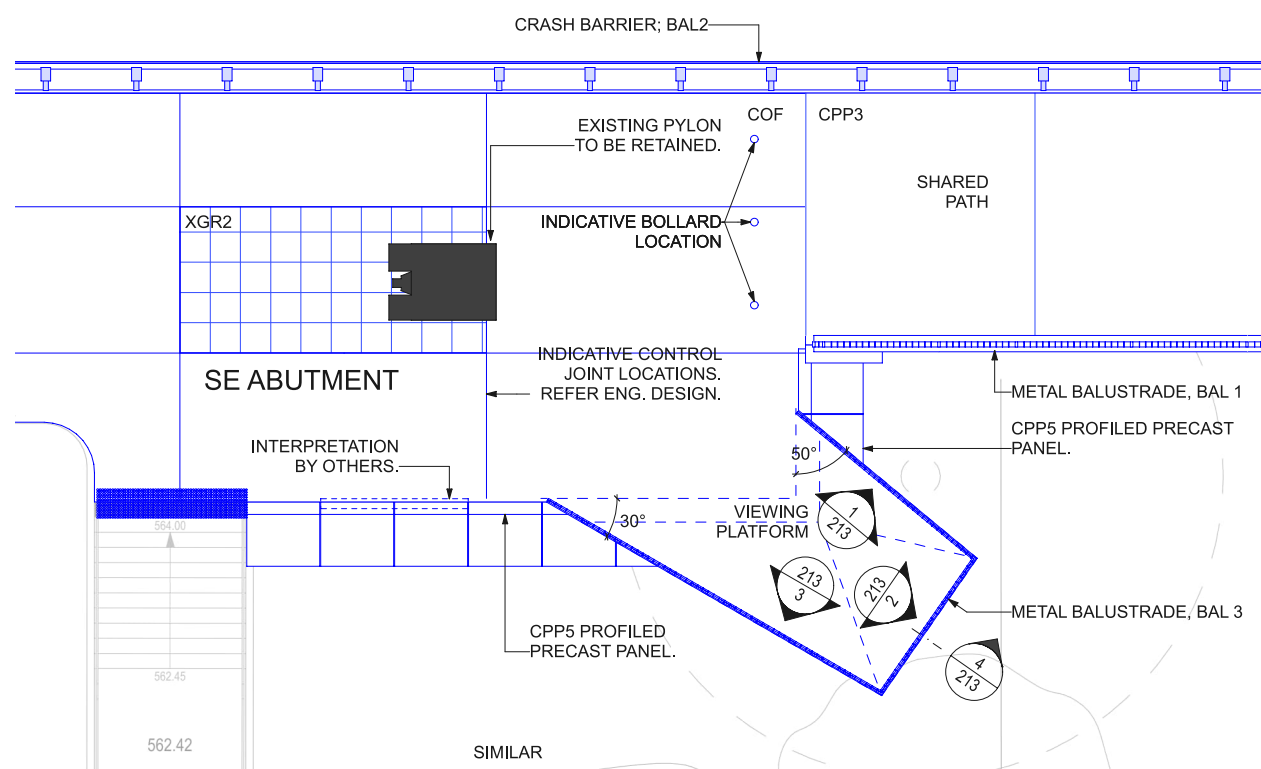


Figure 57: SE Abutment and Lookout Plan (Scale 1:150)

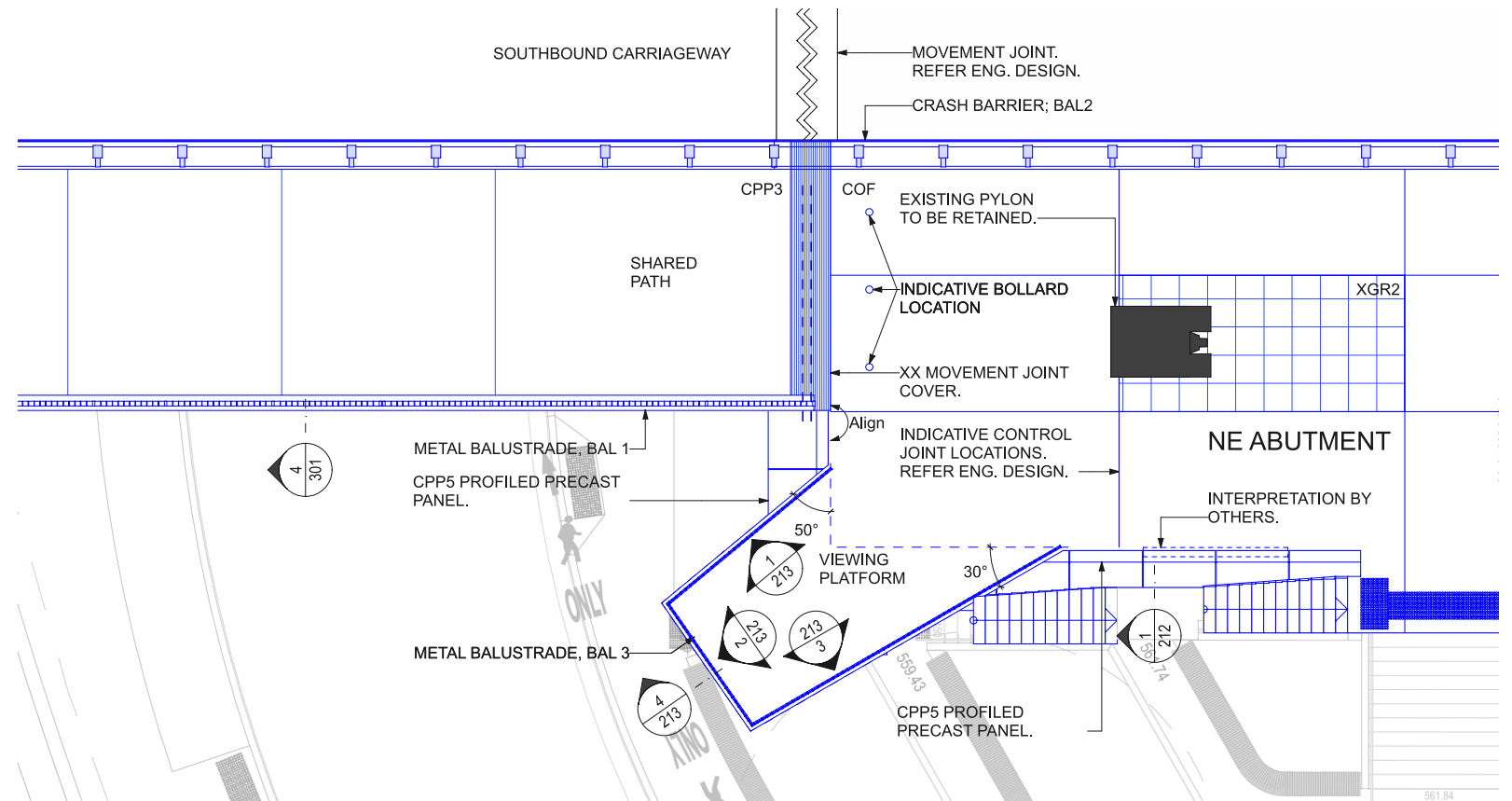


Figure 58: NE Abutment and Lookout Plan (Scale 1:150)



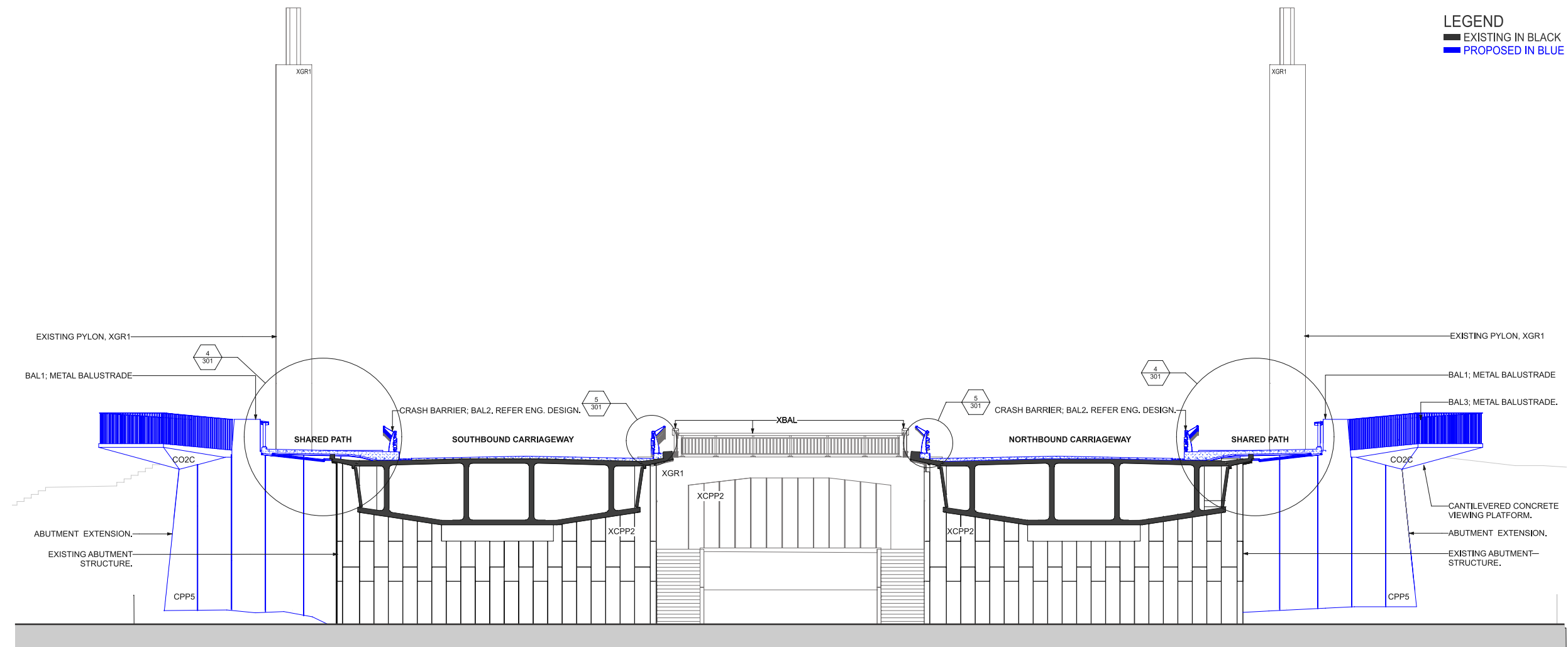


Figure 59: South Abutments north elevation (Scale 1:200)

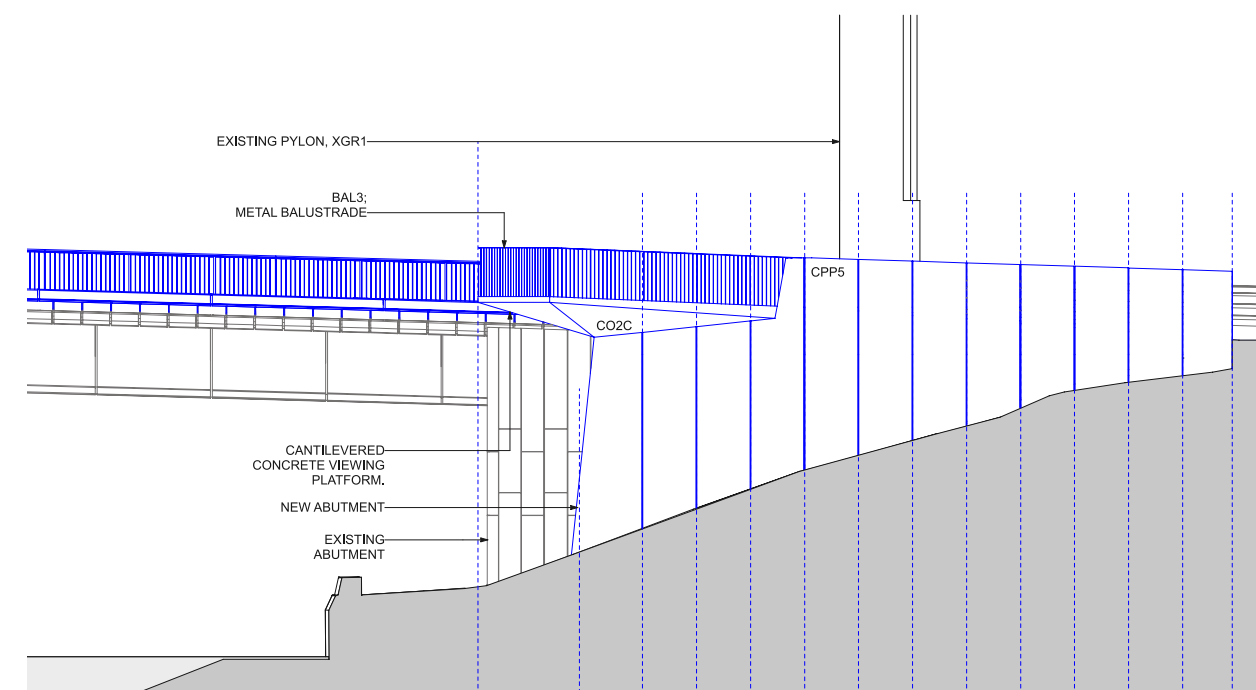


Figure 60: SW Abutment west elevation (Scale 1:200)

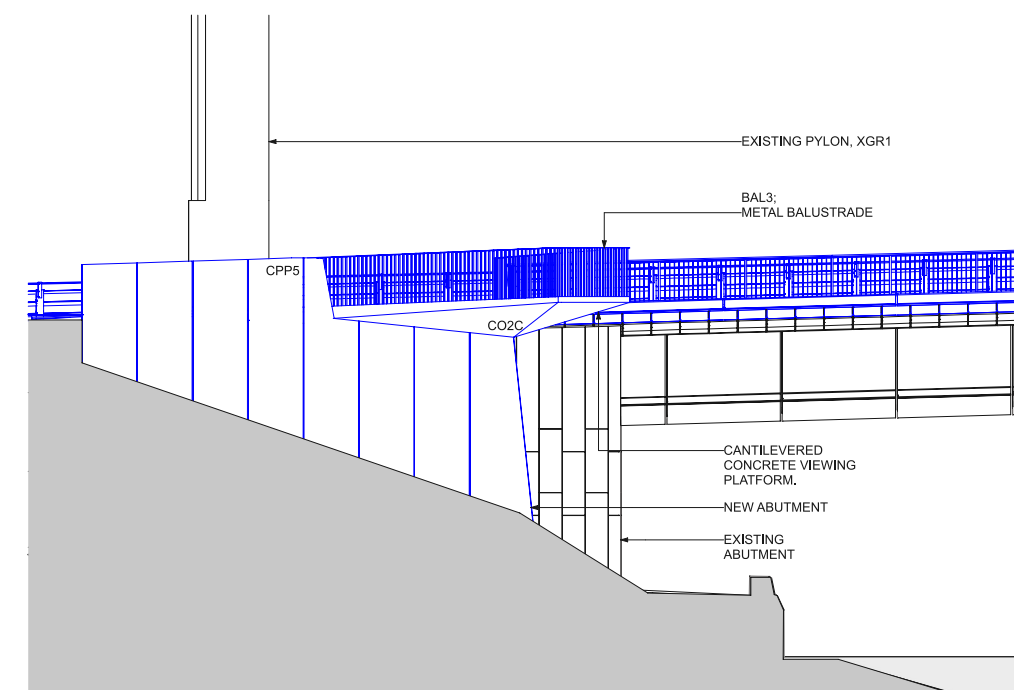


Figure 61: SE Abutment east elevation (Scale 1:200)



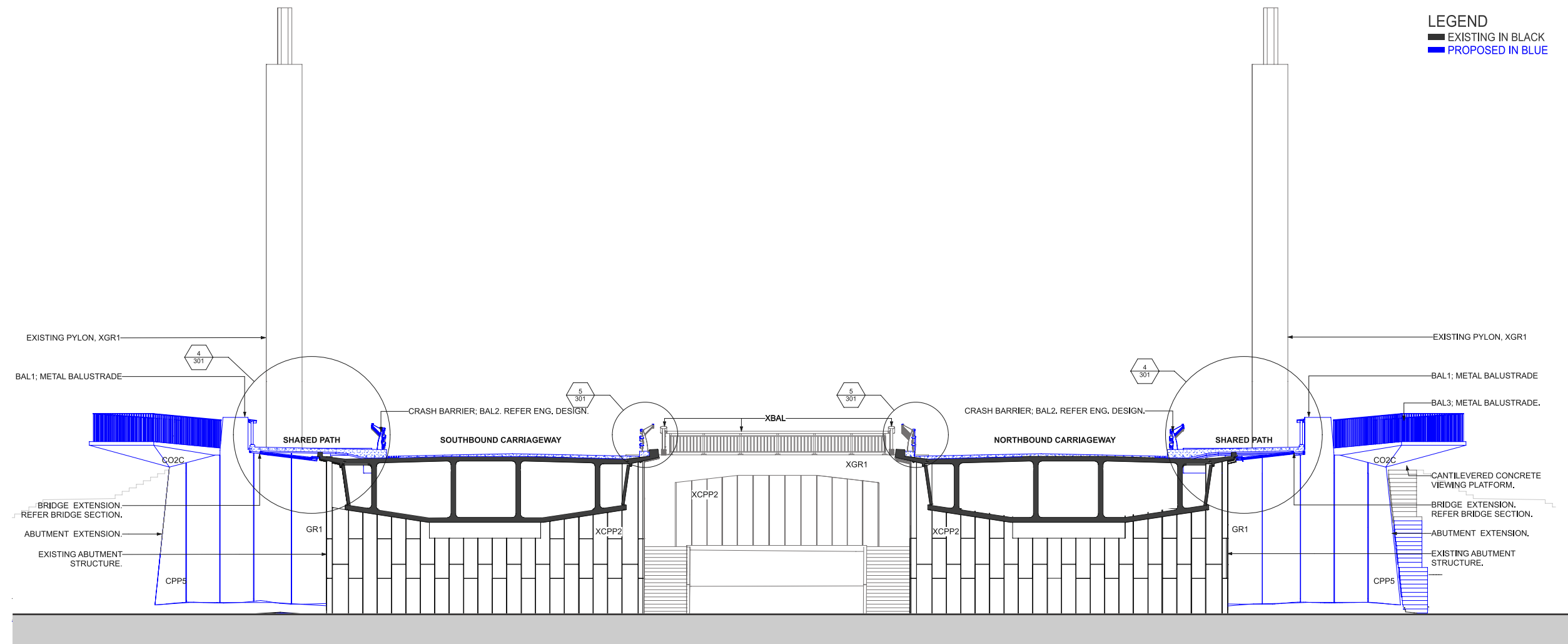


Figure 62: North Abutments south elevation (Scale 1:200)

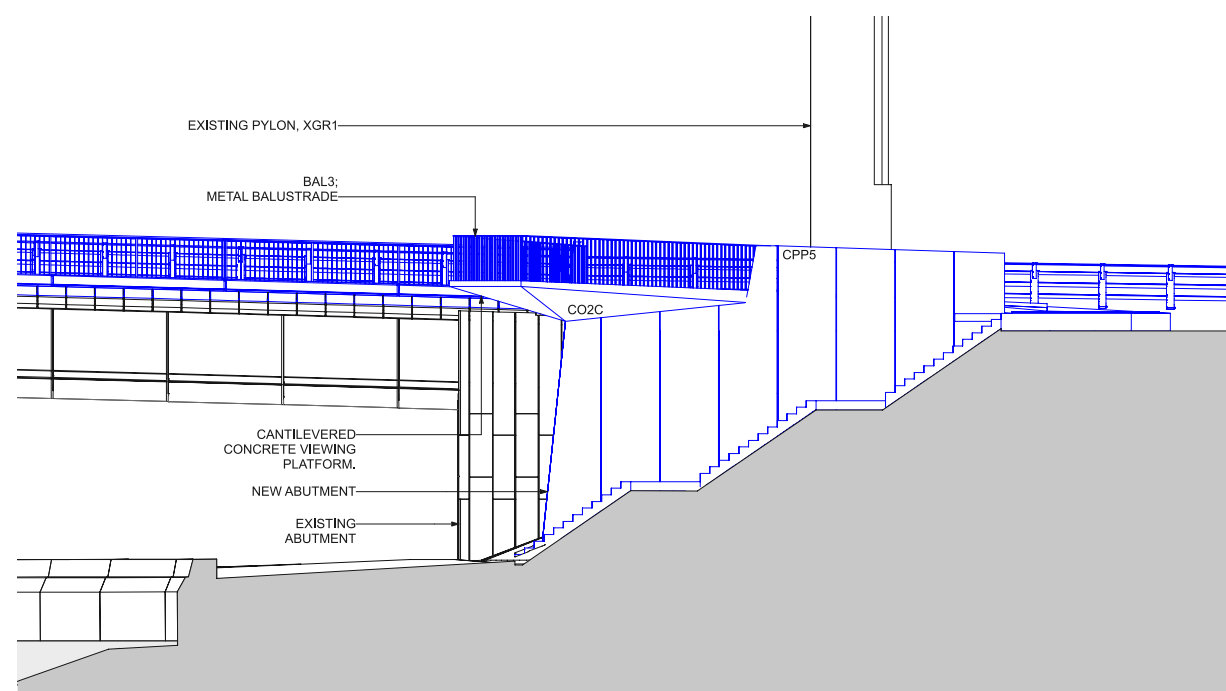


Figure 63: NE Abutment east elevation (Scale 1:200)

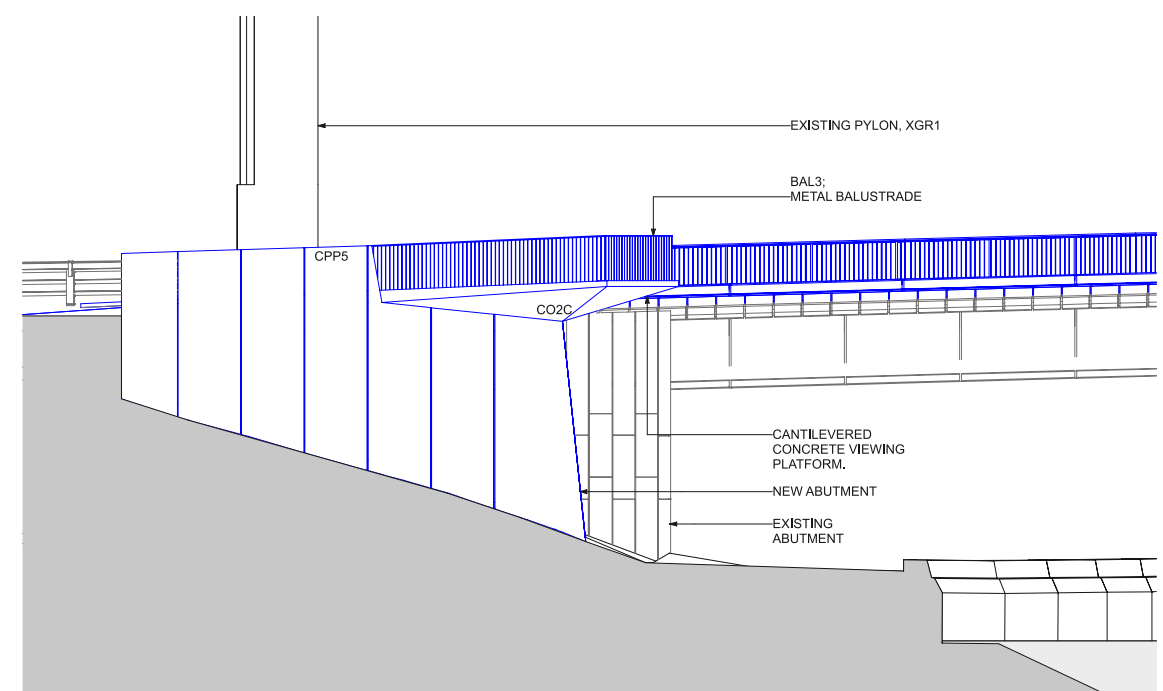


Figure 64: NW Abutment west elevation (Scale 1:200)



# 4.5 Bridge approaches

There are two main approaches to the Bridge.

The northbound Bridge has approaches on the north-west and south-west sides. The southbound Bridge has approaches on the north-east and south-east sides. Each of these approaches and potential options for their design are provided in this section of the report.

The north-west approach has been recently upgraded with a shared road and separate pedestrian and cycle paths which will potentially see an increase in usage of this foreshore area.

The south-west approach forms part of the lake Circuit and connects to Flynn Drive. In addition to these path connections, there are a number of desire lines which provide short-cuts across the grass, reducing the general appearance of this foreshore landscape.

The north-east approach carries greater pedestrian and cyclist traffic travelling to and from Commonwealth Park. The park contains numerous paths that connect to the Civic Precinct across Parkes Way as well as numerous routes around the lake towards the east.

The south-east approach provides the key connection to the many cultural buildings and sites in the Parkes Precinct. These connections are popular at all times during both weekdays and the weekend.

The four bridge approaches have been investigated in order to identify a preferred path network arrangement around the bridge.



Figure 65: Four major site approaches



#### 4.5.1 Concept design approach

The Commonwealth Avenue Bridge approaches concept design is based on the site analysis, the vision and the design principles presented in the previous chapters of this report. The concept design takes into account the 6 Project Design Principles of:

- Heritage
- Environmental and Social Sustainability
- Amenity
- Movement and Circulation
- Quality and Constructability.

The key design challenge is to accommodate the bridge widening elements while protecting the heritage, civic and landscape values of the bridge and its surrounds. In addition, the objective was to enhance the function, safety, comfort and enjoyment of all users and where possible enhance the visual quality and character of the overall setting.

The diagrams opposite illustrate the main shared path network around and onto the bridge approaches for both the existing and proposed concept design for the northern and southern foreshore areas around the bridge abutments. The new network of paths aims to create a simplified, safer and more logical series of path alignments to assist users to easily navigate and enjoy their walk and/or cycle onto and off the bridge.

The following sections present the concept design divided into the 4 quadrants of the bridge approaches.

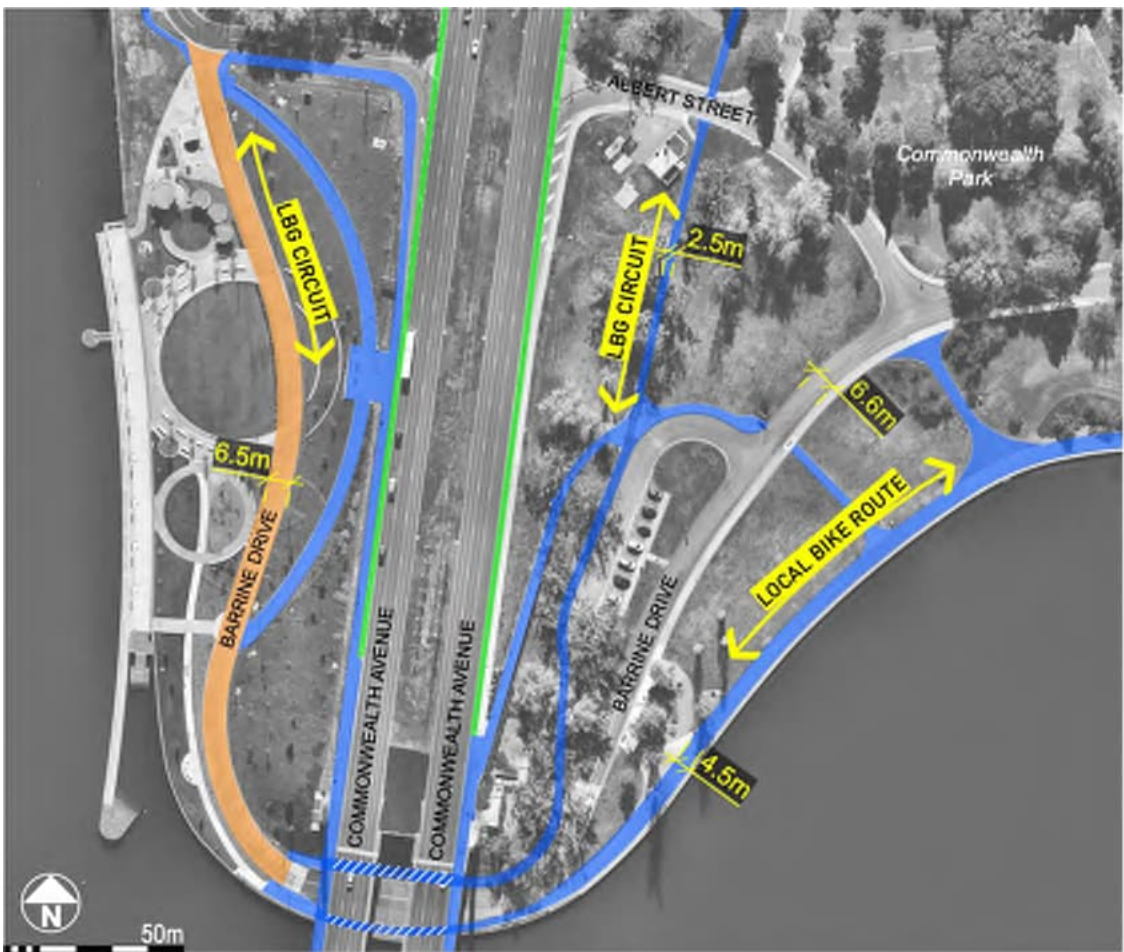


Figure 66: Existing active transport routes

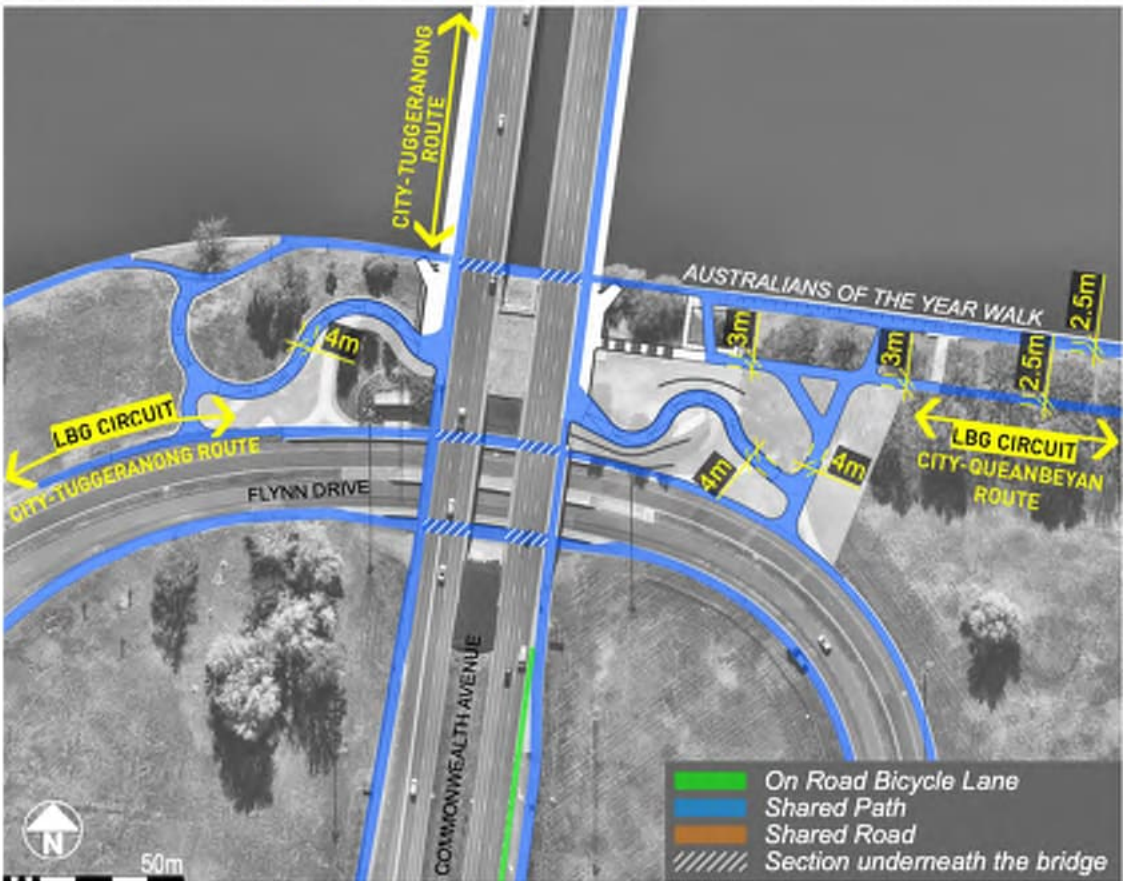
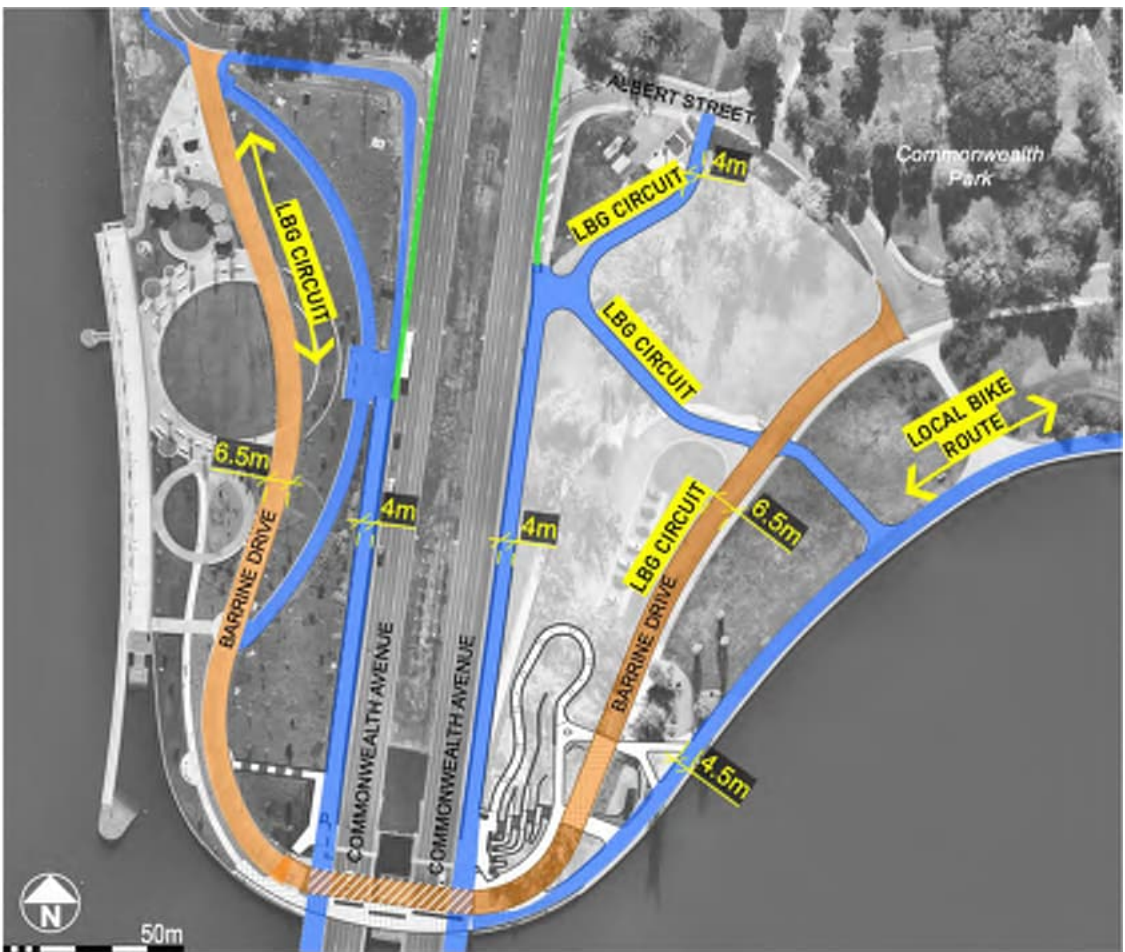


Figure 67: Proposed rationalised and safer pedestrian and cyclist routes



4.5.2 North-west approach

Existing site conditions

The north-west approach has an existing 4m wide pedestrian and cycle ramp that travels through Henry Rolland Park before leading up to the Bridge. This shared path is already compliant with accessibility standards and requires no further adjustment.

Some modifications are required to the abutment stairs to improve safety for pedestrians as they merge onto the existing shared path, minimising the risk of collisions with cyclists.

Design considerations and opportunities

- Existing accessible shared path ramp to be retained
- Existing trees provide limited canopy and shade, however there is opportunity for large tree planting
- Opportunity to enhance views towards SW from the existing embankment and top of the abutment
- Opportunity to provide safer pedestrian route connecting the bridge to existing pedestrian crossing node at Barrine Drive shared road



Figure 68: North-west approach existing site conditions

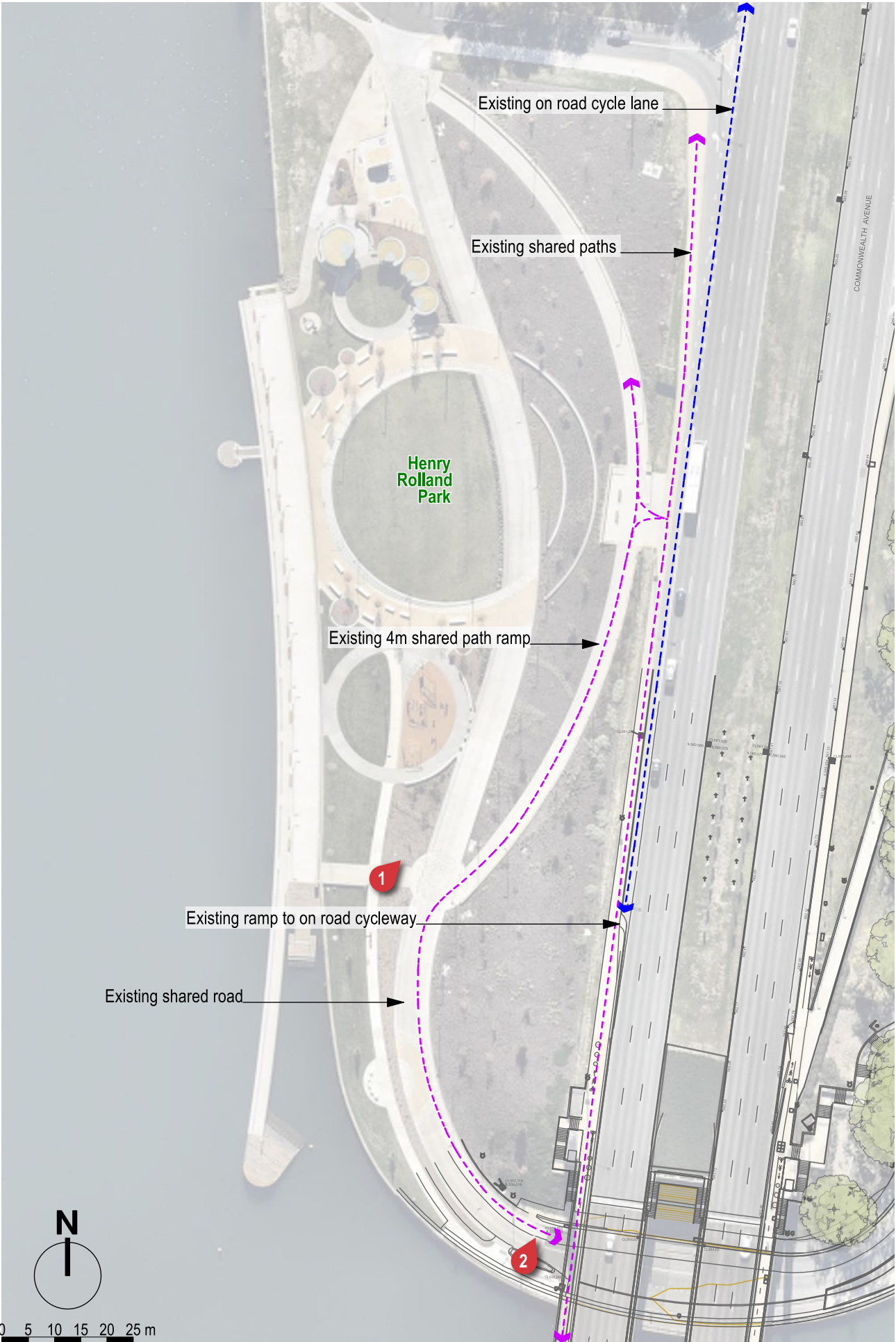


Figure 69: North-west approach existing site conditions diagram



**Proposed detailed design**

The north western approach to the bridge is an area which has recently been upgraded as part of the new Henry Rolland Park on the foreshore of the West Basin of Lake Burley Griffin. The widened bridge arrangement requires the widening of the abutments and therefore the need for new access stairs down from the bridge to the lake foreshore.

The following is a list of the key features of the concept design in this area:

- The widened abutment creates a larger plaza space around the bridge pylon which connects to a new cantilevered lookout which provides attractive and panoramic views over the Lake and the National Museum of Australia to the distant Brindabella Ranges
- The existing stairs adjacent to the abutment are replaced with a new set of stairs which lead directly down the embankment to Barrine Drive and are centred on the existing circular pavement detail which creates a threshold to the base of the stairs and feeds directly into the shared road environment of Barrine Drive and the adjacent lakeside footpath
- The existing shared path is widened from the new bridge abutment up to the intersection of the shared paths leading into Henry Rowland Park and further north into the city, along Commonwealth Avenue
- The shared road conditions of Barrine Drive are extended from Henry Rolland Park, under the bridge heading east, which extends the slow speed and pedestrian and cyclist friendly environment around to the north eastern approaches to the bridge and into Commonwealth Park
- An improved urban environment is created in the undercroft space of the two bridges, where Barrine Drive is narrowed to a width consistent to that in Henry Rolland Park, creating a larger foreshore pedestrian space for park users safety and enjoyment
- The guard rail vehicle barrier is replaced with large bench seating whose mass allows them to function as a slow speed barrier for vehicles, as well as seating for viewers to observe the bridge and the lake and in particular the intriguing water reflections on the underside of the bridges.



Figure 70: North-west approach (scale 1:1000)



Figure 71: Detail of north-west approach (scale 1:400)



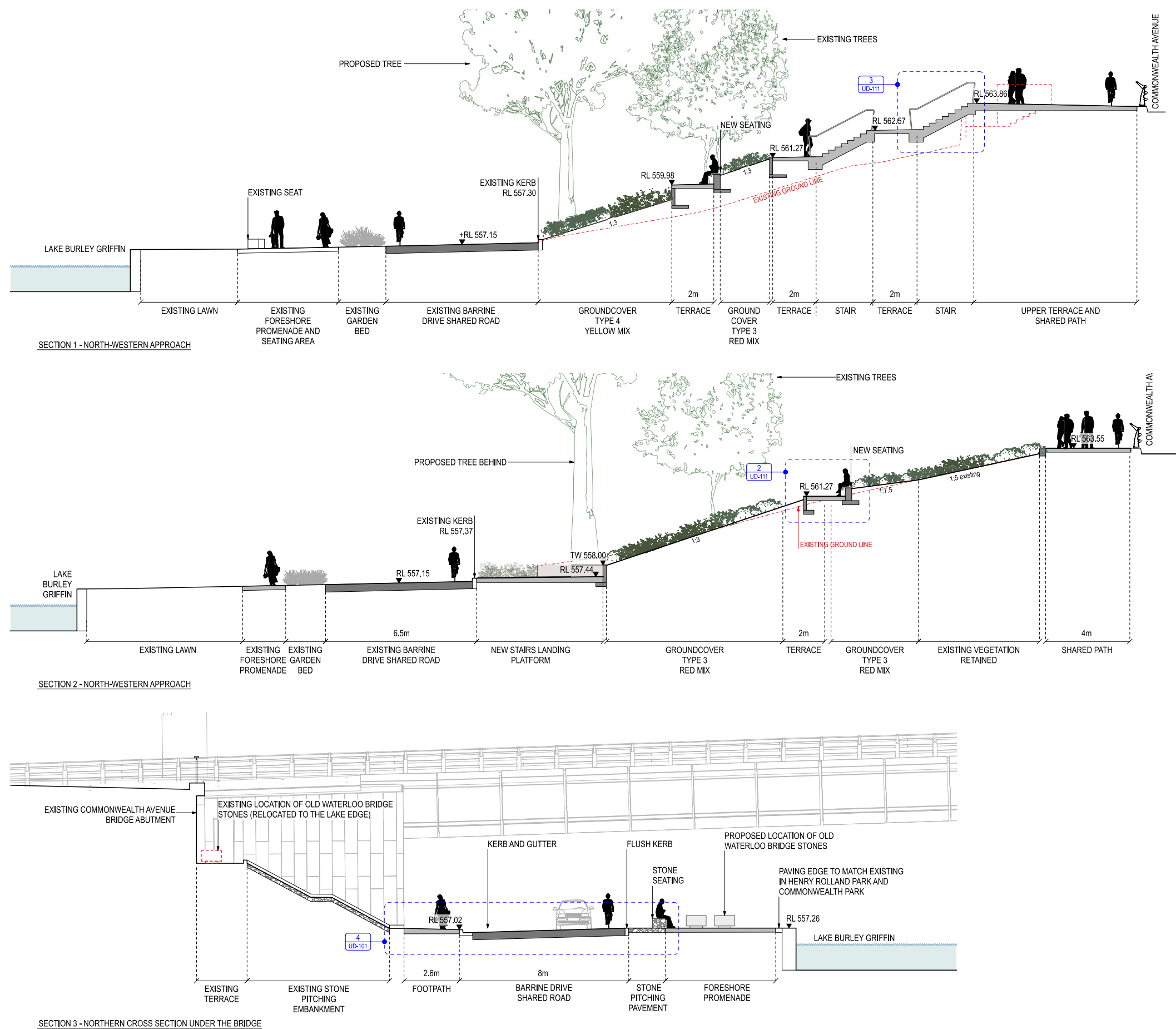


Figure 72: North-west quadrant cross sections 1 to 3 (Scale 1:200)



4.5.3 North-east approach

Existing site conditions

The north-east approach has an existing 2.5m wide shared path ramp that travels through Commonwealth Park before leading up to the north-east abutment and the Bridge.

Design considerations and opportunities

- Existing shared path ramp gradient is non-compliant with accessibility standards
- Large number of existing mature trees providing good shade along the existing pathways
- Opportunity to enhance views towards SE from the existing embankment and top of the abutment
- Opportunity to provide safer pedestrian and cyclist routes across the precinct



Figure 73: North-east approach existing site conditions



Figure 74: North-east approach existing site conditions diagram



### Proposed detailed design

The north eastern approach to the bridge is an area with a network of paths and roads, including a car park, as well as substantial open lawn areas and groups of trees along the slope of the Commonwealth Avenue embankment. This concept design seeks to rationalise and reduce the amount hard surfaces and particularly to reduce pedestrian and cyclist conflict by separating the two modes of movement and creating a more logical and intuitive set of path alignments.

In addition to the important connectivity role of this area between Civic, the lake parklands and the Parliamentary Triangle, via Commonwealth Avenue Bridge; its setting on the lake foreshore, opposite the Captain Cook Fountain and the key Parliamentary Triangle buildings along the southern foreshore, offer iconic and highly attractive views over the lake to the distant hills in the east. This concept design seeks to capitalise on the attractive setting by providing enhanced facilities for the enjoyment of people using the space for a wide range of activities from quiet recreation through to large group events.

The concept design creates a series of attractive spaces with enhanced facilities to increase the range of recreation functions available for users of the open space and associated path network. Additional tree planting will improve the character of the space and increase the levels of comfort for people using and moving through the space.

The following is a list of the key features of the concept design in this area:

- A realigned cycleway path network which separates pedestrian access from cyclists
- A direct 4m wide shared path connection from the north, onto Commonwealth Avenue closer to the Albert Street intersection which increases the space and visibility for cyclists and pedestrians
- A new and more direct shared path connects the Commonwealth Avenue shared path to the Lake Burley Griffin foreshore shared path
- A separate accessible footpath, 2.5m wide, is located closer to the abutment in conjunction with a set of generous 3.5m wide stairs leading down to an enhanced foreshore activity area

- A second stair, adjacent to the new abutment wall, provides direct access to the south onto Barrine Drive, creating a more direct connection to Henry Rolland Park on the western side of Commonwealth Avenue
- The elevated plaza space centred around the existing bridge pylon on Commonwealth Avenue, provides a generous space with ample room for pedestrians and cyclists to avoid conflict and increase the opportunities for viewing the lake panorama from the new cantilevered lookout
- A series of benched terraces are incorporated into the stair design to create viewing areas overlooking the lake and establish a stable and attractive vegetated slope between each terrace
- The enhanced foreshore activity area provides substantial seating facilities on a decomposed granite surface to be incorporated with the existing and adjacent seating area
- Barrine Drive is upgraded to a 'Shared Road' to match the existing shared road in Henry Rolland Park, west of Commonwealth Avenue, including a broad crossing area opposite the stairs and accessible footpath ramp, using granite sets to highlight this higher pedestrian activity area
- The existing car park has been removed to increase the recreational and landscape values of the central space and three new accessible parking spaces are provided in Barrine Drive close to the Albert Street crossing. Removing all cars from this area will greatly enhance the quality and character of this parkland setting
- Barrine Drive is to have a new avenue planting of feature trees to enhance the experience of user and create a unifying landscape feature through this area
- All new paths and stairs have been designed to fit into the existing landform and retain all existing trees except for the tree closest to the abutment which is to be removed due to its poor condition.



Figure 75: North-east approach (scale 1:1000)



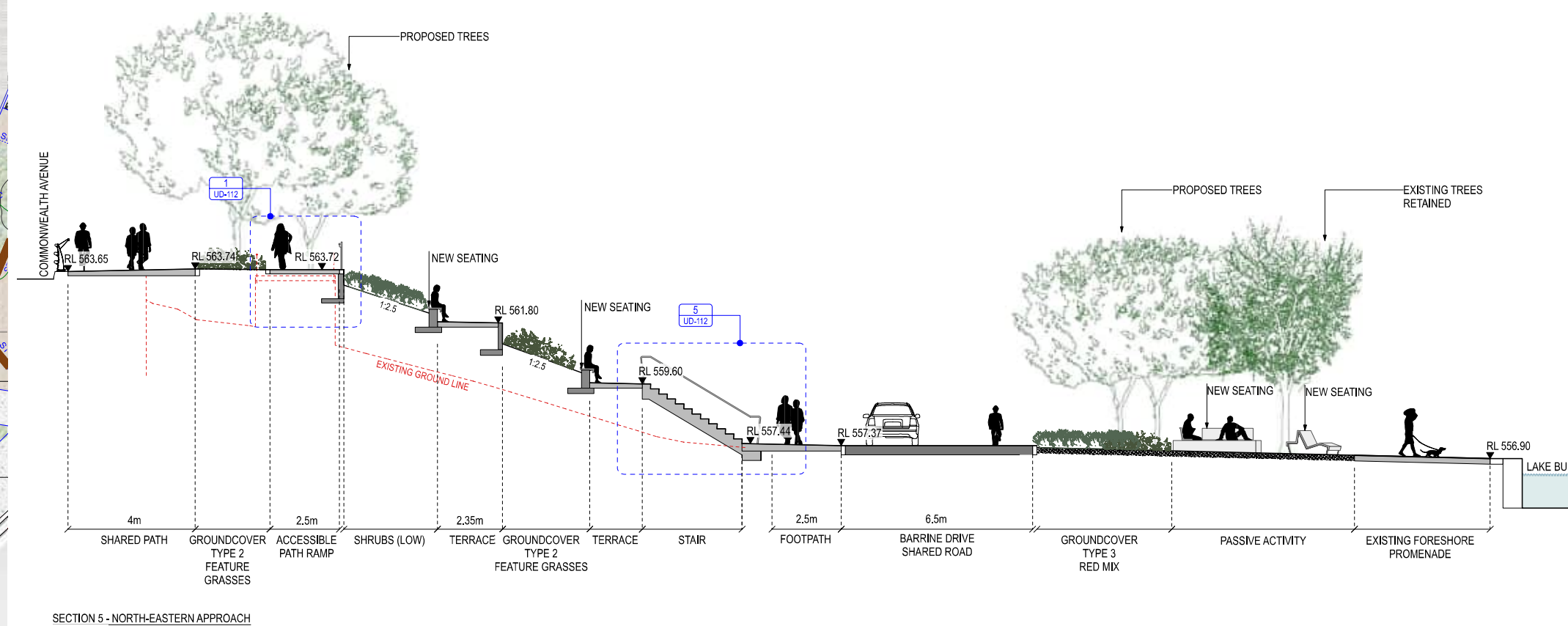
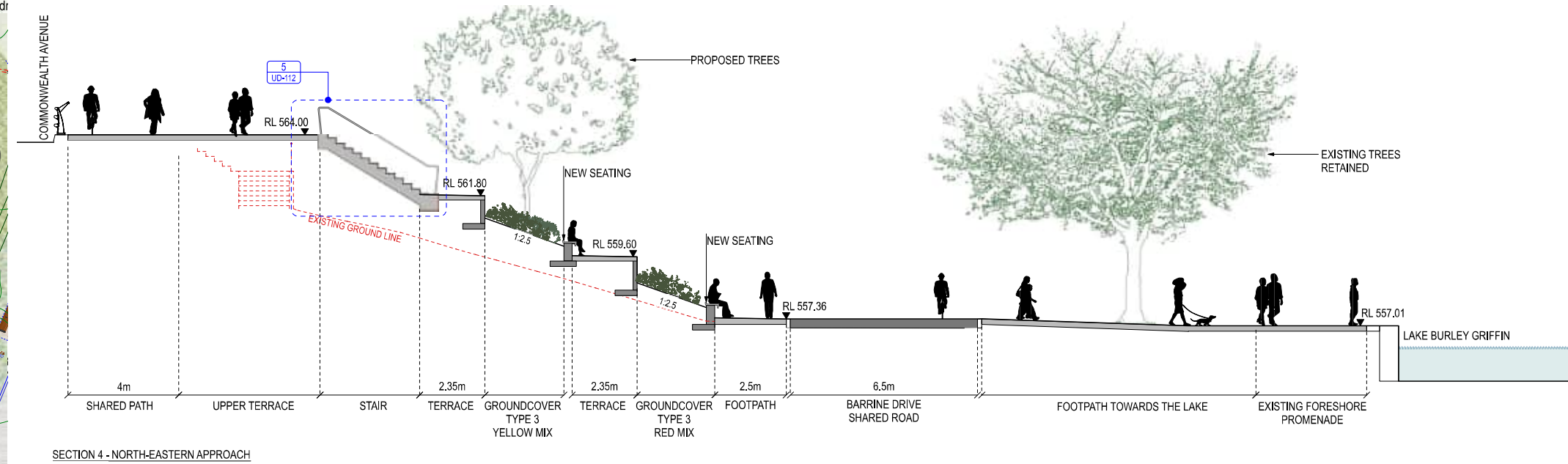
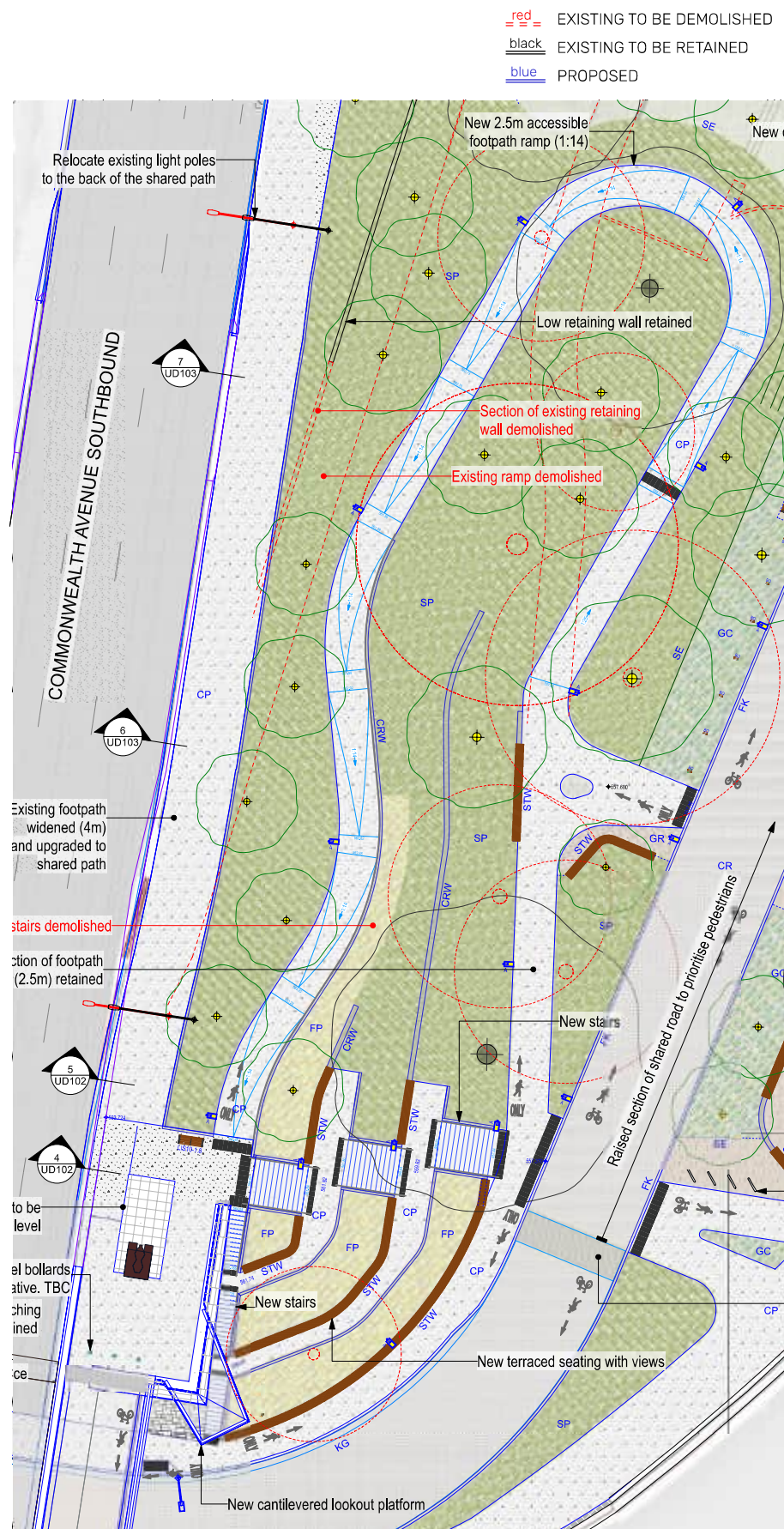
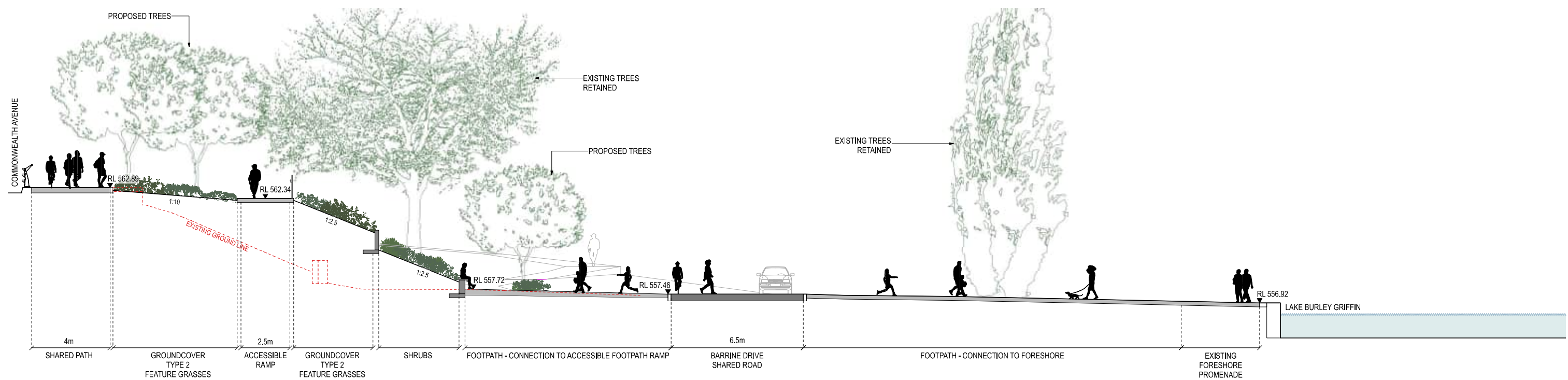
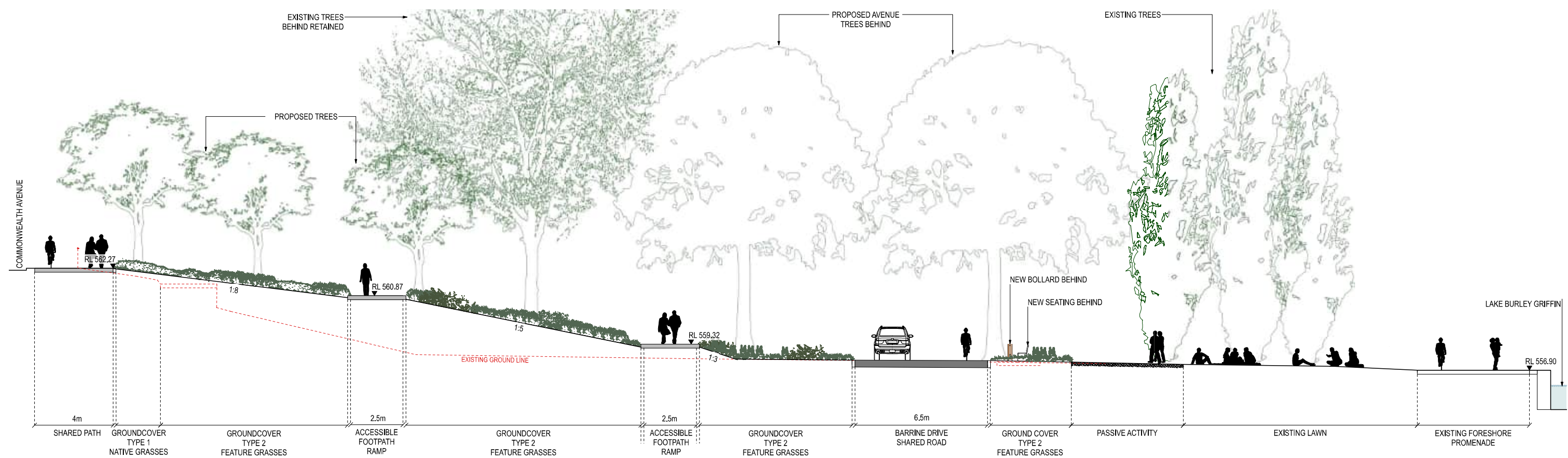


Figure 77: North-east quadrant cross sections 4 and 5 (Scale 1:200)





SECTION 6 - NORTH-EASTERN APPROACH



SECTION 7 - NORTH-EASTERN APPROACH

Figure 78: North-east quadrant cross sections 6 and 7 (Scale 1:200)



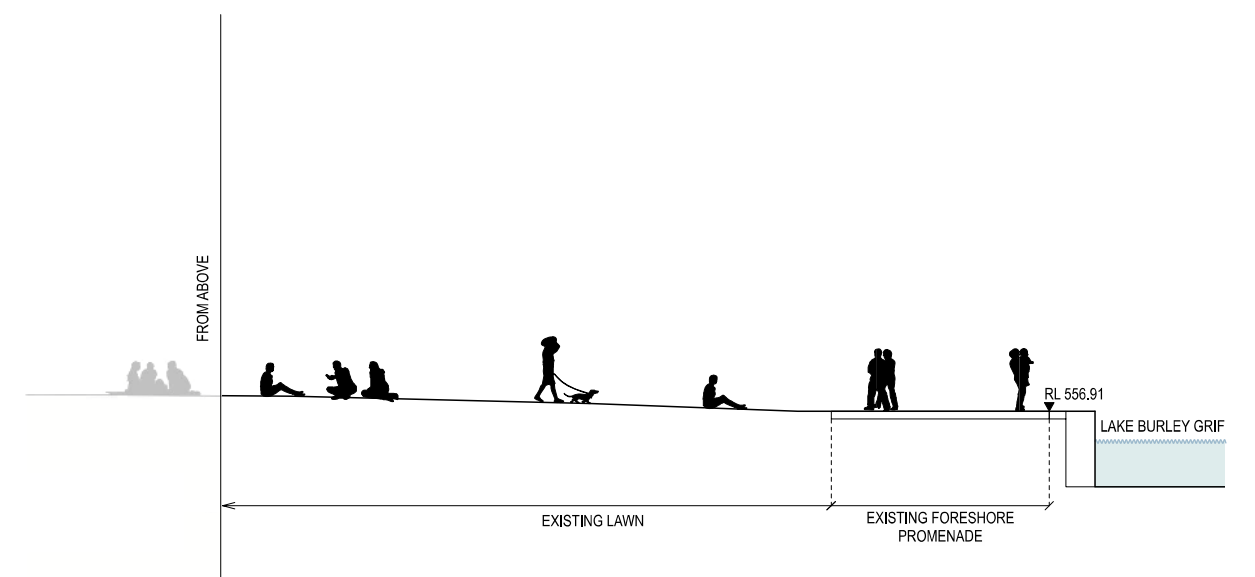
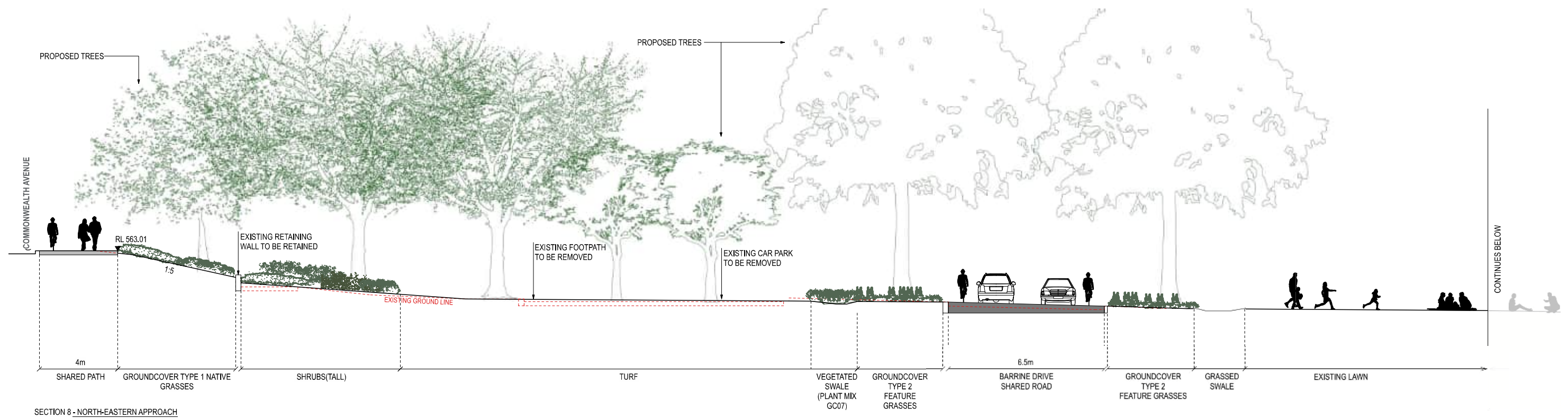


Figure 79: North-east quadrant cross section 8 (Scale 1:200)



#### 4.5.4 South-west approach

##### Existing site conditions

The south-west approach has 2 main access points for pedestrians and cyclists. There is a 2.8m wide shared path ramp running adjacent to Flynn Drive that has a grade that is non-compliant with accessibility standards. The shared path ramp leads up onto the shared path on the western side of the Bridge, immediately south of the abutment pylon. **Figure 82** also reveals that an informal route has been created where pedestrians/cyclists are cutting across the existing turf from the south-west, prior to reaching the formal path.

Another pedestrian path runs along the edge of the lake and leads to a set of steps that lead up the south-west abutment.

##### Design considerations and opportunities

- Existing shared path ramp is non-compliant with accessibility standards
- Existing trees provide limited canopy and shade, however there is opportunity for large tree planting
- Opportunity to enhance views towards NW from the existing embankment and top of the abutment
- Opportunity to consolidate pedestrian and cyclist desired lines as formalised shared paths across the precinct.



Figure 80: South-west approach existing site conditions

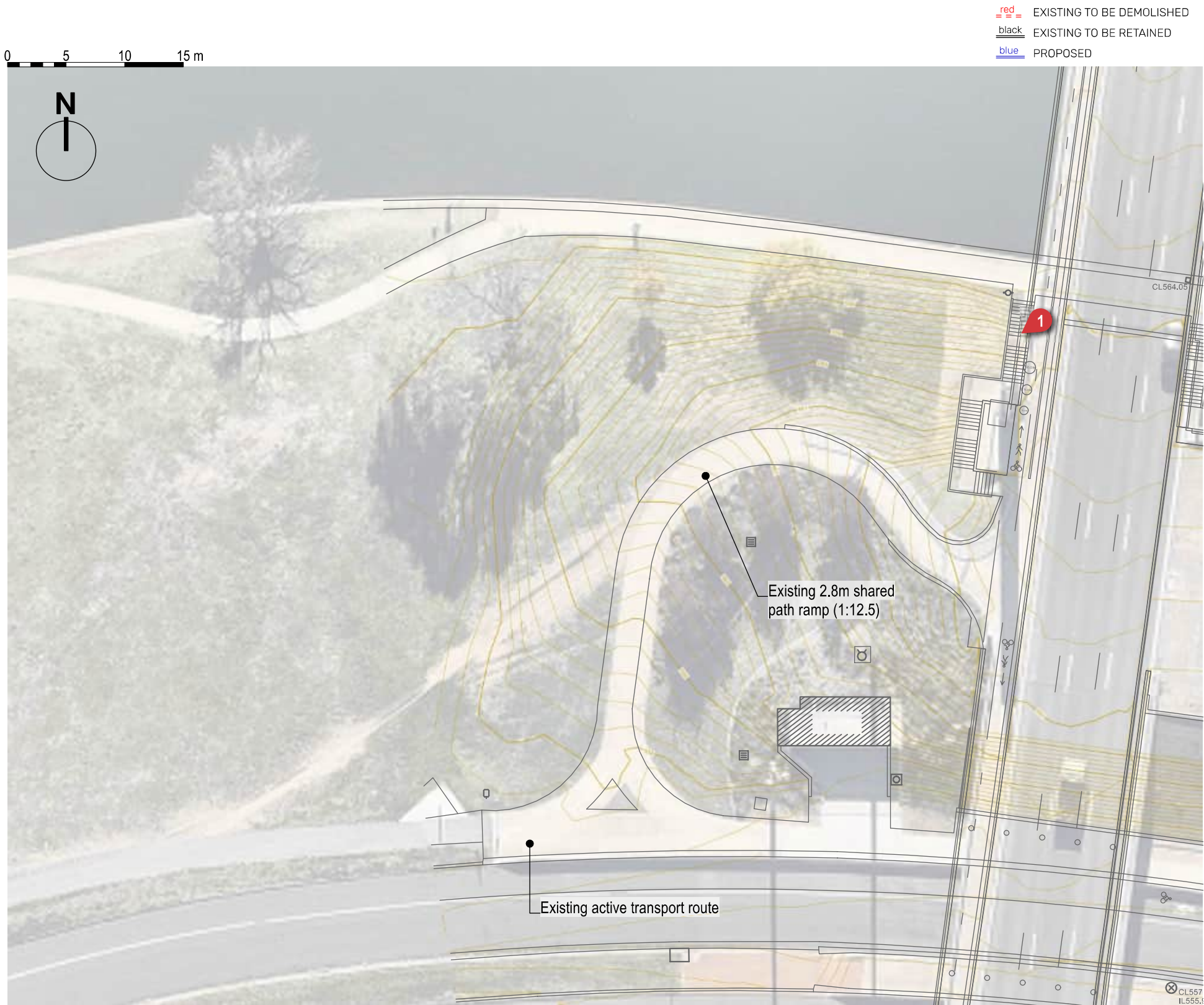


Figure 81: South-west approach existing site conditions diagram



### Proposed detailed design

The current conditions in the south western approaches area are characterised by an open parkland setting with scattered groups of Poplar and Willow trees in an undulating to flat lawn set between the lake foreshore and Flynn Drive. There are shared paths bordering the parkland area on both the lake foreshore and Flynn Drive. A number of informal tracks cut across the lawns following desire lines between Flynn Drive and the bridge access ramp and the foreshore path.

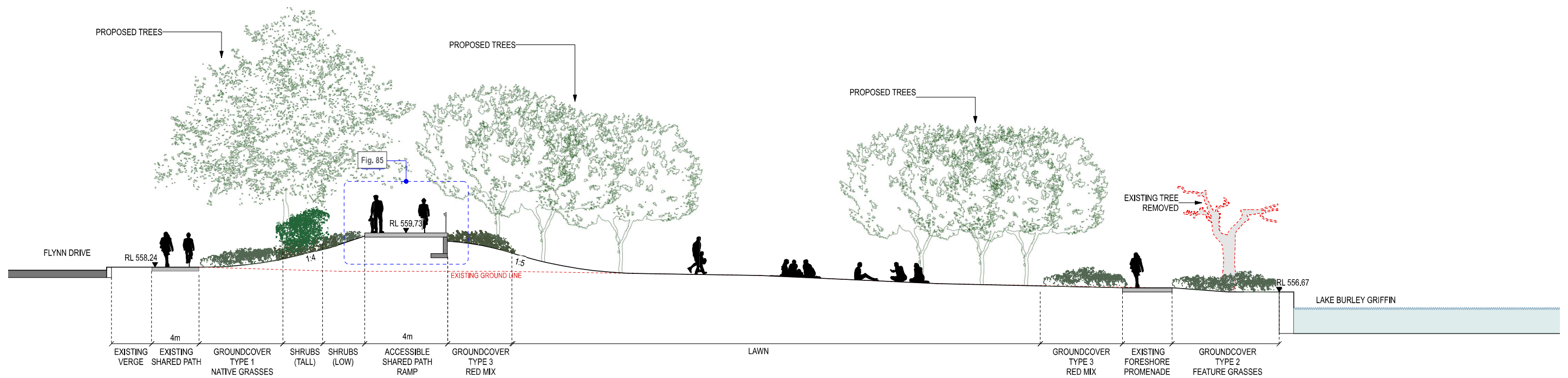
The following is a list of the key features of the concept design in this area:

- A gently meandering 4m wide and 1:14 grade, shared path, connects the widened abutment plaza area on the bridge down to both the foreshore and Flynn Drive shared paths, creating safer and more accessible connections, both east and west along the foreshore and Flynn Drive.
- The new path alignment aims to accommodate the preferred desire lines and to fit into the existing landform, making it an efficient alignment which feeds all 4 directions, east and west along the lake foreshore and east and west on Flynn Drive.
- Massed plantings of trees and shrubs on the embankments around the shared path helps to direct and slow cyclists while creating an attractive landscape.
- A new plaza space is created at the junction of the new shared path and the main foreshore shared path to signal to cyclists of the need to slow for other cyclists and pedestrians.
- Large bench seating form the edges to the new plaza space providing an attractive resting/meeting point on the path network.
- The new abutment features the same arrangements as the northern abutments with increased surface area and a lookout which focusses on the view over the lake towards Black Mountain.

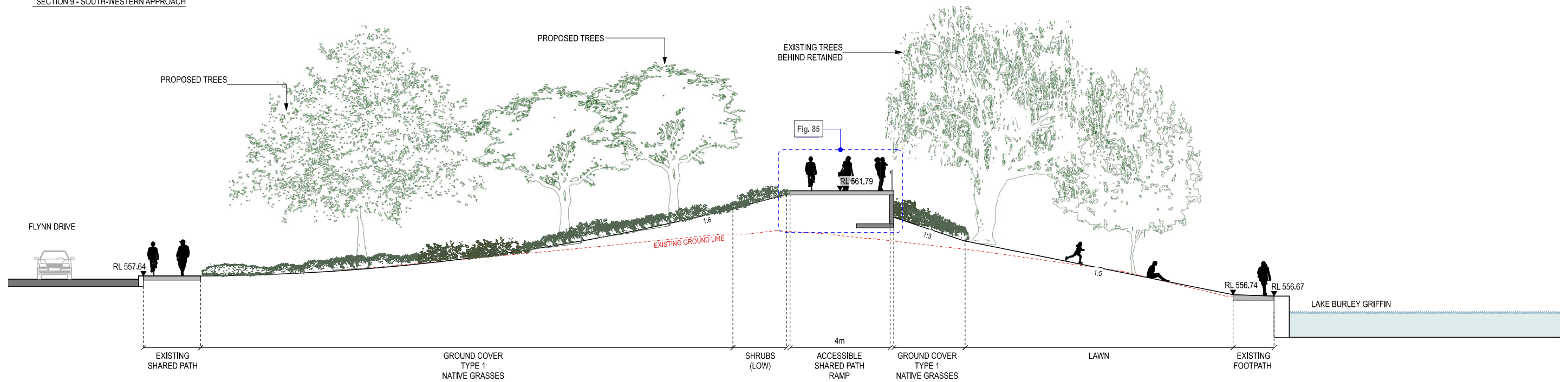


Figure 82: South-west approach (scale 1:400)





SECTION 9 - SOUTH-WESTERN APPROACH



SECTION 10 - SOUTH-WESTERN APPROACH

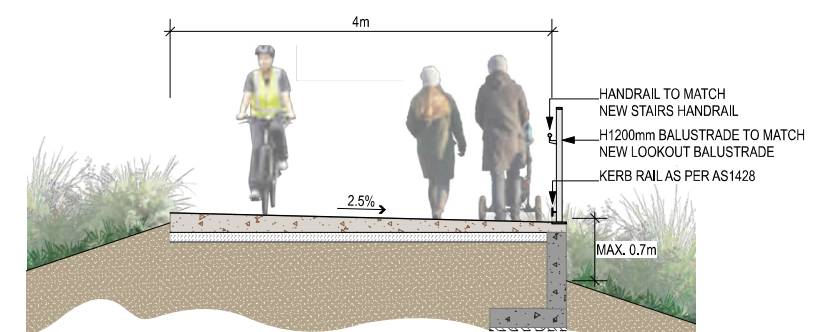


Figure 83: South-west quadrant cross sections 9 and 10 (Scale 1:200)

Figure 84: South-west accessible shared path ramp typical section



#### 4.5.5 South-east approach

##### **Existing site conditions**

The south-east approach has two main approaches to the Bridge, via the abutment and a shared path ramp.

The south-east abutment has two sets of stairs that take pedestrians from the foreshore area to the top of the abutment and onto the Bridge.

An existing shared path ramp also directs cyclists and pedestrians onto the Bridge, however the grade of the ramp does not comply with accessibility standards.

##### **Design considerations and opportunities**

- Existing shared path ramp is non-compliant with accessibility standards
- Existing tree-lined foreshore avenue provides extensive shade and has high recreational value
- Opportunity to enhance views towards NE from the existing embankment and top of the abutment
- Opportunity to provide safer pedestrian and cyclist connection to the bridge and to Flynn Drive



Figure 85: South-east approach existing conditions

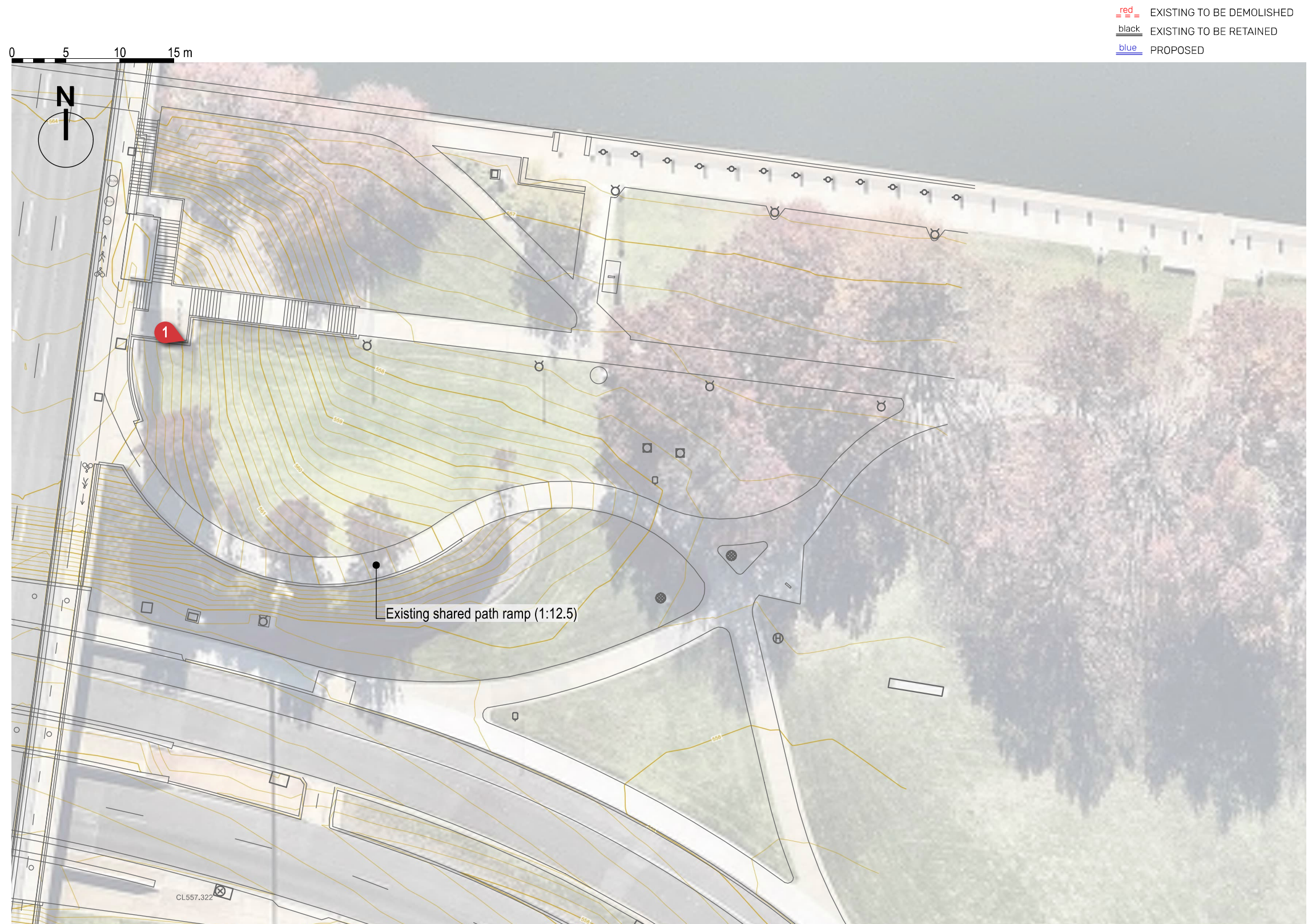


Figure 86: South-east approach existing conditions diagram



## Proposed detailed design

The south eastern approaches to the bridge have the most structured and formal setting of the 4 bridge approaches. Being inside the Parliamentary Triangle and adjacent to the National Library of Australia, it has a formalised and straight lake edge which includes the Australians of the Year Walk. Adjacent to this Walk, and on a parallel alignment, the path that leads to the bridge stairs is enveloped in a formal avenue of trees which creates a powerful landscape element in this area. This axial pathway forms part of the City to Queanbeyan Cycle Route as well as being a popular walking route.

The area is crisscrossed with a range of other paths creating angled intersections along the two main lake foreshore paths, which give rise to potential conflicts between cyclists and pedestrians. The existing shared ramp up to the abutment is both narrow and steep at 2.5m wide with a gradient of 1:12.5.

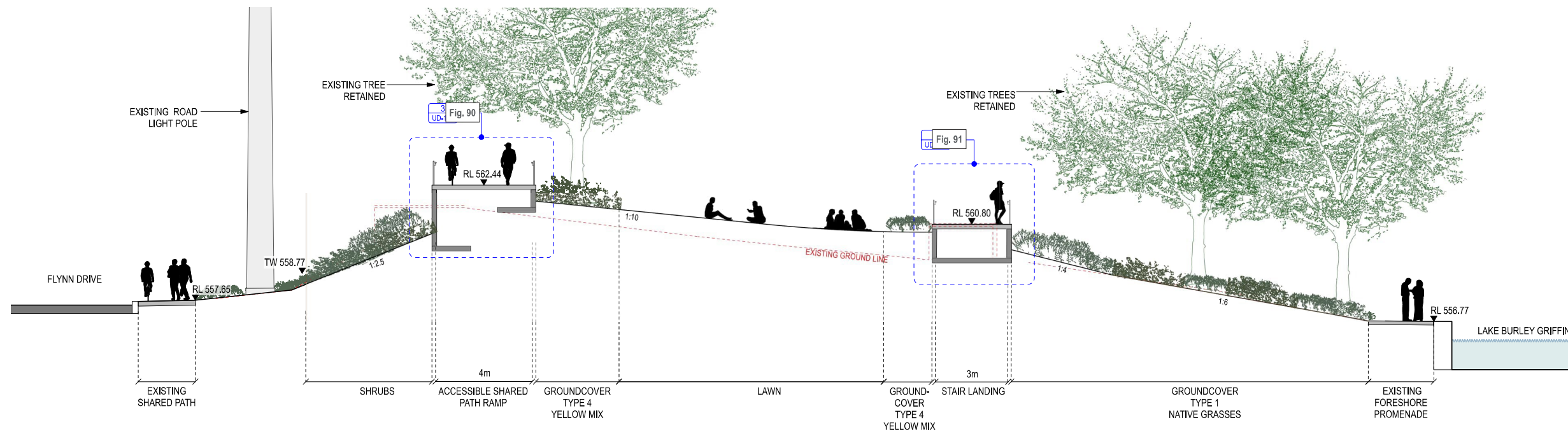
The following is a list of the key features of the concept design in this area:

- The stairs down to the avenue are upgraded to a 3m width and axially realigned with the avenue in keeping with the formal structure of these elements.
- The shared ramp is also upgraded and realigned to a 4m width and a 1:14 grade.
- A series of retaining walls reduce the extent of the slopes adjacent to the shared path ramp and create a series of more gentle and vegetated slopes,
- Adjacent to the base of the stairs is a new plaza which includes bench seating on granite set paving and a central area of decomposed granite with a formalised bosque of trees to create a gathering space for both formal and informal uses including Australian of the Year ceremonies.
- The pathways which have been consolidated and widened to 4m wide, are aligned at a series of angled intersections to slow cyclist speeds and reduce potential for conflict with pedestrians and other cyclists.
- The new abutment features the same arrangements as the northern abutments with increased surface area and a lookout which focusses on the view over the lake towards the National Capital Exhibition buildings and Mount Ainslie.

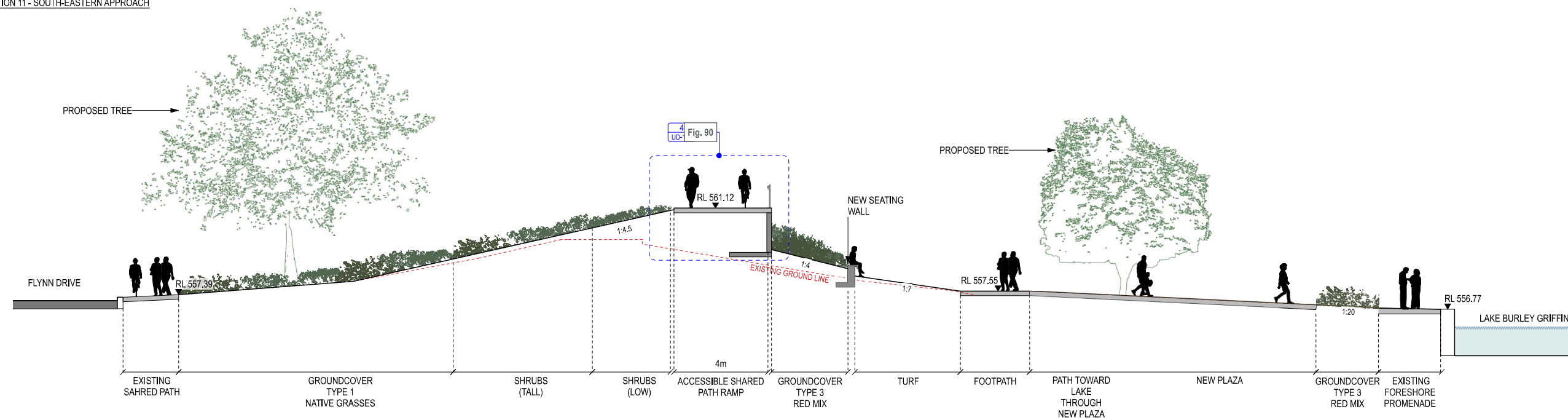


Figure 87: South-east approach (scale 1:400)





SECTION 11 - SOUTH-EASTERN APPROACH



SECTION 12 - SOUTH-EASTERN APPROACH

Figure 88: South-east quadrant cross sections 11 and 12  
(Scale 1:200)

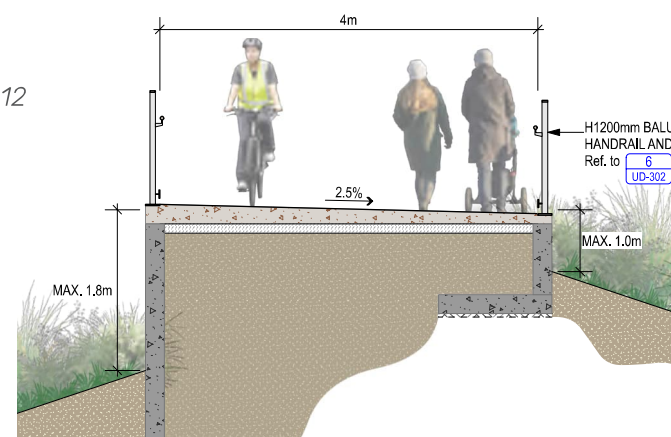


Figure 89: South-east accessible shared path ramp typical sections

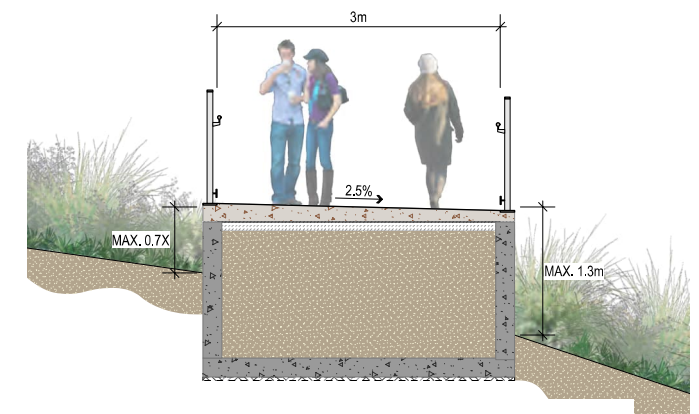
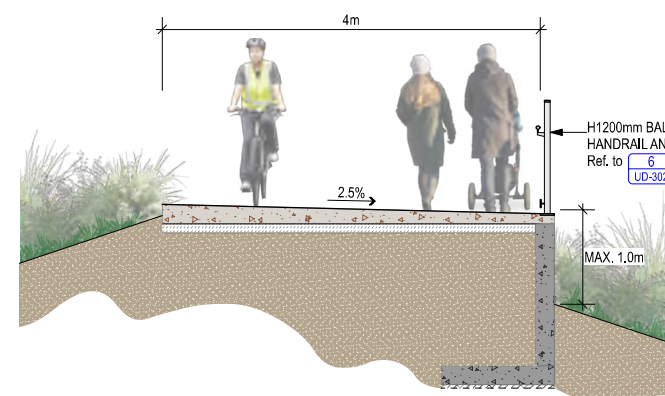


Figure 90: South-east staircase typical section



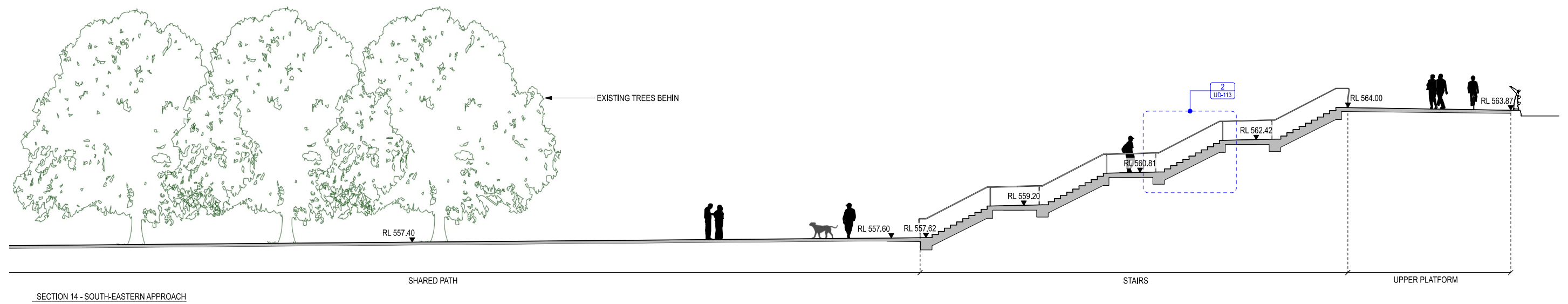


Figure 91: South-east quadrant cross sections 13 and 14 (Scale 1:200)



## 4.6 Planting Design

### 4.6.1 Design Elements

As outlined in **Section 3.6**, an overarching planting strategy and a series of design objectives have been developed that underpin the planting design. Careful consideration has been given to ensure that new planting complements the existing landscape character surrounding the Bridge, and in some instances, enhances areas that are currently less visually appealing and experiencing degradation from erosion or foot traffic. Additionally, we have given special consideration to ensuring the proposed species will successfully establish itself

The following design elements have been utilised to achieve the planting design objectives.

#### NATIVE OR EXOTIC SPECIES SELECTION

The use of natives or a mixed native and exotic palette within each entry quadrant of the bridge has been informed by the existing planting character within each area (refer **Figure 93**). The north-west quadrant comprises largely native species, whilst each of the other quadrants is largely an exotic palette.

#### MICROCLIMATES AND LANDSCAPE TYPOLOGIES

A series of microclimates have also been designed within each quadrant that have been inspired by existing site conditions and corresponding landscape typologies. These offer a diverse set of experiences for the public to enjoy as they navigate around the bridge, enhancing human comfort and also increasing biodiversity outcomes for the area. **Figure 94** details how these landscape typologies have been distributed across each quadrant of the bridge.

#### COLOUR PALETTE

An overarching colour palette has been employed for the understory layer (shrubs and ground covers) that will aid in differentiating between circulation areas and seating areas.

- Transit areas are generally surrounded by textural evergreen plants with muted flower tones of whites or light pastels.
- Seating areas and plazas are surrounded by a vibrant display of colours, including deep reds, purples and yellows to enhance the sensory experience in these zones (See Fig. 43).
- Hardy plants that flower at different times of the year have been incorporated to provide year-round food and pollen supplies for wildlife along with seasonal interest for visitors and commuters.



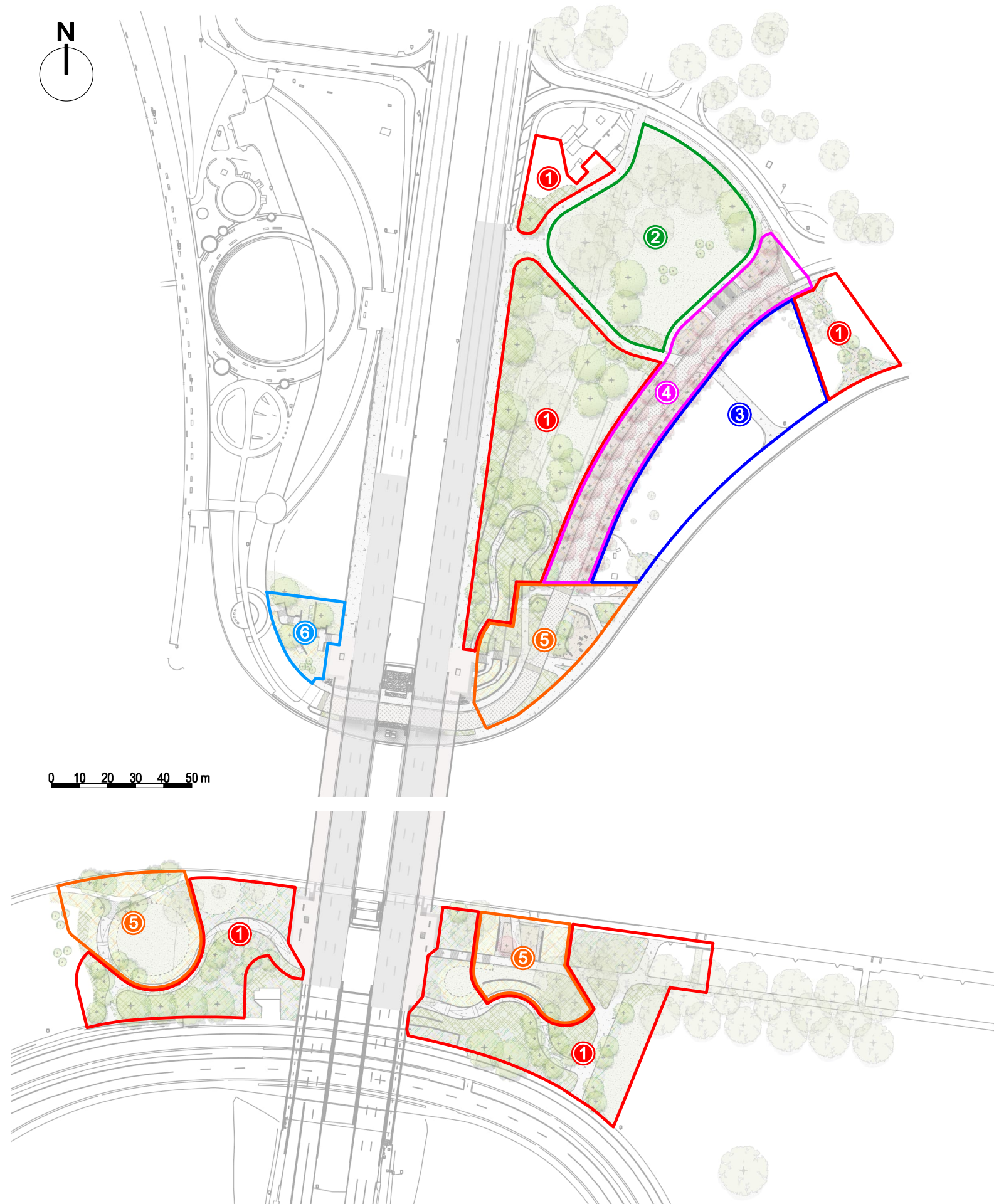
Figure 92: Australian of the Year walk with dense canopy and areas of exotic understory plants





Figure 93: Existing planting character and proposed planting schemes





## LANDSCAPE TYPOLOGY EXAMPLES



| TYPE | DESCRIPTION                 | TREES | UNDERSTOREY |  |
|------|-----------------------------|-------|-------------|--|
| ①    | DECIDUOUS WOODLAND          |       |             |  |
| ②    | MIXED TREE CANOPY AND LAWNS |       | —           |  |
| ③    | OPEN LAWNS                  | —     | —           |  |
| ④    | TREE LINEAR AVENUE          |       |             |  |
| ⑤    | MIXED FEATURE GARDENS       |       |             |  |
| ⑥    | NATIVE FEATURE GARDENS      |       |             |  |

### LEGEND

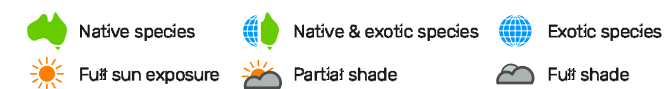


Figure 94: Proposed landscape typologies and microclimates



4.6.2 Tree Canopy Coverage

The strategy to improve the quality of landscaped areas and enhance resilience to extreme climate conditions is based on increasing the existing tree canopy coverage, with a target of achieving at least 30% canopy cover.

The design proposal retains the vast majority of existing trees and introduces a significant number of new plantings, resulting in over 45% canopy coverage, as shown in the table below and illustrated in Figure 95.

| QUADRANT | AREA                  | TREE CANOPY COVERAGE  |     |
|----------|-----------------------|-----------------------|-----|
|          |                       | Area                  | %   |
| NW       | 955 m <sup>2</sup>    | 270 m <sup>2</sup>    | 28% |
| NE       | 18,227 m <sup>2</sup> | 9,007 m <sup>2</sup>  | 49% |
| SW       | 5,153 m <sup>2</sup>  | 1,867 m <sup>2</sup>  | 36% |
| SE       | 5,397 m <sup>2</sup>  | 2,649 m <sup>2</sup>  | 49% |
| Total:   | 29,732 m <sup>2</sup> | 13,793 m <sup>2</sup> | 46% |



Figure 95: Tree canopy coverage proposed in each quadrant





5.

MATERIAL AND PLANT PALETTE



## 5.1 Bridge extension materials and finishes

The existing bridge has a restrained material palette that is reflective of its mid-century stylistic origins and the built environment of Canberra more generally. The three primary materials used are concrete, stone and aluminium, each of which is used in a range of nuanced applications across the site. The proposed modifications to the bridge and abutments build on this existing approach, by utilising the same base palette of materials, however with slight variations to reflect their contemporary status.

### Bridge extensions

To ensure consistency in the reflections, light and shadows that define our perception of the Bridge, the soffit and edge profile of the bridge extensions are proposed to be constructed with precast concrete panels in line with the existing panelling and detail. Likewise, the underside faces of the extensions are proposed to be glass reinforced cement soffit panels. This approach acknowledges the importance of symmetry and minimises the visual impact of the additions, particularly when viewed from afar. In accordance with the Heritage Design Principles, the detailing of the junctions between new and old elements will be such that, upon closer inspection, new elements are clearly identifiable from original fabric.

Paving to the widened shared path is proposed to be a series of precast concrete planks, which are arranged in a simple repetitive pattern based on the module of the bridge structure. The precast pattern utilises smaller elements along the outer section of the shared paths to provide a more human and 'walkable' scale and encourage a natural, but non-didactic separation between pedestrians and cyclists. Moreover this distinction is emphasised by a slight variation in texture between the smaller and larger precast paving elements.

### Barriers and balustrades

The barriers and balustrades to the shared paths, viewing platforms and roadways will be finished in a combination of light colours similar to the original design.

### Abutments

The existing abutments are clad with precast concrete with dark aggregate and Tarana Pink granite. Although Tarana Pink granite is no longer able to be sourced, the design proposes cladding of the abutment extensions in precast concrete with exposed aggregate to be similar in appearance and complementary to the existing Tarana Pink granite.

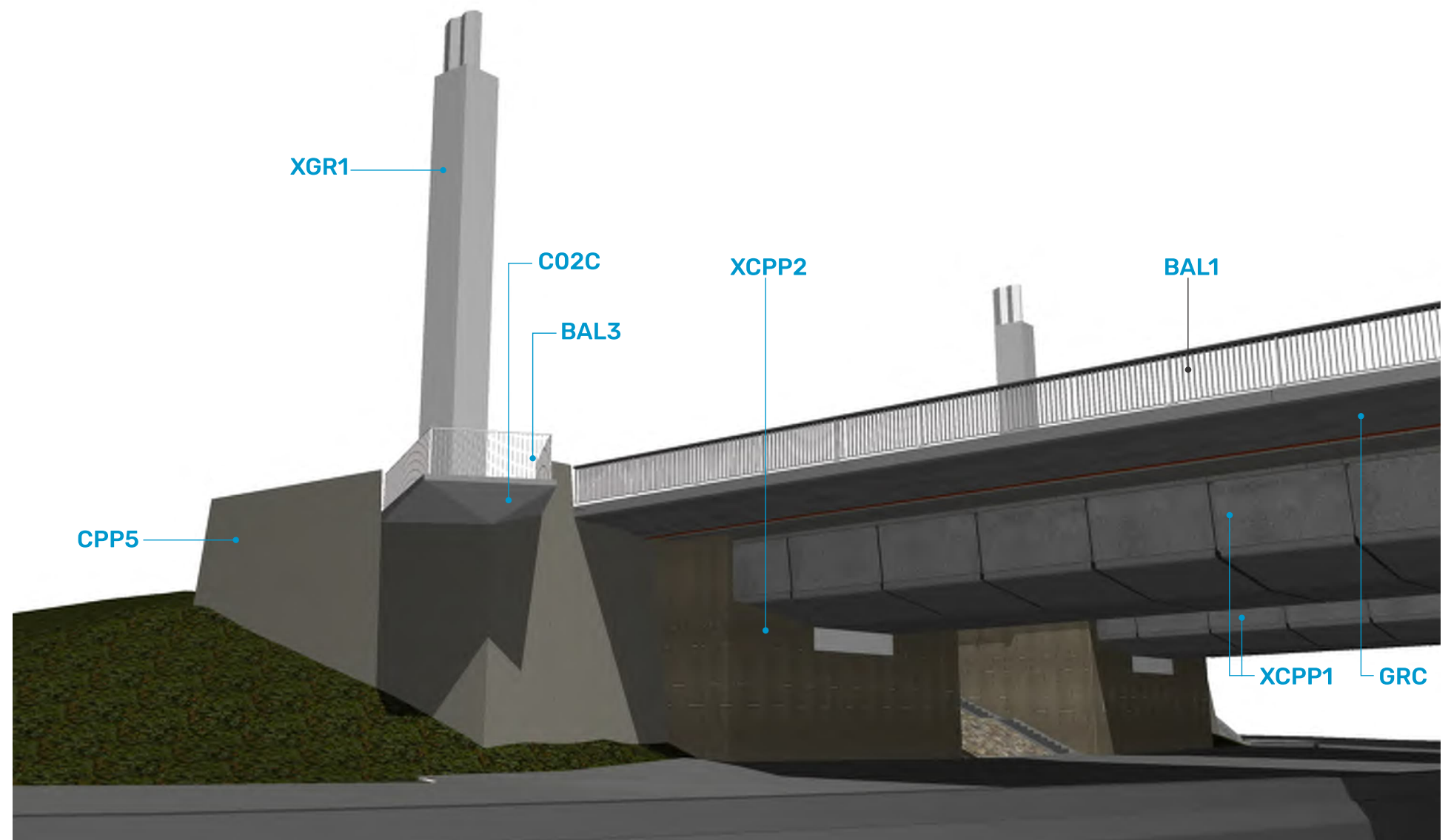
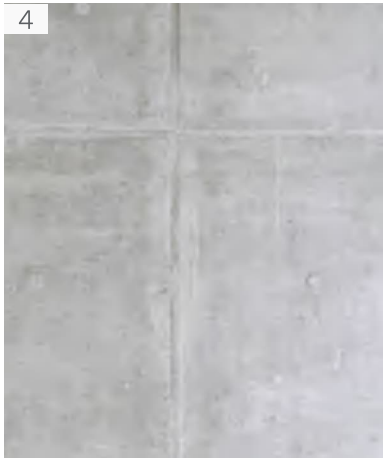


Figure 96: Existing and new material locations

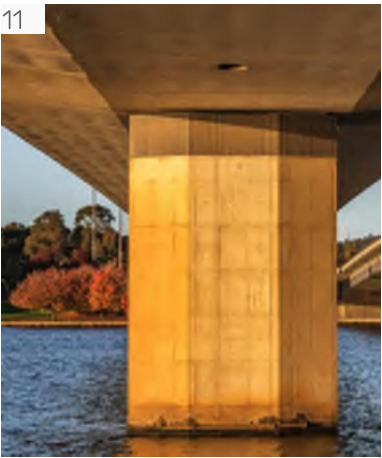
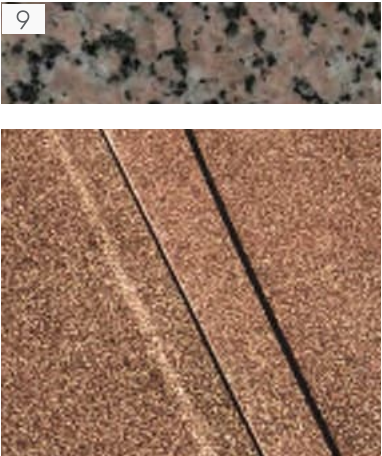


| Image No. | Bridge Element                                                      | Material            | Colour/Finish                                                                                                                                                                                               | Description                                                                                                                                                                                                                                                                                                          |
|-----------|---------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | (BAL1) Steel and aluminium balustrade with integrated LED lighting. | Aluminium and steel | Aluminium: Caustic etched and anodised.<br><br>Steel: Powdercoat finish or approved equivalent.                                                                                                             | Location: Outer edge of widened shared paths.                                                                                                                                                                                                                                                                        |
| 2         | (BAL2) Bridge crash barrier/railing.                                | Steel               |                                                                                                                                                                                                             | Refer engineer's documentation.                                                                                                                                                                                                                                                                                      |
| 3         | (BAL3) Full welded steel balustrade.                                | Steel               | Finish: Paint finish;<br>Refer to PAINT SPECIFICATION MILD STEEL.<br><br>Colour: Colour Steel: to match existing balustrade colour (silver/grey).                                                           | Location: Edge of abutment viewing platforms.<br><br><u>Architectural Requirements:</u><br>Dimensions: As per architectural drawings.<br>Fixings: Continuous steel base plate with welded u-bar cast into concret.<br>Welding: All welds to be continuous, ground flush, filled and sanded smooth prior to painting. |
| 4         | (CO2C) Class 2 off form colour controlled concrete.                 | Concrete            | Finish: Dry Treat clear penetrating sealer.<br><br>Colour: Class 2C, Tone 3 (AS3610), for min. 90% of readings.                                                                                             | Location: Abutment viewing platform soffit.                                                                                                                                                                                                                                                                          |
| 5         | (COF) In-situ concrete path.                                        | Concrete            |                                                                                                                                                                                                             | Location: Abutment extensions and viewing platforms.<br><br>To match landscape architect's concrete path (CP) specification.                                                                                                                                                                                         |
| 6         | (CPP1) Precast concrete edge member/soffit.                         | Precast concrete    | Colour: Class 2C, Tone 3, AS 3610, for 90% of reading. Colour tone range may be between tone 1 and 5 for 10% maximum of finish.<br><br>Finish. Etch finished Class 2c, AS 3610. Sol-silicate based coating. | Location: Shared path extensions.                                                                                                                                                                                                                                                                                    |



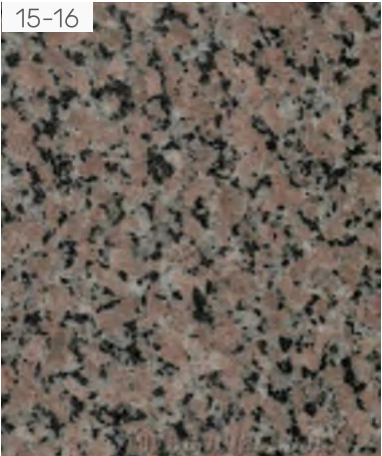


| Image No. | Bridge Element                                                      | Material                  | Colour/Finish                                                                                                                                                                                                                                              | Description                                                                                                                                               |
|-----------|---------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7         | (GRC) Underside of bridge extension panels                          | Glass reinforced cement   | Aggregate: Quartz mix - size and colour to match existing cladding (XCPP1) or approved equivalent.<br><br>Surface Treatment: Washed, not sandblasted, to match existing cladding (XCPP1)<br><br>Finish: Clear penetrating sealer.                          | Location: Shared path extension 'fascias'.                                                                                                                |
| 8         | (CPP3) Coarsely textured precast concrete floor planks              | Precast concrete          | Aggregate: Cowra White Quartz or approved equivalent.<br><br>Surface Treatment: Shotblasted to achieve coarsely textured finish.<br><br>Finish: Clear penetrating sealer.                                                                                  | Location: Bridge shared path paving.                                                                                                                      |
| 9         | (CPP5) Abutment extensions panels                                   | precast concrete cladding | Finish: exposed 'Tarana Pink' aggregate or look alike aggregate to match existing 'Tarana Pink' granite.<br><br>Custom aggregate mix and concrete matrix to be agreed through prototyping (min 5 iterations to be allowed for) with architect and builder. | Location: Abutment extensions.<br><br>Dimensions: Indicative panel size 1400 to 1600mm wide x 8000mm high. Thickness and each panel size refer to ST-002. |
| 10        | (XA) Existing fluted aluminium plate cladding                       | Aluminium plate cladding  | Existing fluted aluminium plate cladding to be replaced on a like-for-like basis. New aluminium profiled plates shall match the existing in all respects, including profile, fixing method, surface finish, and colour                                     | Location: Top of existing concrete bridge piers.                                                                                                          |
| 11        | (XC) Existing off form concrete.                                    | Concrete                  | Cleaning: Pressure clean all visible surfaces.<br><br>Finish: Clear penetrating sealer.                                                                                                                                                                    | Location: Existing concrete bridge soffit and piers.                                                                                                      |
| 12        | (XCPP1) Existing exposed aggregate precast concrete bridge cladding | Precast concrete          | Finish: Clear penetrating sealer.                                                                                                                                                                                                                          | Location: Existing bridge 'fascia'.                                                                                                                       |





| Image No. | Bridge Element                                                        | Material         | Colour/Finish                                                                                                                                                                                                                                                                                                                                                                                                                                    | Description                                                                                                                                                                                         |
|-----------|-----------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14        | (XCPP2) Existing exposed aggregate precast concrete abutment cladding | Precast concrete | Finish: Clear penetrating sealer.                                                                                                                                                                                                                                                                                                                                                                                                                | Location: Existing abutments.                                                                                                                                                                       |
| 15        | (XGR1) Existing 'Tarana Pink' granite slab cladding                   |                  | Cleaning: Pressure clean all visible surfaces.<br><br>Finish: Clear penetrating sealer.<br><br>Paint: Re-paint existing visible concrete and make good.                                                                                                                                                                                                                                                                                          | Location: Existing pylons.<br><br>NOTE: 'Tarana Pink' granite can still be sourced in case of damage or repair works required.<br>Contact:<br>'Stoneplus' Brookvale, NSW;<br>info@stoneplus.com.au. |
| 16        | (XGR2) Existing 'Tarana Pink' granite slab pavers.                    | Granite          | Salvage: Carefully remove existing pavers to avoid damage, clean thoroughly and store safely for reuse.<br><br>Slip Resistance: Surface of pavers to meet statutory slip resistance requirements.<br><br>Samples: Allow to undertake a minimum of three samples, including acid-etching, sand blasting and penetrating sealer, to establish preferred approach to achieve slip resistance whilst maintaining aesthetic qualities of the material | Location: Existing pylon bases.<br><br>Note: 'Tarana Pink' granite can still be sourced in case of damage or repair works required.<br>Contact: 'Stoneplus' Brookvale, NSW; info@stoneplus.com.au.  |





5.2 Landscape elements

| Image No.                      | Landscape Element                      | Material                               | Colour/Finish                                                                                  | Description                                                                                         |
|--------------------------------|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| PAVEMENTS AND SURFACE FINISHES |                                        |                                        |                                                                                                |                                                                                                     |
| 1                              | Concrete footpath and shared path (CP) | In-situ concrete                       | Aggregate: Cowra Quartz or approved equivalent<br><br>Surface Treatment: Traverse broom finish |                                                                                                     |
| 2                              | Plaza basalt pavers (BP)               | Basalt paver 300 x 300 x THK40mm       | Surface finish: Calibrated                                                                     | Basalt paver in areas with vehicle traffic (parking area) to be THK60mm.<br><br>Slip resistance: P5 |
| 3                              | Decomposed granite gravel (GR)         | Decomposed Granite Gravel              | Natural                                                                                        | To match existing decomposed granite gravel near Barrine Drive                                      |
| 4                              | Stone pitching verge (PS)              | As per existing                        | Natural                                                                                        | To match existing stone pitching in Barrine Drive adjacent to bridge abutment                       |
| 5                              | Stepping stones (SS)                   | 600x400xTHK40mm Wee Jasper stone paver |                                                                                                |                                                                                                     |
| 6                              | Concrete road finish (CR)              | In situ concrete                       | Surface Treatment: Light grit blasted exposed aggregate                                        | To match existing road finish on Henry Rolland Drive                                                |
| 7                              | Steel edge (SE)                        | Stainless steel                        | Grey                                                                                           | To match existing edging used around Barrive Drive                                                  |





| Image No.        | Landscape Element                                        | Material                                    | Colour/Finish                                                                                                                                     | Description                                                                                        |
|------------------|----------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| STAIRS AND RAMPS |                                                          |                                             |                                                                                                                                                   |                                                                                                    |
| 8                | Risers                                                   | Concrete                                    | Aggregate: Cowra Quartz or approved equivalent<br><br>Surface Treatment: Light grit blasted exposed aggregate                                     |                                                                                                    |
| 9                | Nosing                                                   | Extruded aluminium                          | 6063 T5 extruded aluminium alloy.<br><br>Black anodised.                                                                                          | PEMKO® Pleat Edging 50×3 (DE0300B)<br>Supplied by DTAC.<br><br>Slip resistance: P5                 |
| 10               | Handrails                                                | Stainless Steel                             | 316 Stainless steel                                                                                                                               |                                                                                                    |
| 11               | Balustrade                                               | Full welded steel balustrade                | Finish: Paint finish;<br>Refer to PAINT SPECIFICATION MILD STEEL.<br><br>Colour: Colour Steel: to match existing balustrade colour (silver/grey). | To match new balustrade on bridge lookouts (BAL3)                                                  |
| 12               | Pavement warning tactiles (composite discrete indicator) | Stainless steel with moulded polymer insert | 316 marine grade stainless steel tactiles with UV stabilised thermo plastic urethane insert.                                                      | Spiked Black Top Classic Warning Tactiles (DT0200)<br>Supplied by DTAC.<br><br>Slip resistance: P5 |
| WALLS            |                                                          |                                             |                                                                                                                                                   |                                                                                                    |
| 13               | Concrete retaining wall (CRW)                            | Concrete                                    | In-situ concrete Class 2, smooth-trowelled finish                                                                                                 |                                                                                                    |
| 14               | Seating wall (STW)                                       | Hardwood Timber Battens 40x40               | Eco-certified Darwin Stringybark (Eucalyptus tetrodonta) oiled                                                                                    | Timber battens fixed to concrete retaining wall (CRW) or stone wall (SW)                           |





| Image No. | Landscape Element                 | Material                                                                      | Colour/Finish                                                                                                                                                                          | Description                                                                                                                                                                  |
|-----------|-----------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15        | Stone wall (SW)                   | Wee Jasper Porphyry                                                           | Varied                                                                                                                                                                                 |                                                                                                                                                                              |
| FURNITURE |                                   |                                                                               |                                                                                                                                                                                        |                                                                                                                                                                              |
| 16        | Standard seats 1.8 & 2.1m (LIS10) | 316 Stainless steel (frame) and eco-certified hardwood oiled timber (battens) | Frame: 316 Stainless steel powder coated 'Textura Dark Bronze' .<br><br>Battens: eco-certified Spotted Gum oiled timber.                                                               | Linea Seat 1800 and Linea Seat 2100. Supplied by Street Furniture Australia. Surface fixed.                                                                                  |
| 17        | Standard bench 2.1m (LIB6)        | 316 Stainless steel (frame) and eco-certified hardwood oiled timber (battens) | Frame: 316 Stainless steel powder coated 'Textura Dark Bronze' .<br><br>Battens: eco-certified Spotted Gum oiled timber.                                                               | Linea Bench 2100. Supplied by Street Furniture Australia. Surface fixed.                                                                                                     |
| 18        | Standard sun lounge (LISS)        | 316 Stainless steel (frame) and eco-certified hardwood oiled timber (battens) | Frame: 316 Stainless steel powder coated 'Textura Dark Bronze' .<br><br>Battens: eco-certified Spotted Gum oiled timber.                                                               | Linea Sun Lounge. Supplied by Street Furniture Australia. Sub-surface fixed.                                                                                                 |
| 19        | Bollards (BO)                     | 316 Stainless steel and eco-certified hardwood oiled timber                   | Frame: 316 Stainless steel powder coated 'Textura Dark Bronze' .<br><br>Timber: eco-certified Spotted Gum oiled.                                                                       | Timberform Contemporary Bollard Model No. 2179-01. Supplied by Moodie Outdoor Products.                                                                                      |
| 20        | Bicycle rack (CBR4-F)             | 316 Stainless steel                                                           | 316 Stainless steel                                                                                                                                                                    | Hoop Stand Product Code CBR4-F. Supplied by CORA or approved equivalent. Sub-surface fixed.                                                                                  |
| 21        | Drinking fountain (DF)            | 316 stainless steel                                                           | Frame: Electropolished marine grade 316 stainless steel, mirror polished select faces.<br><br>Drainage grate: Cast aluminium with wire brush finish, secured with tamper proof screws. | Prospect Drinking Fountain with bottle tap. Supplied by Botton + Gardiner. This design is AS1428.2 Australian Standards compliant, wheelchair accessible. Sub-surface fixed. |
| 22        | Rubbish bin (RB)                  | Eco-certified hardwood oiled timber (Spotted Gum) battens. Steel Body         | Body & chute: powder coated 'Texture Asteroid' zinc primed steel.<br><br>Panels: eco-certified Spotted Gum oiled.                                                                      | Bondi Bin Enclosure 2x120L. Supplied by Botton + Gardiner. Surface mounted to manufacturer's recommended detail                                                              |
| N/A       | Lighting                          | Refer to Lighting documentation by WEBB                                       |                                                                                                                                                                                        |                                                                                                                                                                              |





5.3 Plant Palette

|                         |           |                                                          |                     |                                  |           | Seasonal Flowering |        |        |        |
|-------------------------|-----------|----------------------------------------------------------|---------------------|----------------------------------|-----------|--------------------|--------|--------|--------|
| Plant or Plant Mix Code | Image No. | Botanical Name                                           | Common Name         | (I)ndigenous, (N)ative, (E)xotic | H x W (m) | Summer             | Autumn | Winter | Spring |
| Exotic Trees            |           |                                                          |                     |                                  |           |                    |        |        |        |
| FP                      | 1         | <i>Fraxinus pennsylvanica</i>                            | Green Ash           | E                                | 12 x 8    |                    |        |        | ●      |
| CT                      | 2         | <i>Chitalpa x tashkentensis</i>                          | Chitalpa            | E                                | 8 x 6     | ●                  |        |        |        |
| QP                      | 3         | <i>Quercus palustris</i> 'Freefall'                      | Pin Oak             | E                                | 18 x 15   |                    |        |        | ●      |
| LN                      | 4         | <i>Lagerstroemia indica</i> x <i>L.fauriei</i> 'Natchez' | Crepe Myrtle        | E                                | 8 x 6     | ○                  | ○      |        |        |
| LS                      | 5         | <i>Liquidamber styraciflua</i> 'Palo Alto'               | Palo Alto Sweet Gum | E                                | 12 x 12   |                    |        |        | ●      |
| MA                      | 6         | <i>Melia azedarach</i> 'Caroline'                        | White Cedar         | E                                | 8 x 7     |                    |        |        | ●      |
| PB                      | 7         | <i>Prunus x blireana</i>                                 | Flowering Plum      | E                                | 4 x 4     |                    |        |        | ●      |
| PC                      | 8         | <i>Pyrus calleryana</i>                                  | Flowering Pear      | E                                | 12 x 12   |                    |        |        | ○      |
| CS                      | 9         | <i>Cupressus sempervirens</i> 'Glauca'                   | Italian Pencil Pine | E                                | 10 x 3.0  | -                  | -      | -      | -      |
| Native Trees            |           |                                                          |                     |                                  |           |                    |        |        |        |
| ER                      | 10        | <i>Eucalyptus rossii</i>                                 | Scribbly Gum        | I                                | 15 x 10   | ○                  | ○      | ○      | ○      |
| EME                     | 11        | <i>Eucalytus melliodora</i>                              | Yellow Box          | I                                | 20 x 15   | ○                  |        |        | ○      |

EXOTIC TREES



NATIVE TREES



Figure 97: Proposed planting palette - Trees



|                               |           |                                                           |                     |                                  |           | Seasonal Flowering |        |        |        |
|-------------------------------|-----------|-----------------------------------------------------------|---------------------|----------------------------------|-----------|--------------------|--------|--------|--------|
| Plant or Plant Mix Code       | Image No. | Botanical Name                                            | Common Name         | (I)ndigenous, (N)ative, (E)xotic | H x W (m) | Summer             | Autumn | Winter | Spring |
| Shrubs and Feature Perennials |           |                                                           |                     |                                  |           |                    |        |        |        |
| VT                            | 12        | <i>Viburnum tinus</i>                                     | Laurustinus         | E                                | 3.0 x 2.5 |                    |        |        |        |
| SH01                          | 13        | <i>Correa alba</i>                                        | White Correa        | N                                | 1.5 x 1.5 |                    |        |        |        |
| SH01                          | 14        | <i>Abelia x grandiflora</i> 'Nana'                        | Dwarf Glossy Abelia | E                                | 1.0 x 1.0 |                    |        |        |        |
| SH02                          | 15        | <i>Philotheca myoporoides</i> 'Winter Rouge'              | Wax Flower          | N                                | 0.8 x 0.8 |                    |        |        |        |
| SH02                          | 16        | <i>Raphiolepis indica</i> 'Oriental Pearl'                | Indian Hawthorn     | E                                | 0.8 x 0.8 |                    |        |        |        |
| AM                            | 17        | <i>Acanthus mollis</i>                                    | Oyster Plant        | E                                | 1.2 x 1.2 |                    |        |        |        |
| GC03                          | 18        | <i>Sedum spectabile</i> 'Autumn Joy'                      | Stonecrop           | E                                | 0.6 x 0.6 |                    |        |        |        |
| GC03                          | 19        | <i>Rosmarinus officinalis</i> 'Roman Beauty'              | Rosemary            | E                                | 0.6 x 0.6 |                    |        |        |        |
| GC03                          | 20        | <i>Lavender pedunculata</i> 'Frostberry Ruffles'          | Lavender            | E                                | 0.5 x 0.7 |                    |        |        |        |
| GC05                          | 21        | <i>Grevillea rhyolitica x juniperina</i> 'Cherry Cluster' | Spider Flower       | N                                | 0.5 x 0.8 |                    |        |        |        |
| GC05                          | 22        | <i>Anigozanthos rufus</i> 'Frosty Red'                    | Red Kangaroo Paw    | N                                | 0.6 x 0.6 |                    |        |        |        |
| GC05                          | 23        | <i>Carpobrotus glaucescens</i> 'Aussie Rambler'           | Pigface             | N                                | 0.2 x 2.0 |                    |        |        |        |
| GC04                          | 24        | <i>Phlomis russeliana</i>                                 | Turkish Sage        | E                                | 0.9 x 0.6 |                    |        |        |        |
| GC04                          | 25        | <i>Santolina chamaecyparissus</i>                         | Lavender Cotton     | E                                | 0.6 x 0.9 |                    |        |        |        |
| GC06                          | 26        | <i>Anigozanthos rufus</i> 'Frosty Yellow'                 | Yellow Kangaroo Paw | N                                | 0.6 x 0.6 |                    |        |        |        |
| GC06                          | 27        | <i>Xerochrysum viscosum</i>                               | Sticky Everlasting  | N                                | 0.6 x 0.6 |                    |        |        |        |
| GC04, GC06                    | 28        | <i>Chrysocephalum apiculatum</i>                          | Yellow Buttons      | N                                | 0.3 x 0.6 |                    |        |        |        |

SHRUBS AND FEATURE PERRENIALS



Figure 98: Planting palette details – Shrubs and Feature Perennials



|                             |           |                                                       |                            |                                  |           | Seasonal Flowering     |                        |                        |                        |
|-----------------------------|-----------|-------------------------------------------------------|----------------------------|----------------------------------|-----------|------------------------|------------------------|------------------------|------------------------|
| Plant or Plant Mix Code     | Image No. | Botanical Name                                        | Common Name                | (I)ndigenous, (N)ative, (E)xotic | H x W (m) | Summer                 | Autumn                 | Winter                 | Spring                 |
| Strappy leaf feature plants |           |                                                       |                            |                                  |           |                        |                        |                        |                        |
| GC02                        | 29        | <i>Dietes grandiflora</i> 'Grand Star'                | Wild Iris                  | E                                | 0.7 X 0.7 | <div><div></div></div> |                        |                        | <div><div></div></div> |
| GC02                        | 30        | <i>Liriope muscari</i> 'Munroe White'                 | Lily-turf                  | E                                | 0.4 x 0.4 | <div><div></div></div> | <div><div></div></div> |                        |                        |
| GC02, GC03                  | 31        | <i>Liriope muscari</i> 'Just Right'                   | Lily-turf                  | E                                | 0.5 x 0.5 | <div><div></div></div> |                        |                        |                        |
| Native grasses              |           |                                                       |                            |                                  |           |                        |                        |                        |                        |
| GC04                        | 32        | <i>Pennisetum alopecuroides</i> 'Nafray'              | Native Swamp Foxtail Grass | N                                | 0.6 x 0.6 | <div><div></div></div> | <div><div></div></div> |                        |                        |
| GC01                        | 33        | <i>Dichelacne crinita</i>                             | Long Hair Plume Grass      | N                                | 0.8 x 0.2 | <div><div></div></div> |                        |                        | <div><div></div></div> |
| GC01                        | 34        | <i>Lomandra longifolia confertifolia</i> 'Lime Tuff'  | Mat Rush                   | N                                | 0.5 x 0.5 |                        |                        |                        | <div><div></div></div> |
| GC01                        | 35        | <i>Lomandra confertifolia rubiginosa</i> 'Frosty Top' | Mat Rush                   | N                                | 0.7 x 0.5 | <div><div></div></div> | <div><div></div></div> |                        |                        |
| GC01                        | 36        | <i>Poa poiformis</i> 'Kingsdale'                      | Blue Tussock Grass         | N                                | 0.5 x 0.5 | <div><div></div></div> |                        |                        | <div><div></div></div> |
| XG                          | 37        | <i>Xanthorrhoea glauca</i>                            | Blue Grass Tree            | I                                | 2.0 x 2.0 |                        |                        | <div><div></div></div> | <div><div></div></div> |

STRAPPY LEAF FEATURE PLANTS



NATIVE GRASSES



Figure 99: Planting palette details – Strappy Leaf Feature Plants and Native Grasses



5.4 Watering Requirements for Vegetation

The determination of watering needs should be carried out by the irrigation consultant. Their expertise allows them to assess plant requirements in relation to species, growth stages, and site-specific conditions, while also considering local climate and weather patterns such as rainfall, temperature fluctuations, and evaporation rates. Based on this assessment, the irrigation consultant can design and adjust the watering regime to ensure healthy plant growth and efficient water use.

As a general rule, the watering regime should be adapted to the varying needs of different plant species and the different stages of their growth cycle, with watering applied only when necessary. Seasonal climate conditions, rainfall patterns, temperature extremes, and periods of drought or high evaporation should all be taken into account. The maintenance specialist has the expertise to develop a responsive watering program tailored to the specific site conditions, planting types, and prevailing weather

**Extent:** All non-irrigated plantings, lawn areas and tree plantings.

Water quality:

- pH between 5.5 and 7.5.
- Total soluble salts less than 1000 mg/litre.
- No substances that would be toxic to plant growth.

**General:** water all lawn and planting areas, soaking to a depth of 150 mm for lawn and 300 mm for planting. Avoid frequent dampening of the surface. Allow the surface of the soil to partially dry out between waterings.

Watering program:

- Establishment period: Minimum six complete waterings at four-days intervals for the first 6 weeks of plant establishment. During hot and dry periods increase frequency as needed, possibly to twice a week or more.
- Regular maintenance: check soil moisture to determine if watering is needed. General guideline: once a week for groundcovers and grasses and every 2-3 weeks for shrubs, or as per table below.
- Water early in the morning or late in the afternoon to minimize evaporation

**Water restrictions:** Coordinate the water supply and confirm the watering restrictions against ACT legislation and restrictions at the time, especially during summer months.

| PLANTING MIX | SPECIES                                                                                                                                              | WATERING FREQUENCY |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| GC01         | Dichelachne crinita<br>Lomandra confertifolia rubiginosa ‘Frosty Top’<br>Lomandra longifolia confertifolia ‘Lime Tuff’<br>Poa poiformis ‘Kingsdale’  | Every 2 weeks      |
| GC02         | Dietes grandiflora ‘Grand Star’<br>Liriope muscari ‘Just Right’<br>Liriope muscari ‘Munroe White’                                                    | Weekly             |
| GC03         | Liriope muscari ‘Just Right’<br>Lavandula pedunculata ‘Frostberry Ruffles’<br>Rosmarinus officinalis ‘Roman Beauty’<br>Sedum spectabile ‘Autumn Joy’ | Every 2 weeks      |
| GC04         | Pennisetum alopecuroides ‘Nafray’<br>Chrysocephalum apiculatum<br>Phlomis russeliana<br>Santolina chamaecyparissus                                   | Every 2 weeks      |
| GC05         | Carpobrotus glaucescens ‘Aussie Rambler’<br>Anigozanthos rufus ‘Frosty Red’<br>Grevillea rhyolitica x juniperina ‘Cherry Cluster’                    | Every 2-3 weeks    |
| GC06         | Chrysocephalum apiculatum<br>Anigozanthos rufus ‘Frosty Yellow’<br>Xerochrysum viscosum                                                              | Every 2-3 weeks    |
| SH01         | Abelia x grandiflora ‘Nana’<br>Correa alba                                                                                                           | Every 1-2 weeks    |
| SH02         | Philotheca myoporoides ‘Winter Rouge’<br>Raphiolepis indica ‘Oriental Pearl’                                                                         | Every 1-2 weeks    |
| TREES        | All                                                                                                                                                  | Every 1-2 weeks    |
| LAWN         | All turfed areas during dry periods                                                                                                                  | Every 3-4 days     |

\* The notes above are only indicative and should be reviewed by a specialist irrigation consultant



smm®

spackman mossop michaelis

15 Foster Street  
Surry Hills NSW 2010  
Sydney - Australia

T. 02 9361 4549  
[smm.studio](http://smm.studio)