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Bayfair Underpass Design

Doc Name	BAYLINK URBAN AND LANDSCAPE DESIGN: UNDERPASS DEVELOPMENT		
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Project Principles

The below are the overall principles extracted from the UDLMP for the BayLink project. Refer to UDLMP for further information.



1. Context Sensitive Design

Design solutions based in ecological, historical and site specific contexts, in order to celebrate the unique character of the Bay Link site.



2. Wayfinding

Creating clear and legible connections between areas located adjacent to and within the highway corridor. Includes design of gateways, signage and patterning.



3. Connectivity

Creating pedestrian, cycle and vehicle links to and from the site and within the corridor to connect and integrate successfully with the wider landscape.



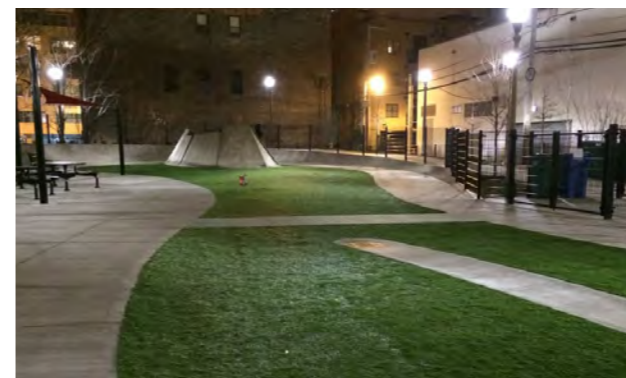
4. Cultural Influences

Linking the project principles, designs and way-finding elements into the cultural and historical narrative of the place. Integration of Maturanga Maori in the design approach, structure and patterning.



5. Ecological Design

Creating landscapes based on integrating wider ecological patterns. Designing for long-term maintenance strategies that include whole of life, value for money, access and operation.



6. Safety of Place

Designing for dynamic and functional landscapes that include safety in design, CPTED, lighting, with a range of site furnishings and features to create high quality spaces.

Design Context

Overarching elements/drivers

- Similar location as existing underpass
- Priority for pedestrians provided through at-grade crossings
- Connected to wider movement networks
- Design will accommodate a wide range of users
- Increased convenience and connectivity for the cycling community

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

Placement and Position

The underpass location has been decided upon to effectively 'replace' the existing underpass.

The high level principles described would be better achieved through a full consideration of alternatives of placement. This would include:

- approaches and entrances
- location for best use and desire lines

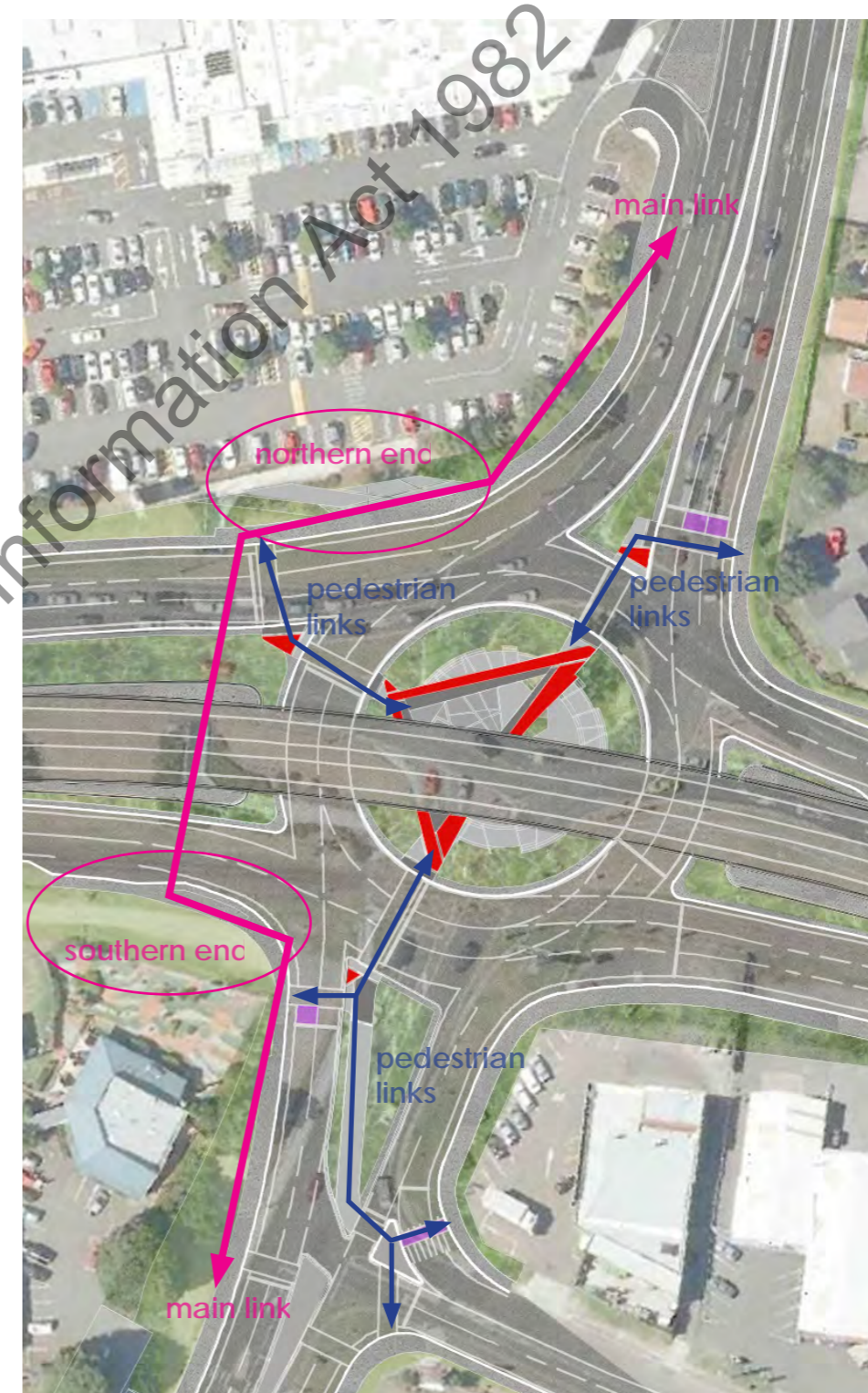
However, the location is fixed given the confines of the project that include:

- being inside designation
- structural components such as bridge embankments
- geotechnical requirements such as ground improvements
- construction staging for build; and
- the Bay fair project being already in construction.

Therefore an achievement of principles will be focused around a 'best case' scenario within the confines of the overall placement.

See principles following for description.

Location & Connectivity



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

Underpass Principles

The following principles identify the outcomes sought from the design of the underpass.

Wayfinding

Defined pathways through retaining walls and planting boxes. Staggered wall heights around stairs for legibility. Combined with variety of surface textures and explicit signage in locations visible along the ramp, staircase, and through underpass. Lighting of different routes and signage to create a clearly understood space with a range of paths.

Decision Points

Combined with the wayfinding design elements, decision points for the different routes users can take through the site need to be clear for determining how to reach their destination. Design choices will allow maximum visibility at these decision points for clarity and safety. Signage will be used where required.

Landscape

Consistent with the wider development, including the use of similar plant species. Use of planting that softens the amount of hardscape (retaining walls, underpass, ground surfacing), while maintaining sightlines within the space. Terracing of planting to offset large scale walls and provide visual variation within space.

Stormwater and Drainage

Integration of drainage services within space.

Structures

Multipurpose structures through the space that fulfill both landscape and movement goals. Cohesive with the wider site and developments, including materials and forms.

Safety in Design and Crime Prevention through Environmental Design (CPTED)

Clear and wide viewlines entering and exiting the underpass for visibility and safety. Lighting through the underpass and around corners that is inviting through the space. Also include items such as:

- Height of walls and barriers through site designed so users head is generally above the barrier.
- minimum shared path width of 3m through space,
- expansion and opening up of approaches where possible,
- flaring of walls at entrances to allow for improved sightlines in and out of underpass space.

Materials

Include materials and common design elements within underpass area that have been used across the rest of the BayLink project:

- Coloured concrete
- Open style fencing to allow for views into and out of approach environment
- Angled steps at decision node to provide direct pedestrian link to at grade footpath to and from underpass approach

Maintenance

Whole of life considered for materials including safe maintenance. Including use of appropriate planting and anti graffiti coating applied to all walls.

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Exemplar Imagery

1.

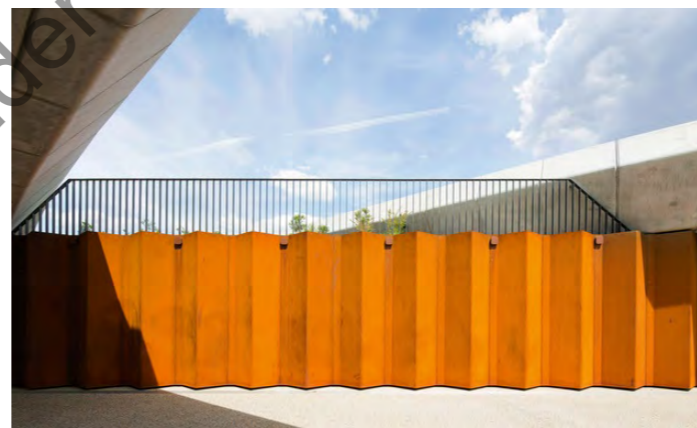


1: Wide entry and visibility for safe movement by a variety of users

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

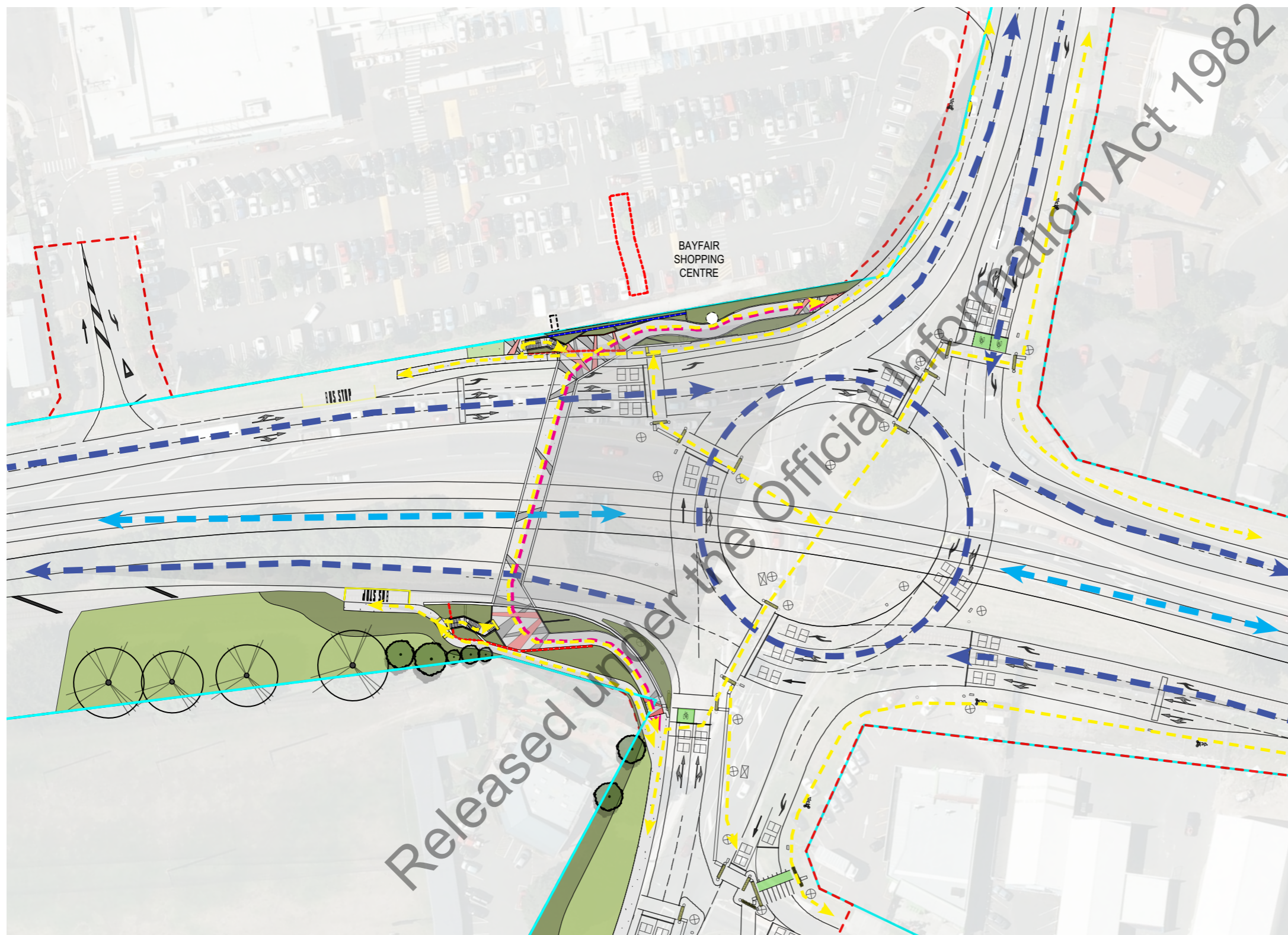
2.



3.



Overview of Route



- LEGEND**
- PROPOSED GRASS
 - PROPOSED PLANTING
 - BRUSHED CONCRETE
 - SANDBLASTED CONCRETE/ EXPOSED AGGREGATE
 - COLOURED CONCRETE
 - TREES - PROPOSED SPECIMEN GRADE
 - +
 TREES - EXISTING TO BE RETAINED
 - PROJECT DESIGNATION
-
- Pedestrian traffic
 - Cycle traffic
 - Vehicle traffic
 - Vehicle overpass traffic

CPTED Development

Overview for Underpass

Alignment

As outlined in the Jacobs design report there are geotechnical and civil engineering requirements that have meant the proposed underpass has had to be moved to its proposed location. The proposed design has focussed on providing pedestrian priority and enhancement of these routes at grade across MGI. The primary cycling route is provided through the underpass, however there will always be the possibility that pedestrians will use the underpass. From a CPTED perspective the alignment is not ideal as it takes people away from the primary pedestrian pathways and "eyes on the street". Other than moving the alignment back to the original location this cannot be mitigated.

Flaring of the underpass and entranceways

A bare minimum amount of flaring has been incorporated in the 50% design to address blind corners if this flaring was not provided. This minimum has been recommended based on what would likely be increased capex costs if further flaring in the tunnel was provided. Ideally further flaring of the underpass tunnel (up to 15m -ideal) would be provided. Corners around stairwells would also be improved to provide for clearer sightlines as shown on sketches to the right, especially for people choosing how to exit a very long tunnel of 60m. In terms of priority of investment, if further improvement of sight lines was provided, the tunnel should be prioritized first and then stairwells.

Vehicular access for supervision and maintenance

Design of the approaches to the underpasses are building in the possibility of a sweeper maintenance vehicle, police or community crime prevention vehicle to drive to the entrance to look down the tunnel, turn around exit

Length and perceptions of the underpass

Other than flaring of the underpass, key ways of addressing the safety perception within the underpass is with daylighting and lighting plans. Nominal lighting locations and treatments have been identified in the design drawings. These two areas need further work in the next stage of design and will require commitment to addressing these two fundamental design parameters

Thresholds/entrances of underpass

Providing clear threshold treatments with a consistent colour scheme that provides visual cues for pedestrians and cyclists have been started with the design. These need to be further refined in the next stage of design to balance the conflict points where multiple users converge at each entrance. This also needs to be balanced with typical signage treatments for pedestrians and cyclists to develop a unique situation that accommodates all users. Currently the design has also provided or minimised of concealment opportunities outside of the underpass. This needs to be retained in the next stage of design.

Overall assessment

The entrances to the underpass and approach ramps are able to meet CPTED requirements sought from the UDLMP and NZTA's bridging the gap document as the design is developed further. Due to the location of the alignment the underpass will never be able to score a 10/10 rating from a CPTED perspective. However, as identified in our design report and also indicated in the independent CPTED review attached, if further design work is done within the tunnel (interior, lighting and entrance) and working further with the design team a possible 7/10 CPTED rating would be able to be achieved.

Imagery

1. Potential additional splay; Bayfair approach

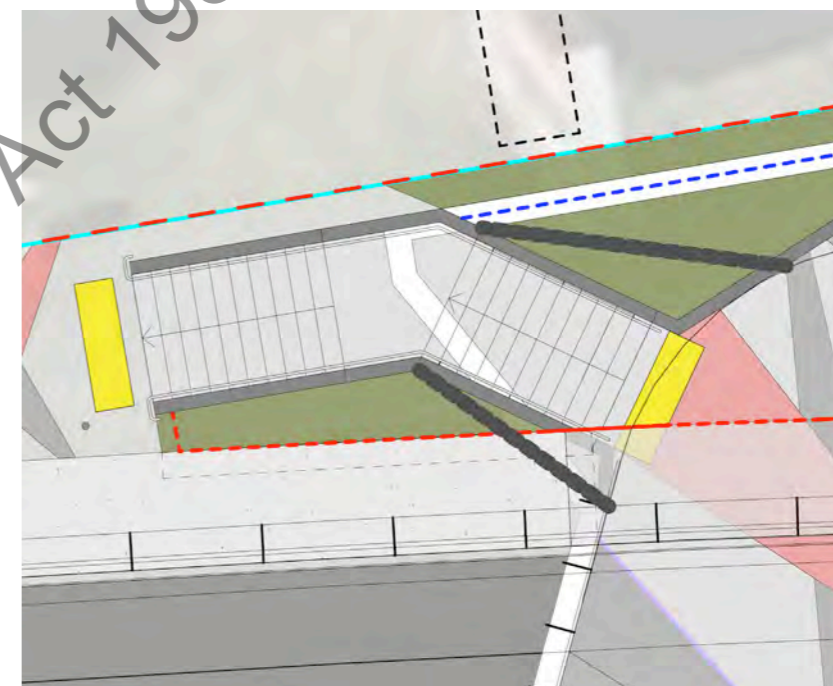
- Added visibility when traversing down the stairs to enter the underpass and vice versa.
- Improved integration with the structural design for the retaining wall (underneath stair area)
- Widened base of staircase means a bigger 'decision node' for directional movement.

2. Potential additional splay; Matapihi approach

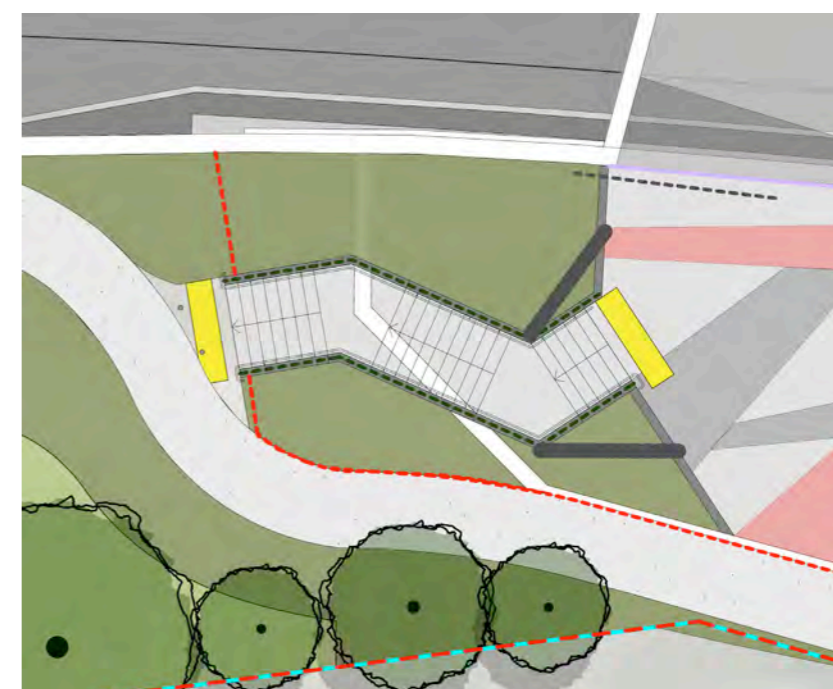
- Added visibility when traversing down the stairs to enter the underpass and vice versa.

3. Potential additional splay; underpass

- The further the splay intersects 'into' the underpass the more improved the environment is, as it adds to feeling of openness and breaks up the space.
- Ideally, the width of the underpass would be 5.0 metres (currently 4.5m).

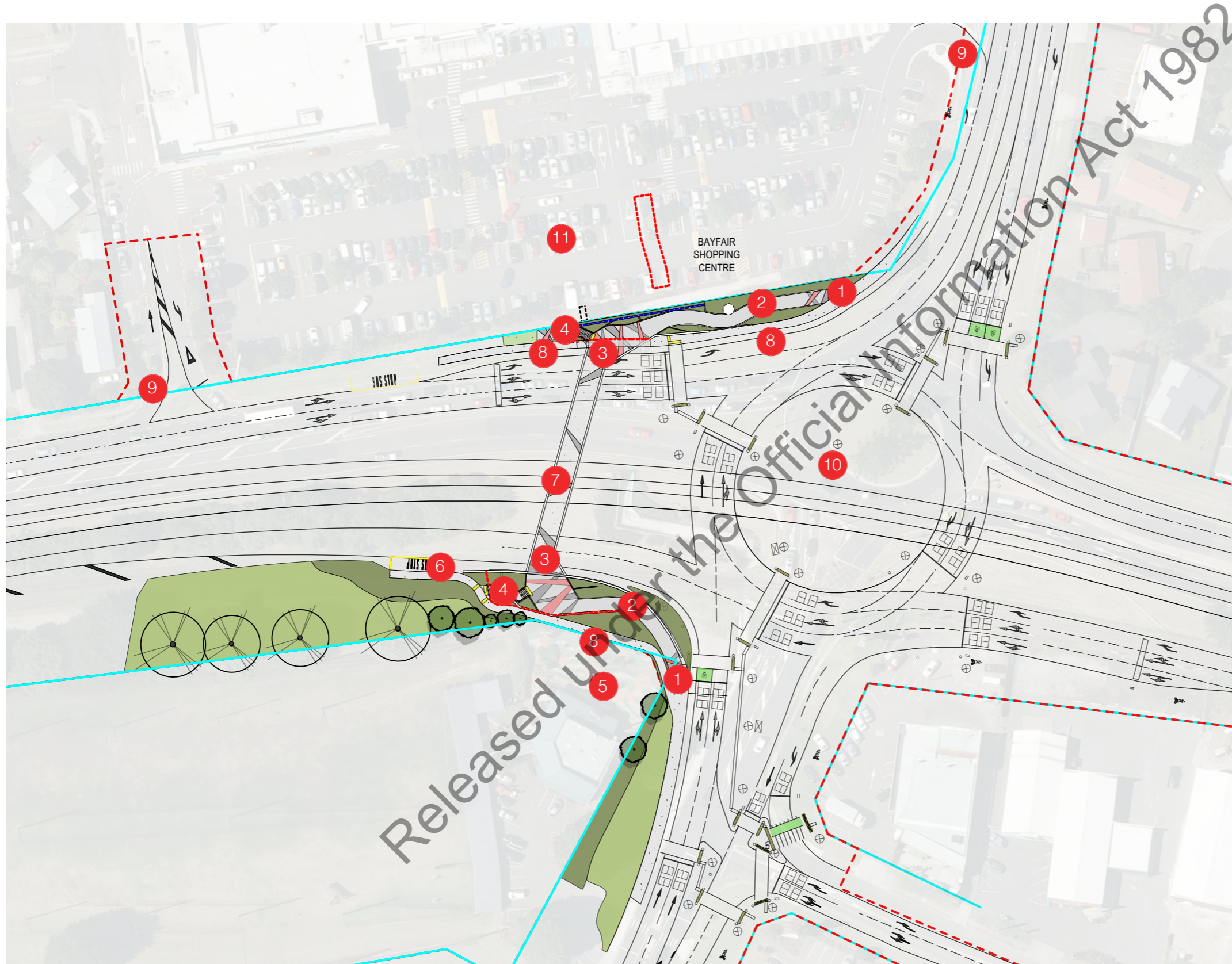


Bayfair approach



Matapihi approach

Overall Landscape Concept Plan

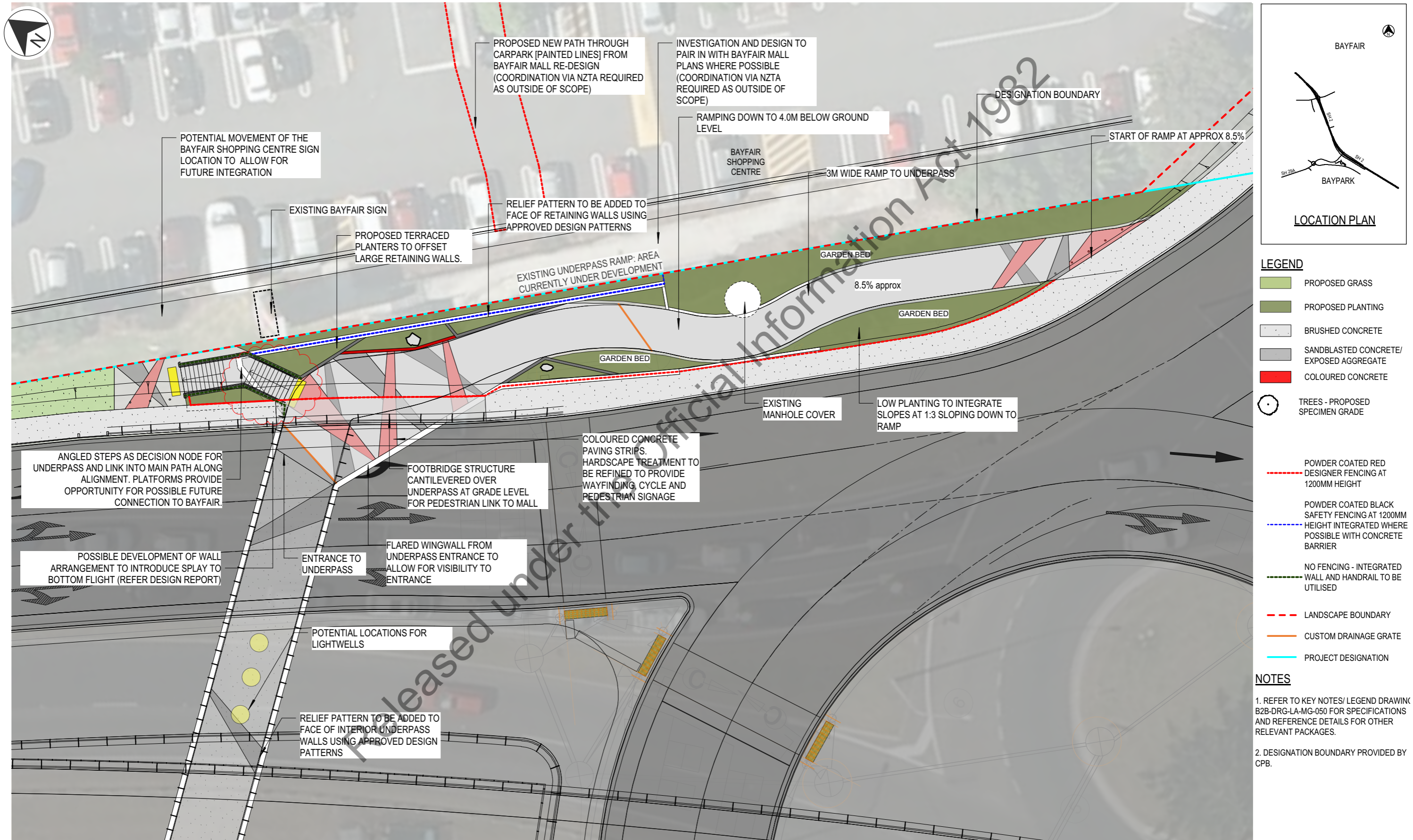


LEGEND

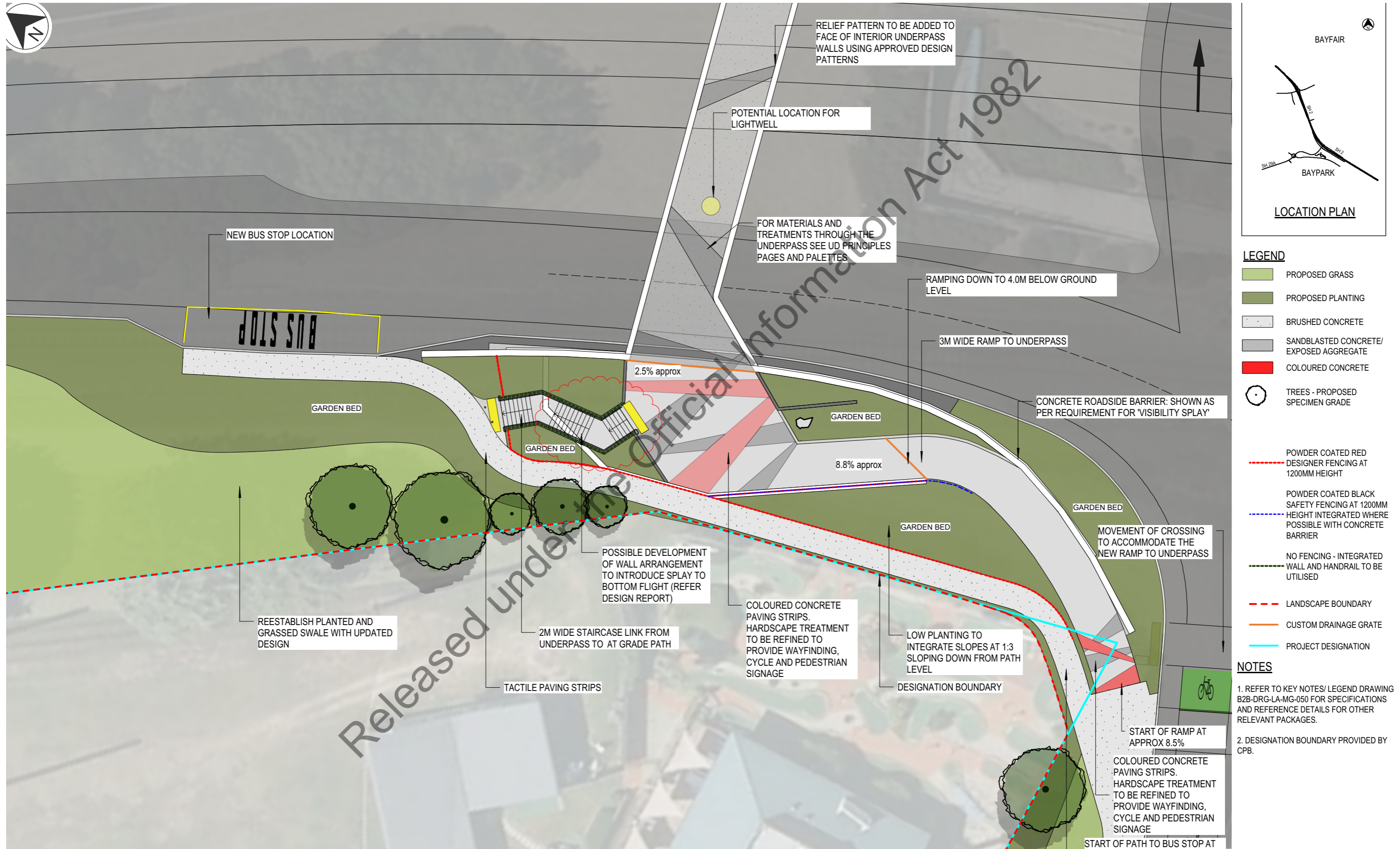
- PROPOSED GRASS
- PROPOSED PLANTING
- BRUSHED CONCRETE
- SANDBLASTED CONCRETE/
EXPOSED AGGREGATE
- COLOURED CONCRETE
- TREES - PROPOSED
SPECIMEN GRADE
- TREES - EXISTING TO
BE RETAINED
- PROJECT DESIGNATION

- 1 Cycle underpass ramp entry
- 2 Cycleway ramp
- 3 Underpass entry
- 4 Pedestrian access steps to underpass
- 5 Mini golf course
- 6 Bus stop
- 7 Underpass
- 8 Footpaths
- 9 Bayfair shopping mall car park
- 10 MGI roundabout
- 11 Bayfair shopping mall car park

Bayfair Landscape Concept



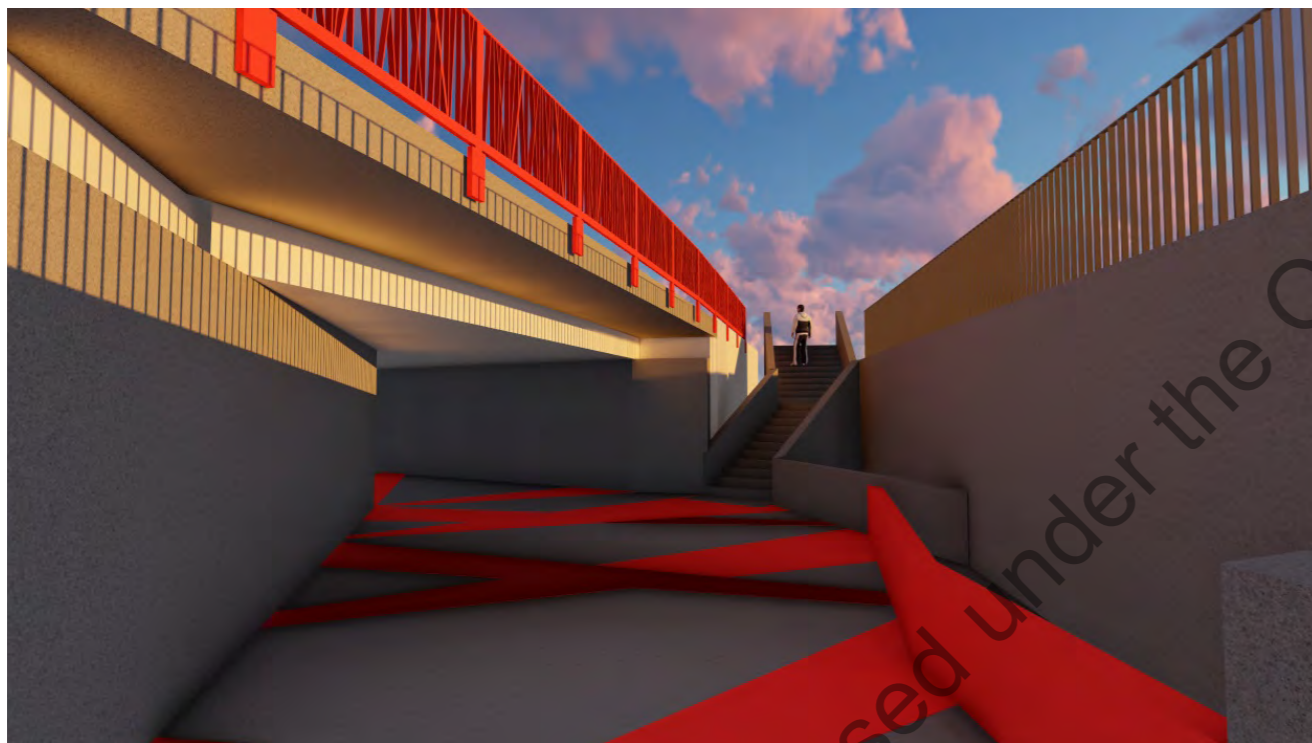
Matapihi Landscape Concept



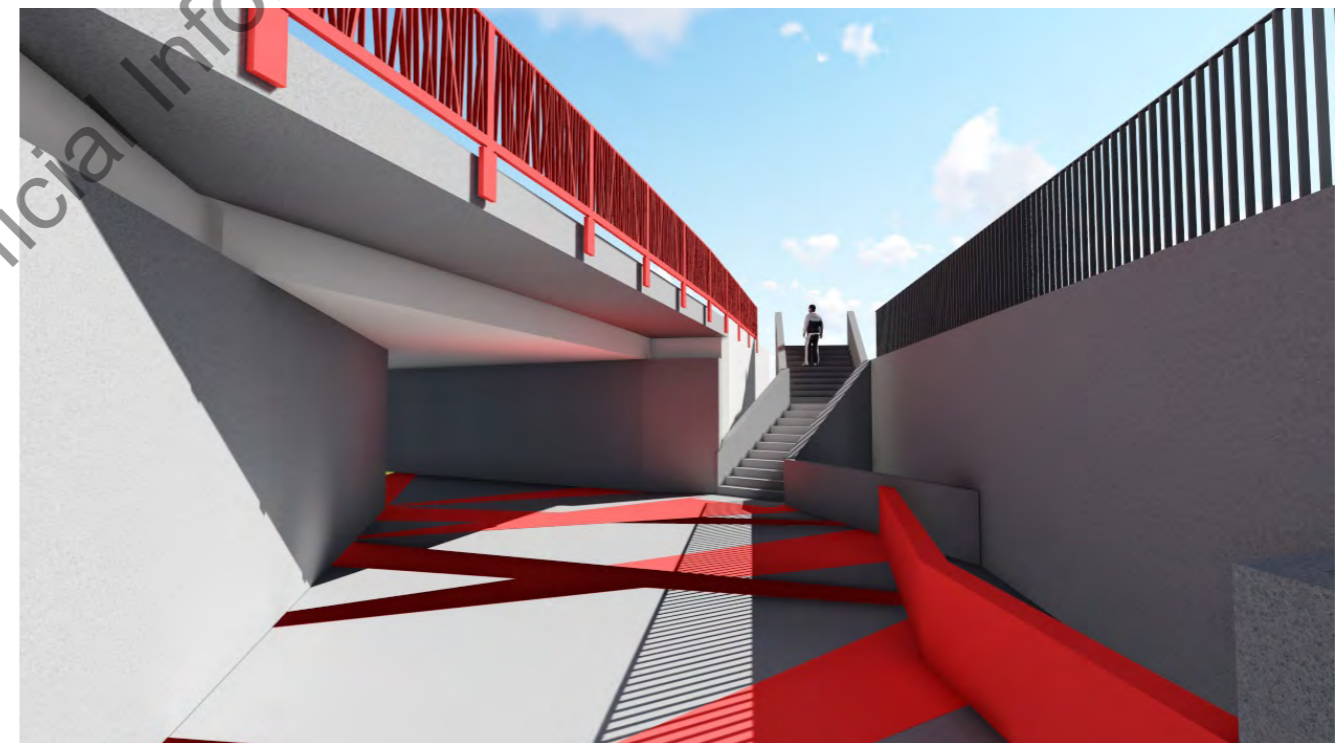
Working Renders

Bayfair (North) Side Temporal Views

The above is a visual representation of what the approach on the North side of the Underpass adjacent to Bayfair Mall will appear like during the morning and afternoon 'rush hour commute'. Due to the height of the sun during these times, the underpass approaches will be relatively shaded. This view highlights the flared wall allowing partial views into the entrance of the underpass. Staggered wall heights around stairs, combined with variety of surface textures, low planted walls, open up the space as much as possible. Lighting will be required to further open up the area and illuminate potentially shadowed areas.



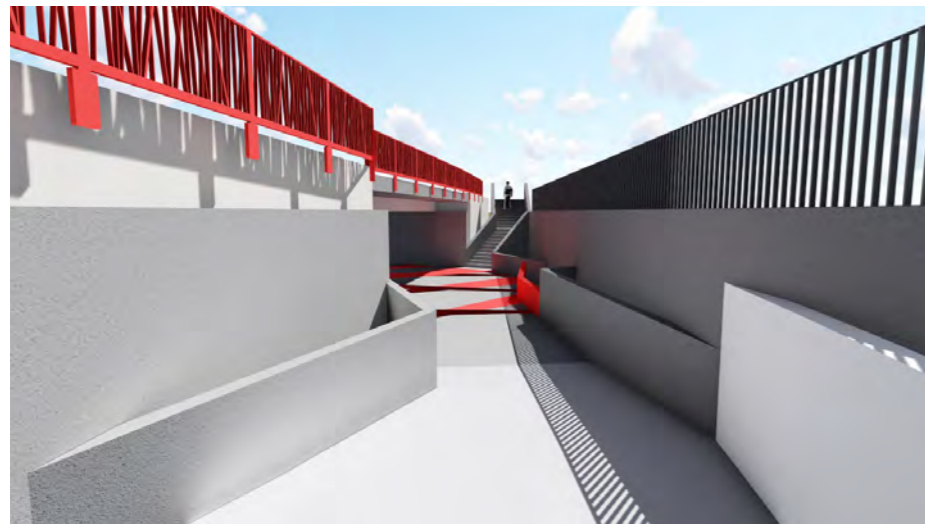
Morning and Afternoon



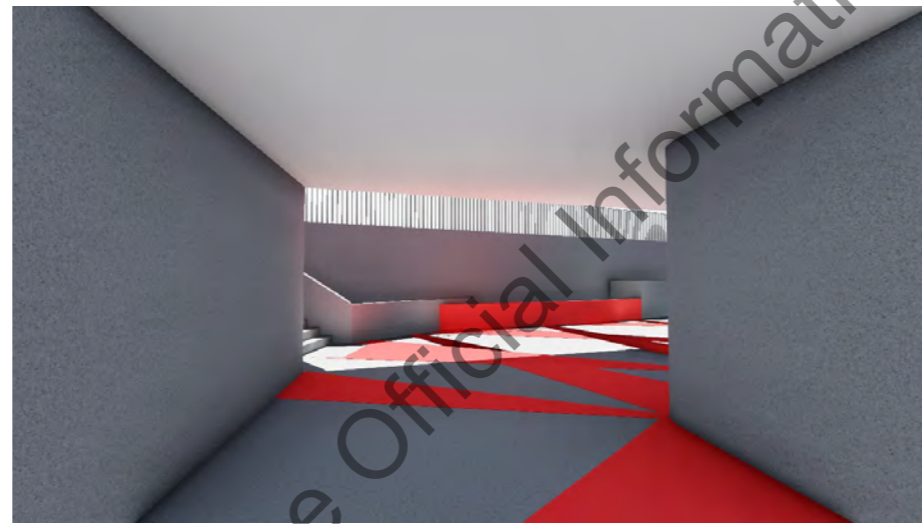
Day

Working Renders

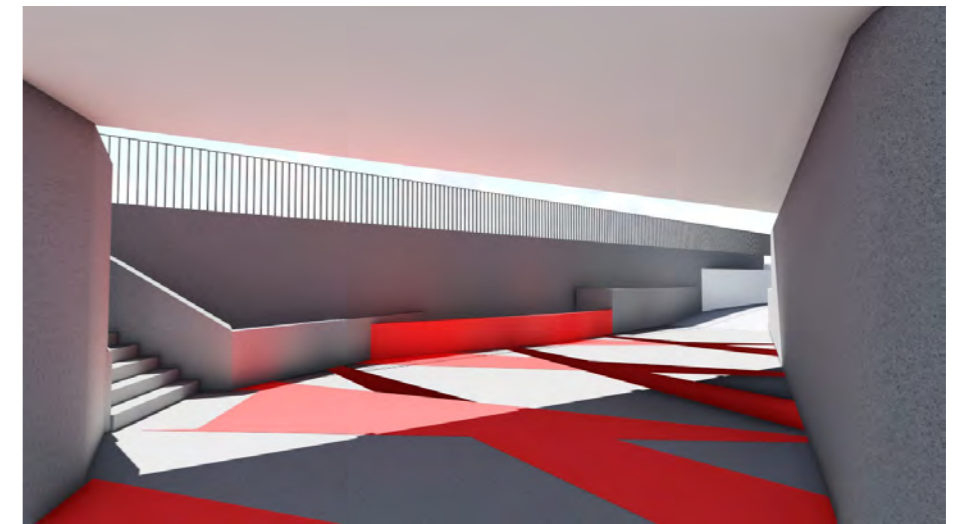
Bayfair Side Steps and Views Study



Underpass Approach



Underpass Exit



Underpass Flared Walls

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Working Renders

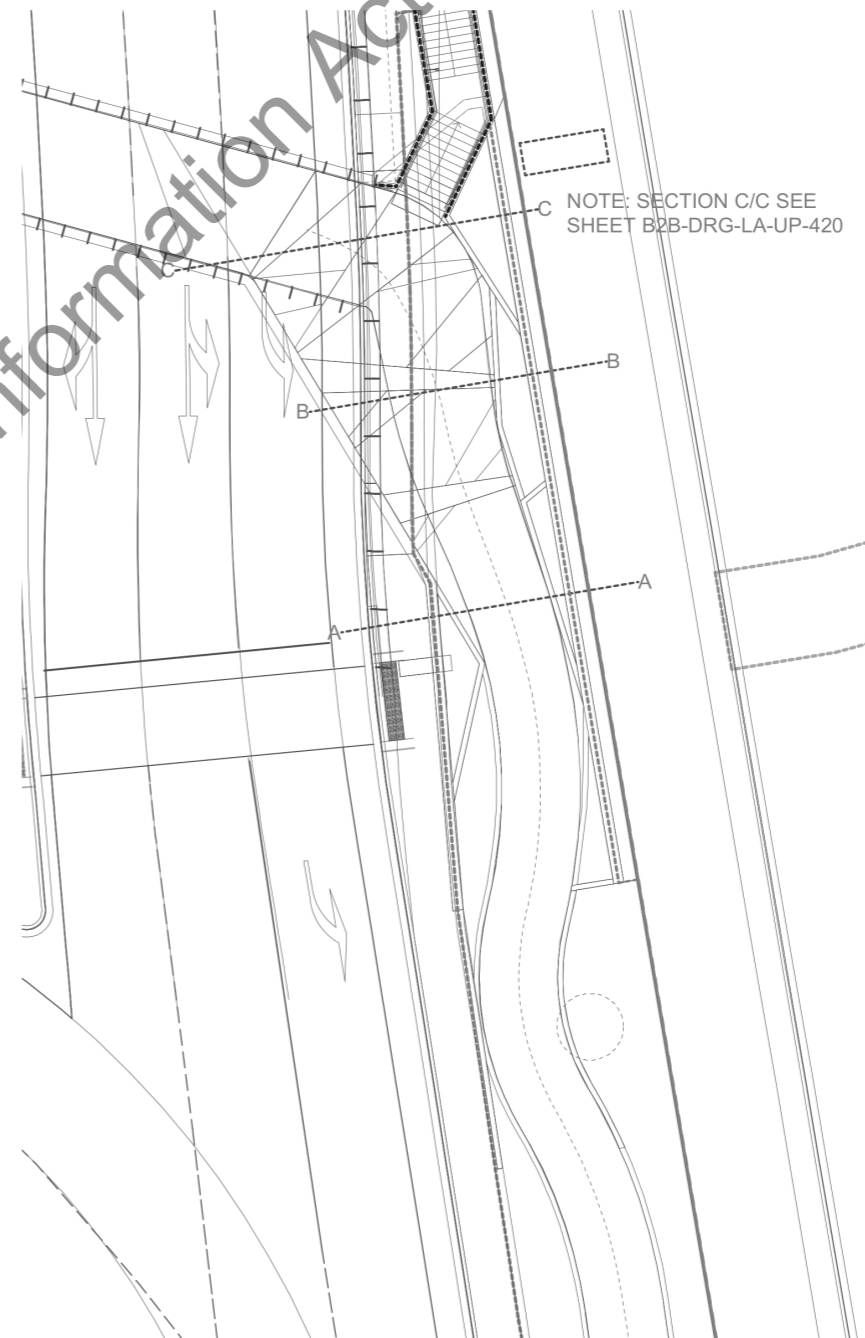
Bayfair Sections



UNDERPASS NORTH ENTRANCE - SECTION A-A
SCALE 1:100



UNDERPASS NORTH ENTRANCE - SECTION B-B
SCALE 1:100



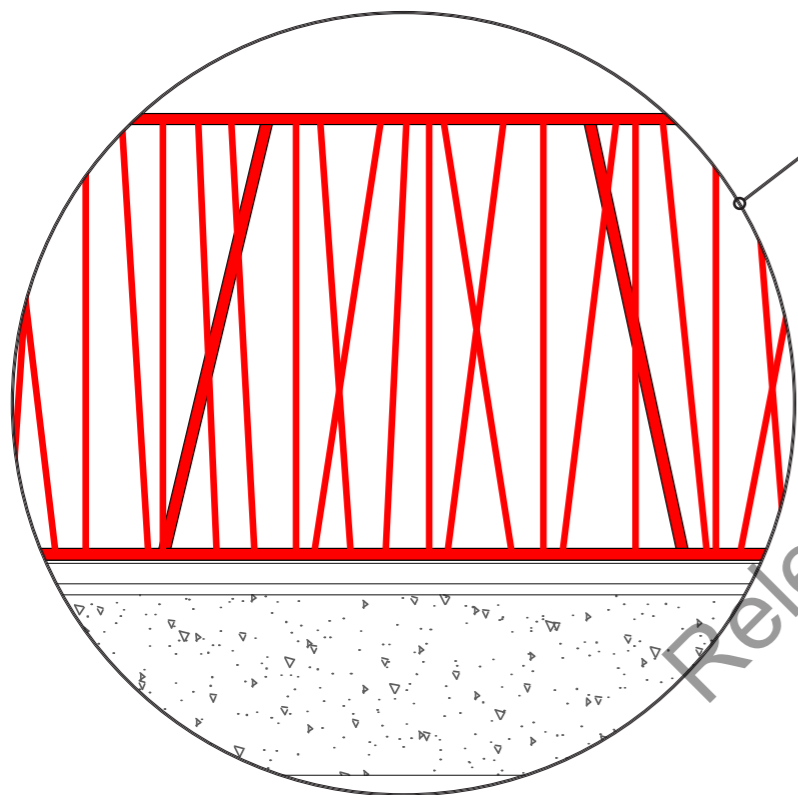
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Pedestrian Footbridge

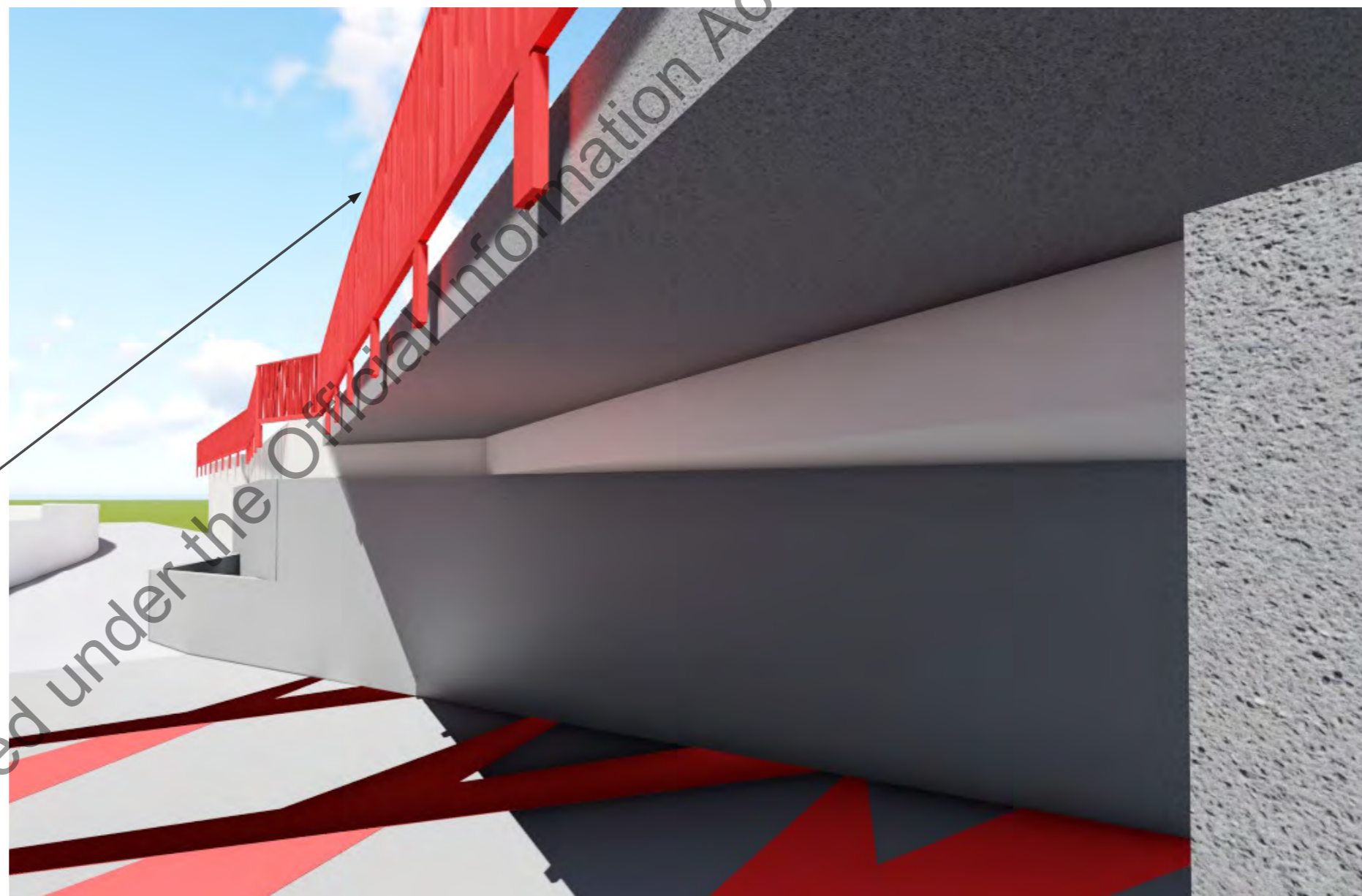
Concept Development

Development of:

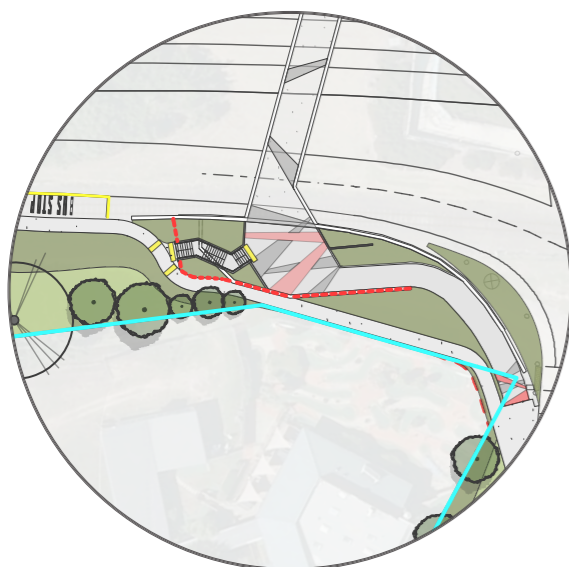
- designing for human scale
- concrete TL5 barrier and fence required
- remove any boxed in feeling as much as possible
- consistency of design and materials
- placate the concrete barrier with a focus on the pedestrian safety fencing
- remove 'fenced in' feel
- potential for splay at either end
- looking upwards - view from below to be aesthetically designed and smooth
- less constrictin; remove the heavy feel
- angles to incorporate interest
- throw screen matching



Barrier elevation



Matapihi Retaining Wall Study



LOCATION



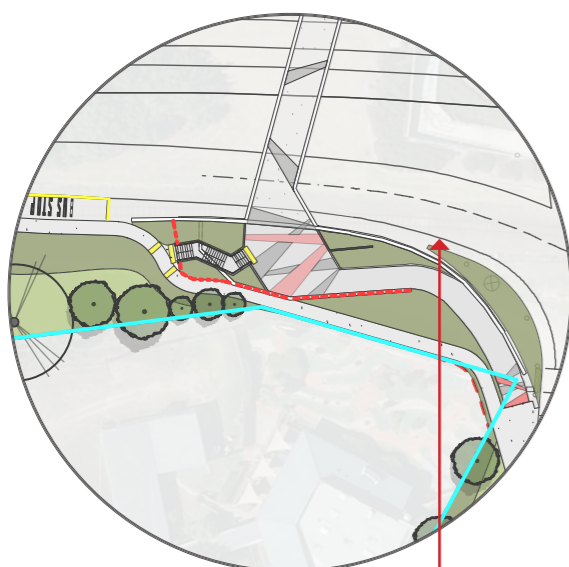
OPTION 1: WINGWALL / RETAINING WALLS IMMEDIATELY BESIDE RAMP AND INTERFACE

- not designing for human scale
- concrete TL5 barrier as well as safety fence required
- encloses space
- blocks entrance to the underpass
- dangerous to cyclists lack of visibility
- corted issues



OPTION 2: WINGWALL / RETAINING WALLS MIDWAY THROUGH AREA

- not designing for human scale
- concrete TL5 barrier as well as safety fence required i.e. double barriers on each level
- aesthetically not streamlined
- partially opens out entrance to the underpass
- reduces the need for large heavy walls i.e. breaks up surfacing



OPTION 3: RECOMMENDED



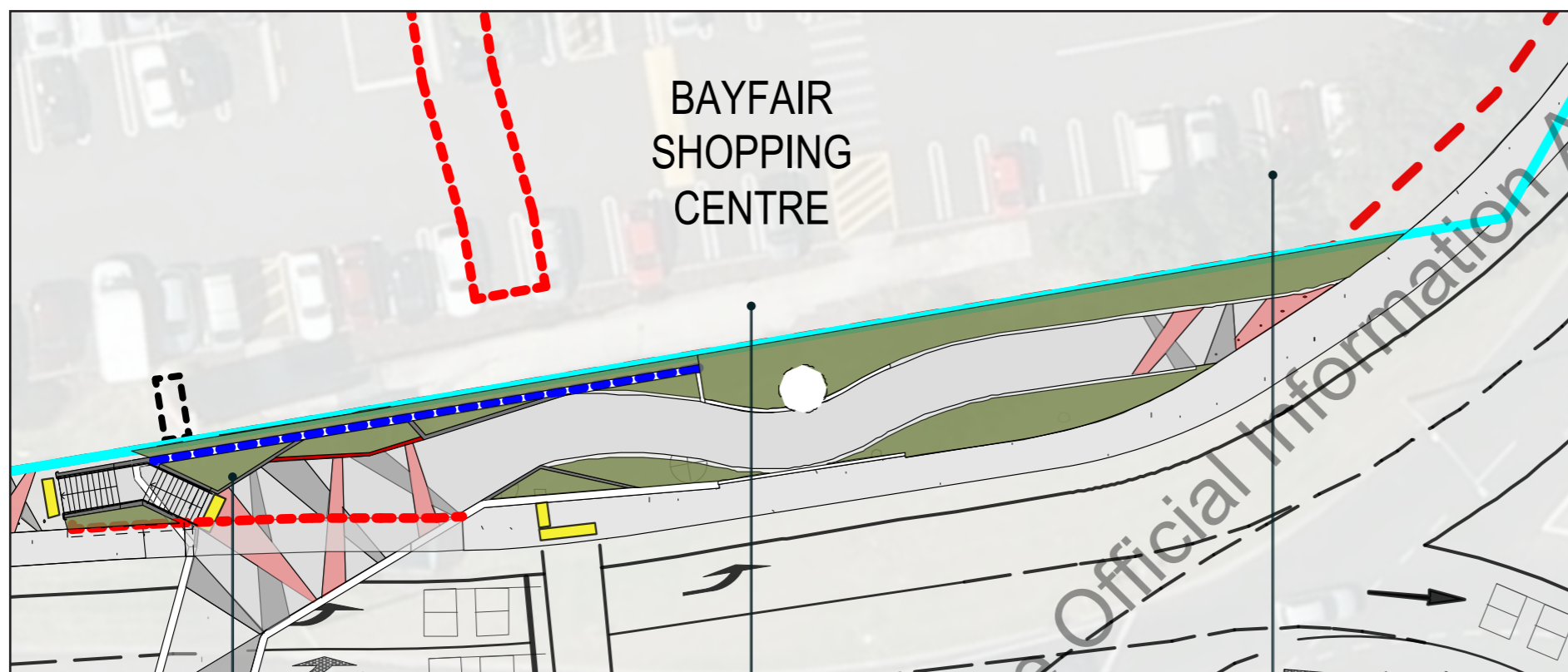
OPTION 3: WINGWALL / RETAINING WALLS IMMEDIATELY BESIDE ROADSIDE

- designing for human scale
- concrete TL5 barrier will be required, no safety fence as the barrier will act as both
- opens out into sloped planting area
- opens out entrance to the underpass
- **recommended option**

Images are indicative only in draft

Materials Palette

Horizontal Materials



Exposed concrete
 - FINISH: EXPOSED, MATT SEALER
 - COLOUR: PLAIN
 - THICKNESS: 100MM
 - AGGREGATE SIZE AND TYPE: 13MM STANDARD

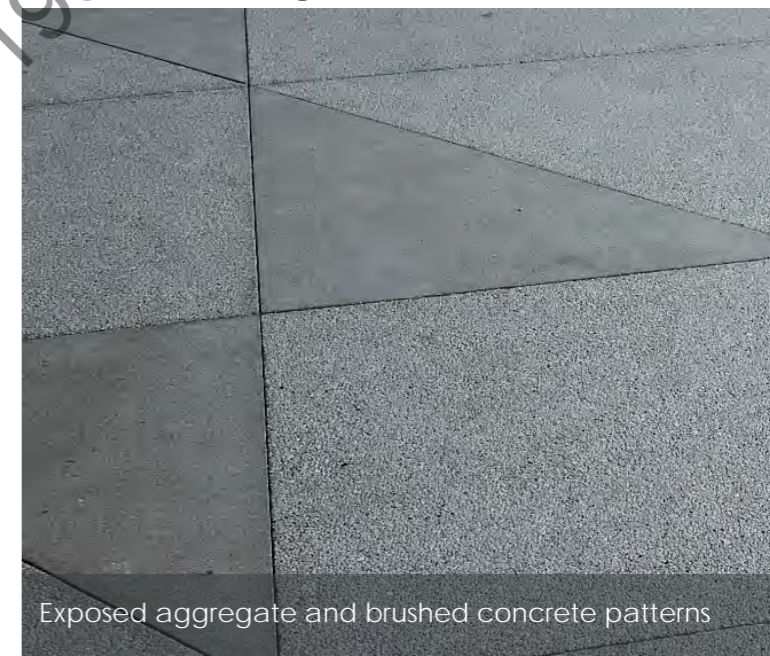


Plain concrete
 - FINISH: BRUSHED
 - COLOUR: PLAIN
 - THICKNESS: 100MM
 - AGGREGATE SIZE AND TYPE: 13MM STANDARD

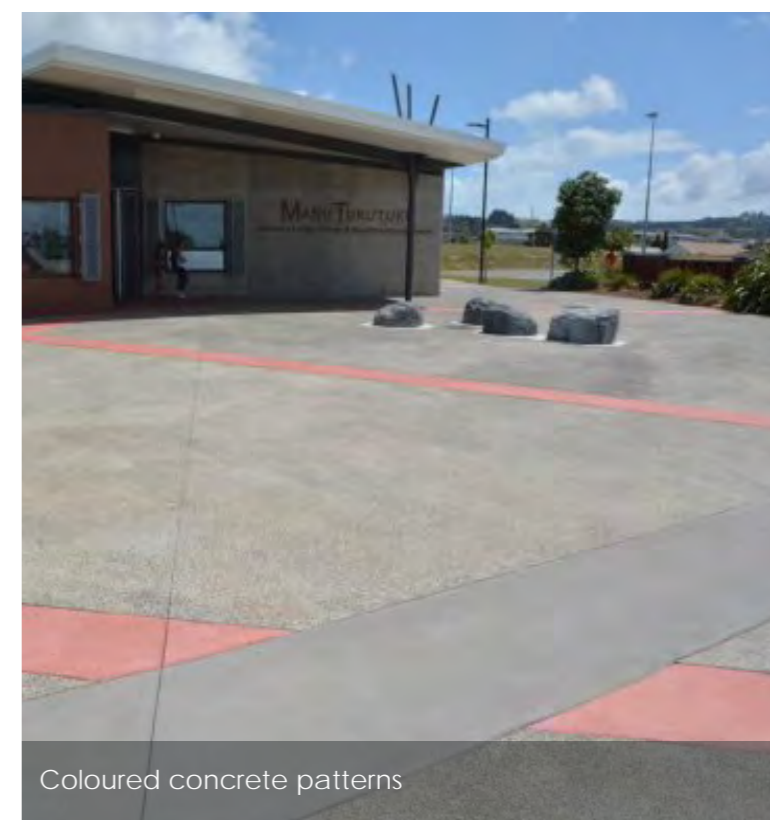


Coloured concrete
 - FINISH: SPONGED U5, PFL NATURAL SEALER
 - COLOUR: PETER FELL COLOUR RANGE GELATO RASPBERRY
 - THICKNESS: 100MM
 - AGGREGATE SIZE AND TYPE: 13MM STANDARD

Precedent images:



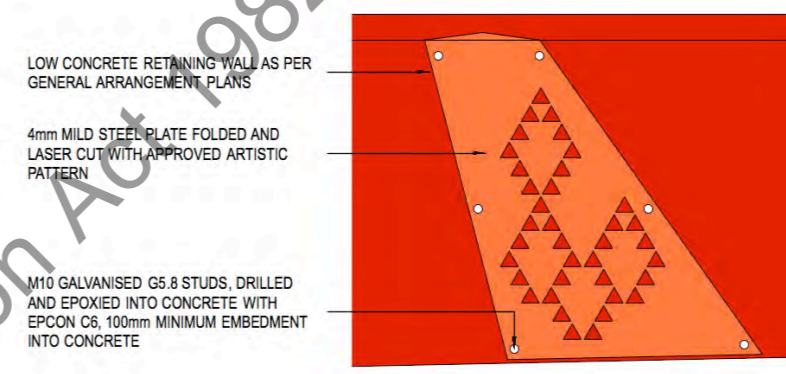
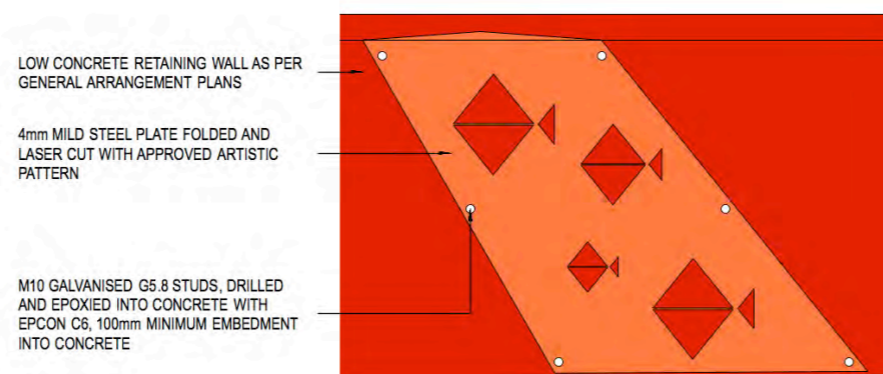
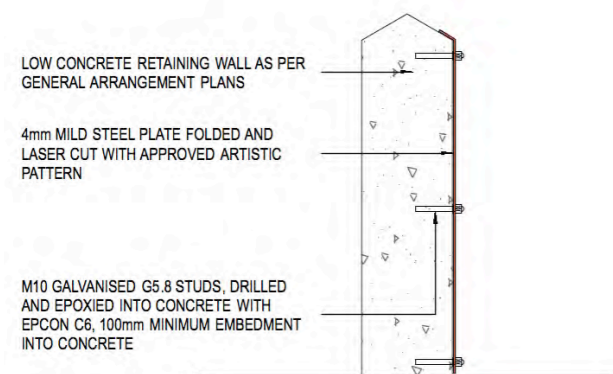
Exposed aggregate and brushed concrete patterns



Coloured concrete patterns

Materials Palette

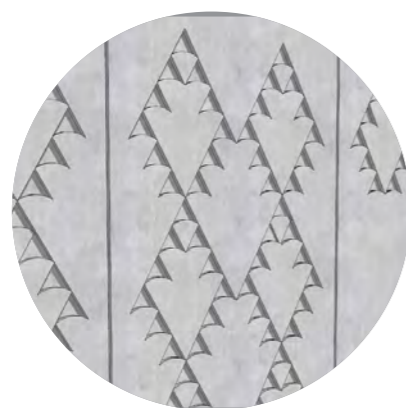
Vertical Materials



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



Iwi pattern



Corten steel



Insitu blasted patterns



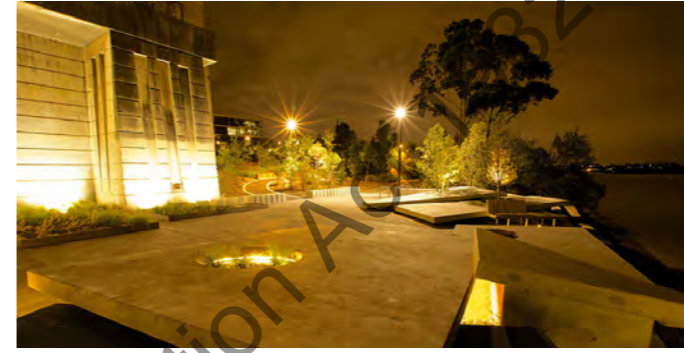
Pre cast relief patterns

Lighting Strategy

FOOTBRIDGE



UNDERPASS ENTRANCES



STEPS AND RAMPS



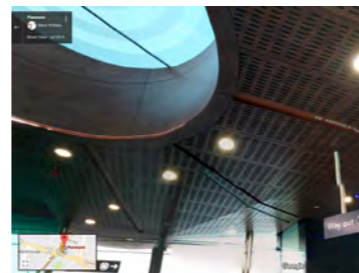
WALLS



UNDERPASS CENTRAL



LIGHTWELLS



Planting Strategy

Principles

Visual interest

Continual stretches of retaining walls are visually broken up by planting variety at eye level. Massed areas of similar species will be distributed throughout the garden beds. There will be a variety of foliage texture and colour arranged along the user pathways. These areas will be overlapped to enhance contrast and variety.

Application:

Bands of low level species (Meuhlenbeckia and Coprosma) along the sides of the main path from the bus stop and taller species (Astelia and Choinichloa) at offset intervals behind.

Bank Stabilisation

On the sloped areas, species with fibrous root systems are selected to stabilise slopes, these species will be selected and applied alongside all other conditions. The planting of the slopes will reduce the visual dominance of the walls of the alleyways.

Application:

Species selected include Choinichloa and Astelia. These are found in a range of conditions, and will establish on engineered slopes. Slopes exposed to the sun will largely be covered by Choinichloa, and shady slopes by the Astelia. Where these slopes meet through fares, low growing species will be located along the boundary.

Safety

Consistent with the wider development strategy, the placing of taller species at the rear of garden beds, with lower growing species in the foreground to improve visibility and safety through the site.

Species with tall or sharp flowers and fruit will also be set away from thoroughfares and stairways or located at a height where injury is no longer a risk.

Application:

Species below 1m tall alongside paths, with broad leafed species immediately adjacent to path. Other flax or tussock species set 1m back from any thoroughfares. Smaller growing species (Dianella) located in the raised planters around the northern stairs.

Conditions & Maintenance

The species are to be located in the site best suited for the light and moisture requirements of each species. The considered application of species will reduce the resources required to firstly get species established, and to secondly, maintain the design.

Application:

Due to the height of the walls and the angle of the underpass, the plated areas around the northern stairs and entry to the underpass are heavily shaded. Therefore Dianella and Astelia species are utilized.

Consistency

Species selected for the underpass will be consistent with those used throughout the wider context, including MGI roundabout. Similar planting patterns and forms will also be applied. The consistency of planting also serves to differentiate the areas that are a part of the new routes.

Application:

All species applied to this design are present in the MGI planting palette. Symmetrical species at entry ways and repeating patterns throughout site.

Local species

To aid in being consistent to the design context and suiting the conditions, the plants will be those available locally and better suited to the site. Therefore enhancing biodiversity and expression of local landscape identity.

Application:

None of the species are cultivars or hybrids that are not found in the surrounding landscape. Combined with being derived from previous plant schedules, the planting will express a familiar landscape character.



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