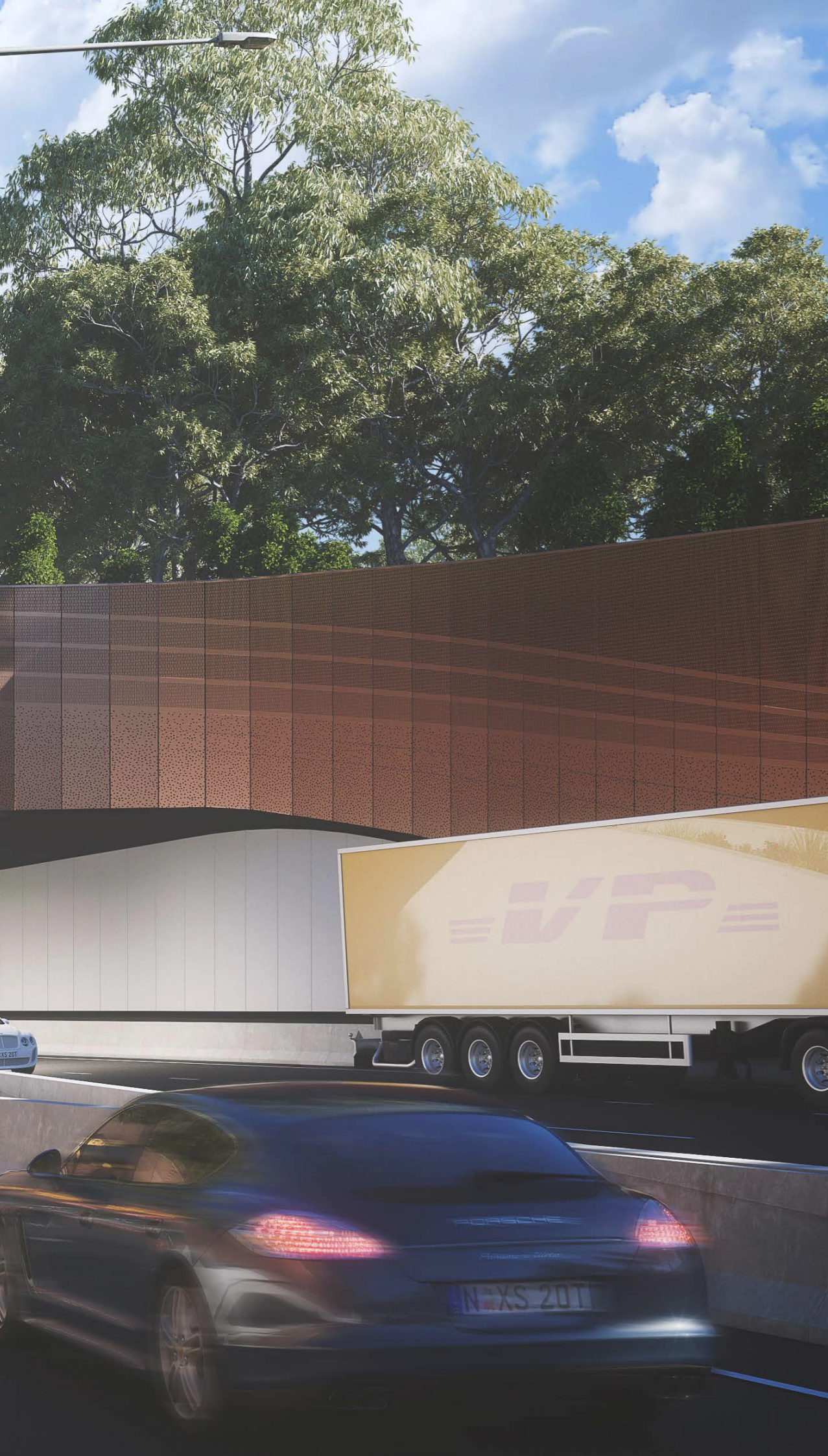


Artist's Impression: Driver's view of entry portal at President Avenue with parkland behind. (trees and landscaping shown at maturity).



10.0 TUNNEL PORTAL AND APPROACHES

THE TUNNEL PORTAL HAS BEEN DESIGNED TO INTEGRATED WITH THE ADJACENT ROCKDALE BICENTENNIAL PARK, YET REMAIN AS A VISUAL LANDMARK FOR BOTH MOTORISTS AND PARK USERS

Tunnel portals act as a marker or gateway for the wider city, encompassing the character of the area in which they are placed, and are a point of transition above or below ground. Tunnel portals often delineate suburban with urban and give a sense of embrace on arrival and release on departure.

The tunnel portals at President Avenue embeds landscape as a key feature within its design to complement the surrounding context of the Rockdale Bicentennial Park, while remaining visually discrete. Its architectural language integrates seamlessly with other Project elements, including the shared pedestrian and cyclist bridge over President Avenue, Rockdale Motorway Operations Complex (MOC3), and various parkland elements.

The overarching intent is for the landscape - existing and proposed - to provide site context and a sense of arrival for the portal.

The portals have been designed to present a memorable approach to the tunnel with carefully designed wing walls and portal treatments that respond to functional requirements of the motorway, contribute to the motorway experience, enhanced by the backdrop of the parkland vegetation behind.

Large areas of new tree planting will be incorporated on both sides of the motorway, between portal entries and above the portals. This will present a continuous green canopy and create a sense of green immersion for the motorist upon entry and exit from the long tunnel journey.

To offset some of the vegetation to be removed at Bicentennial Park Ponds, the area surrounding the tunnel portal and entry and exit ramps will be planted with a variety of low, mid canopy vegetation reflective of the adjacent wetlands and recreational open space species.

10.1 Site context

The tunnel portal is located within the existing Rockdale Bicentennial Park near the Brighton Memorial Playing Fields, which features passive open space, a senior field, and two half-sized fields, along with basic amenities including toilets, changing rooms and park seating.

The site is fringed by the Bicentennial Park Ponds to the west, and the small-scale residential neighbourhood of Brighton-Le-Sands with predominantly red brick buildings and terracotta roofs to the east.

Land is generally low lying and flat, associated with the Brighton Memorial Playing Fields. Existing views are generally contained within the dense vegetation of the Bicentennial Park Ponds, and low-level residential housing.

Majority of the existing vegetation around the Bicentennial Park Ponds falls within an exclusion zone that limits and protects the amount of tree clearing. As such the existing vegetation will provide an important backdrop to the portal which will also be accentuated by new tree plantings as part of the landscape design.



Figure 10-1: Rockdale Bicentennial Park precinct plan. Not to scale



Aerial photo over President Avenue looking east to Botany Bay with approximate tunnel portal location shown

10.2 Design approach

The overall design intent for tunnel portals is to create a refined design aesthetic that avoids clutter and is elegantly detailed. The portals have been designed as architectural elements that are attractive and welcoming, set within the parkland and provide a seamless transition to the in-tunnel environment which is described in *Section 11.1*.

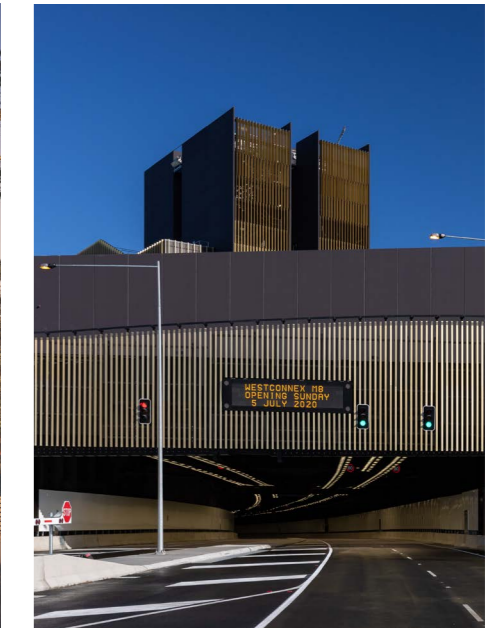
The portal design will define a new individual aesthetic for the Project and for future stages of the M6 Motorway. The portals and dive structures blend seamlessly with the surrounding topography and provide a safe and legible transition between the surface, dive structures and the driven tunnel. The design of the portal façades is integrated with the wider architectural language of the Project, providing a consistent design aesthetic.

There has been a considered attempt to avoid unnecessary embellishment in the design of tunnel portals. The design approach has focused on designing the elements to fit within the parkland context, emphasising the simple and consistent detailing within all portal materials and finishes to achieve a timeless design.

Local Aboriginal design language and elegant touches of feature lighting are integrated into the design.

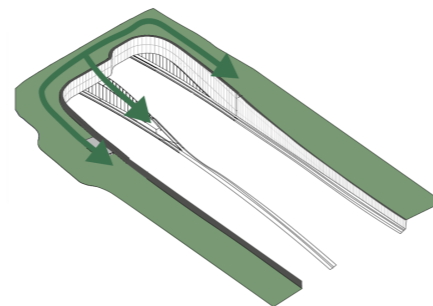
10.2.1 Design principles

The key design principles that have been adopted in the design of the tunnel portal are described in the following sections.



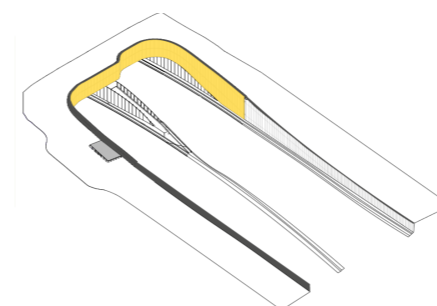
A portal in the parkland

- Integrate the portal with the landscape - through forms, materials and design language
- Use landscape to soften the portal experience, pulling landscape around the portal down into the trough structure to create a portal within a landscape.



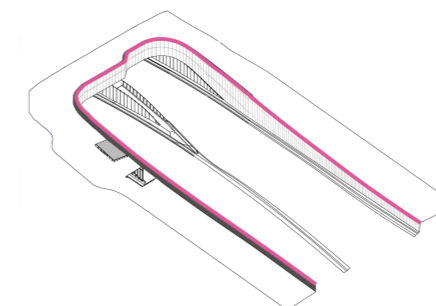
Integrated with Aboriginal design language

- Incorporate perforated artwork on the portal facade, with reference to the Aboriginal cultural heritage of the area
- Use lines and symbology to mark ceremonial and tribal boundaries to ensure the historic design vernacular is continued and built upon
- Incorporate etched mural on the approaching retaining walls, which draws upon the significance of local totems such as the whale to form an entry statement to the portal and welcome to Country.



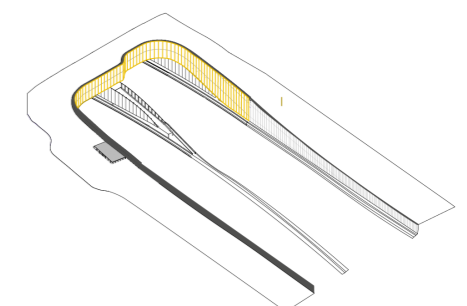
Project-wide architectural language

- Ensure the design of the tunnel portal has an architectural language that complements the integrated series of Project elements including the ATC shared pedestrian and cyclist bridges and boardwalks, MOC3 and various parkland elements.



Simple, refined and elegant

- Design headwalls, openings, retaining walls, lighting and barriers as an integrated suite of high-quality elements
- Finely detail and carefully integrate materials, structures and joints, providing a high-quality outcome and experience at a slower road speeds
- Ensure feature lighting subtly accentuates the key features, with no visible light fittings.



10.3 Key design elements

The portal openings, retaining walls, lighting, safety barriers leading to the portals and all other elements have been designed as a simple, robust and integrated series of elements.

The key design elements of the portal comprise the following:

- Portal walls and facade will have perforated metal cladding supported on structural steel frame, to form a recessive built edge
- The perforations form a patternation symbolising the Aboriginal place and cultural storytelling, this is accentuated by back-lit feature lighting.
- Central landscaped median that rises to the portal to conceal operational equipment and maintenance access behind
- The height of the overall portal has been minimised to decrease the overall mass of the portal façade and offer views of the native vegetation planted between the portal and ventilation building behind
- The cut and cover structure is covered by landscape planting on a soil layer with a depth of at least 1 metre, forming part of the parklands
- Security fencing will be setback approximately 3 metres from the portal facade to blend into the adjacent parkland character
- Existing and new tree plantings will surround the portal to provide a landscape backdrop and buffer to parkland users.

10.4 Feature lighting

The architectural design of the dive approaches and portal facade is the inclusion of feature lighting. These LED light strips are located behind the panels to subtly highlight the perforated artwork, building in intensity towards the portal entry.

They add an element of interest to motorists entering and existing tunnel without becoming a source of distraction.

The lighting will feature the following:

- LED strip light that will illuminate the back of the panels. The lighting intensity will be controlled so that it varies from day to day and creates visual interest for regular motorists
- The LED strip light will be concealed and hidden from view.



Precedent imagery of back lighting effects adopted for perforated facades

10.5 Materials and finishes

The material selection for the portals has adopted similar finishes and details as those proposed on the ATC shared pedestrian and cyclist bridges and boardwalks, MOC3 and other parkland elements to maintain a unified aesthetic and a common Project design language. All materials have been chosen for their quality, ease of maintenance and longevity.

The portal facade and dive walls will be constructed from perforated aluminium panels attached to a steel subframe that will be painted black. The panels will have a matt anodized finish to minimise the amount of glare in a copper-bronze colour to complement the parkland character and in reference to the ochre colours of the earth of this Country.

The portal facade has been designed to conceal as much of the operational infrastructure as possible. Visible elements such as the VMS and red, amber, green (RAG) signage will be seamlessly integrated into the facade arrangement, and the overhead height limiting structure and access gantry behind.

The tunnel lining panels, will also continue beyond the daylight portal for approximately 30 metres to provide a smooth transition from a height of approximately 5 metres above the road surface.



Anodised aluminium cladding

Working within the constraints of the VMS and other operational infrastructure, the portal head walls are clad in architectural panels to provide a refined finish and to ensure consistency with the Project-wide design language.

Perforated patterning

The walls and portal will be lined with perforated and non-perforated metals panels on a sub-frame to subtly create the desired reference to Aboriginal symbology, while providing a long wearing, consistent and refined expression along the tunnel approach.

Given the differences in engineering wall types to construct the dive and portal, this is the most efficient and responsible form of planning and construction.

10.6 Connection to Country

Application of Aboriginal themes and symbology into Project elements

The Project team has worked with Badawang, Yuin designer Michael Hromek to develop symbology concepts in collaboration with Knowledge Holders that could be translated and applied to various infrastructure elements across the Project.

Tunnel portal facade

The concept of the tunnel portal facade is based on the following symbology, which has been subtly and elegantly integrated with the engineering requirement of the tunnel portal:

- Carving to reflect grinding grooves found in the local area
- Reflect the portal carving out the earth and sculpted by interaction of water, sky and earth
- Sand water symbols to reflect this Country
- Ochre/Bronze colour used at portal entry/exit to represent the earth and sand.
- Important totems such as the whale which was identified during the design process and has been represented as part of the broader sand and water motifs.

The perforation patterns will draw on the line-based symbols used for earth, sky, sand and whale as part of the architectural design. The following image outlines how the portal elements will be integrated with the outcomes of the symbology and translated across the portal façades.

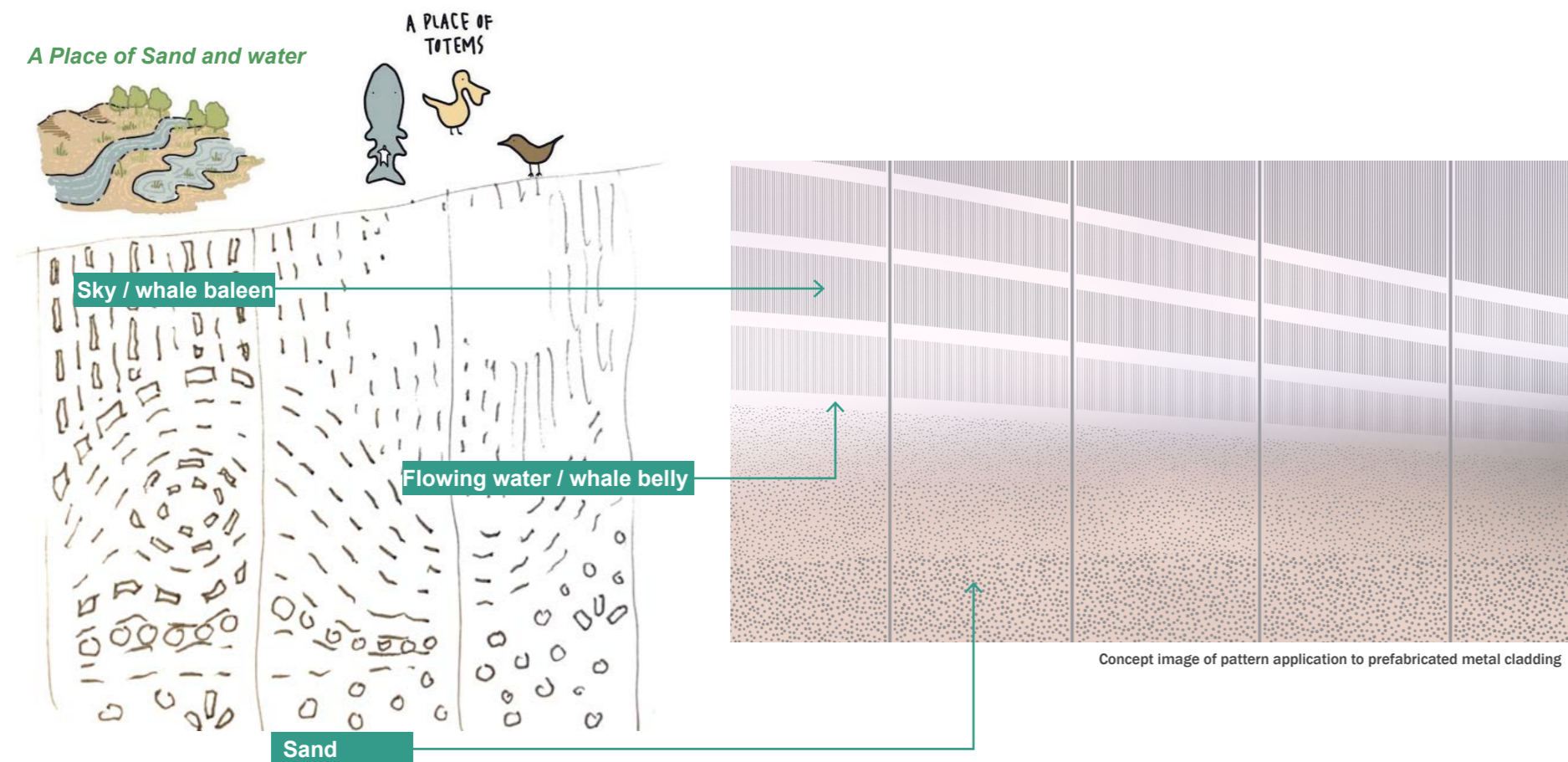
Retaining walls

In conjunction with portal façade panels, an etched mural will be provided on the approach walls that are designed to provide flood immunity protection to the tunnel.

Aboriginal artist Victoria Golding was engaged based on advice and request from the Knowledge Holders to prepare the mural that will be applied as an abrasive etched shot-blast artwork into the reinforced concrete walls on either side of the intersection. Victoria Golding is an emerging Aboriginal artist whose bright dot painting style incorporates both animals and sporting codes. She is the mother of contemporary artist Dennis Golding.

The etched mural draws upon the significance of local totems such as the whale to form an entry statement to the portal and Welcome to Country. The mural has been located near the signalised pedestrian and cyclist crossings to provide a welcoming statement to the portal that can be experienced by drivers, pedestrians and cyclists alike.

The design intent of the mural is shown below. The final design and layout of the mural is subject to further detail design development.



Initial concept image for etched artwork prepared by Aboriginal artist Victoria Golding

Figure 10-2: Project team – Aboriginal symbology concepts prepared by Michael Hromek



Artist's Impression: Tunnel entry portal at dusk with backlit feature lighting show indicatively.

10.7 Portal details

The following section provides plans, elevations, sections and artist's impressions of the proposed tunnel portal at President Avenue.

Key	
01	Landscape median with low frangible planting
02	Signalised pedestrian crossing across President Avenue
03	Motorway service toilet facilities
04	Rockdale Bicentennial Park. Refer Section 7.3
05	ATC shared pedestrian and cyclist path. Refer Appendix B
06	Stormwater sump pump and niche
07	Stormwater treatment bio-retention basin
08	Perforated metal cladding along retaining walls
09	Perforated metal portal facade
10	VMS Gantry
11	Security fencing setback from edge of portal
12	Controlled access gate point from parkland
13	Approach walls with etched mural art

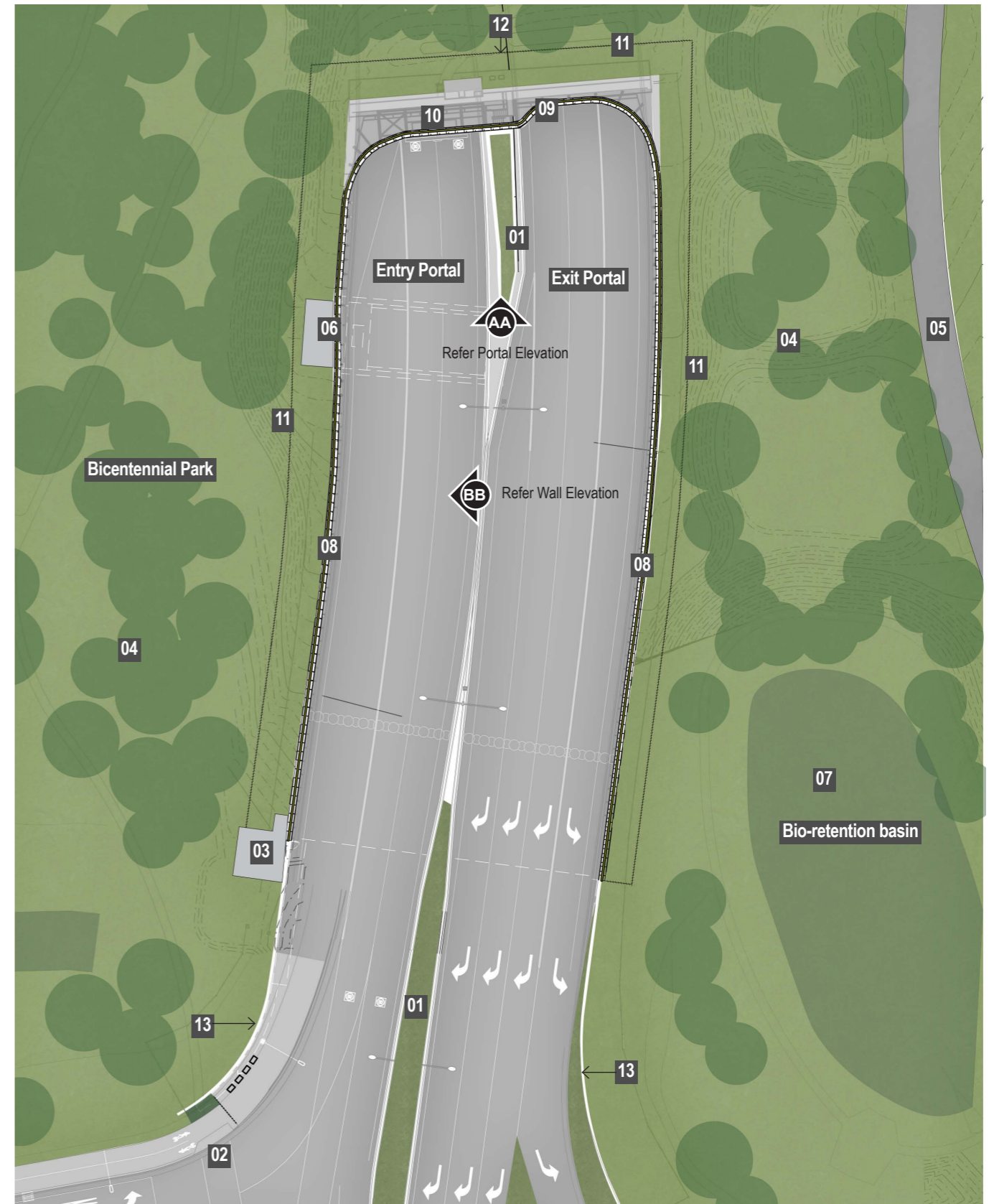
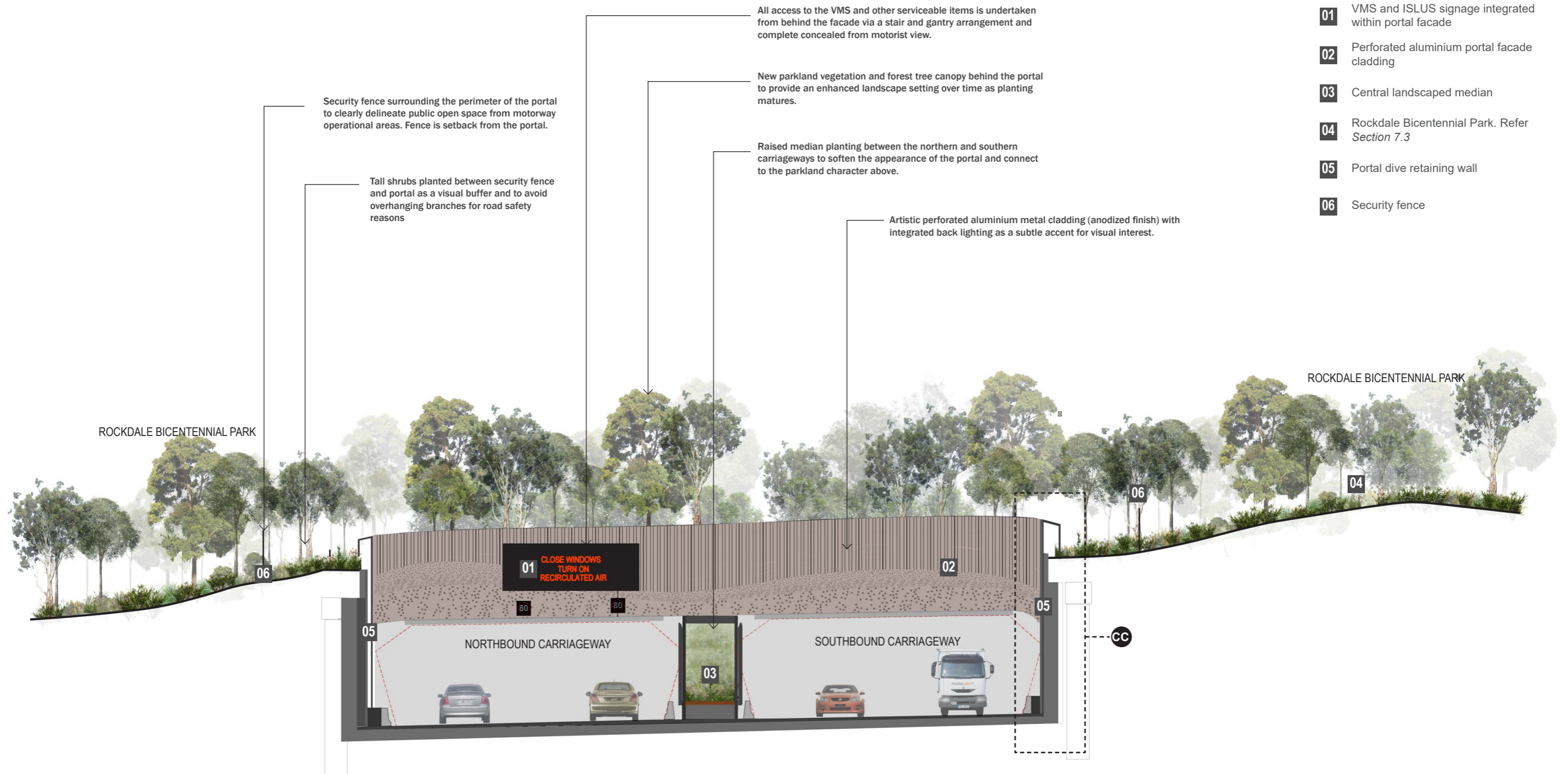


Figure 10-3: Portal - Concept Plan - 1:1000





0 2 4 8m

Figure 10-4: Portal - Elevation AA - 1:200

Key

- 01** VMS gantry behind portal facade
- 02** Perforated aluminium portal facade cladding
- 03** Tunnel lining panels (white)
- 04** Rockdale Bicentennial Park. Refer Section 7.3
- 05** In-situ reinforced concrete retaining wall
- 06** Cut and Cover structure

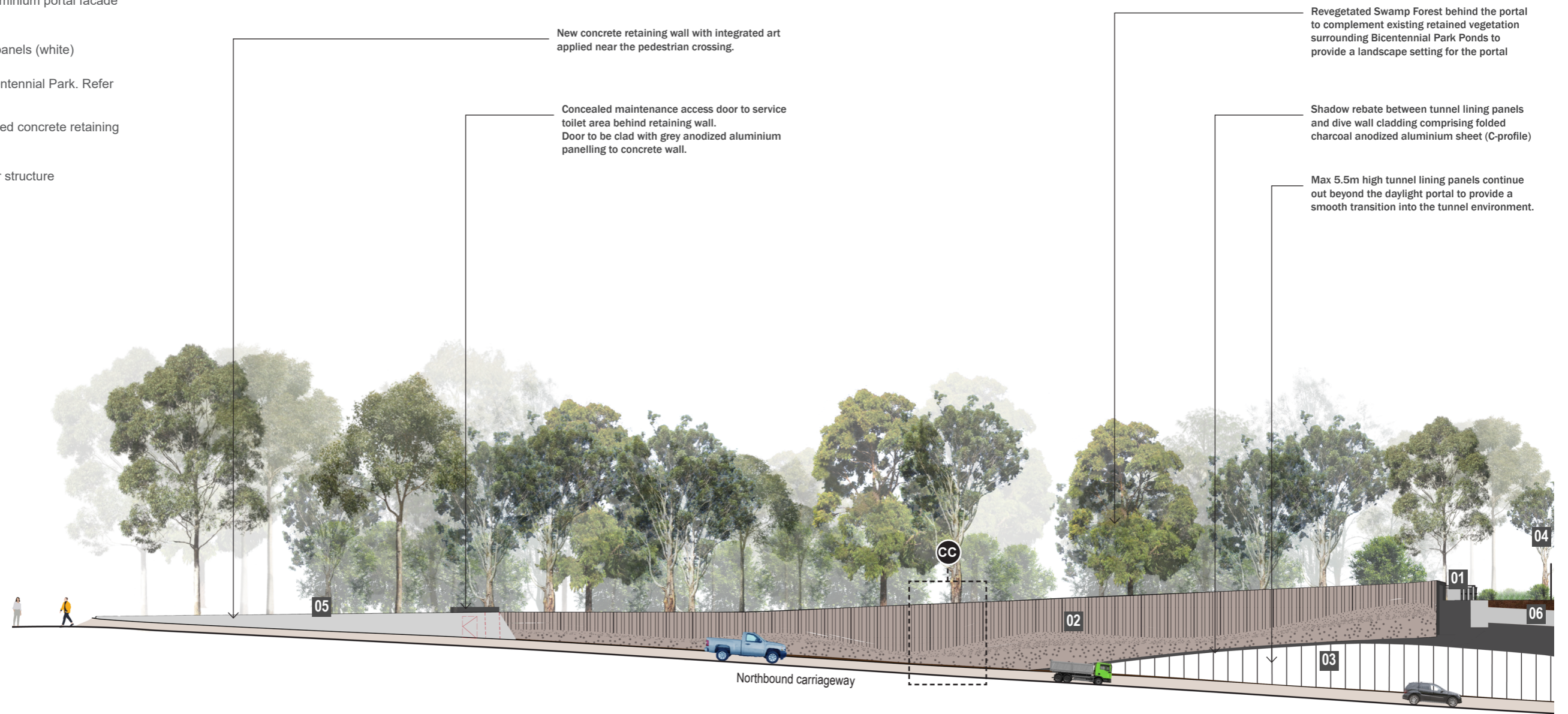
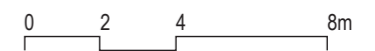


Figure 10-5: Portal - Elevation BB - 1:200



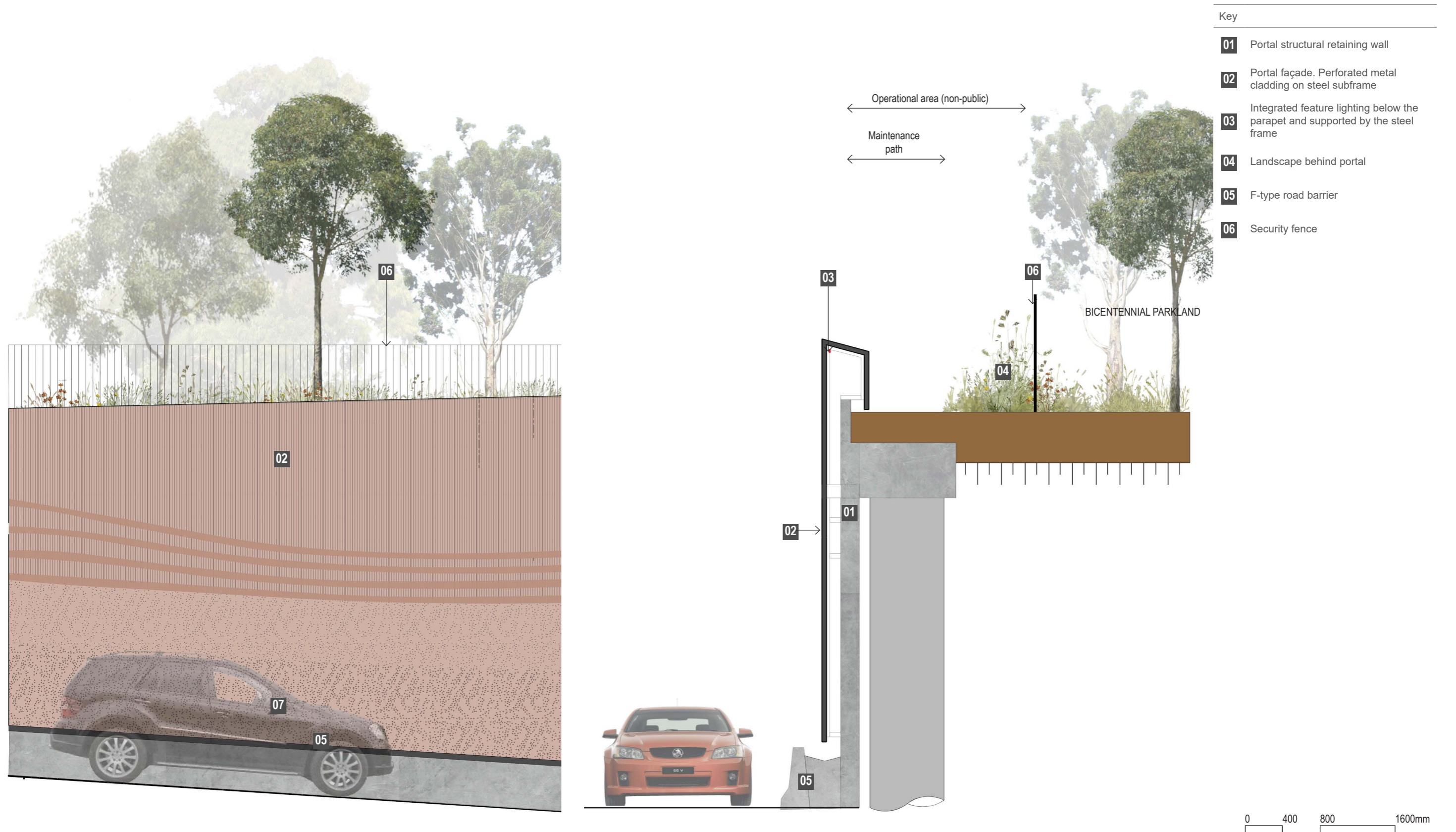


Figure 10-6: Portal - Detail elevation and section CC - Typical section of patterned facade 1:20



Artist's Impression: View of President Avenue portal from the intersection at President Avenue (trees and landscaping shown at maturity).



Artist's Impression continued: View of President Avenue portal from the intersection at President Avenue (trees and landscaping shown at maturity).