

Ref: B2B-NTE-0638

18 September 2018

Beca
32 Harington Street
P.O. Box 903
TAURANGA 3140
NEW ZEALAND

By email: s 9(2)(a)

Attention: s 9(2)(a)

Dear s 9(2)(a)

**CONTRACT NO. 2/09-024/603
BAYPARK TO BAYFAIR LINK UPGRADE WORKS – PHYSICAL WORKS
MGI Subway Options Report**

Further to the meeting on 7 September 2018, we enclose a copy of the MGI Subway Options Report.

The report details the work undertaken over the last six weeks to develop a preferred option for the location, size and entrance details of a proposed pedestrian/cyclist subway at the MGI Roundabout. The report recommends that NZTA engage CPB to prepare a Concept Design to confirm the option achieves NZTA objectives and provide a fixed price to undertake the detailed design and construction.

Our cost estimate to undertake the design and construction of the subway is \$16.64M as detailed overleaf. The impact to CPB's programme of works will be assessed during the design development.

We await your instructions before proceeding with further development of the concept.

Yours sincerely

CPB CONTRACTORS PTY LIMITED

s 9(2)(a)

Contractor's Representative

Attachments: MGI Subway – Options Report
Bay Link Underpass – Design Study - Align

Bay Link - MGI Subway

Item	Description	Base Estimate	% Allocation
Design and Project Documentation			
1	Design (Concept & Detailed)	\$	
2	General	\$	
3	Mobilisation	\$	
4	Service Relocations	\$	
5	Ground Improvements	\$	
6	Box Culvert (4m x 3m)	\$	
7	Approach Ramps	\$	
8	In Situ Entrances	\$	
9	Pavements	-\$	
10	MSQA	\$	
	Sub Total	\$ 9,790,800	100%
11	Risk	\$ 1,468,620	15%
	Sub Total	\$ 11,259,420	
12	On Site Overheads	\$	
13	Off Site Overheads	\$	
	Project Base Estimate	\$ 13,315,390	
14	Contingency	\$ 3,328,847	25%
	Project Expected Estimate	\$ 16,644,237	
Notes			
a	Risk = Estimate based on concept drawings with no quantities or specifications		
b	Contingency = Concept design stage		
c	Ground Improvement reflects limited design inputs at Concept Stage		
d	Programme effects to be assessed during design development		

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Subject Baylink MGI Subway - Options Report

Attention s 9(2)(a) CPB

From s 9(2)(a)

Date 17 September 2018

Copies to Various

1. Background

The use of an existing subway in combination with a new subway was first identified in a Temporary Traffic Management meeting in early August 2018 as a solution to providing a temporary safe crossing route for pedestrians and cyclists between Bayfair and Matapihi Road.

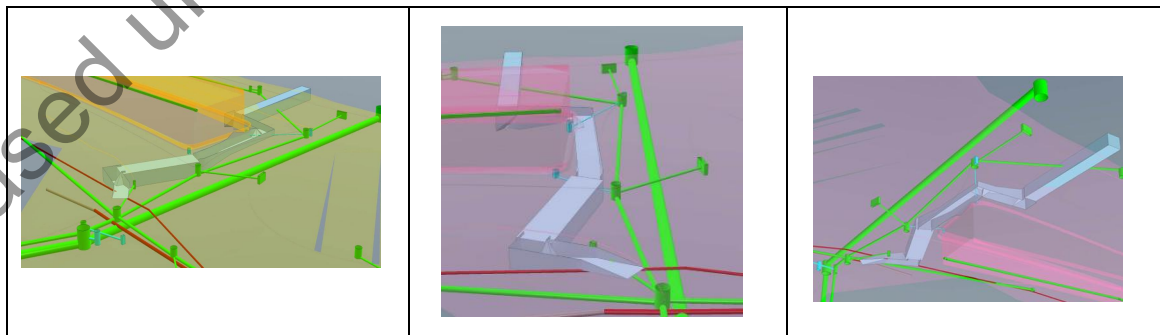
The concept developed over a number of weekly meetings that considered a number of options to provide a permanent grade separated link.

This document has been created to capture on the development of the preferred option and recommend options for detailed design development.

2. Options Considered

The readily available 3D Baylink Utilities model was the tool used to quickly locate and assess the placement of the options considered, screen shots are included from this model to demonstrate the options considered.

The first options considered the subway adjacent and below northern abutment of Bridge 1 using an alignment that was a combination of the existing and new subway as shown on the model screen shots below.



The initial options were considered possible to locate but the CPTED requirements were compromised with the alignments considered.

Subsequently further alignments investigated the option of using subways to connect to the signalised gyratory inner island, these are shown below.



This work showed that it was not possible to successfully connect into the gyratory island without significant works outside of designation, further this layout relied upon a surface crossing of Matapihi Road to complete all movements.

It was concluded that the best position for a subway was a direct connection running from west to east under the northern approach embankment of Bridge 1 adjacent to the existing subway. This location, shown below, provided a direct connection and resolved many of the CPTED issues prevalent with previous options.



This location allows for the existing subway to be used as grade separated access beneath SH2 during construction of the new subway.

The subway approaches on both the Matapihi and Bayfair sides of the subway are constrained by the existing designation and constrain CPTED issues.

On the 4th September 2018 a workshop was organised between Align (Urban Design) and Jacobs (Engineering) where both approaches were reviewed in some detail to identify what was possible within designation.

Concept designs for the layout of both approaches were produced that were within the existing designations and also met CPTED issues.

The final meeting of the 7th September 2018 agreed that the location of the subway and the concept designs tabled at the meeting for both approaches be the basis for the preferred design.

3. Preferred Option

The preferred option is described in the accompanying Align document, Baylink – Underpass Option Feasibility

4. Constraints/Challenges

The two key constraints that dominated design development to date has been the existing designation and being CPTED compliant, these two constraints are now largely considered to have been met.

Future key challenges are:

- Design programme to meet identified slot in the existing construction programme
- Design and construction within the high water table
- Integration of the subway into the existing geotechnical design
- Balance of depth of subway below the approach embankment with regards to approach ramp gradients
- Management of pedestrian and cycle traffic through the construction site
- Relocation of services within the constrained construction site

5. Assumptions

Key assumptions made to date are as follows:

- Design development is based upon and a continuation of the preferred layout as shown in the Align documentation *180913_0.1_Align_NZTA_Baylink-Underpass-Design-Study-Draft-Rd*
- The preferred layout shown in *180913_0.1_Align_NZTA_Baylink-Underpass-Design-Study-Draft-Rd* requires the use of the left turn lane into Girven Road.
- Other than geotechnical no material impact envisaged on Bridge
- Minimal impact on existing designs
- Subway considered for the preferred layout was 5m by 2.5m
- All utility impacts are mitigated.
- All planning issues are mitigated
- All third parties are in support of an underpass and all issues mitigated.
- Optioneering of the subway is completed within the first two weeks from start of the concept design period.
- A two stage Concept and Detailed submission process is employed to deliver the design.
- Peer Reviewer and Principal Advisor's received for the Concept and Detailed design are identified and responded to within two weeks of submission.
- Departures will be identified by designer and agreed/disagreed by the PA within the concept design period.

6. Risks/Opportunities

The key risks and opportunities are shown in the table below.

No	Discipline	Risk	Mitigation	Owner
R1	Planning	Not sufficient time to determine planning risk in preparation of cost estimate	Undertake a preliminary planning assessment to identify potential issues with respect to consenting requirements, existing designation and other planning risk.	NZTA
R2	Property/Land	Nothing allowed for property inputs	Design based upon not requiring additional land	NZTA
R3	Consultation Stakeholder Engagement	Nothing allowed for in cost estimate for consultation or stakeholder engagement	NZTA specialism	NZTA
R4	Programme	Detailed design delivery fails to meet existing construction programme.	Mitigation to ease programme risk includes: <ul style="list-style-type: none"> Reduce submission stages to two Concept and Detailed design stages Streamline comments and response process Streamline departure process. 	ALL
R5	Design	Design changes impact design delivery	Mitigation includes: <ul style="list-style-type: none"> All optioneering in first two weeks to agree location, cross section and layout. Assumption that urban design features will be undertaken within the layout agreed. 	CPB
R6	Utilities	Not sufficient time to fully identify utility risk in preparation of cost estimate	Utility impacts well understood but programme risk from dealing with provides unknown	NZTA
O1	Property/Land	Acquire additional land at Matapihi Road	Relatively small amount of land acquired from the Omanu Golf Course provides a better outcome for the western tie-in into Matapihi Road	NZTA
O2	Property/Land	Bayfair Easement	Seek to maximise the use the easement with the Bayfair Shopping Centre during the detailed design phase	CPB

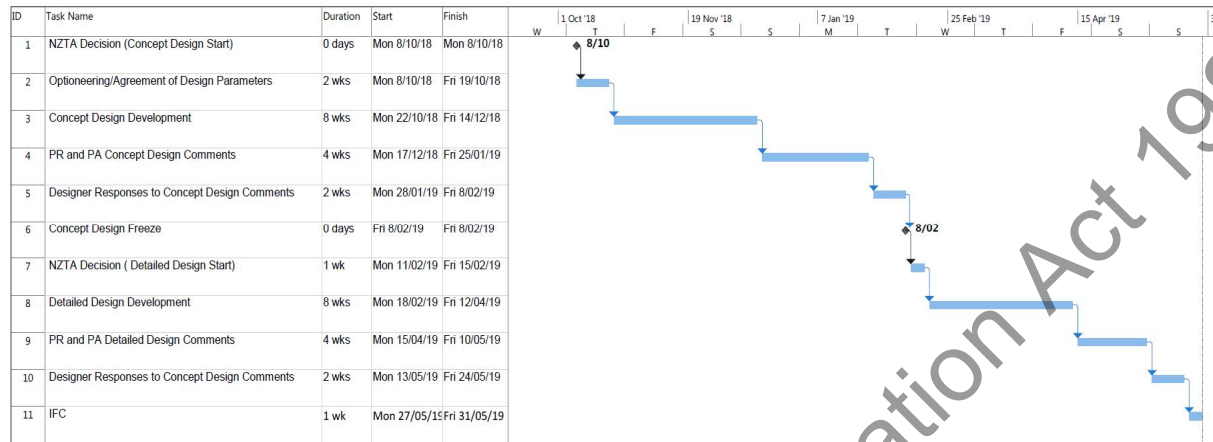
7. Departures Required

Technical departures will be identified once a sufficient level of design has been undertaken but within the first half of the concept design period.

To achieve anticipated programme, PR changes will be required around the departure and submission processes.

8. Design and Construction Programme

The design programme to meet the anticipated construction window is shown below. This is based on a two-step design methodology of concept and detailed design stages.



Construction will take approximately 5 months on completion of the detailed design, this could vary as the concept design detail is progressed.

9. Recommendation

Build upon the preferred design identified in this memo and go forward with a methodology that:

- Design development is based upon and a continuation of the preferred layout as shown in the Align documentation *180913_0.1_Align_NZTA_Baylink-Underpass-Design-Study-Draft-Rd*
- Commences with an initial two week optioneering period to agree and set design parameters for the Concept Design.
- Provides an eight-week Concept Design period that:
 - Develops sufficient detail to allow the construction team to identify realistic cost estimates
 - Allows stakeholders and customer engagement and subsequent input at an appropriate early stage
 - Allows effective risk management and exploitation of opportunities.
 - Provide an opportunity for Value Engineering to occur before detailed design starts.
- Detailed design phase where the optioneering is completed and the design is frozen to allow detailed design to be completed to match programme constraints.

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Baypark to Bayfair Link

Baylink Underpass

September 2018



Baylink Underpass

Design Study

- Same location as existing underpass
- Connected to wider movement networks
- Design will accommodate a wide range of users
- Increased convenience and connectivity for the cycling community
- In conjunction with the MGI Subway Options Report [Jacobs]

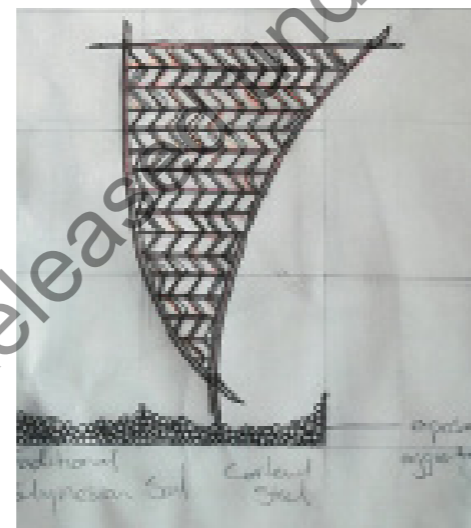
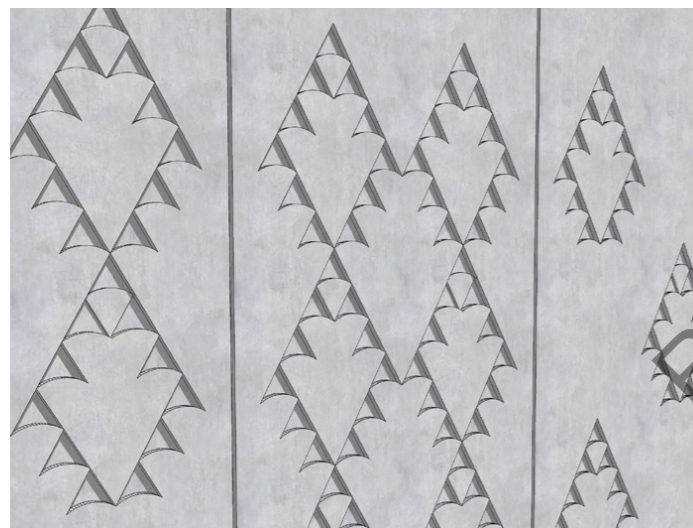
Overarching elements/drivers

High-level Principles

- CPTED and daylighting
- Urban design shared spaces
- Cyclist clear sight and movement lines
- 'Decision points' & route alternatives
- Materiality choices
- Links and choices for movement

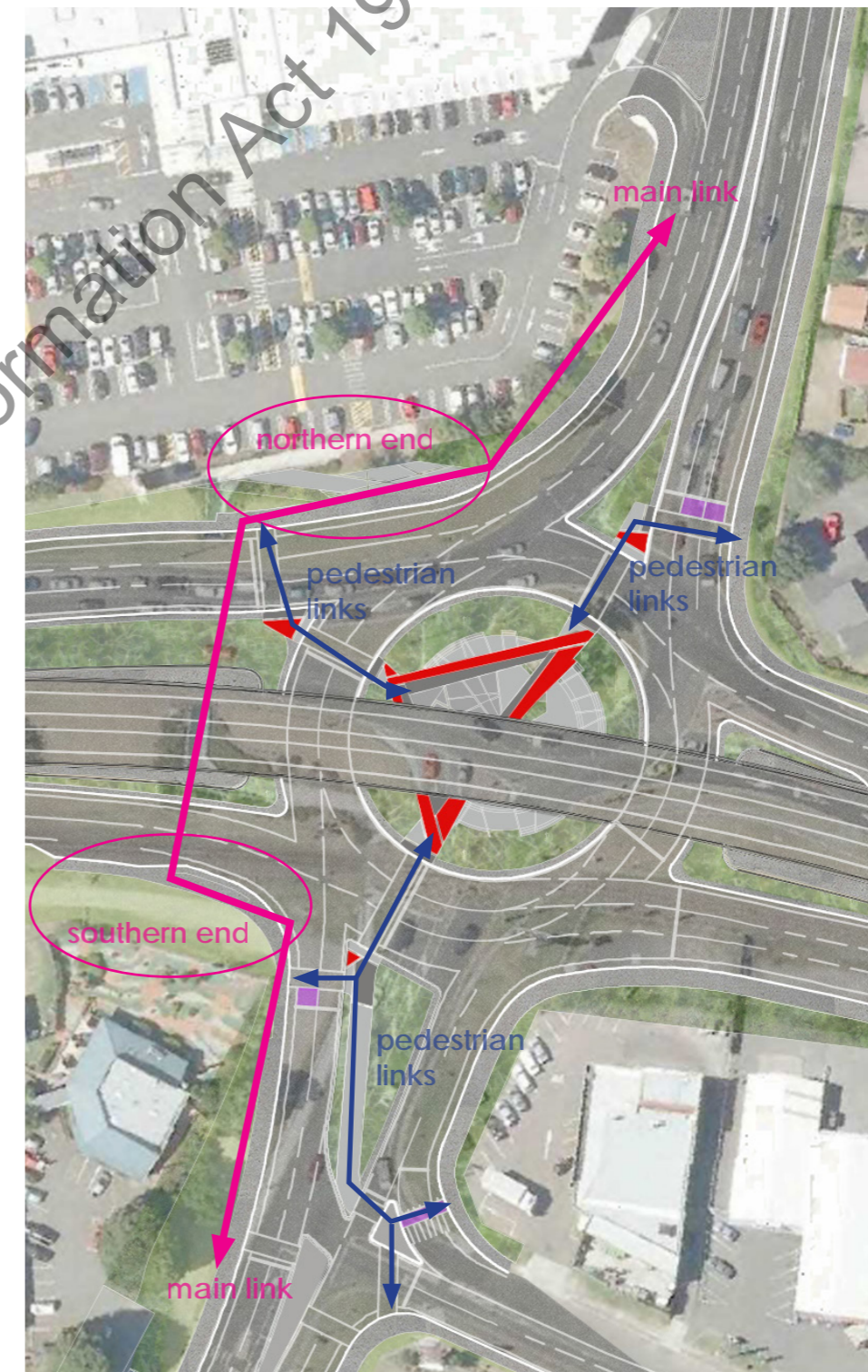
Continuity of themes

Including common design elements as used elsewhere, ensuring a unified experience through the underpass in connection to the wider design and site.



Urban design elements and finishes to tie in with wider design context

Location & Connectivity



plan view // showing main links, and the location of either end of the underpass

Baylink Underpass

Exemplar images

1.

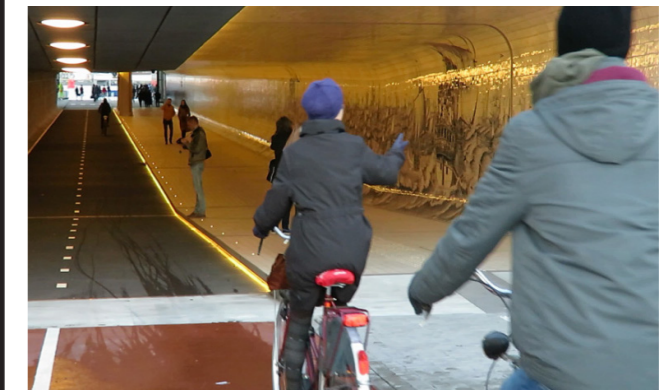


1: Wide entry and visibility for safe movement by a variety of users

2: Visual interest and variety of levels to define entrance. Different access routes and alternative paths, as well as waiting areas.

3: Internal details, natural as well as artificial lighting for visibility and safety as according to CPTED principles

2.



Baylink Underpass

1:500 Plan

Northern entry to the underpass











Entry to the underpass access from Bayfair car park

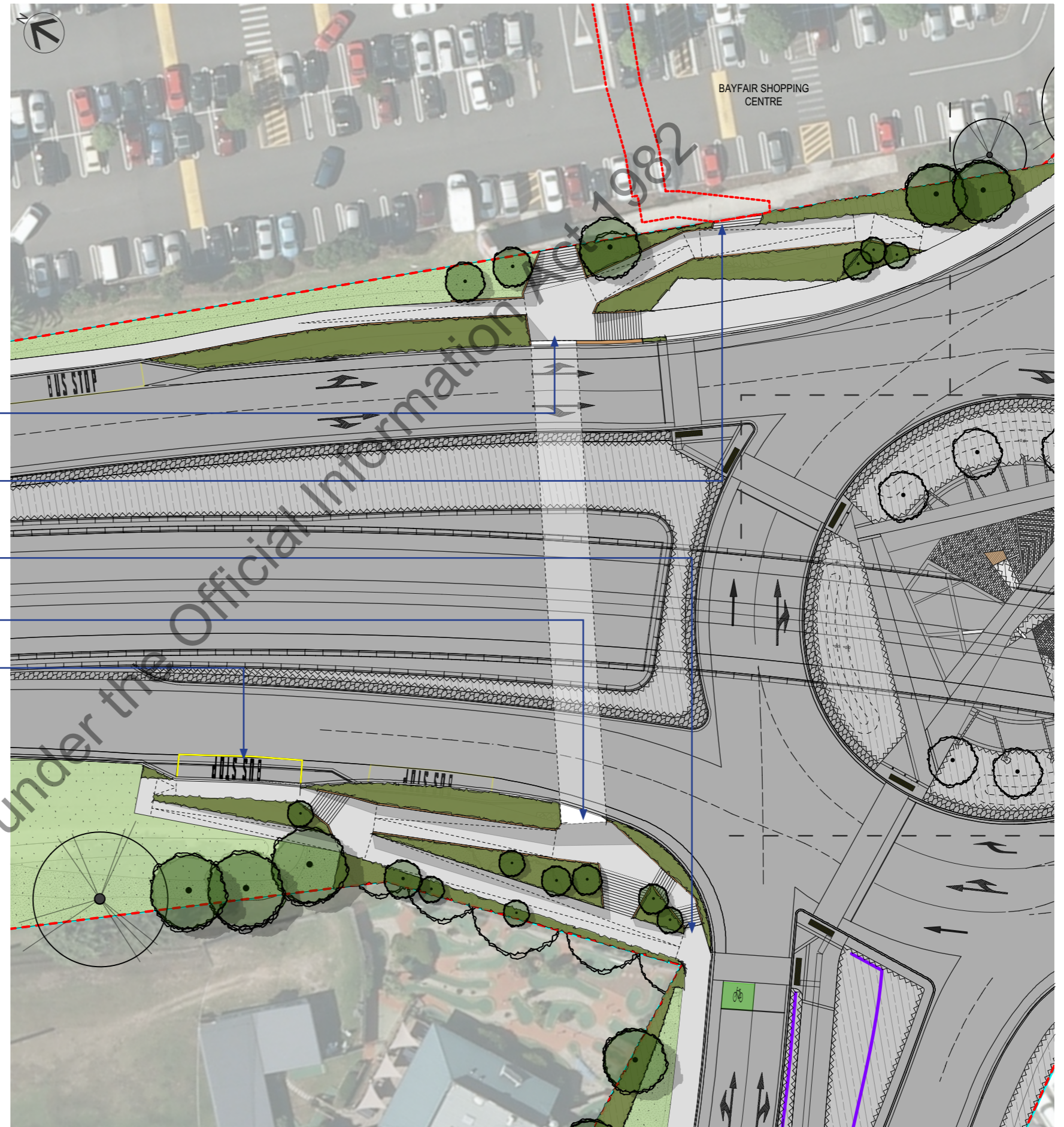
Multiple routes to/ from underpass

Southern entry to the underpass

Proposed bus stop

Key

-  Grass
-  Planting
-  Proposed tree
-  Pavement
-  Road
-  Existing tree
-  Underpass route under road
-  Planted areas (MGI)
-  Cycleway
-  Existing aerial



Baylink Underpass

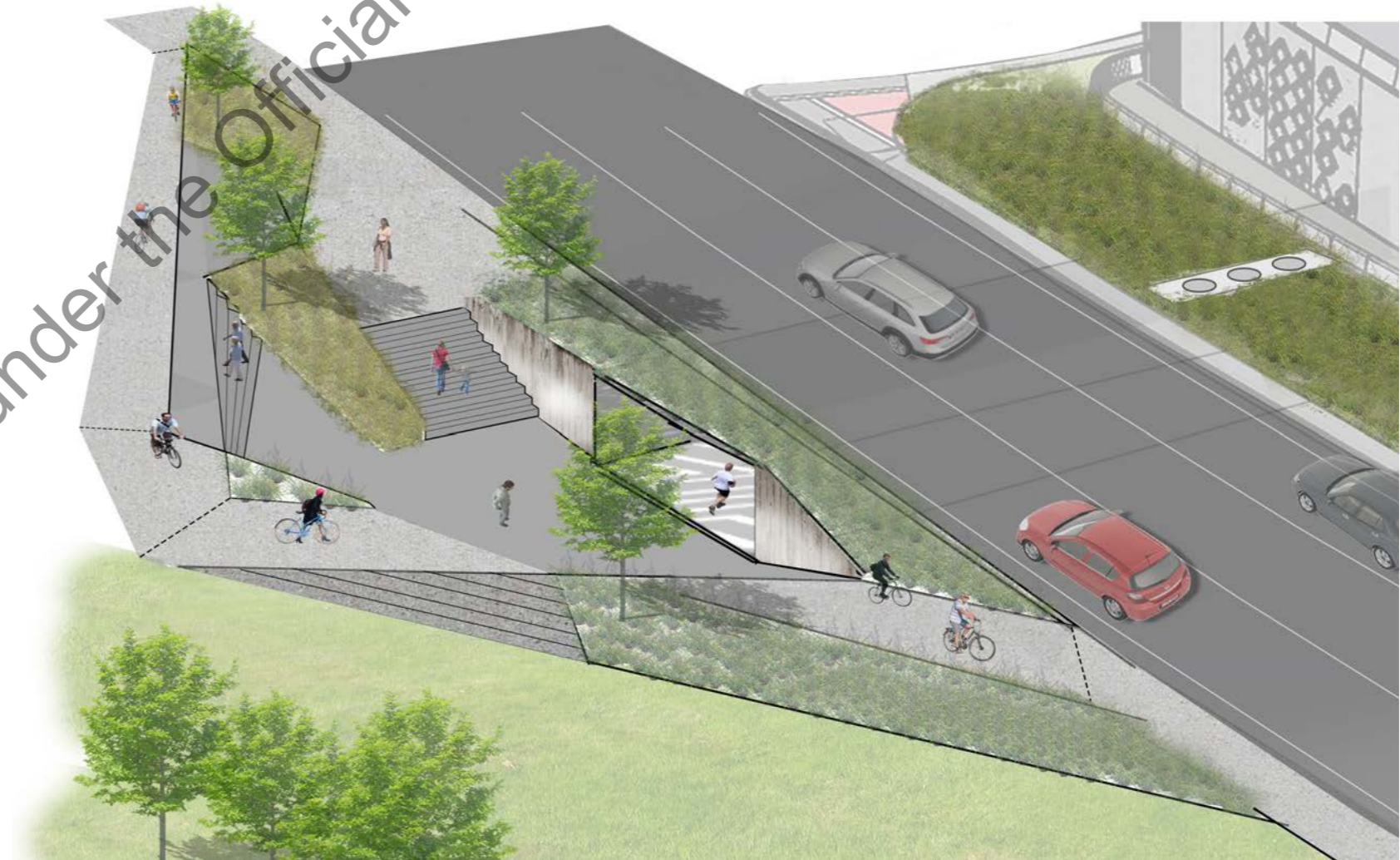
Conceptual Renders of Access to Underpass

pictorial view//
northern side from bayfair
mall // mixed use



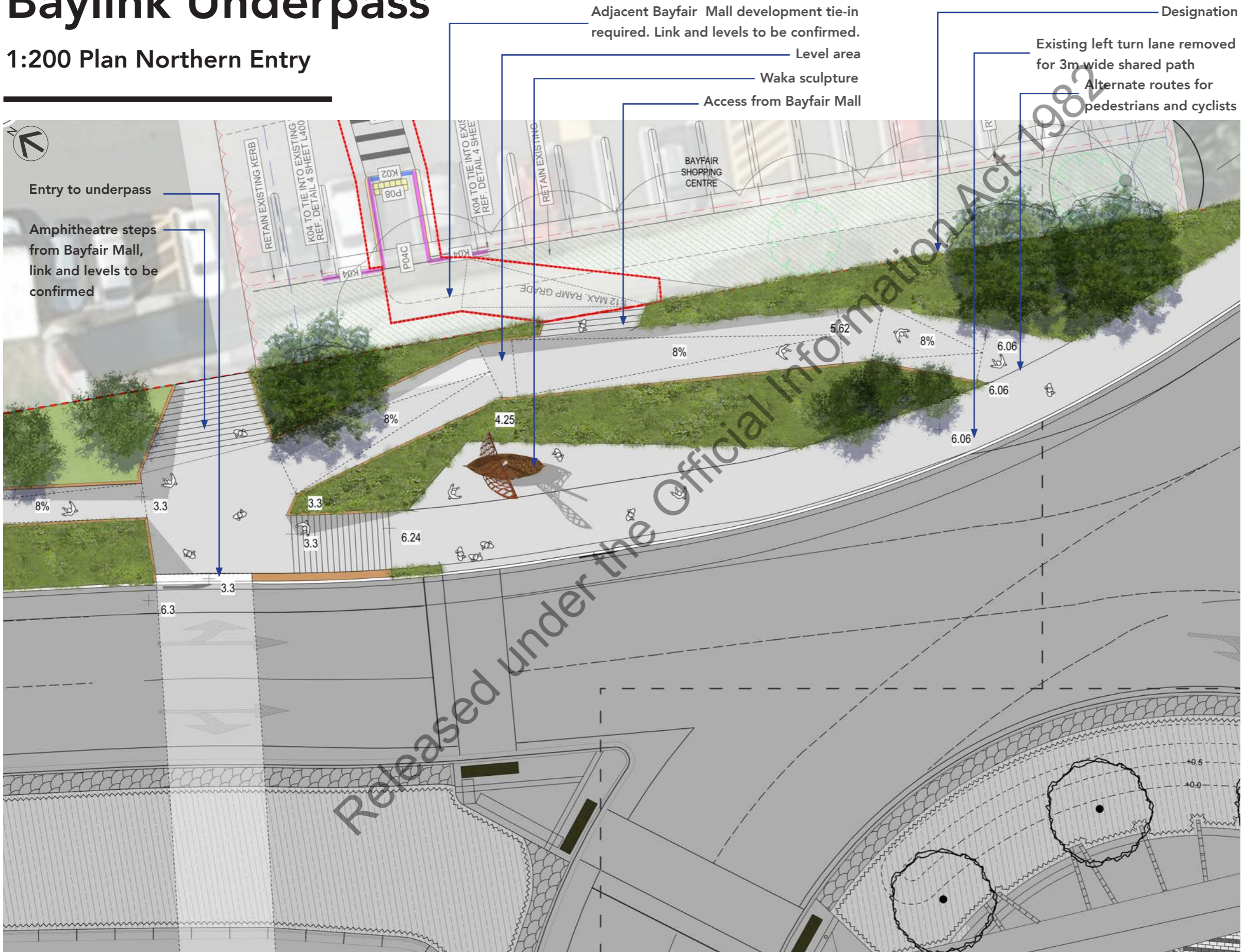
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isometric view //
connection with ramp and urban design space //
decision lanes and options



Baylink Underpass

1:200 Plan Northern Entry

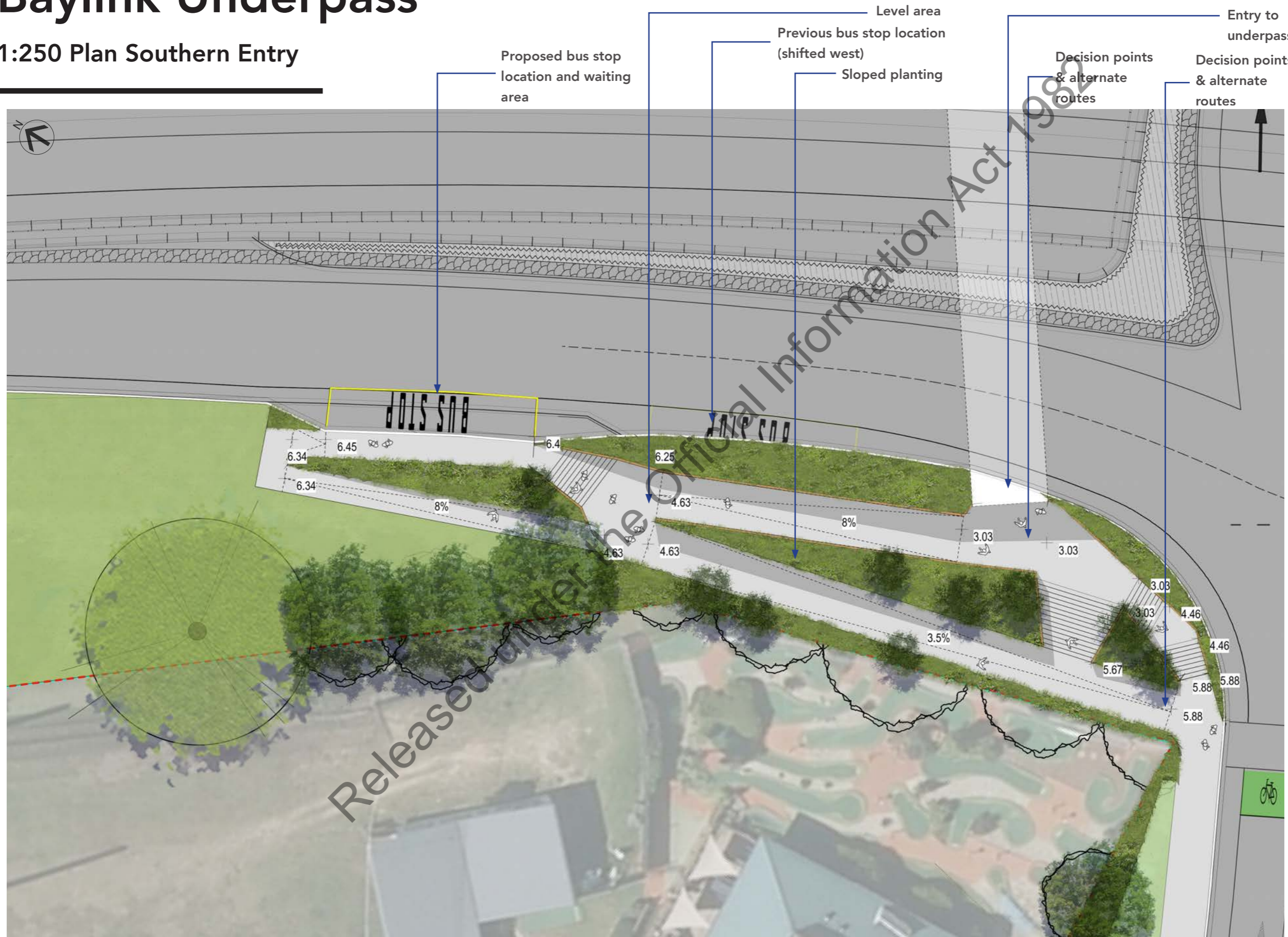


Key

	Trees
	Planting
	Grass
	Pavement
	Road
	Steps
	Retaining wall

Baylink Underpass

1:250 Plan Southern Entry



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