

# **Section 5**

## **Consistency with the Urban Design Strategy**

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# 5. Consistency with the Urban Design Strategy

## 5.1 Corridor-wide Urban Design Principles and Objectives

This section of the UDLP demonstrates compliance against Section 3.1 of the Urban Design Strategy (UDS).

The eight principles outlined in the UDS inform a whole-of-corridor design approach that is applied locally to develop a context-sensitive design.

### 1. Identity

**A well-defined identity and sense of place add to people’s experience and understanding of a place.**

**Response:**

The design response has broken the UDLP area into four precincts to fully understand the unique identity and character of existing landscapes, built form, materials, texture, colour, cultural heritage and condition. This approach ensures the design response creates a connected, unified journey that strengthens local character, improves amenity and minimises visual and physical impacts on local neighbourhoods.



Objectives	Urban Design Outcome	Response
<p><b>Objective 1.1</b> Sense of place</p>	<p>Protect, maintain and enhance the identity of local places, and respectfully represent Indigenous and non-Indigenous cultural values. This includes appropriate consideration of local community facilities, the natural environment, European and Indigenous history, and cultural places such as the Bolin Bolin Billabong, Yarra Bend Park, and Heide Museum of Modern Art.</p>	<p>The urban design response protects, enhances and maintains the unique identity and sense of local places embedded in the high-value precincts of Eastern Freeway Upgrades, while respectfully representing Indigenous and non-Indigenous cultural values in the following manner:</p> <ul style="list-style-type: none"> <li>– Building from the NELP-led Cultural Values Assessment with the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation, the design references the colours, textures and tones of Indigenous artefacts through the Munsell soil colour classification system and applies these to bridges, noise walls and other structures.</li> <li>– Weathered steel and revealed stone rockface cuttings are employed in relevant locations to pay homage to existing cutaways along the Eastern Freeway.</li> <li>– Within the high-value Koonung Reserve precinct, the landscape response improves the quality, amenity and character of local parklands and natural habitats adjacent to the Project wherever practical, to celebrate their valued landscape character.</li> </ul> <p>Throughout the life of the Project, meaningful and innovative ways to represent Indigenous cultural themes and living culture will be further explored and developed through ongoing engagement with the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation. This will support ongoing living culture through the Project.</p> <p>The Project continues to deliver on the existing cultural uses of the various sites in the corridor. The rebuilt environment of the Koonung Creek Reserve, as presented in this UDLP, has taken the wider community's feedback into consideration and is designed to encompass areas for recreation, sports, picnics and other activities suitable for public use. As such, the rebuilt Koonung Creek Reserve as a whole through this UDLP will continue to provide meaningful experiences for the adjacent neighbourhoods.</p>
<p><b>Objective 1.2</b> Recognise the Yarra River (Birrarung)</p>	<p>Provide a design that respects and promotes the Yarra River (Birrarung) and its environs which encompass its tributaries, wetland, billabongs, native vegetation and parklands such as Banyule Flats, and seek opportunities to celebrate this iconic Melbourne asset and ceremonial meeting place for the benefit of Traditional Owners and the general public.</p>	<p>This objective seeks a design outcome that respects and promotes the Yarra River (Birrarung) and its environment. While the Project area does not interact with the Yarra River directly, the design response in this UDLP benefits from Koonung Koonung Creek, which is a small tributary of the Yarra River and a living waterway in its own right.</p> <p>The design provides for a respectful and site-sensitive response to the Creek. Key examples are outlined below:</p> <ul style="list-style-type: none"> <li>– In the absence of direct interface with the river, the design is developed with considerations of existing habitat linkages between the river and the greater Yarra Urban Parklands. Noting that plants and fauna within the existing linkages could/may disperse from one habitat.</li> <li>– The design response includes careful management of water including on-site management, filtering of runoff and flood water controls, which in turn will support the health of the network of wetland, billabongs and waterways within the broader catchment.</li> <li>– Improved cycling and walking connections along the corridor provide for new opportunities for the community to visit and enjoy these recreational and habitat areas, as well as those further afield.</li> <li>– Nearby interfaces with the Yarra River (Birrarung) are located in the far west portion of this UDLP, where the existing Koonung Creek Trail connects from Musca Street Reserve (Balwyn North) on the south-side of the Eastern Freeway through an existing underpass, to the Yarra Flats Reserve of the north-side of the Eastern Freeway. This existing cyclist and pedestrian network is retained. Additionally, this UDLP does not propose road related infrastructure in the Yarra Flats Reserve, and there are no proposed works or associated impacts to the Yarra River.</li> </ul> <p>Refer to site plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9535 to 9537 and 9542 to 9547) and sections (NEL-STH-NSA-5900-UUD-DRG Nos. 9551 to 9562), all contained in Attachment 2: Landscape Design.</p>

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## 1. Identity (continued)

Objectives	Urban Design Outcome	Response
<p><b>Objective 1.3</b></p> <p>Landscape and visual amenity</p>	<p>Sensitively enhance landscape and visual outcomes and reduce physical and visual impacts associated with the Project.</p>	<p>The landscape design reduces the impacts of the Freeway widening on adjoining open space and residential areas by sensitively accommodating new infrastructure requirements and enhancing landscapes. Examples include:</p> <ul style="list-style-type: none"> <li>– Responding to community need, new noise walls along the corridor are site-specific design solutions that minimise height and bulk and allow natural light through to adjacent landscapes where required.</li> <li>– Robust landscape screening reduces the visual impacts of structures.</li> <li>– Intervention to existing landscapes and waterways is minimised and/or where development is required, revegetation works are sensitively undertaken to create a high-quality landscape outcome.</li> <li>– New structures and built elements are designed to respond and contribute to local character, while also creating a strong visual identity for the Freeway journey that is consistent across the North East Link Program.</li> <li>– The palette of built elements adopts high quality materials, textures and forms that positively enrich visual amenity.</li> </ul> <p>Refer to planting schedules (NEL-STH-NSA-5900-UUD-DRG Nos. 9511 to 9526), site plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9535 to 9537 and 9542 to 9547), sections (NEL-STH-NSA-5900-UUD-DRG Nos. 9551 to 9562) and tree retention and removal plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9570 to 9575), all contained in Attachment 2: Landscape Design.</p>
<p><b>Objective 1.4</b></p> <p>Existing landscape character</p>	<p>Provide a high-quality design outcome that responds sensitively to the distinctive character of this part of Melbourne, takes advantage of existing landmarks and vegetation, views and significant places, protects landscape and vegetation, and seeks to enhance the way in which people experience and interact with the landscape.</p>	<p>The design has responded sensitively to the distinctive character of the areas along the Eastern Freeway by identifying the existing landmarks, vegetation and surrounding environment. It has identified four precincts with significant landmarks and key features. Section 4.3.1 presents how the landscape, colours, materials and form proposed by the Project respond sensitively to these character areas.</p> <p>For example, a high-quality landscape character is provided through reimagining and reinstating a living waterway – Valda Wetlands. New vistas and pathway systems that connect cyclists and pedestrians enhance opportunities for people to experience and interact with their local neighbourhood. For instance, the Koonung Creek Reserve secondary paths are designed to interact with landscape thereby improving users’ experience within the open space; and the Heyington Avenue SUP bridge ramp links with paths in the adjacent Valda Wetlands, creating a naturalised connection with a broader catchment.</p> <p>The distinctive landscape character of these areas has been captured through plantings that respond to the Ecological Vegetation Classes (EVCs), improving the quality of habitat.</p> <p>The design creates a coordinated, intuitive and consistent wayfinding approach across the NEL corridor for all users.</p> <p>Refer to planting schedules (NEL-STH-NSA-5900-UUD-DRG Nos. 9511 to 9526), site plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9535 to 9537 and 9542 to 9547), sections (NEL-STH-NSA-5900-UUD-DRG Nos. 9551 to 9562) and tree retention and removal plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9570 to 9575), all contained in Attachment 2: Landscape Design.</p>
<p><b>Objective 1.5</b></p> <p>Architectural contribution</p>	<p>Make a positive architectural contribution to infrastructure including bridges, noise walls and other structures.</p>	<p>Architectural elements – bridges, noise walls and other structures – are conceived in a corridor-wide design method that shares a cohesive approach to materials, textures, colours and form to create an overall sense of identity and journey through a choreographed sequence of colours and elements that also respond to local area character and condition. They connect to Country by making a positive contribution to motorists, pedestrians and cyclists as wayfinding markers and sculptural forms and they connect people by optimising the ramp and bridge alignments to minimise distances of travel.</p> <p>The Estelle Street SUP bridge forms a key urban landmark along an arching bend of the Koonung Creek Reserve. The sculptural pylon holds up the bridge over an extended span.</p> <p>The Heyington Avenue SUP bridge seamlessly forms connections with Stanton Street to the north and the shared use and secondary paths within Valda Wetlands to the south.</p> <p>Connection to Country has been reflected through materials, patterns and colours of the modular noise walls, abutments and the retaining walls to create an authentic sense of place.</p> <p>Refer to UDLP Attachment 1: Architecture and Urban Design, particularly as outlined below:</p> <ul style="list-style-type: none"> <li>– Estelle Street SUP Bridge (NEL-STH-NSA-5900-UUD-DRW 9171 to 9176)</li> <li>– Heyington Avenue SUP Bridge (NEL-STH-NSA-5900-UUD-DRW 9181 to 9186)</li> <li>– Noise walls (NEL-STH-NSA-5900-UUD-DRW 9201 to 9208)</li> </ul>

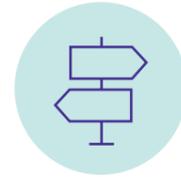
# 5. Consistency with the Urban Design Strategy

## 2. Connectivity and Wayfinding

Well connected and legible networks and places contribute to strong economies and healthy, inclusive communities.

### Response:

The proposed landscape design is an improved intermodal network that allows for efficiency, legibility and memorable experiences while connecting adjacent communities.



Objectives	Urban Design Outcome	Response
<p><b>Objective 2.1</b> Connectivity</p>	<p>Improve people's ability to move through the immediate and wider area with ample, efficient and quality links across and along the corridor for all transport modes, including pedestrians and cyclists.</p>	<p>The design improves people's ability to move through, along and across the Freeway corridor in the following manner:</p> <ul style="list-style-type: none"> <li>- The Freeway widening provides for expanded active transport connections along the corridor, linking key user nodes and transport interchanges such as the Doncaster and Bulleen Park and Ride facilities.</li> <li>- The overall capacity of the Freeway will be significantly increased, supporting streamlined motor vehicle travel to and from the eastern suburbs of Melbourne and greater eastern regions of Victoria to the north and subsequent interstate connections. This is a particularly important improvement for vehicles.</li> <li>- A critical section of Melbourne's first express busway will be delivered, linking the Doncaster and Bulleen Park and Ride facilities. This will ultimately provide a faster and more direct link for public transport into and from the city, reducing road congestion and travel times.</li> <li>- A path on the west side of the Bulleen Road bridge, situated within the Southern Interface Zone (SIZ), is amended to accommodate a standard pedestrian path in lieu of a 'shared use path' (SUP). As detailed in Section 4.1.3 of this UDLP, this change should be interpreted as a correction to the path's description as its existing width is insufficient to accommodate a SUP arrangement. However, supported by the immediately surrounding SUP network, it will have no adverse impact on the overall improved connectivity contemplated in the approved design of Southern Interface Zone as detailed in Attachment 5.</li> </ul> <p>The design provides a continuous and well-connected path for the full length of the UDLP boundaries by way of:</p> <ul style="list-style-type: none"> <li>- upgrades to walking and cycling pathways north and south of the Freeway, including Koonung Creek Trail</li> <li>- improved pedestrian and cyclist connectivity underneath Doncaster Road</li> <li>- delivery of new underpasses at Doncaster Road on the north side of the Eastern Freeway</li> <li>- an upgraded existing underpass on the south side of the Eastern Freeway.</li> </ul> <p>Of particular notes are the proposed upgrades to existing SUPs, including the Heyington Avenue and Estelle Street SUP bridges as outlined below:</p> <ul style="list-style-type: none"> <li>- Upgrades to the existing SUP and secondary path networks will improve safety at 'pinch points', improve sightlines and legibility and manage areas of conflict between different user groups. Safety is prioritised, to ensure the community and landscape areas of interest are well connected and accessible.</li> <li>- Upgrades to the Heyington Avenue SUP bridge and Estelle Street SUP bridge will improve the north-south connection over the Eastern Freeway and integrate the connection into existing and new transport linkages, ensuring cross-corridor communities remain well connected. The overarching outcome is that the Project provides connectivity through the movement of people through the corridor.</li> </ul> <p>Refer to planting schedules (NEL-STH-NSA-5900-UUD-DRG Nos. 9511 to 9526), site plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9535 to 9537 and 9542 to 9547), sections (NEL-STH-NSA-5900-UUD-DRG Nos. 9551 to 9562) and tree retention and removal plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9570 to 9575), all contained in Attachment 2: Landscape Design.</p>

# 5. Consistency with the Urban Design Strategy

## 2. Connectivity and Wayfinding (continued)

Objectives	Urban Design Outcome	Response
<p><b>Objective 2.2</b> Transport integration</p>	<p>Maximise the benefits of the project by facilitating seamless access to a variety of public transport, walking and cycling choices as part of a connected intermodal network.</p>	<p>The design facilitates seamless access to transport choices in the following manner:</p> <ul style="list-style-type: none"> <li>– providing more and improved paths along Doncaster Road to connect the Koonung Creek Trail north and south of the Eastern Freeway, as well as increasing the connections from the Koonung Creek Trail into Doncaster Park and Ride</li> <li>– providing improved crossings for pedestrians and cyclists with new SUP bridges over the Eastern Freeway at Estelle Street and Heyington Avenue, connecting the Koonung Creek Trail to key neighbourhood destinations</li> <li>– providing an improved SUP connection between existing Doncaster and Bulleen Park and Ride facilities, improving the public transport intermodal network for all users</li> <li>– providing meaningful connections with the Eastern Freeway Interchange (as part of the Southern Interface Zone) including seamless access to roads and pathways at all levels and a necessary correction to user description in relation to a pedestrian path on the west side of the Bulleen Road bridge with no impacts on the walking and cycling networks that will be upgraded.</li> </ul> <p>Refer to Attachment 5 for details of the approved design within the Southern Interface Zone.</p>
<p><b>Objective 2.3</b> Legibility and wayfinding</p>	<p>Provide a coordinated design that promotes visual connections and wayfinding, reduces reliance on signage and minimises visual clutter and obstructions to key views.</p>	<p>The design creates a coordinated, intuitive and consistent wayfinding approach across the NEL corridor for all users. The two upgraded SUP bridges and one upgraded road bridge at the Doncaster Road interchange will provide high-quality architectural form along the Eastern Freeway alignment, serving as key wayfinding features that allow both motorists and pedestrians to identify their location as they travel along the corridor. Noise walls and retaining walls reflect the characteristics of each precinct, providing visual connection with retained and enhanced landscaping through this Project. This design approach will be further developed during the detailed design process to ensure that appropriate noise wall types and materials will be applied to site-specific locations thereby strengthening visual connections and delivering a coordinated design.</p> <p>Visual clutter and obstructions to key views are minimised when viewed from the Freeway and adjacent open spaces and residential catchments respectively. More specifically, it is noted that:</p> <ul style="list-style-type: none"> <li>– The design adopts a restrained palette and locates gantry legs to sit behind noise walls (where appropriate), thereby minimising visual distractions for motorists.</li> <li>– The design proposes the use of simple, streamlined forms for bridges and other built form elements so as to provide clear indications to pedestrians and cyclists in terms of wayfinding while limiting the potential of visual obstructions.</li> <li>– The design connects spaces by way of amenities and facilities in the form of park furniture (such as seating and tables, BBQ areas and bicycle repair stations), which help create functional and appealing outdoor spaces for public use. While the exact location of park furniture is to be determined in the detailed design process. The Project will ensure final location is to the satisfaction of the relevant land manager and is appropriate for public use and promote visual connections and wayfinding.</li> <li>– Signage may be incorporated within the Project boundaries where appropriate and necessary, which will be further developed during the detailed design process in consultation with relevant stakeholders.</li> <li>– Additionally, the design has considered that the final gantry locations will be confirmed in consultation with DTP as the relevant road authority to ensure adequate wayfinding on the road network is achieved. Of particular note is that for SUP users, clear and logical built form arrangement with uninhibited sightlines has been prioritised, minimising reliance on signage. Borrowed light from the freeway masts and adjoining local roads network will also provide an illuminated path for most of the corridor. Where experience is compromised (for example, at pinch points), clear and direct wayfinding signage will be provided along with careful siting and selection of landscape plantings to maintain clear sightlines and supplementary lighting, informed by design development to determine the most appropriate mitigations at key pinch points in the SUP and secondary path network.</li> </ul>

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## 3. Urban Integration

Well integrated infrastructure provides a sound framework for successful cities and places.

**Response:**

Improved and well-integrated infrastructure and public open space is at the forefront of the design solution. The Project provides multiple connections for adjacent communities and reimagined access to parklands and diverse landscapes.



**Objectives**

**Objective 3.1**

Integration with context

**Urban Design Outcome**

Avoid, minimise and mitigate any severance of communities. Provide a well-integrated corridor environment that enhances the street network and takes advantage of opportunities to connect and integrate with the broader commercial, residential and open space functions and environment.

**Response**

New elements along the corridor, such as SUP bridges, road barriers and noise walls and new natural landscapes form part of the corridor wide design response, which connects and integrates with the broader commercial, residential and open space functions and environment. Landscape has been carefully designed and incorporated to ensure that it creates a natural filter, screening built elements.

From a pedestrian experience, potential visual impact of noise walls, retaining walls and the like are framed through a vegetated landscape, including plants, earth mounds and tree canopy used throughout the UDLP area where appropriate.

Other examples of how potential adverse impacts have been mitigated include:

- The Estelle Street and Heyington Avenue SUP bridges provide improved connections along the Eastern Freeway, particularly important to the adjacent local school catchments and local neighbourhoods.
- All links into the Project (pedestrian, cyclist and motorist) have been surveyed, supported and integrated into one network that connects paths and amenities within the Project as well as roads, amenities and facilities beyond the Project boundary.
- Connections have been strengthened to the Bulleen and Doncaster Park and Ride facilities. The ultimate access arrangements to Bulleen Park and Ride are detailed in Section 4.1.3. The access between the Freeway and Doncaster Park and Ride has been indicatively shown in this UDLP and will be detailed in a separate UDLP.
- The design of the Estelle Street SUP bridge is at a location that not only improves connectivity to the desired paths, but also allows full operation of the existing bridge to be maintained during construction, until the new bridge is finalised.
- Replacement of the Estelle Street SUP bridge will be completed in stages thereby minimising any adverse impact on the traffic on the Freeway and in the surrounds.
- The design of the Heyington Avenue SUP Bridge allows the construction of the bridge offline, minimising the number of closures to the Eastern Freeway required for its installation.
- The Doncaster Road interchange is upgraded by way of constructing the underpass to the north and widening the one to the south. As a result, the bridge intersection realignment will be improved while maintaining the established traffic arrangements.

# 5. Consistency with the Urban Design Strategy

## 3. Urban Integration (continued)

Objectives	Urban Design Outcome	Response
<p><b>Objective 3.2</b> Integration of design</p>	<p>Ensure an integrated engineering, urban design, architectural and landscape architectural approach that sensitively addresses social, cultural, functional and physical aspects of the project.</p>	<p>The Project has evolved through constant collaboration between all disciplines to ensure an integrated transport infrastructure and land use solution that sensitively addresses all aspects of the Project in a way that optimises efficiency through an urban design-led lens to deliver an enduring, high-quality solution.</p> <p>The solution considers and overlays three scales of experience – ecology, pedestrian as well as cyclist and motorist – to provide a seamless journey for all users and ensure all social, cultural, and environmental outcomes are addressed.</p> <p>New elements along the corridor such as SUP bridges, road barriers and noise walls and new, expanded natural landscapes form part of the design outcome contemplated in a broader context.</p> <p>This integrated approach has resulted in outcomes such as:</p> <ul style="list-style-type: none"> <li>- noise walls composed with acrylic panels strategically located to provide sunlight to priority landscape settings, ensuring a thriving ecology into the future</li> <li>- experiences of diverse users connected for a stronger sense of place; for example, the colours and textures of the pedestrian experience is mirrored in the roadway, so that motorists can connect to the adjacent landscapes</li> <li>- road infrastructure (barriers, retaining walls, etc.) designed to increase areas of vegetation facing the roadway</li> <li>- structures such as the SUP bridges integrated with urban design, resulting in outcomes that have an enduring architectural legacy and contribute to the identity of the communities of which they are a part.</li> </ul> <p>Community feedback has been incorporated in the landscape design where appropriate. For instance, the open spaces of Koonung Creek corridor are designed with curated spaces and context responsive planting mix, thereby enhancing the quality of open spaces (which in turn, mitigates the quantity loss of open spaces).</p> <p>Cultural outcomes will be further developed in consultation with the Wurundjeri Woi-wurrung and Boroondara City Council, through potential multicultural storytelling along the swales and open areas of Koonung Creek Reserve.</p> <p>Functional aspects of the Project have been addressed through the provision of a coordinated landscape and drainage solution that will maximise WSUD features to better manage drainage within the reserve as well as integrating existing and enhanced wetland areas.</p> <p>The proposed solution for the Heyington Avenue SUP bridge is also an example of the functional integration aspect of the design. For instance, the use of steel in the bridge not only maintains its place making character but also contributes to a sustainable design outcome due to its recyclable and reusable nature with little/no degradation in performance.</p> <p>Physical aspects of the Project have been addressed by identifying the appropriate landscape, materiality and forms for each location through the interpretation of existing conditions into design character precincts presented in Section 4 of this UDLP report.</p> <p>Refer to Attachment 1: Architecture and Urban Design and Attachment 2: Landscape Design, particularly as outlined below:</p> <ul style="list-style-type: none"> <li>- Heyington Avenue SUP bridge (NEL-STH-NSA-5900-UUD-DRG-9181 to 9186) in Attachment 1</li> <li>- Landscaping design (NEL-STH-NSA-5900-UUD-DRG Nos. 9511 to 9526, 9535 to 9537, 9542 to 9547, 9551 to 9562 and 9570 to 9575) in Attachment 2.</li> </ul>

# 5. Consistency with the Urban Design Strategy

## 3. Urban Integration (continued)

Objectives	Urban Design Outcome	Response
<p><b>Objective 3.3</b> Strategic alignment</p>	<p>Provide an integrated transport infrastructure and land use solution that responds to strategic transport and land use planning for the broader precinct in consultation with local government and authorities.</p>	<p>Development and refinement of road alignment and associated infrastructure – bus depots, active transport linkages, and connection to adjacent nodes – continues through ongoing consultation with relevant authorities and local government to ensure all broader precinct strategic transport and land use planning objectives are addressed.</p> <p>The design has been positively shaped by the following strategic documents:</p> <ul style="list-style-type: none"> <li>– Plan Melbourne 2017-2050 (and 2019 Addendum) – the Plan sets out broad transport and land use moves for a growing Melbourne and identifies the key role that the Project will play in contributing to positive transport and employment outcomes. The Project will help connect people to jobs and services and goods to market (Outcomes 1 and 3) and the design of its infrastructure will ensure Melbourne continues to be a distinctive city with quality design (Outcome 4). The design also employs a variety of techniques to ensure the sustainability and resilience of the infrastructure and the corridor around it (Outcome 6) (for example, tree planting, waterway revitalisation, delivery of SUPs).</li> <li>– Healthy Waterways Strategy 2018-2028 – the design has sought to respond to the goals and values within this strategy by ensuring that the waterways and wetland are enhanced, stormwater is managed appropriately, and re-naturalisation is undertaken where appropriate.</li> <li>– Victorian Cycling Strategy 2018-28 – through the delivery of a range of new cycling paths and SUPs, the design is helping to deliver a safer and better-connected cycling network in Melbourne’s east. The design has focused on enhancing and integrating Koonung Creek Trail sections as a key improvement of the Strategic Bicycle Network.</li> <li>– Burndap Birrarung Burndap Umarkoo (Yarra Strategic Plan) 2022-2032 – The western section of the Project is covered by this strategic plan. The Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation’s involvement in the creation of the strategic plan and the Project’s ongoing collaboration with the Corporation ensures a continuity of approach and thinking. Water sensitive urban design (WSUD) treatments will improve water quality within the Koonung Creek and its broader catchment, in turn contributing to the health of the Yarra River.</li> </ul>
<p><b>Objective 3.4</b> Minimise footprint</p>	<p>Minimise negative impacts on the community and the environment by minimising the project footprint and visual bulk, particularly where it intrudes on sensitive land uses including open space and existing vegetated areas.</p>	<p>A strongly collaborative, integrated design approach has enabled a design solution that has minimised the overall impact of the Freeway widening on open space and surrounding residential areas while still ensuring appropriate functionality and safety considerations are met.</p> <p>While the constrained width of the Eastern Freeway reserve within the UDLP area limits opportunities to significantly reduce the overall footprint of the road works, the design has achieved an improved outcome at Elgar Road by moving the westbound on-ramp closer to the Freeway, freeing up additional space for landscaping to screen the adjacent noise walls. This has also allowed the construction of the adjacent shared use path bridge at Heyington Avenue to be simplified through removal of the central pier, minimising visual bulk and clutter.</p> <p>Where open space is directly encroached by the Freeway widening or associated road infrastructure (for example, noise walls), negative impacts will be mitigated through inclusion of canopy trees, new and expanded landscape and buffer planting thereby enhancing the quality of the open spaces while preventing unreasonable visual impact.</p> <p>In addition, open public space embellishments, such as furniture seating and exercise equipment, will be reinstated in the returned open space reserves in consultation with the relevant local councils including locations of park furniture to be further developed during detailed design to ensure localised site specific context is considered to reduce visual bulk and maximise landscape and vegetation where possible.</p> <p>The visual impacts of these works have also been minimised through incorporation of noise mounds along parts of the alignment, reducing the overall height of noise walls and providing greater opportunities for planting.</p>

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## 4. Resilience and Sustainability

Infrastructure must be sustainable, enduring and resilient to support current and future generations.

### Response:

This urban design-led solution ensures that the design is conceived with whole-of-life impact factored into the construction and design of the Project so that future generations will enjoy increased amenity and biodiversity through the proposed works to Koonung Creek Reserve.



Objectives	Urban Design Outcome	Response
<b>Objective 4.1</b> Enduring and durable	Provide a design that is enduring and functional for generations to come, is readily maintainable and will age gracefully in concept and detail, ensuring a positive built form legacy.	The design solution considers the Project's life span through high-quality materials that will age gracefully, and robust forms to ensure ongoing maintenance is appropriate. The integrated design process ensures decisions for long term sustainability outcomes and end user experience. Consideration of adaptability and end-of-life planning is being incorporated into the design approach to support creation of an asset with an enduring legacy.  Naturally hued pigmented concretes are designed to age and fade into muted tones. The patina of weathering steel complements open face rock cuttings and strategic use of acrylic to noise walls ensures daylight to adjacent vegetation. Design strategies such as these, and others, collectively deliver an enduring urban design outcome that will stand the test of time.  Other examples of material selection that will contribute to an enduring urban design outcome with practical maintenance considerations and will age gracefully and contribute to a positive built legacy include: <ul style="list-style-type: none"> <li>- concrete finishes to various urban design forms</li> <li>- textured treatments and landscape screening to deter graffiti</li> <li>- gantry cladding and finish that will enable graffiti management</li> <li>- location of freeway management assets behind noise walls to allow safe maintenance access, while ensuring through landscape design that the assets are protected from vandalism.</li> </ul> Engagement with proposed asset owners, including councils, will occur during detailed design to ensure the final outcome is readily maintainable, fit for purpose and can be enjoyed by the community for years to come. Agreements with proposed asset owners will be obtained to ensure the standard and final design accords with the stakeholder's expectations.
<b>Objective 4.2</b> Resilience and future proofing	Ensure the infrastructure is able to survive, adapt and perform when subjected to acute stresses and shocks such as changes in climate, technology, future fleets, road use and extreme events.	The design ensures the infrastructure has the ability to survive, adapt and perform when subjected to acute stress in the following ways: <ul style="list-style-type: none"> <li>- Road and active transport corridors are designed with future capacity and intermodal integration to ensure adaptation to future technological change, which includes road demand to 2036.</li> <li>- A climate and natural hazards risk assessment and treatment plan is being developed in accordance with IS version 2.1 credit Res-1 to support delivery of a future-proofed outcome. Risks have been identified by the design team and evaluated for severity and likelihood using Representation Concentration Pathway (RCP) 8.5 climate projections. Mitigation methods are being developed and integrated into the design and operation of the asset to increase the project's resilience to a changing climate.</li> <li>- Flood modelling includes consideration of climate change rainfall intensity to ensure the design responds to both current and future anticipated rainfall events, and this is reflected in the design of the project's flood walls, flood retention and drainage systems.</li> <li>- A resilience plan is being delivered in accordance with IS version 2.1 credit Res-2 that identifies and mitigates acute shocks and chronic stresses likely to impact the asset to ensure the infrastructure contributes to broader community resilience.</li> <li>- Landscapes are being designed to support a resilient outcome from new ecosystems that are better able to manage flood events, such as at Koonung Creek, to landscapes that expand over time, such as the batters planted with species that self-colonise and thrive in harsh conditions.</li> <li>- The reshaped Valda Wetlands provide improved water quality outcomes and increased resilience to flood events.</li> <li>- The design has considered the climate change risk assessment. Examples worth noting include concrete cover specification that allows for future projected carbonation via modelling in accordance with RCP 8.5 climate projections, and specification of pavement types that are more resilient than other types to extreme heat events.</li> </ul>

# 5. Consistency with the Urban Design Strategy

## 4. Resilience and Sustainability (continued)

Objectives	Urban Design Outcome	Response
<p><b>Objective 4.3</b></p> <p>Environmental sustainability</p>	<p>Optimise environmental performance and embed sustainability initiatives into the design response. This includes integrated water management, biodiversity and habitat enhancement and connections, green infrastructure provision and sustainable use of energy and materials.</p>	<p>Environmental sustainability is being embedded into the design response through an integrated design process that ensures sustainability requirements, targets, and opportunities are identified and incorporated for all design packages. A Sustainability Design Brief is being used to communicate and develop the design response for each package and includes sustainability targets and requirements relating to carbon reduction, life cycle impacts, Recycled First targets, integrated water management, resilience and ecology.</p> <p>Design optimisation has occurred and will continue to be undertaken throughout design development to reduce and optimise material use, operational energy and energy required for construction works, with these savings being captured and quantified by the Sustainability team. As an example, the design of the Heyington Avenue SUP bridge has been optimised to reduce steel quantities (and subsequent carbon emissions) by approximately 30%.</p> <p>Material lifecycle impact reductions are being achieved through specification of recycled plastic fibre reinforcement for SUPs instead of typical steel reinforcement, maximising the use of reclaimed asphalt pavement in the pavement design, and through adoption of a 40% Portland cement reduction target for the Project.</p> <p>Energy and greenhouse gas emissions are being reduced through a construction decarbonisation strategy that includes electrification of a proportion of construction plant and equipment, use of alternative fuels, purchase of renewable energy for all construction electricity and optimisation of the proposed construction methodology. Energy use in operation is being minimised through optimisation of the proposed street lighting design.</p> <p>Landscape design plans and planting schedules have been reviewed by an ecologist to maximise benefits for local biodiversity, with further studies of rain and sun exposure planned to inform design development during detailed design.</p> <p>The design currently contains areas of open space, wetland, planted vegetation and modified bushland that support a range of biodiversity values such as terrestrial and aquatic native wildlife, plants and habitats. Koonung Creek Reserve is the largest of these areas and supports an extensive cover of native vegetation and habitat for local flora and fauna. Locations of ecological significance include the Yarra Flats Reserve, Yarra River and Freeway Golf Course. New and enhanced landscape plantings will provide habitat that, once matured, forms connections with existing vegetation to provide an expanded network of habitat links for local flora and fauna. Integrated water management has been integral to the design, which includes the treatment of runoff via wetland, flood management and mitigation and also incorporates spill containment for freeway pavements in line with EPR SW2. Reuse of mulch and topsoil in the landscape design will be maximised to achieve both ecological and circular economy benefits.</p> <p>A consistent approach and strategy for the reuse of timber from vegetation removed to facilitate the broader delivery of the North East Link Program is currently under development. Once finalised, this will be implemented across all works areas to ensure that opportunities for reuse are considered at a 'whole of project' level, rather than within individual UDLP areas, including to reuse felled timber as soft landscaping in returned open public space.</p>
<p><b>Objective 4.4</b></p> <p>Whole of life</p>	<p>Ensure the design is appropriate having regard to ongoing maintenance, operations and upkeep; and effective governance arrangements are established to ensure its functionality, design qualities and appearance is able to meet community expectations.</p>	<p>The proposed design outcomes take into consideration aspects of ongoing maintenance, operations and upkeep. Examples of these design considerations have been provided in the response to Principle 4 (Objective 4.1 Enduring and durable).</p> <p>As part of the design development process, design reports for all packages will include an operations and maintenance review of the design solution, covering maintenance access, material maintenance considerations and durability assessments.</p> <p>Coordination with relevant authorities will ensure ongoing maintenance delivers best outcomes. The design will deliver outcomes for landscape and infrastructure that meet community expectations and maintenance requirements. Agreements with proposed asset owners will be obtained to ensure the standard and final design accords with the stakeholder's expectations.</p> <p>The proposed Freeway lighting design minimises both maintenance and energy consumption. As an example, the perimeter lighting – rather than centre – design offers a simpler and safer maintenance solution as access to the centre of the Freeway is not required. Furthermore, the provision of fewer taller poles at a higher lamp wattage provides both material and energy savings overall compared to the Reference Design.</p> <p>The North East Link is targeting net zero emissions in operation and maintenance. The Project will support this objective through initiatives that minimise operational energy and ongoing maintenance requirements, with relevant examples including the proposed lighting design approach as described above, and incorporation of adaptability and end of life considerations, such as in the event of future major changes to technology or capacity, and response to emergency situations.</p>

# 5. Consistency with the Urban Design Strategy

## 5. Amenity

High quality urban amenity afforded by well-designed infrastructure contributes to successful, equitable and prosperous communities.

### Response:

The design creates four precincts that provide a diverse solution to the varied conditions and community needs along the road corridor. The design presented through this UDLP will improve the ecological and landscape value of the corridor and Koonung Creek by enhancing its community value and fostering greater connection and caring for country and connecting people.



Objectives	Urban Design Outcome	Response
<p><b>Objective 5.1</b> Improved amenity</p>	<p>Enhance urban amenity through a highly considered and site-specific response to realise opportunities and address challenges to create better places for people.</p>	<p>The design response considers site-specific areas within the Project by following an approach of identifying the contextual settings of the four identified precincts along the alignment, as presented in Section 4 of this UDLP report. Report.</p> <p>The Project improves built, cultural and natural amenity by creating more opportunities for active and passive recreation. Examples of this include:</p> <ul style="list-style-type: none"> <li>– an upgraded and new network of SUPs and secondary paths on both sides of the Eastern Freeway, including along the Koonung Creek Trail, that increases opportunities for pedestrians to interact with adjacent landscape and open spaces, providing varied options for rest, pause and play settings</li> <li>– a cohesive network of water sensitive urban design features that link the renewed Valda Wetlands with the Koonung Creek Reserve</li> <li>– replacement of the Estelle Street and Heyington Avenue SUP bridges over the Eastern Freeway with improved access from/to local roads, providing pause points and lookouts to adjacent landscape while minimising any adverse impact on adjacent properties</li> <li>– a place-specific assessment of noise wall requirements, identifying the locations where noise walls directly adjacent to roadways are appropriate or where buffer planting is more beneficial to create better places for both the road and the community side of the noise wall.</li> </ul>
<p><b>Objective 5.2</b> Landscape values</p>	<p>Create positive outcomes for the community with a coherent landscape response that embraces natural qualities and values.</p>	<p>By working to significantly improve the ecological and landscape value of the Freeway corridor and Koonung Creek Valley, the Project creates a positive outcome for community and fosters greater connection to Country and connection to people. Minimising visual bulk of new built elements and ensuring that their siting, design and material selection is context-specific aligns with the core pillar of Caring for Country through integrated design resolutions.</p> <p>The design features a natural colour palette evolved from the landscape and informed by Wurundjeri Cultural Heritage and the Munsell soil colour classification system.</p> <p>The landscape approach responds to the varying settings along the corridor, adapting and changing in relation to the adjacent environment. Enhancing the sense of journey and place, the settings are nuanced and reflective of their location. This is expressed through differing plant species, material colours and textures and built form composition.</p> <p>Plant species for the project are predominantly selected from the local EVCs of the Koonung Creek. Species have been selected with consideration to the soil conditions and varying microclimatic conditions along the project corridor. Consideration has also been given to plant species of cultural significance to the Wurundjeri Woi-wurrung such as the Manna Gum.</p> <p>Examples of the landscape types across the project vary from permanent wetland such as the Valda Wetlands containing indigenous aquatic species and iconic Red Gums, open wooded grasslands within Koonung Creek Reserve with native kangaroo and wallaby grasses and plantings of Manna Gums.</p> <p>Further information on how the urban features of the design have been selected to embrace natural qualities and values of each of the precincts has been provided in Section 4 of this UDLP Report; and details of planting schedules are provided on the plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9500 to 9526) in Attachment 2: Landscape Design.</p>

# 5. Consistency with the Urban Design Strategy

## 5. Amenity (continued)

Objectives	Urban Design Outcome	Response
<p><b>Objective 5.3</b></p> <p>High quality</p>	<p>Provide a high-quality design outcome that makes a positive contribution to the local built and natural environment and minimises physical and visual impact on the surrounding community.</p>	<p>The urban design response has prioritised the pedestrian experience and created an authentic sense of place through an expanded palette of built form material and natural landscape settings.</p> <p>The design approach considers the experience of all end users and adjacent communities. In many cases throughout the corridor the existing natural environment has been enhanced or reimagined to deliver better outcomes for ecosystems, water quality, habitat and communities.</p> <p>Space for plants and trees to help screen noise walls, bridges, and other Project infrastructure has been included wherever possible, to minimise visual impacts on local communities.</p> <p>Further high-quality design outcomes will be delivered through:</p> <ul style="list-style-type: none"> <li>- purposeful architectural forms at the SUP bridges that avoid the use of superfluous materials, minimise the number of piers and integrate elegant forms that will promote their landmark features</li> <li>- a landscape approach that reimagines the Koonung Creek corridor and enhances biodiversity</li> <li>- noise walls and retaining walls integrated with the surrounding landscape and contextualised to each location to ensure a seamless integration with existing conditions</li> <li>- improvements to the Koonung Creek Trail as part of the Strategic Bicycle Network that will provide quality rides for SUP users all along the Project corridor.</li> </ul> <p>Refer to Attachment 1: Architecture and Urban Design and Attachment 2: Landscape Design, particularly as outlined below:</p> <ul style="list-style-type: none"> <li>- Road Infrastructure Plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9020 to 9022 and 9027 to 9032) in Attachment 1</li> <li>- Urban Design Sections (NEL-STH-NSA-5900-UUD-DRG Nos. 9047 to 9050) in Attachment 1</li> <li>- Doncaster Road Bridge (NEL-STH-NSA-5900-UUD-DRG Nos. 9141 to 9151) in Attachment 1</li> <li>- Elgar Road Bridge (NEL-STH-NSA-5900-UUD-DRG Nos. 9161 and 9162) in Attachment 1</li> <li>- Estelle Street SUP Bridge (NEL-STH-NSA-5900-UUD-DRG Nos. 9171 to 9176) in Attachment 1</li> <li>- Heyington Avenue SUP Bridge (NEL-STH-NSA-5900-UUD-DRG Nos. 9181 to 9186) in Attachment 1</li> <li>- Tram Road Bridge (NEL-STH-NSA-5900-UUD-DRG No. 9191) in Attachment 1</li> <li>- Planting Schedules (NEL-STH-NSA-5900-UUD-DRG Nos. 9501 to 9526) in Attachment 2</li> <li>- Landscape Plans Zones 0-11 (NEL-STH-NSA-5900-UUD-DRG Nos. 9535 to 9547) in Attachment 2</li> <li>- Landscape Sections (NEL-STH-NSA-5900-UUD-DRG Nos. 9551 to 9562) in Attachment 2</li> </ul>
<p><b>Objective 5.4</b></p> <p>Experiential</p>	<p>Provide a great journey for motorists, public transport users, pedestrians and cyclists with consideration of the varying speeds and journey types. Prioritise the visual amenity of the community over the road user.</p>	<p>As presented in Section 4 of this UDLP Report, a guiding framework of ‘four speeds of experience’ has informed the design process, contributing to the delivery of outcomes that address the motorist, cyclist, pedestrian, and ecological experience of the Project.</p> <p>For example, the modular system of shifting materials, patterns, colours, and compositions presented within the noise walls in this Project prioritises pedestrian experience and positively speak to vehicular and cyclist movements. More specifically, it is noted that:</p> <ul style="list-style-type: none"> <li>- For motorists, the design seeks to provide a cohesive but varied experience along the corridor. This is in principle achieved by way of noise walls designed in a way that positively responds to and accords with key characteristics of respective areas and/or precincts while forming visual connections with surrounding landscaping through transparent acrylic panels at the upper level of noise walls. For instance, the experience created by varying noise walls alongside the landmark SUP bridges at Estelle Street and Heyington Avenue provide motorists safe and convenient access from and to the surrounding road networks while establishing a positive connection to Country through wayfinding markers.</li> <li>- For public transport users, the Project introduces Melbourne’s first dedicated express busway, providing direct connections to key landmarks and facilities within the eastern suburbs as well an efficient journey into Melbourne’s CBD. Visual experience as well as public amenities afforded within and adjacent to the Freeway has been prioritised by using appropriate design elements to minimise or conceal physical encroachment and visual intrusion of road infrastructure into public realm.</li> <li>- For pedestrian and cyclists, the design seeks to increase connectivity and integrate noise walls into the experience, through landscape screening where appropriate or textured finishes and curated connection details that provide a high quality visual presentation at close distances. For instance, a thriving, biodiverse landscape along Koonung Creek that grows and evolves at different rates, are incorporated along with secondary paths enabling pedestrians to interact with and emerge into the landscaped space.</li> </ul> <p>In addition to the above, noise walls are co-located with new and enhanced landscape planting in large areas of open space. This landscape planting solution will provide effective and of high amenity screening and also contribute to the quality of the open spaces. In ‘pinch-points’ where there are limited setbacks between private property and the freeway reserve, careful design solutions will be incorporated to ensure that respective noise wall material and/or colouration will provide an improved journey experience for all users.</p>

# 5. Consistency with the Urban Design Strategy

## 6. Vibrancy

Vibrant communities are places where people want to visit, experience or live.

### Response:

The Project recomposes this part of the Eastern Freeway to provide enhanced connections and a prioritised pedestrian experience through a series of settings that build on the sense of the discovery and delight of the Koonung Creek Reserve.



### Objectives

### Urban Design Outcome

### Response

#### Objective 6.1

Putting people first

Provide places that are comfortable, inclusive and pleasant for the local community, support active and healthy lifestyles, and encourage diverse social interaction within public spaces.

With Connecting People as one of the core pillars underpinning the Project, this design response includes a diverse range of new formal and informal opportunities for community to come together and engage with local landscapes. Guided by the 'people first' principle, the design increases opportunities for diverse social interaction by bringing together various communities and social groups into various settings along the Project corridor.

A reconfigured pedestrian network provides clear and direct ways to navigate the Project, while leading users through journeys of discovery over fascinating infrastructure (such as the SUP bridges and the integrated walking and cycling network resulting from the Project) and through varied landscapes within open spaces. For instance, the updated paths to Koonung Creek Trail and between Doncaster Interchange and Winfield Road further reinforce an integrated user friendly network for pedestrians and cyclists. Reinstated existing walking and cycling paths within Musca Street Reserve will be connected to the new and existing shared use path within Koonung Creek Trail to the north of the Freeway through the underpass, forming a seamless journey.

A web of local nodes has been identified throughout the Project, providing touchpoints in the landscape. These may have been connected with passive moments that are verdant and quiet or a lookout providing connection and orientation, or formal moments of active recreation.

The design focuses on enhancing various uses of the Koonung Creek corridor through SUP connectivity, open spaces, secondary paths, all allowing interaction with the Creek and wetland and providing opportunities to interact with nature.

At the Heyington Avenue SUP bridge, the ramp has been realigned to be more accessible for all users and provide a moment of pause and observation of the adjacent Valda Wetlands.

#### Objective 6.2

Places for people

Improve local neighbourhoods where there are opportunities to create inviting, people-friendly streets and public places.

Adjacent urban landscape and street interfaces are addressed throughout the Project, protecting existing community spaces and providing an expanded range of diverse public spaces for community benefits.

Clear and direct ways to navigate into and through the Project blur the boundary with adjacent settings, integrating with the wider neighbourhood.

The strategic use of acrylic in the noise walls ensures that the road corridor is visually permeable, eroding the sense of enclosure these walls would otherwise cultivate.

Reconfigured landscapes along reserves adjacent to the Koonung Creek include (not limited to) park furniture and amenities that will be strategically located at appropriate locations (such as areas close to paths or at points of entry and exit). As such, the design will encourage people to use these facilities and assist in fostering healthy active communities and vibrant urban environments.

Heavy vehicle and bus traffic is also anticipated to be eased on local streets due to the Project connection of the Eastern Freeway with the M80 Ring Road, along with potential reductions through the encouragement of public transport usage by providing a dedicated express busway that is a safe, direct and fast connection to the City of Melbourne.

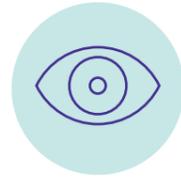
# 5. Consistency with the Urban Design Strategy

## 7. Safety

Safe environments are essential for strong, connected and liveable communities.

### Response:

The urban design promotes safe, inclusive and liveable neighbourhoods through north-east Melbourne.



### Objectives

#### Objective 7.1

Safer places

### Urban Design Outcome

Reduce the opportunity for crime, maximise passive surveillance and support safe, comfortable and enjoyable places that meet Crime Prevention through Environmental Design (CPTED) principles.

### Response

The urban design promotes diverse and safe environments for the community that meet Crime Prevention through Environmental Design (CPTED) principles by:

- maximising visibility and natural/passive surveillance of the public environment
- provision of a network of safe movement, good connections and access
- activation of public spaces through opportunities for passive and recreational activity
- demarcating private and public land
- adopting design-related recommendations outlined in an asset transfer strategy.

Examples of how CPTED principles have been incorporated into the design are listed below, which will be further refined as the urban design develops:

- The design encourages people to use the public spaces through the establishment of passive and active recreation areas (and retention of supporting amenities i.e., seating, toilets, bike repair stations) throughout the Project in particular with regard to established open spaces such as Musca Street Reserve, Valda Wetlands and Koonung Creek Reserve.
- The design encourages pedestrian and cyclists to connect to surrounding neighbourhoods and parkland areas throughout the Project and beyond. For instance, replacement of the Estelle Street and Heyington Avenue SUP bridges facilitate north-south passage across the Eastern Freeway for pedestrians and cyclists with safe and convenient access and paths.
- Access and vital sightlines, via the SUP network, to existing key amenities such as playgrounds adjacent to the UDLP area are also prioritised (Koonung Creek, Katrina Street and Winfield Reserves). These popular key nodes benefit the surrounding corridor through a sense of community ownership and pride.
- Built form will be made from quality materials and finishes that deter vandalism and reduce maintenance.
- Provision of clear sightlines along the Freeway corridor for motorists and along pedestrian and cyclist path networks enhance the feeling of safety and enjoyment experienced by end users. Through detailed design, the alignment of SUP underpasses will seek to maximise clear sightlines based on site constraints.

The design encourages the use of public spaces. This enhances community surveillance by creating a more populated public realm that deters antisocial behaviour and provides an enhanced sense of safety. Retaining structures and abutment treatments are being designed to maximise openness and daylighting and minimise areas of concealment or entrapment (i.e., dead end corners). Examples that demonstrate an improvement to visibility, safety and amenity include:

- the upgraded pedestrian and cyclist bridges at Heyington Avenue and Estelle Street, with improved access to the Koonung and Valda Wetlands for communities north of the Freeway by way of crossing replacement
- incorporation of enhanced landscaping at the entrances of the Heyington Avenue and Estelle Street to create a sense of identity and improve visibility
- inclusion of 'incidental' nodes interspersed throughout the walking and cycling network to enhance user experience of amenities within open spaces
- upgrades to the Doncaster Road interchange by way of constructing the underpass to the north and widening the underpass to the south. More specifically, the underpass to the north is straightened as much as possible thereby increasing direct view lines with corresponding low level landscaping and creating positive realignment with local roads; and further, designed with stainless steel metal mesh to be positioned between the underpass and the express busway so as to ensure safety for pedestrians and cyclists. With regard to the underpass to the south, not only has it been considerably widened in width but also incorporated with wing walls on top of landscaping on both sides thereby creating direct connections with Koonung Creek Reserve extending from west to east.

Overall, the upgrades to the SUPs at the Doncaster Road Interchange evidently demonstrate a perceived level of improvement to visibility, safety and amenity.

# 5. Consistency with the Urban Design Strategy

## 7. Safety (continued)

Objectives	Urban Design Outcome	Response
<p><b>Objective 7.1</b></p> <p>Safer places (Continued)</p>		<p>Adjacent land uses such as residential zones encourage passive surveillance, with plant mixes selected to minimise visual obstruction. Material finishes in the built form will discourage vandalism. Higher-level plant selection and reduced planting densities in the right areas will support passive surveillance to occur from the properties adjoining local reserves.</p> <p>Lighting along the Freeway corridor has been placed in the outer verges of the Eastern Freeway, allowing for passive illumination of adjacent SUP and secondary path networks while balancing residual impacts to neighbouring residential areas and areas of high biodiversity value. Lighting has been provided to SUP underpasses and bridges, making paths visible, safe and easy to navigate and promoting connection of communities across the Project. For example, the Musca Street Reserve underpass connection with Yarra Flats Reserve will be improved through upgraded lighting, wall treatments and wayfinding as per UDS place-specific requirements.</p> <p>The design seeks to create a strong sense of community ownership for the public spaces, hence encouraging a shared sense of responsibility for security. Open space and nature play opportunities provide an environment that is able to be enjoyed by all.</p> <p>The design has taken into consideration minimisation of maintenance through:</p> <ul style="list-style-type: none"> <li>- use of materials and finishes with due consideration for maintenance, availability for repair or replacement and ongoing access</li> <li>- selection of geographically appropriate vegetation that supports local ecosystems and is resilient to the local climate</li> <li>- installation of a dry creek bed to provide passive irrigation to assist with plant establishment and ongoing health</li> <li>- the development of an Asset Transfer Strategy that defines ongoing roles and responsibilities for long term maintenance and asset management</li> <li>- the design achieving territorial re-enforcement through the use of throw barriers on pedestrian bridges, clear wayfinding and warning signage (as appropriate), path definition and suitable fencing to maintain delineation between public and private property</li> <li>- the design incorporating a variety of routes to destinations, thereby minimising the potential for predictability and providing options where point for contemplative reflection in nature can occur separate from the more direct active transport commuters or recreational users. Legibility will be promoted through the detailed design process to ensure intuitive wayfinding for the public to safely move through the area.</li> </ul>
<p><b>Objective 7.2</b></p> <p>Road safety</p>	<p>Prioritise safety for all users including motorists, cyclists, pedestrians and public transport users, and avoid unnecessary distractions.</p>	<p>The design has adopted a safety-led solution for all users in the following manner:</p> <ul style="list-style-type: none"> <li>- Road design has been developed in accordance with current standards and best practice, noting that Road Safety Audits have already been undertaken and will continue to be undertaken through the following stages of design development.</li> <li>- The use of continuous concrete barriers aligns with Safe Principles for road users.</li> <li>- Variable message signage is proposed to minimise clutter as well as provide adaptability of signage in unusual conditions.</li> <li>- For public transport users, the dedicated express busway minimises the interaction with other modes and movements, minimising opportunities for conflict.</li> <li>- CPTED principles have been incorporated into the design as outlined in Objective 7.1 for the safety of pedestrians and cyclists.</li> <li>- Signalised crossings are provided at other at-grade crossings.</li> <li>- Grade-separated crossings for pedestrians and cyclists are provided at major intersections such as Doncaster Road and Elgar Road, as well as across the freeway at Estelle Street and Heyington Avenue.</li> <li>- Secondary pathways are proposed to encourage pedestrians to separate from commuter cyclists.</li> <li>- Disability Discrimination Act (DDA) - spacing compliant access is provided at the SUP bridges.</li> <li>- Sightlines and interaction with the Freeway corridor have been carefully considered to ensure visibility and safety for all users with regard to landscape heights and planting locations. Safety will continue to be the priority of the design development through the establishment of a Safety in Design process that reviews the designs for safety during the construction, operation, maintenance and demolition stages.</li> </ul>

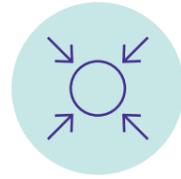
# 5. Consistency with the Urban Design Strategy

## 8. Accessibility

Highly accessible and inclusive environments encourage positive activation and are vital to community wellbeing, inclusion and health.

### Response:

The Project has prioritised Universal Access principles, balancing regulatory requirements with the need to create vibrant civic space and architecture accessible to all.



### Objectives

#### Objective 8.1

Universally inclusive

### Urban Design Outcome

Enhance universal access across the affected and surrounding area for all members of the community.

### Response

The design has prioritised Universal Access by carefully considering the location of pathways, ramps and access to both the road and SUP corridor along the network. The assessment of access has been presented in Section 4 of this UDLP report.

The seven principles of universal access have been promoted through:

- providing equal access by designing all road crossings and the SUP bridges across the freeway in accordance with DDA compliance
- providing flexibility of use through the introduction of primary and secondary pathways where space permits along the Koonung Creek corridor
- providing simplicity in the connections such as the direct ramps at Estelle Street SUP bridge or the direct through routes under Doncaster Road
- providing effective communication through the use of variable message signage on the freeway
- allowing a reasonable level of flexibility through alternative routes, safety handrails for both pedestrians and cyclists and segregation through traffic barriers for road users thereby minimising hazards
- requiring minimal effort to cross the freeway through the straight alignment and ramp provisions at Estelle Street and Heyington Avenue SUP bridges
- providing suitable space and size for use through appropriate path widths.

An expanded palette of materials is used through the various Project elements (such as bridges, noise walls) to ensure a sense of place and journey is reinforced. This approach is mirrored across user types and therefore ensures that the way a bus passenger experiencing various parts of the Project relates to the experience of a pedestrian or other user.

A reconfigured SUP network stretches across the Project, providing clear and direct journeys into and through the corridor. A consistent minimum width of 3m applies to all new SUPs (minimum 4m for SUP bridges). In key recreational nodes and areas of high demand, such as the Valda Wetlands, the Koonung Creek Reserve Wetlands and along the Koonung Creek Trail where the width of the public open space is wide enough, two paths and suitable landscape planting are provided. A direct commuter-focused shared use path provides an efficient journey through the Project, while a more meandering landscape-experience path provides an experience of discovery and delight for pedestrians along the Koonung Creek corridor. The UDLP will apply relevant Standards as required for accessibility of access, such as:

- Australian Standard AS 1428.1 (2009) - Design for access and mobility, Part 1: General requirements for access - New building work (AS 1428.1)
- Disability Discrimination Act 1992 (DDA)
- Australian/New Zealand Standard AS 2890.5 (2020) - Parking facilities, Part 5: On-street parking for people with disabilities (AS/NZS 2890.5)
- Australian/New Zealand Standard AS/NZS 2890.6 (2009) - Parking facilities, Part 6: Off-street parking for people with disabilities (AS/ NZS 2890.6)
- Australian/New Zealand Standard AS/NZS 1428.4.1 (2009) - Design for access and mobility, Part 4.1: Means to assist the orientation of people with vision impairment - Tactile ground surface indicators AS/NZS 1428.4.1.

Examples of instances where the above seven principles have been applied are outlined as follows:

- Doncaster Road bridge SUPs (NEL-STH-NSA-5900-UUD-DRG-9141 and 9142) in Attachment 1: Architecture and Urban Design.
- Doncaster Road SUP underpass adjacent to the express busway (NEL-STH-NSA-5900-UUD-DRG-9148 to 9149) in Attachment 1: Architecture and Urban Design.
- Estelle Street SUP bridge (NEL-STH-NSA-5900-UUD-DRG-9171 to 9176) in Attachment 1: Architecture and Urban Design.
- Heyington Avenue SUP bridge (NEL-STH-NSA-5900-UUD-DRG-9181 to 9186) in Attachment 1: Architecture and Urban Design.

# 5. Consistency with the Urban Design Strategy

## 8. Accessibility (continued)

Objectives	Urban Design Outcome	Response
<p><b>Objective 8.2</b></p> <p>Twenty-minute neighbourhoods</p>	<p>Support and enhance 20-minute neighbourhoods for convenient and desirable access to everyday services and facilities (within a 20-minute walk from their home, or faster by bicycle or local public transport).</p>	<p>The design includes relocated and/or upgraded SUPs and linkages along and across the corridor to make it easier, safer and faster for communities to access services and facilities through active or public transport.</p> <p>Public open space and amenities have been designed to support a wide-ranging scope of use. Formal and informal settings are dotted throughout the Project, encouraging active and passive enjoyment.</p> <p>Examples of 20-minute neighbourhoods are enhanced through the:</p> <ul style="list-style-type: none"> <li>– improved connections at cyclist and pedestrian key nodes such as Estelle Street, Doncaster Road bridge intersections and Heyington Avenue, providing convenient and desirable access to facilities north-south neighbourhood connection across the Eastern Freeway</li> <li>– maintenance of existing north-south connections across the Eastern Freeway, such as Musca Street Reserve underpass to Yarra Flats Reserve, at Tram Road bridge and Elgar Road bridge</li> <li>– introduction of express busway (noting that this UDLP response to the section between Burke Road and Doncaster Park and Ride) and related park and ride facilities.</li> </ul>
<p><b>Objective 8.3</b></p> <p>Active transport</p>	<p>Encourage walking and cycling for transport and recreation with an integrated active transport infrastructure that meets future growth in demand and connects seamlessly with surrounding networks and with proposed infrastructure being delivered by others.</p>	<p>Proposed walking and cycling networks are integrated with existing infrastructure and link into adjacent connections to ensure seamless movement and facilitate growing community demand for safer, more attractive and efficient walking and cycling paths.</p> <p>Engagement with local communities and governments is ongoing to ensure tailored results are achieved throughout the Project.</p> <p>The proposed network of SUPs throughout this Project is designed to interface with new Bulleen Park and Ride facility and the existing Doncaster Park and Ride facility. Through this approach, public and active modes of transport are harmoniously combined to work as one interconnected system. This ecosystem of paths and transport nodes anticipates increased patronage and varied use of both active commute and passive recreational experiences.</p>

# 5. Consistency with the Urban Design Strategy

## 5.2 Corridor-wide requirements – Key design directions

The Incorporated Document requires that this UDLP is consistent with the Urban Design Strategy (UDS). As per Section 3.2 (Key design directions) of the UDS, the Project must demonstrate effective integration of disciplines to deliver an innovative and integrated design solution in response to the five corridor-wide key design directions.

This section outlines this UDLP's consistency with the key design directions provided in the UDS:

- 1 Key Direction 1**  
**Develop an integrated response**  
The project must demonstrate the effective integration of engineering and urban design to deliver an innovative and balanced design solution.

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- 2 Key Direction 2**  
**Support a natural and connected corridor**  
The project must demonstrate a design that responds to the natural, movement and open space systems and improve connectivity to 'stitch' communities across the project corridor.

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- 3 Key Direction 3**  
**Recognise cultural and historic values**  
The project must demonstrate a design philosophy and approach that recognises, protects and promotes Indigenous cultural heritage values, and celebrates and interprets places and objects of historical heritage importance.

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- 4 Key Direction 4**  
**Provide a great experience for road users**  
The project must demonstrate a design that creates a great journey for road users, with a consistent experience that coherently links to adjacent freeways and provides a design hierarchy that allows for intuitive navigation.

---

- 5 Key Direction 5**  
**Create a context sensitive design**  
The project must demonstrate a design that protects, maintains and enhances the local context through which the project passes.

# 5. Consistency with the Urban Design Strategy

1

## Key Direction 1

### Develop an integrated design response

The project must demonstrate the effective integration of engineering and urban design to deliver an innovative and balanced design solution.

The Project has established a multidisciplinary, integrated project team of architects, landscape architects, engineers, planners, transport engineers, sustainability specialists, and other suitably qualified professionals, to work closely together to create a shared vision for the Project. Elevating the Project from a traffic-based engineering solution, the team has created a legacy piece that reflects the three core pillars of Connection to Country, Caring for Country and Connecting People.

This urban design led approach has enabled the team to challenge the EES Reference Project and deliver positive outcomes for community and environmental benefits wherever possible. This significant level of coordination and integration has also benefited the design of key architectural and landscape landmarks and nodes throughout the scope of this UDLP, such as the SUP bridges at Estelle Street and Heyington Avenue. These bridges are designed and sited to minimise visual impact on local communities yet respond meaningfully to the corridor-wide design principles. Negative impacts to neighbouring communities from noise walls and screens are minimised. The bridges are an exemplar of the integrated construction-engineering-architecture approach, achieving considered and meaningful end user experiences (from pedestrian through to vehicular); integrated with adjacent landscape and detailed to represent landmarks in the landscape from up close and afar.

The tones and textures of corridor-wide elements for the Project contribute to its collective identity by visually unifying the Freeway corridor, bridges, buildings and landscape into a choreographed journey that responds to speed, user experience and context. The collective identity of these elements is vital in maintaining a cohesive language and consistency across the Project.

2

## Key Direction 2

### Support a natural and connected corridor

The project must demonstrate a design that responds to the natural, movement and open space systems and improve connectivity to 'stitch' communities across the project corridor.

The Project design approach improves current connections and supports natural systems. An integrated cycling and pedestrian network along the Freeway corridor and linear parklands improves active transport and recreation options. Wherever possible, an east-west route caters well for cycling commuters, efficiently connecting communities along the Eastern Freeway with Melbourne's inner city. New connections via the Yarra Link green bridge at the southern NEL Tunnel portal will link pedestrians and cyclists from the Koonung Creek Valley and the Yarra River Valley north through to the M80 Ring Road.

The landscape design connects, extends and upgrades open spaces along and adjacent to the Project corridor, enabling communities to have better access to diverse and vibrant public open space environments.

Where reinstatement of parklands is required, the Project will improve the ecology, aesthetics and experiential opportunities of natural environments.

Wetland along the Koonung Creek corridor will be strengthened through a biodiverse habitat corridor with extensive plantings of indigenous trees and vegetation from appropriate Ecological Vegetation Classes (EVCs).

Existing SUP bridges over the Eastern Freeway at Estelle Street and Heyington Avenue will be rebuilt to accommodate the new infrastructure. These well-resolved pieces of integrated design respond appropriately to the context and better connect into new and upgraded pathways.

3

## Key Direction 3

### Recognise past, contemporary and shared Indigenous and historic cultural values

The project must demonstrate a design philosophy and approach that recognises, protects and promotes Indigenous cultural heritage values, and celebrates and interprets places and objects of historical heritage importance.

In recognition of their inherent custodianship of Wurundjeri Country, Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation (WWCHAC) has partnered with the North East Link Program since 2018.

This partnership continues for the life of the Project and has structurally embedded Wurundjeri voice and agency through the preparation of the UDS and through the design review process as a fundamental principle of self-determination when designing 'on Country'.

The Project is grateful for the contribution already made by Wurundjeri Woi-wurrung in support of NEL and has respectfully incorporated many elements into the design thinking to complement the conversations generously shared. This UDLP seeks to reflect the Wurundjeri Woi-wurrung's contribution to shaping future design outcomes for North East Link on Wurundjeri Country and commits to partnering with the WWCHAC for the life of the Project.

As part of supporting the protection and enhancement of precious Wurundjeri Woi-wurrung traditional knowledge and values, the WWCHAC has identified a number of cultural themes that may be 'brought to life' through the design of the broader North East Link Program and serve as focal points for the incorporation of these values within this UDLP:

- art and interpretation
- artefacts and material culture
- ceremony (tanderrum)
- Country and natural resources
- fire
- Indigenous architecture
- Indigenous seasonality
- language and communication
- the Manna Gum and Witchetty Grub
- past, contemporary and emerging Indigenous identity
- resource gathering and harvesting
- story telling
- transition and beneath the earth
- travel and trade
- water and totem animal species.

Giving voice and agency to First Nations people and embedding Indigenous design expression is core to the Project. These tenets form part of the DNA of the design's approach, are supported across all levels of the Project and act as an anchor for decision making. The design's strategy is achieved through the following three key domains:

- a culturally sophisticated design narrative
- a culturally responsive First Peoples engagement strategy
- a global benchmark for First Peoples design practice.

(continued on next page ...)

# 5. Consistency with the Urban Design Strategy

## 4 Key Direction 4 Provide a great experience for road users

The project must demonstrate a design that creates a great journey for road users, with a consistent experience that coherently links to adjacent freeways and provides a design hierarchy that allows for intuitive navigation.

## 5 Key Direction 5 Create a context sensitive design

The project must demonstrate a design that protects, maintains, and enhances the local context through which the project passes.

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The Project commits to carrying forward this knowledge and these principles in the ongoing design and delivery of NEL through building on Project-specific cultural themes identified by the WWCHAC, and has demonstrated the commitment through the design. Key examples are (not limited to) outlined below:

- Koonung Koonung Creek is a historical Songline, a trade route and carried and supported the Wurundjeri way of life. The design restores the cultural values embedded in Koonung Koonung Creek to create a cultural experience throughout the project. This is achieved by incorporating appropriate materials and indigenous flora species included in the planting schedules, shown on the architectural and landscape design plans respectively.
- The design acknowledges the contribution made by the Wurundjeri Woi-wurrung and has respectfully incorporated indigenous design in the selection of colours, materials and design treatments across the Project. For instance, colouration of new noise walls and planting selection, both heavily relied on the co-design process, are reflected on the plans, demonstrating how Indigenous cultural heritage values are embedded into and celebrated through the design development. Artefacts and artwork shared by Wurundjeri Woi-wurrung have also been used in the development of place-specific design palettes – this is best demonstrated through the application of Munsell soil colour classification system to bridges, noise walls and other above-ground structures.

The Project has partnered with Wurundjeri Traditional Owners to co-design architectural and landscape design solutions that respect Wurundjeri cultural values. The co-design process is centred on best practice engagement promoting the free prior and informed consent principle and upholding cultural integrity. As a result, the design response will demonstrate a global benchmark for First Peoples design practice.

The design creates a positive experience for road users that coherently links the Eastern Freeway to Melbourne's CBD, East Link and the M80 Ring Road.

The Project scope includes two primary nodes of NEL, the Eastern Freeway/Tunnels Interchange at Bulleen Road (in the Southern Interface Zone) and the Doncaster Road Interchange.

Doncaster Road Interchange appropriately considers its importance as an entry point for bus users to the Doncaster Park and Ride transport hub and a reinstated location for the 'Sentinel' sculpture at Doncaster Road.

East of the Eastern Freeway/Tunnels Interchange, the Freeway corridor becomes wider and more strongly defined by the noise treatments on either side. The colours, textures and tones of the Koonung Creek Valley landscape and geology are referenced in this section through a sequential and choreographed landscape journey. Existing noise walls are retained where possible between Bulleen Road and Tram Road.

The Estelle Street SUP bridge is a dominant marker in this freeway environment, signalling the change in road geometry with the bend in the Freeway alignment. At Doncaster Road Interchange, a featured bridge, wall and barrier design connects with the architecture of Doncaster Park and Ride, signalling the importance of this public transport node.

West of the Eastern Freeway/Tunnels Interchange, the design approach responds to the parkland settings and sweeping, long view lines framed by dramatic cutaways and striated rock interspersed with modernist concrete infrastructure. The design response utilises a curated selection ranging from materials, finishes and textures to new infrastructure interventions along this historic and naturalistic high-quality road experience.

The urban design led integrated approach to the Project ensures key road infrastructure is both designed to sensitively respond to all users and is a context-specific design solution. The SUP and road bridges over the Eastern Freeway provide wayfinding landmarks for the neighbouring communities and urban design integration with the existing landscape to form a connection to Country.

An intricate system of noise wall types has been designed as a corridor-wide 'kit of parts' that can be locally applied for each site. Areas of the Eastern Freeway experienced at speed have associated noise wall types and arrangements appropriate to that experience. At key interchanges or where pedestrians cross over the Freeway, noise walls 'scale down' to respond appropriately, providing finer-grain texture and acrylic views through and beyond structures while maintaining their primary purpose of noise attenuation.

## 5. Consistency with the Urban Design Strategy

### 5.3 Design Character Areas

The North East Link Urban Design Strategy (UDS) defines three distinctive design character areas – Ridgeline, Yarra River Valley, and Koonung Creek Valley – each containing rich landscape and biodiversity values. This UDLP applies to land within Yarra River Valley and Koonung Creek Valley character areas.

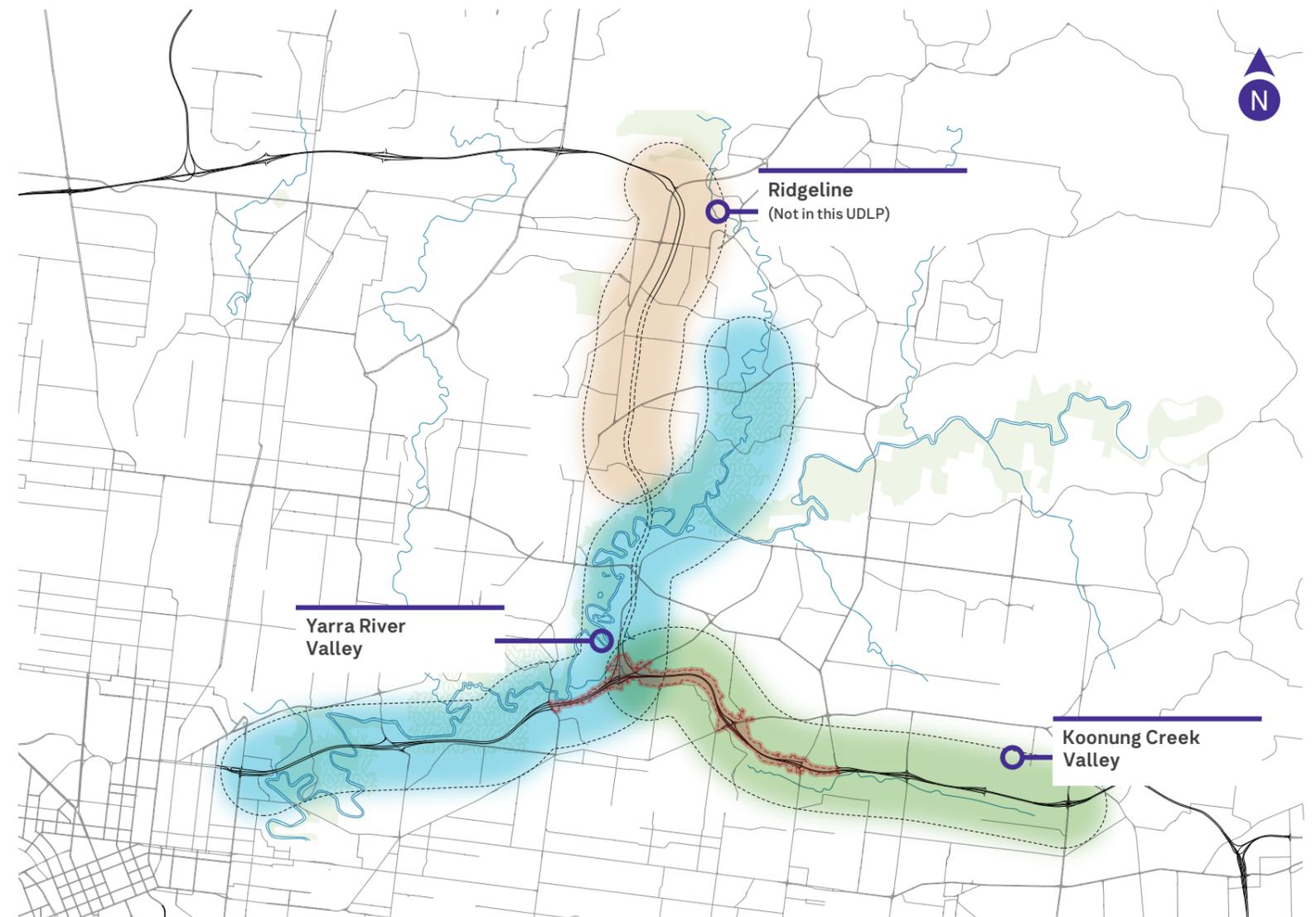


Figure 66: North East Link Program Design Character Areas

## 5. Consistency with the Urban Design Strategy

### 5.3.1 Yarra River Valley

This UDLP applies the section of the Yarra River Valley character area located between Musca Street and Burke Road in Balwyn North. The design response for land to the east, through to Bulleen Road and the future Eastern Freeway interchange, has already been approved under the Tunnels UDLP (except where outlined at Section 4.1.3 above). Visual and functional integration with this approved design has been a consideration for this UDLP.

Key locations, features and contextual elements within this character area identified through the UDS, which are directly relevant to the design response proposed through this UDLP include:

- the sense of connection between city and countryside provided by views through to the low-lying green floodplains of the Yarra River (Birrarung) between Burke Road and the Freeway Golf Course, and to a lesser extent landscape buffer planting on Freeway verges
- the Freeway design, which prioritises aesthetic and landscaping values, with consideration of adjacent tree canopies, site responsive colours and material palettes and a visually appealing design outcome
- the role and significance of the Yarra Flats parklands and Yarra River itself as both place and landscape, from a cultural, recreational, and environmental perspective
- the role and significance of the Musca Street reserve as a local open space and recreational asset.

Other significant areas of the Yarra River Valley identified within the UDS, such as Heide Museum of Modern Art and the Bolin Bolin Billabong, are located approximately 1.5km to the north-west outside of this UDLP area.

### Key Design Requirements

The UDS identifies the following key design requirements and priorities for the Yarra River Valley character area.

#### **1Y. Protect and promote cultural values for the places of significance including the Yarra River, Bolin Bolin Billabong and the Heide Museum of Modern Art.**

The proposed landscape design response acknowledges the spiritual and cultural significance of the Yarra River (Birrarung) to the Wurundjeri Woi-wurrung people, respecting and protecting its unique character.

Physical impacts to the Yarra Flats Reserve and riparian corridor have been minimised through careful design and siting of works associated with the Freeway widening, retaining the existing footprint on the northern side.

Additional landscape plantings and a new path connection between the Koonung Creek and Main Yarra Trails are proposed within the Reserve itself, providing enhanced opportunities for people to connect with and experience the cultural, landscape and environmental significance of the Yarra River (Birrarung) and surrounding parklands.

The design retains and enhances short and medium views from the Eastern Freeway through to the Yarra River (Birrarung) and Freeway Golf Course, through additional landscape planting and careful siting of road infrastructure for it to not impact the Yarra Flats Reserve or the Yarra River (Birrarung).

Significantly, no noise walls are proposed on the northern side of the Freeway, maintaining the highly valued 'green corridor' effect experienced by motorists through this section as well as the visual and landscape amenity of the adjacent parklands.

#### **2Y. Respect the design qualities of the original section of the Eastern Freeway built in 1977 including mast lights and bridges, rock escarpments and 'borrowed' landscape.**

This UDLP covers approximately 400 metres of the original section of the Eastern Freeway. It has maintained the design approach and response proposed through the approved Tunnels UDLP for the Freeway widening east of Musca Street through development of a place-specific design palette drawn from colours, textures and materials in the immediately surrounding landscape.

In particular, the existing sweeping concrete bridge at Burke Road and thick landscape plantings visually linking the Freeway verges to abutting parklands have been retained as key 'framing' design elements, particularly on the northern side where new and enhanced landscape treatments provide for filtered medium and long-range views through to 'borrowed' landscapes in the Yarra Flats reserve and Freeway Golf Course.

To the south, the design of new noise walls along the Freeway interface with the Musca Street Reserve incorporates acrylic panels to minimise visual intrusiveness, with a suite of textures having been developed for solid sections of the walls, which reference and celebrate the dramatic rock escarpments that characterise the Freeway further to the west.

#### **3Y. Create a great bus user experience along the Eastern Freeway and a well resolved facility for Bulleen Bus Park and Ride**

The design provides for a direct connection between the express busway and the existing Bulleen Park and Ride facility, avoiding both Freeway and road traffic to deliver a smooth and streamlined experience for bus users. The express busway is sited on the northern side of the Eastern Freeway with views over the Yarra Flats Reserve parklands and Freeway Golf Course, providing a visually attractive and engaging journey connecting bus users to Country and landscape.

The connection between the Bulleen Park and Ride facility and the express busway proposed through this UDLP has been designed to avoid disruption or impacts on the existing network of SUPs and pedestrian/cyclist routes, ensuring that public and active transport network are integrated into one coordinated system, resulting in minimised conflicts and overall reduced travel time across all modes.

#### **4Y. Maximise opportunities for land use integration at the Manningham Road interchange**

This is not applicable to this UDLP. The design response for this area is described and forms part of the approved NEL Tunnels UDLP.

#### **5Y. Be sympathetic to the landscape setting of the Greater Yarra Urban Parklands**

The design provides for more canopy trees and increased areas of indigenous landscape plantings chosen from the local Ecological Vegetation Classes (EVCs) within the Musca Street Reserve and Yarra Flats Parklands, improving biodiversity and existing habitat links and visual amenity along the Yarra River (Birrarung) corridor.

#### **6Y. Improve the ability for the community to access open space in Bulleen**

This is not applicable to this UDLP. The design response for this area is described and forms part of the approved NEL Tunnels UDLP.

#### **7Y. Provide enhanced and more convenient cycling routes to Melbourne's inner-city areas**

The design provides for new and upgraded cycling paths within both the Yarra Flats Reserve to the north and Musca Street Reserve to the south, including part of the future grade-separated connection between the Main Yarra and Koonung Creek Trails extending under the Burke Road bridge (to be completed as part of the future Eastern Freeway Upgrades – Hoddle Street to Burke Road UDLP).

# 5. Consistency with the Urban Design Strategy

## Place-specific Requirements

This key plan shows the design proposed through this UDLP in the context of the Yarra River Valley design character area.

Individual maps are used to outline place-specific requirements.

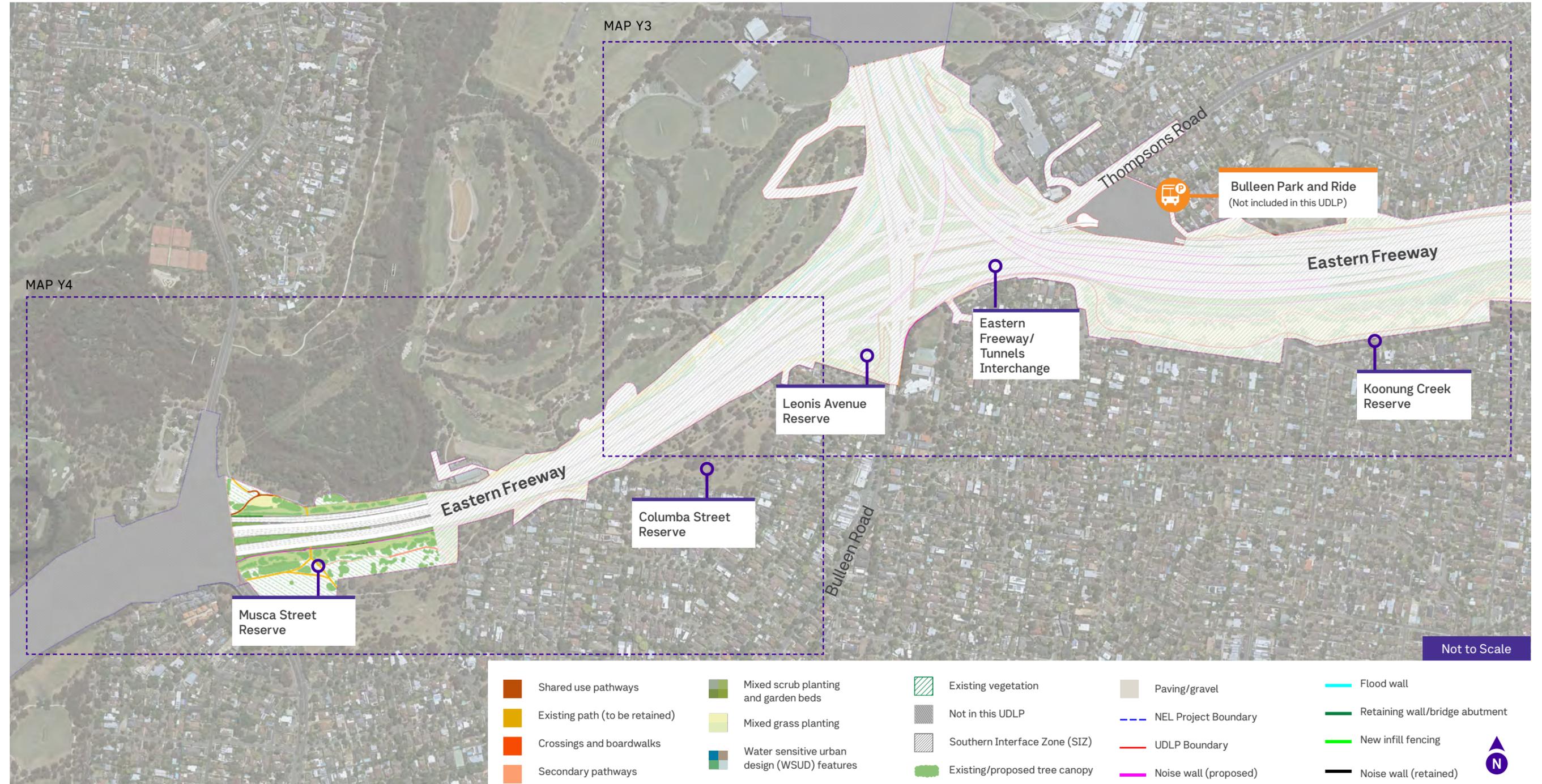


Figure 67: Southern Interface Zone and Bulleen Road to Burke Road

# 5. Consistency with the Urban Design Strategy

## 5.3.1 Yarra River Valley

### 5.3.1.1 Map Y3: Eastern Freeway Interchange

Refer to the table on pages 88 to 90 for a design response to each number.

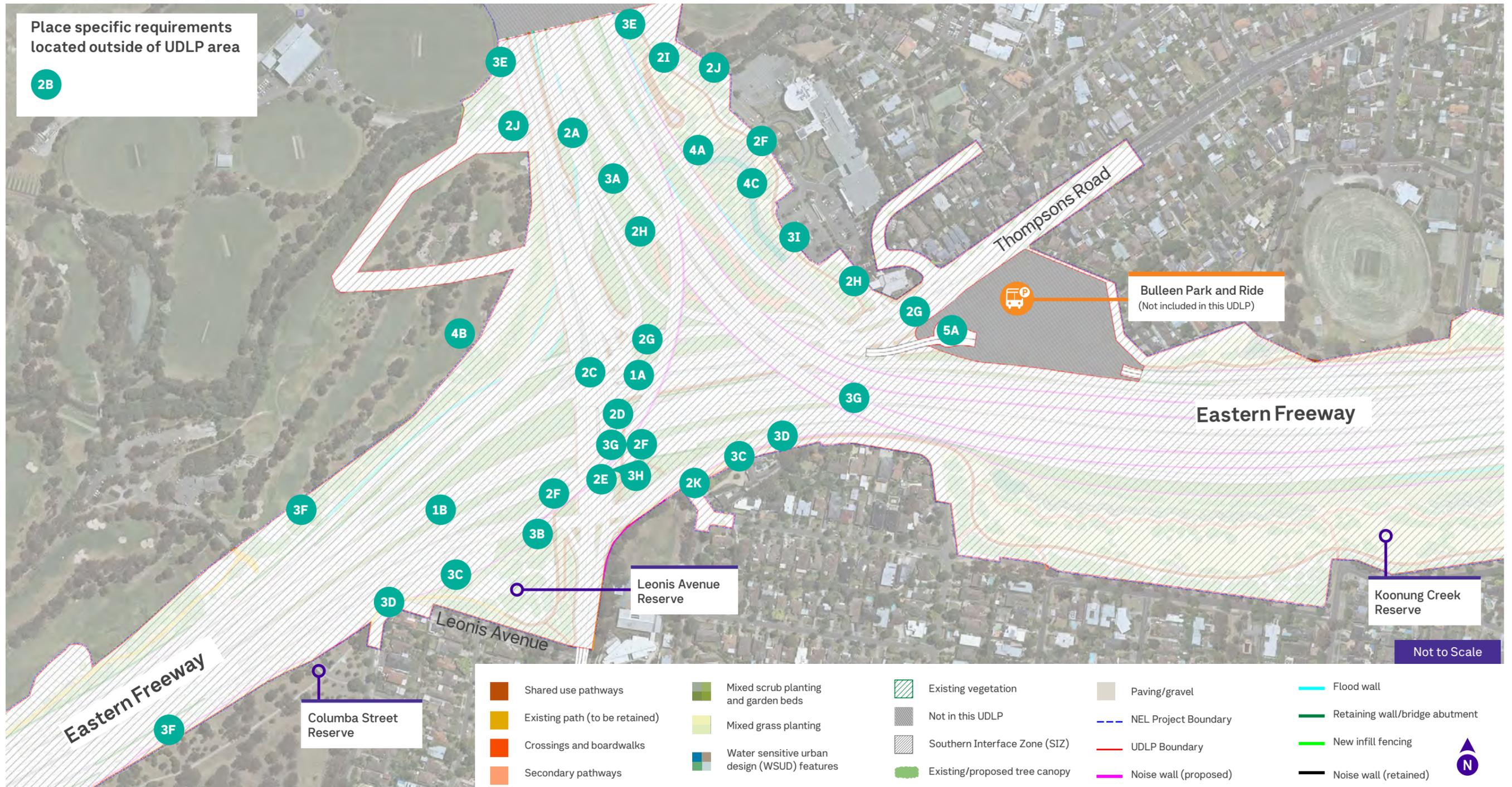


Figure 68: Southern Interface Zone

# 5. Consistency with the Urban Design Strategy

## 5.3.1.1 Map Y3: Eastern Freeway Interchange

Consistency with Urban Design Strategy Place-specific Requirements – Yarra River Valley Character Area – Map Y3 Eastern Freeway Interchange.

Key Design Requirements	Response
<b>Identity</b>	
1A Design the Eastern Freeway interchange to be a navigational node by using distinctive elements to provide features and landmarks for navigation for all modes of transports. Landscaping is to take inspiration from surrounding natural assets such as the Yarra River and will maximise indigenous planting to support biodiversity and habitat.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
1B Where the existing mast lights along the Eastern Freeway cannot be retained, consider relocation. Where the existing mast lights cannot be relocated, provide a design strategy for reuse.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
<b>Connectivity, Wayfinding and Accessibility</b>	
2A Provide an off-road walking and cycling path along the eastern side of Bulleen Road to encourage active transport to local educational, cultural and recreational places.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2B Provide a footpath along the western side of Bulleen Road to support pedestrian access north-south between Ilma Court and the Eastern Freeway. The footpath should seek to minimise impact on sensitive areas.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2C Provide signalised crossings across Bulleen Road to improve pedestrian safety, encourage active transport to the recreational and community facilities, and improve access to public open space from residential areas to the east.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2D Provide a walking and cycling crossing of the Eastern Freeway linking the new walking and cycling path to the Koonung Creek Trail.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2E Provide an alternative grade-separated crossing of Bulleen Road for pedestrians and cyclists traveling along the Koonung Creek Trail.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2F Provide a high-quality walking and cycling path to connect from Bulleen Road and alongside Thompsons Road (located further east) to the Koonung Creek Trail on the northern side of the Eastern Freeway.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2G Provide a pedestrian connection from Bulleen Road into the Bulleen Park and Ride facility.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2H Improve landscape amenity along Bulleen Road and adjacent to Bulleen Park and Ride facility.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2I Through the design process, consider improvement to connectivity to nearby schools by creating a crossing over the Koonung Creek north of the new Bulleen Park and Ride facility.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2J Ensure that the design has regard to the setting and operational requirements of Marcellin College, Trinity Grammar and Carey Grammar.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2K Ensure that the design (including of the walking and cycling crossing of the Eastern Freeway) has regard to the setting and operational requirements of Belle Vue Primary School.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.

# 5. Consistency with the Urban Design Strategy

## 5.3.1.1 Map Y3: Eastern Freeway Interchange

Consistency with Urban Design Strategy Place-specific Requirements – Yarra River Valley Character Area – Map Y3 Eastern Freeway Interchange.

Key Design Requirements	Response
<b>Amenity, Vibrancy and Safety</b>	
3A Provide roadside planting with large canopy trees along Bulleen Road to enhance the area's 'green' character and role as a gateway to Melbourne's north-east.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
3B Reinstate and enhance buffer planting along the Eastern Freeway interface at Leonis Avenue Reserve.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
3C Ensure noise walls to the south of the Eastern Freeway: <ul style="list-style-type: none"> <li>- Maximise solar access to the Koonung Creek Trail and to residential properties</li> <li>- Minimise overshadowing to residential properties</li> <li>- Have treatments to both sides of the wall</li> <li>- Use landscaping to filter views towards noise walls</li> <li>- Respond sensitively to existing retained noise walls.</li> </ul>	As discussed in Section 4.1.3 above, the additional noise wall design to be provided within the Southern Interface Zone incorporates acrylic panels to maximise solar access and minimise visual bulk, with distinct treatments on each side to provide visual interest and appeal. The landscape design and approach for these walls will be undertaken in accordance with the landscape design provided in the approved NEL Tunnels UDLP, which incorporates generous landscape buffers at the interface of noise walls and open space.
3D Ensure narrower areas along the Koonung Creek Trail have good lighting, open sightlines and are attractive to users.	<p>The Koonung Creek Reserve and its series of connected parks have been considered as key active commuting routes, both during the day and at night. The urban design for public open space has been created to maximise community amenity through diverse planting mixes for landscape areas, creating clear sightlines, solar access and passive surveillance, supported by 'borrowed lighting' from the Freeway light poles located on the outside edge of the Freeway Road corridor that will cover the new re-aligned SUP. This will aid in providing artificial lighting at SUPs and near the south-end of Estelle Street SUP bridge, improving safety at night.</p> <p>The planting density and type of landscaped areas have also been considered to maximise sightlines in key locations where required, such as at entry/exits to underpasses, near signalised pedestrian crossings over roads, by opting for high canopy trees instead or very low ground cover planting and avoiding medium dense planting that would have the potential to obstruct sight lines. Where sight lines are not of concern, planting densities remain appropriate for the amount of visual screening required to conceal civic elements from view.</p> <p>Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.</p>
3E Minimise the visibility of road infrastructure from the open spaces, Carey and Marcellin College. Plant indigenous trees and vegetation to filter views.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
3F Reinstate and enhance buffer planting along the Eastern Freeway interface.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
3G Design elevated structures at the Eastern Freeway interchange to minimise the bulky appearance when viewed from surrounding neighbourhoods such as Balwyn North.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
3H Minimise overlooking to residential properties and Belle Vue Primary School located southeast of the Eastern Freeway interchange.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
3I Enhance access and create a pleasant environment for pedestrians and cyclists along the Koonung Creek corridor at the interface with the proposed Bulleen Park and Ride facility.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.

# 5. Consistency with the Urban Design Strategy

## 5.3.1.1 Map Y3: Eastern Freeway Interchange

Consistency with Urban Design Strategy Place-specific Requirements – Yarra River Valley Character Area – Map Y3 Eastern Freeway Interchange.

Key Design Requirements	Response
<b>Resilience and Sustainability</b>	
4A Provide planting to enhance visual amenity, biodiversity and habitat links along the Koonung Creek corridor.	The landscape design, specifically in terms of planting and biodiversity, detailed in the NEL Tunnels UDLP for the section of Koonung Creek adjacent to the Thompsons Road exit ramp, will not be changed by the removal of the boardwalk and extension of the flood wall as described in Section 4.1.3 above. Additional understorey and canopy tree planting adjacent to the exit ramp will still be delivered, along with aquatic/riparian species in proximity to the creek, providing enhanced biodiversity through diverse planting mixes and visual amenity for users of the elevated shared path and improved habitat links.  Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
4B Reinstate and enhance buffer planting along the Freeway Public Golf Course interface. Through the design process, consider Water Sensitive Urban Design infrastructure to capture and treat stormwater runoff from the project.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
4C Where project works directly affect the Koonung Creek interface (between Bulleen Road and Thompsons Road), provide additional vegetation in the area around the creek to enhance the appearance and environmental values.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
<b>Urban Integration</b>	
5A Create a new Park and Ride facility in Bulleen that considers: <ul style="list-style-type: none"> <li>- Connectivity to surrounding walking and cycling network</li> <li>- Provision of convenient bicycle parking facilities</li> <li>- Sensitivity of interfaces with new built form and being at a pedestrian scale with the adjoining Koonung Creek corridor</li> <li>- Seamless transition and connection to the Eastern Freeway design (within the Yarra River Valley design character area) with the design for the Eastern Freeway interchange and to the east of Bulleen Road (within the Koonung Creek Valley design character area).</li> </ul>	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.

# 5. Consistency with the Urban Design Strategy

## 5.3.1.2 Map Y4: Bulleen Road to Belford Road

Refer to the table on pages 92 to 93 for a design response to each number.

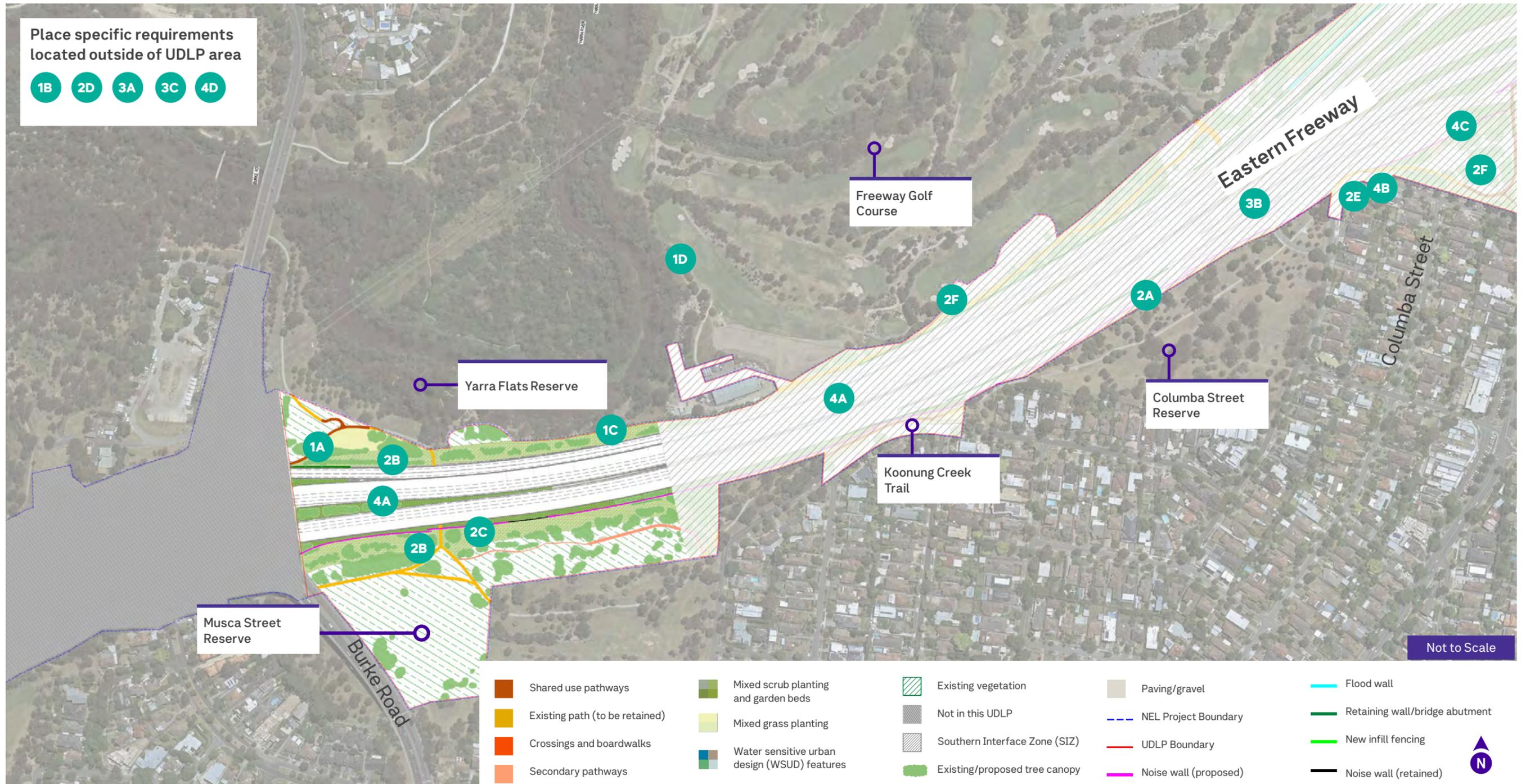


Figure 69: Burke Road to Bulleen Road

# 5. Consistency with the Urban Design Strategy

## 5.3.1.2 Map Y4: Bulleen Road to Belford Road

Consistency with the Urban Design Strategy - Yarra River Valley – Detail of Map Y4 Bulleen Road to Belford Road

Key Design Requirements	Response
<b>Connectivity, Wayfinding and Accessibility</b>	
1A Provide a more direct cycling path parallel with the Eastern Freeway from Burke Road, connecting to the existing Koonung Creek Trail east of Burke Road.	The design provides a new path connection between the western UDLP boundary, directly east of Burke Road, to the Koonung Creek Trail. This connection will ultimately be extended west under the bridge and connect through to the Main Yarra Trail, significantly improving connectivity and reducing travel time for cyclists by avoiding the current need to cross over the bridge.  The design and alignment of the western section of this path is located outside of this UDLP and will be developed through the future UDLP prepared for the Eastern Freeway Upgrades between Hoddle Street and Burke Road.
1B Provide a cycling path on the north side of the Eastern Freeway at freeway level to address existing grade issues at Belford Road.	This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Hoddle Street and Burke Road.
1C <i>*Consider providing a walking and cycling path on the north side of the Eastern Freeway from Bulleen Road towards Burke Road.</i>	The approved NEL Tunnels UDLP did not provide a path connection within the Southern Interface Zone (to the immediate east of this part of Yarra Flats Reserve); should a path be proposed, there would be no further alignment beyond this part of the Reserve and thus, serve no practical purpose. As such, a walking and cycling path has not been included in this UDLP.
1D <i>*Consider providing a path connection along the east side of the Yarra River in the Freeway Golf Course to improve access on either side of the Eastern freeway.</i>	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
<b>Amenity, Vibrancy and Safety</b>	
2A Reinstatement and enhance buffer planting along the Eastern Freeway interface at Columba Street Reserve. <i>*Consider opportunities to improve neighbourhood/local unstructured and informal recreational facilities in consultation with Boroondara City Council.</i>	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2B Improve lighting and consider other enhancements to wall treatments, sightlines, and wayfinding at the existing underpass beneath the Eastern Freeway connecting Musca Reserve and Yarra Flats Reserve.	Lighting will be provided to this underpass at appropriate locations in accordance with CPTED principles for an overall improved design outcome. The final location and type of landscaping (including species, maximum heights at maturity, etc.) will ensure sightlines are maintained/achieved through the detailed design process.  The need for additional and/or replacement wayfinding signage, particularly on the northern side where the Koonung Creek Trail will be extended to the west and will be further assessed and considered in consultation with Boroondara City Council, Parks Victoria, and other relevant authorities.  Final design and location of lighting and planting will be to the satisfaction of relevant asset owners (or land manager if different from asset owner).
2C Provide buffer planting to the edge of Musca Street Reserve to create a vegetated backdrop and filter views towards road infrastructure.	The design provides a thick landscape buffer, incorporating canopy trees and a mix of shrubs, ground covers and bushes between the noise wall and adjoining paths for the full length of the northern reserve boundary interface with the Eastern Freeway. This will provide a 'green backdrop' to the open areas of the Musca Street Reserve, enhancing overall landscape and visual amenity for park users by screening lower sections of the wall with dense, layered plantings and filtering views to taller elements at the canopy level.
2D Design infrastructure to maximise solar access to properties along Elm Grove / Main Yarra Trail adjoining the Eastern Freeway.	This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Hoddle Street and Burke Road.
2E Noise walls adjacent to residential properties are to provide visual amenity on both the road and residential interfaces.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
2F Maximise views towards borrowed landscapes from the Eastern Freeway.	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.

# 5. Consistency with the Urban Design Strategy

## 5.3.1.2 Map Y4: Bulleen Road to Belford Road

Consistency with the Urban Design Strategy - Yarra River Valley – Detail of Map Y4 Bulleen Road to Belford Road

Key Design Requirements	Response
<b>Resilience and Sustainability</b>	
<p>3A *Consider providing habitat infrastructure beneath Burke Road bridge to support habitat connectivity to and from the Yarra River.</p>	<p>This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Hoddle Street and Burke Road.</p>
<p>3B *Consider providing a habitat link across the Eastern Freeway to the Freeway Public Golf Course.</p>	<p>This habitat corridor was included as part of the approved NEL Tunnels UDLP, although no specific details were provided. The feasibility and effectiveness of a habitat link in this location has been reassessed in greater detail through the design development process, including specialist ecological review and advice. This found that based on known fauna populations on both sides of the proposed link it was unlikely to be used or meaningfully benefit these species. As a result, this element is no longer proposed to be delivered and does not form part of this UDLP.</p> <p>It is considered that the proposed landscape along the freeway corridor provides a far more effective means of improving and extending habitat, noting that at many locations the proposed planting will interface with or connect to existing areas of vegetation.</p> <p>Further detail is provided at Section 4.1.3.</p>
<p>3C *Consider providing a habitat link across the Eastern Freeway from Hays Paddock to Kew Golf Club.</p>	<p>This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Hoddle Street and Burke Road.</p>
<b>Identity</b>	
<p>4A Through the design process, consider the relocation of the existing mast lights where the lights cannot be retained in their current location.</p>	<p>This UDLP has adopted the approach and strategy outlined in the Tunnels UDLP for the mast lights in order to maintain consistency in treatment along the corridor, as follows:</p> <ul style="list-style-type: none"> <li>- An assessment of the condition and operational lifespan for all mast lights will be undertaken through the detailed design phase to confirm whether they can be retained or relocated in the final design.</li> <li>- If the mast lights no longer meet functional requirements, they will be replaced with new lighting designed to be visually consistent with that delivered through the approved NEL Tunnels UDLP. This outlines a general approach and strategy for treatment of this lighting as part of detailed design development based on further assessment of their current condition and operational lifespan.</li> <li>- Should this assessment identify that the mast lights no longer meet functional requirements and need to be replaced by new lighting in the final design, opportunities for re-purposing the mast lights as design features will be further investigated through development of detailed landscape and architectural designs in consultation with relevant stakeholders. Final design and location of lights will be to the satisfaction of relevant asset owners (or land manager if different from asset owner).</li> </ul>
<p>4B Seek to maintain distant scenic views to the north from residential areas on Columba Street at the interface with the project.</p>	<p>Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.</p>
<p>4C Maintain the existing rock escarpments. Where additional rock cutting or modifications are required, they should complement the existing rock escarpment.</p>	<p>The existing rock escarpments within this UDLP from Burke Road to Bulleen Road are maintained as an essential contributor to the Freeway's identity. It is also noted that this approach is adopted in the approved NEL Tunnels UDLP.</p> <p>Existing rock escarpments located between Belford Road and Burke Road are located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Hoddle Street and Burke Road.</p>
<p>4D Conserve the quality of existing Belford Road and Burke Road bridges by:</p> <ul style="list-style-type: none"> <li>- Avoiding the retrofitting of elements to the bridges. Should the retrofitting of elements be required, they are to be bespoke to complement the existing bridge designs</li> <li>- Not locating signage on the bridges</li> <li>- Ensuring any new structures and/or elements located near the existing bridges are designed to minimise visual impact and to respond to the design of the existing bridges.</li> </ul>	<p>This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Hoddle Street and Burke Road.</p>

# 5. Consistency with the Urban Design Strategy

## 5.3.2 Koonung Creek Valley

This UDLP applies to the western section of the Koonung Creek Valley character area, between Estelle Street in Balwyn North and Tram Road in Box Hill. Land to the west, through to Bulleen Road, is subject to the approved NEL Tunnels UDLP.

Key locations, features and contextual elements identified through the UDS, which are directly relevant to the design response proposed through this UDLP include:

- formation of interconnected linear parklands expanding through the precincts of Koonung Creek, Doncaster Junction and Koonung Wetland along and underneath the Eastern Freeway

- reinstatements and improvements to existing open spaces by way of provision of public amenities and community facilities and incorporating of corresponding landscaping in particular where established local parks are highly valued by the community for recreational and socialising purposes along the Koonung Creek Reserve corridor
- prioritisation of an aesthetic and well-landscaped design outcome that is reinforced by way of maximising tree planting in spatially permissible areas and enhancing the landscaping quality through a combination of trees, plants and wildlife habitat within linear landscapes

- incorporation of noise wall types that responds to the key characteristics of respective areas or precincts with regard to materiality and coloration along the Freeway
- inclusion of water sensitive urban design treatments in particular in areas subject to inundation, such as towards the west end of Koonung Creek Reserve and Valda Wetlands.

The role and significance of the linear parklands along the corridor, notably Koonung Creek Reserve and Valda Wetlands, are reflected through the established sense of local identity and cultural, recreational and environmental benefits delivered to the broad community.

### Key Design Requirements

The UDS identifies the following key design requirements and priorities for the Koonung Creek Valley character area.

#### 1K Optimise the existing open space functions and upgrade the open spaces that run parallel to the Eastern Freeway

The design improves the parklands along the Eastern Freeway by way of reinstating and enhancing existing open spaces as well as incorporating more trees and plants.

For instance, planting palettes draw heavily from the original Ecological Vegetation Classes (EVCs) to create robust, biodiverse and drought tolerant landscapes; and large areas of new, open native grasslands, woodlands for shade and wetland for habitat biodiversity are incorporated throughout the open space network, including along connecting sections of the Koonung Creek Trail to provide a consistent, ‘whole of corridor’ landscape experience.

Reinstatement and improvement to existing open spaces adopt a holistic design approach to ensure that the parklands are seamlessly interconnected and will positively contribute to the environment. For instance, the design of upgrades to the Valda Wetlands has carefully considered the increased flooding risk and resolved to reducing the frequency and extent of inundation through provision of reconfigured open space, which in turn will improve downstream water quality and drainage conditions. Additional open space infrastructure, such as seating, fitness facilities, bike repair stations, drinking fountains and other amenities, will be provided in dedicated nodes at strategic locations within the broad Koonung Creek Reserve. Details of landscape design, including community infrastructure, will be finalised through design development and will be to the satisfaction of the future asset owners.

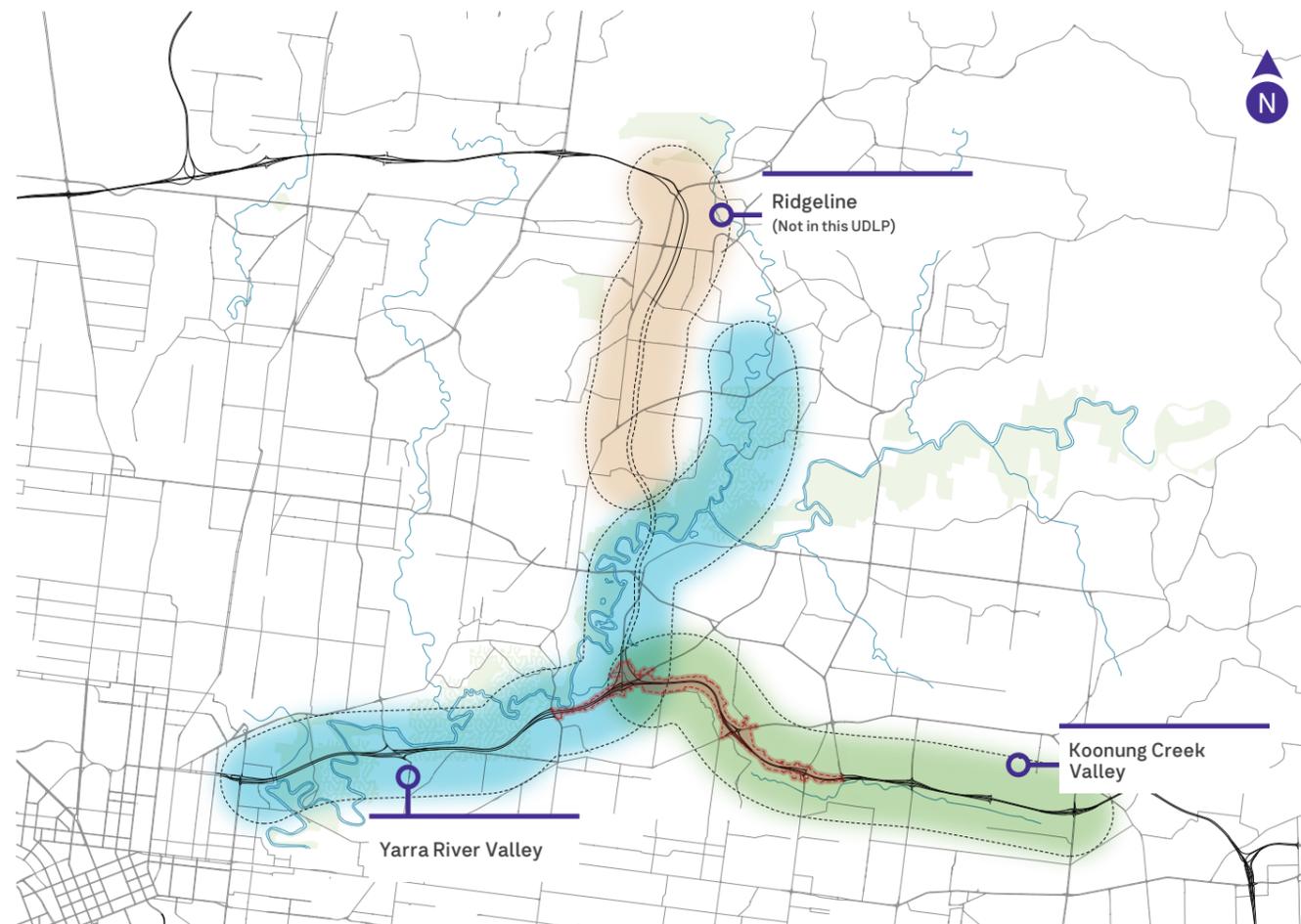


Figure 70: North East Link Program Design Character Areas

## 5. Consistency with the Urban Design Strategy

### 2K Respect the original architectural and landscape design of the Eastern Freeway

While not as architecturally consistent as the original sections, the part of the Eastern Freeway covered by this UDLP still has a distinct character and identity through the presence of well-established landscape plantings on the Freeway verges interspersed with timber and concrete noise walls.

While the spatial constraints through this section of the Freeway, particularly on the northern side, mean that in some areas the verge has been sacrificed in order to avoid encroachment into abutting open space and private land, the design responds to and references these elements by:

- incorporating transparent acrylic screens to the upper levels of noise walls to minimise visual bulk and intrusion and allow for views to vegetation within adjoining open space
- using a palette of colours and material finishes directly drawn from the surrounding landscape
- utilising simple, low-profile structures and forms for the design of the Doncaster Road interchange in keeping with the existing bridges at Elgar Road and Tram Road, which are to be retained largely in their current condition. This UDLP includes retaining the existing exposed rock cuttings near Doncaster Road.

### 3K Maximise opportunities to connect the communities to the north and south of the Eastern Freeway

The design provides for upgraded shared use path bridges across the Eastern Freeway at Estelle Street and Heyington Avenue, widened to accommodate both pedestrian and cyclist movements. The design of the new bridge at Doncaster Road also provides improved amenity and safety for pedestrians through separating the footpath from the road pavement (currently located at the back of kerb) and providing designated landscape strips. The existing underpass within the Musca Street reserve, a key link on the Koonung Creek Trail, will be enhanced through replacement lighting and additional landscaping at the northern and southern approaches.

### 4K Improve transport and road connections to key activity centres

Improved walking and cycling connections and pathways throughout the road corridor are well connected into existing local streets to enable seamless journeys to key activity areas – schools, shopping strips, public transport stops and other community facilities – throughout the neighbourhoods adjacent to the Eastern Freeway.

### 5K Create a great bus user experience and upgrade the existing Doncaster Park and Ride into a well-resolved facility

The design provides for the connection of the Doncaster Park and Ride to the new express busway, resulting in a smooth and streamlined journey for commuters. Noise walls adjacent to the busway have been designed to incorporate a mix of architectural details and textures, including acrylic panels to minimise visual bulk and provide solar access, providing a positive and engaging visual experience for commuters.

The existing Doncaster Park and Ride falls outside the boundary of this UDLP and upgrades to this facility, beyond the scope of the works required to facilitate the busway connection, do not form part of the design. A future UDLP will be prepared detailing the scope and design response for the upgraded facility.

### 6K Support active transport along the Koonung Creek Trail

The Koonung Creek Trail extends along the section of Koonung Creek Valley character area that falls within the UDLP area. The design has sensibly considered and incorporated new and reinstated walking and cycling paths along the Koonung Creek Trail to support active transport.

Furthermore, in conjunction with the underpass at Bulleen Road approved under the Tunnels UDLP, the delivery of upgraded underpasses at Doncaster Road will provide for a continuous, traffic free path of travel between Middleborough Road and Burke Road to satisfy the level of service contemplated in the Principal Bicycle Network.

Moreover, in areas of high demand and/or recreational amenity, such as the Valda Wetlands and the Koonung Creek Reserve, localised networks of secondary paths are provided to separate park users from commuter and/or recreational cyclists travelling at speed through the broader corridor.

Additionally, 'rest nodes', including seating, bike repair stations and other infrastructure, are indicatively shown at strategic locations on the Koonung Creek Trail both north and south of the Freeway; and opportunities for additional amenities and facilities in public open spaces will be further explored and maximised as the design development progresses.

### 7K Reinstatement and enhance buffer vegetation to filter views to freeway infrastructure and blend interfaces with surrounding treed neighbourhood character

The design has incorporated canopy tree and landscape buffer planting along the length of the Freeway interface to the north and the south, screening and softening views to noise walls, bridges and other road infrastructure from open space to local roads.

In constrained areas where there is insufficient space to achieve meaningful landscape screening, noise walls incorporating architectural textures and detailing will be installed to face local streets, open space and nearby dwellings, to positively contribute to the visual and landscape amenity of public and private land.

### 8K Celebrate, maximise, and reinstate natural vegetation, wetland and open waterways including Koonung Creek

The design reinstates and upgrades the existing wetland within the Koonung Creek and Valda Street reserves, providing extensive new plantings comprising canopy trees and a mix of shrubs, understorey plants and ground covers to maximise biodiversity and habitat potential.

A continuous landscaped corridor will be provided for the full length of the Koonung Creek Trail to the north and south of the Freeway, linking existing and enhanced plantings in open space and providing opportunities for pollinator pathways and other 'micro habitats' through inclusion of flowering plants.

West of Doncaster Road, an open swale extends through the Koonung Creek corridor to the wetland systems at Bulleen Road, conveying flows during rain events and providing a visual connection to Koonung Creek as a living waterway, albeit below ground. The inclusion of the open swale builds on what has been previously approved as part of the NEL Tunnels UDLP. The open swale is proposed to be a cultural reminder of a past landscape that was a trade and travel route for the Wurundjeri Woiwurrung Traditional Owners of the land.

It will form the natural low point to support the drainage function of the Koonung Creek Reserve and will not form a major barrier for the community. It will be generally placed within or at the edges of densely revegetated areas that frame the open areas of lawn and will be relatively narrow and at a grade that can be crossed by pedestrians. Supplementary flows can also be pumped to this

swale from the nearby pressure reducing station if required to support downstream ecosystems/water quality infrastructure. Details of the open swale and landscaping through the Koonung Creek corridor will be finalised through design development and will be to the satisfaction of the future asset owners.

East of Doncaster Road, open sections of the Creek will be improved and enhanced with new planting to banks and WSUD treatments, enhancing water quality and ecological values.

# 5. Consistency with the Urban Design Strategy

## Place-specific requirements

This key plan shows the Koonung Creek Valley design character area of the North East Link alignment. Individual maps are used to outline place-specific requirements, as defined through the UDS.



Figure 71: Bulleen Road to Tram Road

# 5. Consistency with the Urban Design Strategy

## 5.3.2.1 Map K1: Bulleen Road to Doncaster Road

Refer to the table on pages 98 to 101 for a design response to each number.

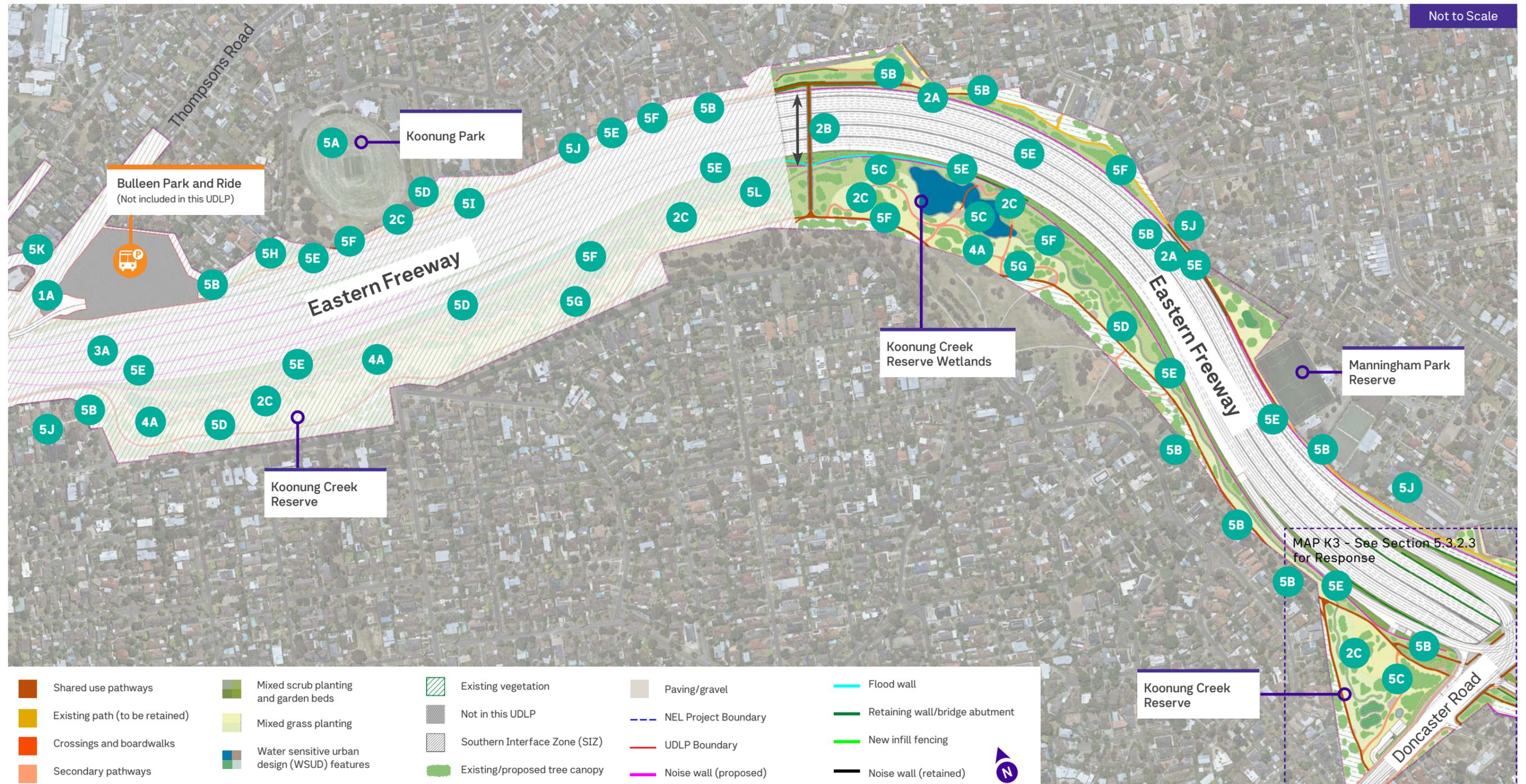


Figure 72: Bulleen Road to Doncaster Road

# 5. Consistency with the Urban Design Strategy

## 5.3.2.1 Map K1: Bulleen Road to Doncaster Road

Consistency with Urban Design Strategy Place-specific requirements – Koonung Creek Valley Character Area – Map K1 Bulleen Road to Doncaster Road.

### Key Design Requirements

### Response

#### Identity

1A

Ensure the Thompsons Road intersection supports a safe pedestrian environment and caters for public transport such as for the Bulleen Park and Ride facility.

Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.

#### Connectivity, Wayfinding and Accessibility

2A

Reinstate or realign the Koonung Creek Trail where required to a suitably wide and functional standard.

The Koonung Creek Trail has been realigned, where required, as a result of works associated with the Freeway widening into public open space along the Koonung Creek corridor, in order to maintain connectivity and continuity of access for its full alignment within this UDLP area. A minimum width of 3m will be achieved for all new shared use path sections of the Koonung Creek Trail with existing sections widened where required to be consistent and upgraded/repared where required for to meet safety and functional requirements. Existing surface treatments will be retained.

2B

Replace existing pedestrian bridge at Estelle Street with a walking and cycling bridge over the Eastern Freeway linking Estelle Street with the Koonung Creek Trail (north and south of the freeway) and Koonung Creek Reserve. Bridges within the Koonung Creek design character area must seek to retain existing elegant qualities and should read as a family while being individually identifiable to provide landmarks for navigation.

Provide an enhanced entry and link at Estelle Street to the new walking and cycling bridge which has clear sightlines and wayfinding signage to the Koonung Creek Trail.

The design provides for the replacement of the existing Estelle Street footbridge with an improved and widened shared use path (SUP) bridge able to accommodate both pedestrian and cyclist movements, located approximately 90-100m east of its current location.

The design for the SUP bridge maintains the lightweight qualities through the architectural design that requires only a single span over the Eastern Freeway Road reservation and consequently, removed the need to have a pier located in the Freeway corridor while reducing visual bulk for motorist users. The new SUP bridge design increases safety for the users as well as the level of amenity as it incorporates mesh screens of high transparency in place of solid fencing for safety barriers along the length of the SUP bridge.

The new SUP bridge includes a statement by way of plinth and pylons, adding an elegant structural and design solution to the local area, which can be used as a clearly identifiable landmark visible from both Freeway motorists and pedestrians along the adjacent path networks.

The Estelle Street SUP bridge design provides an enhanced approach and entrance experience to the north, with ramps connecting from the Koonung Creek Trail to the east and the west, providing clear and direct sightlines to the landscaped mound on which the bridge sits, providing a natural 'pause point' and sense of transition in the journey. To the south, the access ramp soars over the Koonung Creek Reserve before connecting to the Koonung Creek Trail near the wetland. The ramp and trail intersect at 90-degree angles, providing clear sightlines from all directions.

Wayfinding signage will be provided at both ends of the bridge and strategic locations within the surrounding path network. The final location and design will be confirmed through the detailed landscape plan and park master plan approvals processes in consultation with the relevant Councils and other key stakeholders, to ensure that this is considered holistically as part of a 'whole of network' approach.

While the design is visually distinct from the other nearby SUP bridges, including the Bulleen Road SUP bridge to the west (approved under the NEL Tunnels UDLP) and the proposed Heyington Avenue SUP bridge further east, the three bridges share a common design language and approach, which ensures they will be read as a coherent and coordinated 'family' when viewed at speed in the Freeway corridor. Specifically:

- All three bridges utilise the same, or extremely similar, design for the bridge structure itself, with angled mesh screens of high transparency for safety, concrete deck, and feature lighting.
- Structural elements within the road carriageway and abutting verges have been minimised, with both the Heyington Avenue and Estelle Street SUP bridges being single span (excluding the support pylon at Estelle Street, which presents as a design element), and the Bulleen Road SUP bridge limited to a narrow steel pylon in the median. This allows the bridges to soar over the Eastern Freeway, providing a visual cue to their function in the broader movement network.
- Elegant networks of lightweight pylons, balustrades and other elements characterise both the Heyington Avenue and Estelle Street SUP bridges and are the basis of their individual design 'statement' and identity in the landscape.

While this has not been achieved at Bulleen Road, contextually, this bridge will be read against the adjoining flyover ramps and road bridge associated with the broader Eastern Freeway/Tunnels Interchange, where there is a greater focus on minimising visual clutter and maintaining legibility for road users.

# 5. Consistency with the Urban Design Strategy

## 5.3.2.1 Map K1: Bulleen Road to Doncaster Road

Consistency with Urban Design Strategy Place-specific requirements – Koonung Creek Valley Character Area – Map K1 Bulleen Road to Doncaster Road.

### Key Design Requirements

**2C** Where project works directly affect existing secondary paths in Koonung Creek Reserve, provide replacement walking paths in high use areas where safe and practicable to reduce the potential for conflict between walkers and cyclists along the Koonung Creek Trail and provide additional amenity for the community.

### Response

Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5, and the Eastern Freeway land widening requires land in the Koonung Creek Reserve.

As a result of the Freeway widening works in Koonung Creek Reserve near the Koonung Creek Reserve Wetlands, removal of existing walking paths running adjacent to the existing Freeway corridor is required. The design provides for a new and upgraded network of secondary paths throughout the Koonung Creek Reserve, including through the wetland, providing opportunities for passive recreational and quiet enjoyment.

As discussed in Section 4.1.3 above, this UDLP proposes changes to the alignment of the Koonung Creek Trail SUP north of Kosciusko Road from what is shown in the approved NEL Tunnels UDLP. The change by way of ‘swapping’ the alignments of the Koonung Creek Trail and existing pedestrian path to the south will improve community amenity as it separates ‘through’ traffic on the Koonung Creek Trail from an area of high landscape and recreational value thereby minimising the potential for conflict between passive and active recreational activities while benefiting the cyclist commuters throughout the year with better passive surveillance and incidental lighting spill from the local roads.

### Urban Integration

**3A** Seamlessly transition and connect the Eastern Freeway design (within the Koonung Creek Valley design character area) with the design for the Bulleen Road interchange and to the west of Bulleen Road (within the Yarra River Valley design character area).

Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.

### Resilience and Sustainability

**4A** Support the biodiversity corridor in Koonung Creek Reserve with indigenous revegetation.

The landscape design for the Koonung Creek Reserve incorporates a series of planting palettes with species chosen from the relevant EVC lists and/or existing areas of habitat. This UDLP proposes the planting mix schedules, which all include a variety of indigenous plants comprising:

- garden beds for wetland and waterway restoration, habitat corridor, grass/tussocks
- tree canopy
- bioretention area
- ephemeral wetland.

All palettes include a mix of flowering plants to further support biodiversity and habitat creation, increasing potential food sources and opportunities for establishment of ‘pollinator pathways’ within the reserve, which connect through to adjacent areas.

The partnership and collaboration with the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation will continue through the design development of the Project, including to further explore opportunities to incorporate additional or useful specific indigenous plantings.

Refer to planting schedules (NEL-STH-NSA-5900-UUD-DRG Nos. 9570 to 9575) in Attachment 2: Landscape Design.

# 5. Consistency with the Urban Design Strategy

## 5.3.2.1 Map K1: Bulleen Road to Doncaster Road

Consistency with Urban Design Strategy Place-specific requirements – Koonung Creek Valley – Map K1 Bulleen Road to Doncaster Road

### Key Design Requirements

### Response

#### Amenity, Vibrancy & Safety

5A	<p>Support Manningham City Council's planned improvements to Koonung Park which include:            Additional planting, improving sightlines and creating a more consistent landscaping theme  <i>*Consider upgrades to the playground and providing a shelter and barbecue nearby.</i>  <i>*Consider a path link from the Koonung Creek Trail to the playground and exercise area.</i></p>	<p>Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.</p>
5B	<p>Ensure narrow areas along the Koonung Creek Trail have good lighting, open sightlines and are attractive to users.</p>	<p>Upgrades to the existing SUP and secondary path networks will improve safety at 'pinch points', improve sightlines and legibility and manage areas of conflict between different user groups. Safety is prioritised, to ensure the community and landscape areas of interest are well connected and accessible. Due to the narrow width of the Koonung Creek Reserve on the north side of the Freeway through this section and proximity to residential development, existing 'pinch points' in the trail are present south of the Greythorn Bowling Club and Park Avenue Reserve, and near the intersection of Park Avenue and Outhwaite Avenue. While the underlying spatial constraints cannot be resolved through this design, it has sought to improve safety, amenity and user experience through these sections as follows:</p> <ul style="list-style-type: none"> <li>- maximising opportunities for solar access and penetration of 'borrowed' lighting from the Freeway light mast through limiting landscape plantings to low shrubs and grasses and ensuring any replacement noise wall treatments incorporate clear acrylic panels</li> <li>- maintaining, as much as practicable, a straight path alignment and avoiding sharp bends or intrusions into the corridor from built form, which could impact on sightlines</li> <li>- retaining the existing rock retaining wall and landscape planting through the narrow section west of Paul Avenue and Outhwaite Avenue, which strongly contributes to landscape and visual amenity and partially offsets visual impact at this location</li> <li>- avoiding additional landscaping or other visual barriers through the section adjacent to the Park Avenue Reserve, maintaining the existing sense of space and openness and maximising potential 'borrowed amenity' through views to existing canopy trees and open green spaces within this area.</li> </ul> <p>The need for supplementary lighting to achieve adequate levels of illumination to these sections of the trail for safety and amenity will be further reviewed and confirmed through the detailed design process, through assessment of modelled lux levels, consideration of CPTED principles and compliance with relevant guidelines and standards for public lighting.</p>
5C	<p>Maintain wetland as a focal point for the community in the Koonung Creek Reserve. Retain the natural values of the wetland. Retain and/or enhance community infrastructure (such as seating, boardwalks, interpretation, informal paths, shade) to support the enjoyment of the wetland.</p>	<p>The natural value of the Koonung Creek Reserve Wetlands, east of Wilburton Parade in Balwyn North, is a vital community asset, which will be retained through the proposed design. A water sensitive urban design (WSUD) approach will be applied through new riparian planting to the banks of the wetland and open swales that will add ecological value and increased landscape amenity for park users. Key items of community and recreational infrastructure in and around this area, such as playground, public toilets, outdoor gyms and gazebo, will be retained in their current location or reinstated, based on the outcomes of detailed landscape design and park master plan planning processes. New elements, such as seating, bike repair stations, and other infrastructure, will also be provided in dedicated nodes/key connections in the path network. The final location, type and treatment of these elements will be confirmed through the future design development process in consultation with Boroondara City Council and the local community.</p>
5D	<p>Provide canopy tree planting to improve shade provision along the Koonung Creek Trail and along connections to key destinations.</p>	<p>The design provides for additional tree canopy planting along key sections of the Koonung Creek Trail and associated path networks, along the footpath connection to Paul Street (adjacent to the substation) in Doncaster, within the open space south of Willow Bend and between the primary and secondary paths north of the Estelle Street SUP bridge. This will increase shade and environmental comfort along these routes.</p> <p>The realigned section of the Koonung Creek Trail north of Kosciusko Road follows the alignment of the existing pedestrian path and upgraded as required in line with its function as a shared use path. This path runs beneath the canopies of adjoining mature trees to the south, providing shade and shelter.</p>

# 5. Consistency with the Urban Design Strategy

## 5.3.2.1 Map K1: Bulleen Road to Doncaster Road

Consistency with Urban Design Strategy Place-specific requirements – Koonung Creek Valley – Map K1 Bulleen Road to Doncaster Road

### Key Design Requirements

### Response

<p><b>5E</b> Ensure noise walls along the Eastern Freeway deter graffiti at lower levels and maximise solar access.</p>	<p>Noise walls on the south side of the Freeway through this section are largely aligned to the Freeway interface and separated from residential properties by the Koonung Creek Reserve. The design provides for the replacement and enhancement of existing vegetated buffers through these sections, delivering a layered planting outcome, which screens views and blocks access to lower levels of the walls through thick under and middle storey plantings, while filtering views to upper levels through tree canopies. Solar access will be maintained, and visual bulk further reduced, through the use of noise wall types incorporating clear acrylic panels at the upper level.</p> <p>North of the Freeway, opportunities to physically deter public access to noise walls are more limited due to spatial constraints and the need to maintain adequate sightlines and clearance to the Koonung Creek Trail. This specifically applies to the 'pinch points' west of Outhwaite Avenue, south-west of the residential property at 65 Estelle Street, and adjacent to Manningham Park Reserve. In addition to incorporating acrylic panels at the upper level, noise wall types incorporating textured finishes at the lower level will be installed through this section to deter graffiti and provide visual interest to users of the trail, along with low level garden beds to provide an additional buffer.</p>
<p><b>5F</b> Reinstate buffer landscape treatments (such as vegetation and mounding) adjacent to the Eastern Freeway Road reserve to filter views from parkland and residential areas towards the Eastern Freeway. Landscape planting is to complement the existing open space planting themes and local character.</p>	<p>Landscape buffers will be reinstated and extended along the northern boundary of the Koonung Creek Reserve in order to screen and soften views to adjacent noise walls and ensure the highly valued 'green backdrop' to this space, particularly the area directly adjacent to the Koonung Wetland, is retained into the future.</p> <p>The proposed planting palettes for this area, include indigenous species heavily drawn from the relevant Ecological Vegetation Classes (EVCs) in order to respond to and integrate with the reserve's highly valued semi-bushland character.</p> <p>Residential properties on the northern side of the Freeway sit up to 6m above the level of the road through this section and largely back or side onto the Koonung Creek Trail and its surrounding corridor. As a result, views to the Freeway and its associated infrastructure, such as noise walls, may not be concealed and a level of visibility may present. However, views from dwellings and adjacent open space will largely be filtered and softened by retention of existing canopy trees and vegetation, with additional buffer planting proposed in key locations such as the approach to the Estelle Street SUP bridge and the open space south of Willow Bend.</p> <p>Opportunities for integration of mounding and/or use of topography to further enhance screening opportunities, including as part of noise walls, have been considered and the details (such as the exact ratio of mounding and acrylic panels incorporated in noise walls) will be determined as the detailed design development progresses based on final site levels investigation, drainage requirements and amenity impacts considerations.</p>
<p><b>5G</b> Where project works directly affect Koonung Creek Reserve provide appropriate seating and additional planting to enhance amenity for the community.</p>	<p>Where project works affect Koonung Creek Reserve, public open space community facilities, such as seating and exercise equipment, will be reinstated or relocated in the returned open space reserves in consultation with councils, relevant authorities and future asset owners. Design details, such as the exact locations and the exact types of these facilities will be finalised in the Design Packages to ensure that a site-specific context is addressed with minimised visual intrusion into public realm.</p> <p>Provision of additional planting has been considered into the design response. For instance, the landscape design for Koonung Creek Reserve incorporates a planting palette that is primarily sourced from local Ecological Vegetation Classes (EVCs) and existing habitats in the surrounds. The diverse species in the planting mix schedules in Koonung Creek Reserve will enhance the amenity offered within the Reserve as it not only actively responds to the natural environment but also provides a visually pleasant experience for pedestrians, cyclists, recreational uses and the surrounding community.</p>
<p><b>5H</b> Consider planting of the open space at the corner of Kampman Street and Thompsons Road.</p>	<p>Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.</p>
<p><b>5I</b> Enhance vegetation between the Koonung Creek Trail and proposed noise walls near Balwyn Road to filter views to walls from Kalker Montessori Centre.</p>	<p>Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.</p>
<p><b>5J</b> Noise walls adjacent to residential properties are to provide visual amenity on the road and residential interfaces.</p>	<p>Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.</p>
<p><b>5K</b> Minimise overlooking to residential properties located north-east of the Eastern Freeway interchange.</p>	<p>Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.</p>
<p><b>5L</b> Retain the concrete half-arch structure located along the Koonung Creek Shared Trail. Should relocation or removal be proposed, this is to be undertaken in close consultation with Council and other relevant stakeholders.</p>	<p>Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.</p>

# 5. Consistency with the Urban Design Strategy

## 5.3.2.2 Map K2: Doncaster Road to Elgar Road

Refer to the table on pages 103 to 106 for a design response to each number.

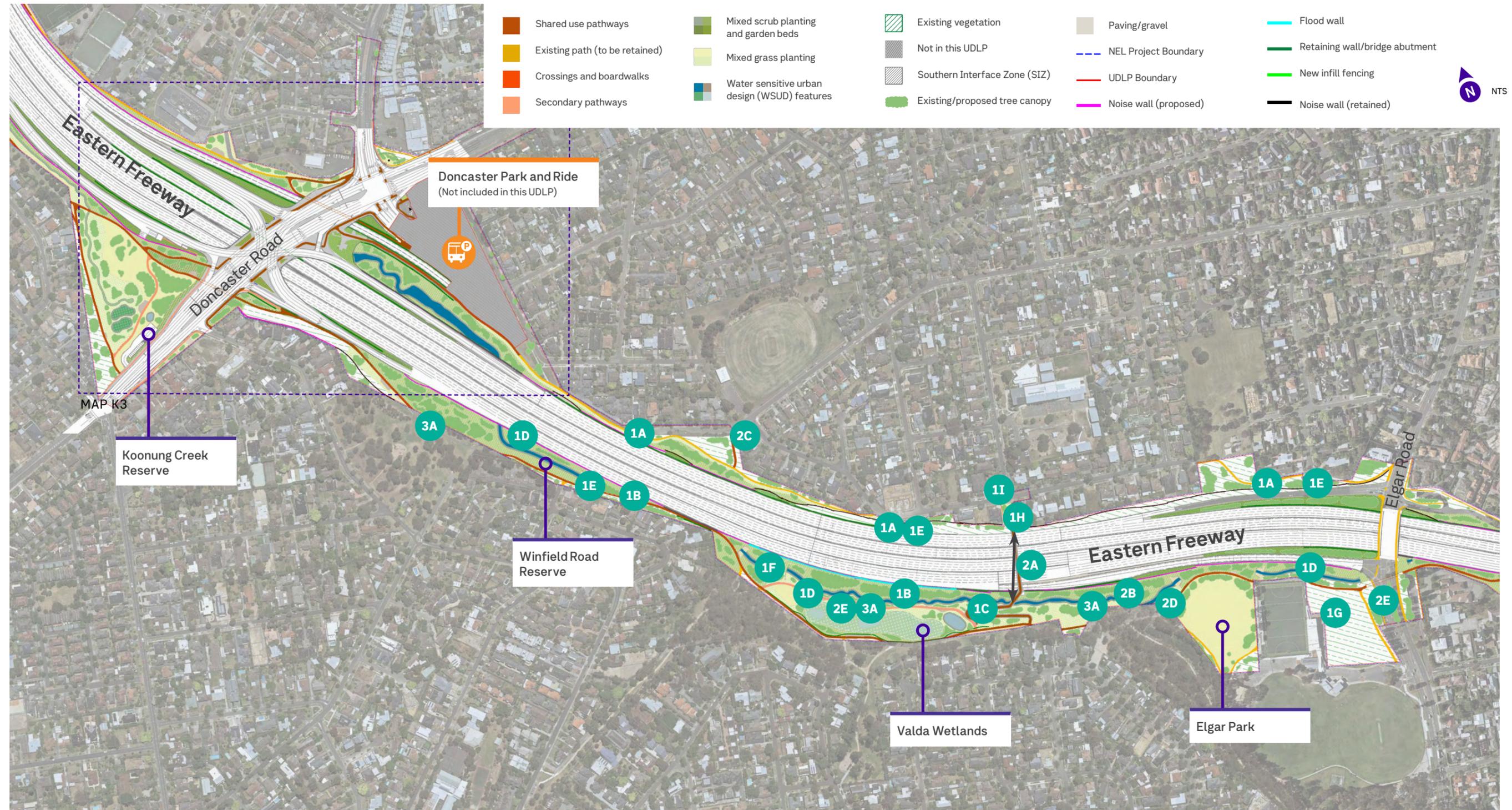


Figure 73: Doncaster Road to Elgar Road

# 5. Consistency with the Urban Design Strategy

## 5.3.2.2 Map K2: Doncaster Road to Elgar Road

Consistency with Urban Design Strategy Place-specific requirements – Koonung Creek Valley Character Area – Map K2 Doncaster Road to Elgar Road.

### Key Design Requirements

### Response

#### Amenity, Vibrancy and Safety

<p><b>1A</b> Ensure noise walls along north of the Eastern Freeway deter graffiti at lower levels and maximise solar access. Use buffer planting to filter views to noise walls.</p>	<p>Noise wall types incorporate transparent acrylic panels at the upper level to maximise solar access and views and enhance residential amenity. Planting is also incorporated adjacent to noise walls as a buffer to soften visual presentation of noise walls. While these areas may appear to be narrow, the planting selection may focus on plants that will thrive in narrow spaces to remedy the situation. For instance, layered plants comprising upright trees for the top layers and climbing plants to vertically support the overall landscaping outcome will effectively filter views to noise walls despite the narrow spaces as presented.</p> <p>Opportunities to physically deter noise wall graffiti are provided through incorporation of textured finishes at the lower level along with low level garden beds to provide an additional buffer.</p>
<p><b>1B</b> Design noise walls to the south of the Eastern Freeway to maximise solar access to residential properties and the Koonung Creek Trail, deter graffiti at lower levels and to have treatments both sides of the wall. Use landscaping to filter views to walls from surrounding dwellings.</p>	<p>Noise walls on the south side of the Freeway through this section are largely aligned to the Freeway interface and separated from residential properties by open spaces (Winfield Reserve, the Valda Wetlands and Elgar Park). The design provides for the replacement and enhancement of existing vegetated buffers through these sections, to deliver a layered planting outcome, which screens views and blocks access to lower levels of the walls through thick under and middle storey plantings, while filtering views to upper levels through tree canopies. Solar access will be maintained, and visual bulk further reduced, through the use of noise wall types incorporating clear acrylic panels at the upper level.</p> <p>The only section where the above approach cannot be achieved is through the 'pinch point' north of Jocelyn Avenue, where there is limited separation between the Freeway reserve and residential properties and a purely landscape-based approach to visual amenity cannot be achieved without compromising sightlines and clearance to the Koonung Creek Trail. In addition to continuation of the use of acrylic panels at the upper level as discussed above, noise wall types installed through section will include textured finishes at the lower level to deter graffiti, with the face of the noise wall directly interfacing with the SUP enhanced with a greater level of architectural detail to maximum visual interest and amenity. Low level garden bed planting will also be provided between the Trail and the base of the noise wall.</p>
<p><b>1C</b> Retain wetland as a focal point for the community in the Koonung Creek Reserve. Retain the natural values of the wetland. Retain and/or enhance community infrastructure (such as seating, boardwalks, interpretation, informal paths, shade) to support the enjoyment of the wetland.</p>	<p>The design response to the Valda Wetlands balances a series of competing priorities and requirements including flood mitigation and management, water quality, ecology and biodiversity, recreational and landscape amenity, and ongoing maintenance. A key design change within the Valda Wetlands is the removal of the boardwalk. While the ability to walk directly over open water is removed from the current design response, it is a necessary change for it has been replaced with an improvement in overall provision of community infrastructure and experience moving through and being within the wetland on the secondary path. Furthermore, noting that the existing boardwalk over the wetland sits below current requirements for clearance (freeboard) from open water, closure of the boardwalk following heavy rain events would be a likely and possibly common occurrence. Having balanced conflicting interests, the design has prioritised the opportunities to best address increased flooding conditions to reduce the overall risk profile and alleviate the need for ongoing maintenance challenges.</p> <p>More specifically, while the proposed design response is not proposed to be a 'like for like' solution, it has successfully managed to retain the spirit of the wetland by not only enhancing visitor experience but also enabling integration of water sensitive urban design community infrastructure within this reserve. Of particular, the Reserve where the Valda Wetlands sits is designed to encompass:</p> <ul style="list-style-type: none"> <li>- new planted wetland habitats comprising the featured Valda Wetlands in a reconfigured footprint and a diverse palette of vegetation</li> <li>- a shared use path extending along the southern edge and a secondary path to the north of the new wetland habitats resulting in alignment of the Trail, which surrounds open water integrated into the landscaped setting to provide enhanced experiences for commuters and visitors</li> <li>- two rest stops/viewing platforms along the Koonung Creek Trail</li> <li>- a sediment pond for water treatment along with other WSUD design solutions</li> <li>- a smooth connection created between the widened Heyington Avenue bridge and shared use paths as well as secondary paths, also noting that the switchback providing safe and elevated viewed areas within the reserve), noting that the design of the switchback provides safe, elevated viewing areas</li> <li>- community facilities such as seating, interpretational signage and other amenities at designated 'nodes' on the secondary path north of the wetland, where people can sit, walk and relax while being surrounded by water and nature on all sides.</li> </ul> <p>In light of the above, the 'reimagined' Valda Wetlands and this part of the Koonung Creek Reserve (where the wetland sit) remain to be a focal point for the community for its well enhanced values in terms of provision of community infrastructure and facilities, and positive contributions to the vegetated habitats and visitor experiences.</p>

# 5. Consistency with the Urban Design Strategy

## 5.3.2.2 Map K2: Doncaster Road to Elgar Road

Consistency with Urban Design Strategy Place-specific requirements – Koonung Creek Valley Character Area – Map K2 Doncaster Road to Elgar Road.

### Key Design Requirements

### Response

<p><b>1D</b> Reinstate buffer landscape treatments (such as vegetation and mounding) adjacent to the Eastern Freeway road reserve to filter views from parkland and residential areas towards the freeway. Landscaping and planting is to complement the existing open space planting themes and local character.</p>	<p>Noise walls on the south side of the Freeway through this section are largely aligned to the Freeway interface and separated from residential properties by abutting open spaces (Winfield Reserve, the Valda Wetlands and Elgar Park). The design provides for the replacement and enhancement of existing vegetated buffers through these sections, to deliver a layered planting outcome, which screens views and blocks access to lower levels of the walls through thick under and middle storey plantings, while filtering views to upper levels through tree canopies. Overall, the landscape in this area has been selected as the primary mechanism to screen views to the Freeway thereby minimising impacts and/or encroachment to open space and private property, as opposed to other buffer planting techniques implemented elsewhere in the UDLP where there is more open public space, such as mounding or topographical treatments.</p> <p>Views from the Katrina Gully playground will largely be screened by topography and existing vegetation at the southern boundary, which has been retained in the design.</p> <p>Planting palettes largely comprise species selected from local Ecological Vegetation Classes (EVCs) to complement the existing semi-bushland character of planting within the Koonung Creek reserve and abutting open spaces. The final selection of species and design of these buffers will be resolved through the preparation of detailed landscape design plans, in consultation with the councils to ensure plantings are fit for purpose, easily maintained, and reflect the councils and community aspirations for these spaces.</p>
<p><b>1E</b> Seek to reinstate a planted buffer between the Eastern Freeway and the Koonung Creek Trail to improve amenity for walkers and cyclists.</p>	<p>The approach to landscaping in these areas, particularly with respect to spatial constraints caused by the limited separation between the Freeway reserve and private properties is a key consideration to landscape buffer planting.</p> <p>With respect to the specific locations identified in this requirement, the design provides for the following:</p> <ul style="list-style-type: none"> <li>– retention of existing landscape treatment, including canopy trees, between Katrina Gully Playground and Esta Court, Doncaster</li> <li>– a mix of diverse shrub and garden bed planting between the Koonung Creek Trail and the noise wall through the 'pinch point' abutting the multi-unit development at 2 McLeod Street, Doncaster</li> <li>– retention of existing landscape treatment, between the Koonung Creek Trail and rear boundaries of the residential properties at 8-12 Jocelyn Avenue, Balwyn North. Immediately to the east, the Koonung Creek has been placed underground for a short section to allow sufficient space for landscape buffer planting, incorporating shrubs and small-medium canopy trees.</li> </ul>
<p><b>1F</b> Where project works directly affect the Koonung Creek Trail, consider opportunities to provide exercise equipment or fitness stations or bicycle maintenance stations at strategic locations.</p>	<p>Indicative locations have been nominated along the alignment of the Koonung Creek Trail and selected locations in abutting reserves on the relevant landscape plans for the provision of bicycle repair facilities and fitness stations. This will enhance the combined recreation/commuter function of this corridor. These will be co-located with seating and other amenities (bins, drinking fountains, etc), the locations of which will be further developed in the detailed design phase with relevant stakeholders.</p> <p>The final siting, design and type of recreational infrastructure to be provided will be determined through landscape design development processes, in close consultation with the relevant councils and incorporating community feedback. This will ensure that the final selection and range of recreational infrastructure provided are considered holistically in the context of the final design and meet the needs and aspirations of its users.</p>
<p><b>1G</b> *Consider Whitehorse City Council's planned improvements to Elgar Park which include:</p> <ul style="list-style-type: none"> <li>– Upgrading the Koonung Creek Trail including increasing path width, path realignment to improve sightlines and wayfinding signage</li> <li>– Improving connectivity through Elgar Park and between the Koonung Creek Trail and Bushy Creek Trail</li> <li>– Providing amenity nodes and pause points along the Koonung Creek Trail including seating, drinking fountains and fitness equipment</li> <li>– Retaining and enhancing the bushland backdrop to Elgar Park, specifically along the northern vegetation which acts as a buffer to the Eastern Freeway</li> <li>– Incorporating Water Sensitive Urban Design initiatives to capture and store stormwater for use in irrigating sports fields</li> <li>– Improving the bushland vegetation along the Koonung Creek to improve its ecological value.</li> </ul>	<p>The design response has considered Whitehorse City Council's planned improvements to Elgar Park with key examples outlined below:</p> <ul style="list-style-type: none"> <li>– Opportunities to upgrade the Koonung Creek Trail within the UDLP area are constrained by the location of existing vegetation and sports fields, noting that the only section of the trail within Elgar Park subject to this UDLP is that immediately north of the North East Oval. The final alignment and width of the trail through this section will be further assessed and finalised in the Design Packages.</li> <li>– The realigned trail within Elgar Park will also improve connectivity with the Koonung Creek Trail beyond the park.</li> <li>– 'Pause points', including seating and appropriate facilities, have been provided within the Valda Wetlands to the west.</li> <li>– Replacement and enhanced landscape buffers, including canopy trees, will be provided along the northern boundary of the park. Species selection will be based on historic Ecological Vegetation Classes (EVCs) and incorporate flowering plants to increase biodiversity and habitat values.</li> <li>– The potential for harvesting stormwater from the Valda Wetlands for irrigation of sports fields in Elgar Park can be considered as part of broader detailed drainage and stormwater design approvals processes, in consultation with Melbourne Water and Whitehorse City Council as to the feasibility of the outcome from a design, maintenance and asset management perspective.</li> <li>– Additional planting within the creek corridor, including to banks, will be incorporated to reduce erosion, improve water quality and enhance its ecological values.</li> </ul>

# 5. Consistency with the Urban Design Strategy

## 5.3.2.2 Map K2: Doncaster Road to Elgar Road

Consistency with Urban Design Strategy Place-specific requirements – Koonung Creek Valley Character Area – Map K2 Doncaster Road to Elgar Road.

### Key Design Requirements

### Response

<p><b>1H</b> Retain the memorial currently located at the north entrance to the Stanton Street pedestrian bridge. Should relocation be required, this is to be undertaken in close consultation with relevant stakeholders.</p>	<p>The design for the Stanton Street (referred to in this UDLP as Heyington Avenue) SUP bridge allows for the retention of the memorial in its current location. Its final treatment, location and integration with the new bridge and associated works, including landscape treatments, will be determined in close consultation and collaboration with Manningham City Council and relevant stakeholders to ensure it is considered holistically with the broader design response.</p>
<p><b>1I</b> Minimise overlooking to residential properties located north of the Stanton Street pedestrian bridge</p>	<p>Overlooking assessments comply to the requirements of EPR LP4 (assessed in detail in Section 6.2 of this UDLP) for potential impacts at standard eye height of 1.7m at an angle of 45 degrees, with predicted impacts shown at a distance of 15m.</p> <p>The design avoids unreasonable overlooking to residential properties when viewed from the Estelle Street SUP bridge (particularly approaching Stanton Street to the north) as required by EPR LP4. This is mainly achieved by the grade of the shared use path, which falls slightly from north to south (i.e., the residential properties to the north of Stanton Street sit on a higher contour).</p> <p>Further, the bridge structure itself connects to the northern entrance at grade, with additional screening of views provided by fencing on either side of the bridge at the approach. There is no potential overlooking into residential properties to the north of the SUP bridge as it connects into Stanton Street Reserve at the same existing ground level as the current bridge.</p> <p>For completeness, an overlooking assessment has been completed for the south of the SUP bridge.</p> <p>Refer to the plan (NEL-STH-NSA-5900-UUD-DRG-9176) in Attachment 1: Architecture and Urban Design.</p>

### Connectivity, Wayfinding and Accessibility

<p><b>2A</b> Replace existing bridge at Heyington Avenue with a walking and cycling bridge over the Eastern Freeway that connects between Stanton Street and Birralee Primary School to the north and the Koonung Creek Trail. Entries to bridge are to be clear, legible and are to include wayfinding to the entry points.</p>	<p>The design provides for the replacement of the existing footbridge at Stanton Street (Heyington Avenue) SUP bridge with a widened bridge able to accommodate both pedestrians and cyclists.</p> <p>The entrance and approach from the north is directly visible from Stanton Street, with alignment of the bridge and connecting path straightened in order to improve sightlines and passive surveillance. Existing landscape treatments will be replaced with new canopy trees along the interfaces with abutting residential properties and lawns/understorey planting on either side of the shared user path, to avoid hidden spaces and maximise legibility. The entrance and approach from the south are via a connecting ramp and switchback, which passes through and above the tree canopy, providing a clear landmark and wayfinding element when viewed from the Koonung Creek Trail. The connection with the Koonung Creek Trail has been widened to provide sufficient space for turning movements and to avoid conflicts between through traffic and cyclists entering/exiting the ramp.</p> <p>Wayfinding signage will be provided at both ends of the bridge and strategic locations within the surrounding path network. The final location and design will be confirmed through the detailed landscape plan and park master plan approvals processes in consultation with the relevant councils and other key stakeholders, to ensure that this is considered holistically as part of a 'whole of network' approach.</p>
<p><b>2B</b> Ensure any changes or upgrades to interfaces with open space (such as Elgar Park) support Whitehorse City Council's proposed Easy Ride Routes (low stress cycling routes to key local destinations and facilities).</p>	<p>The section of the Koonung Creek Trail between Sweyn Street and Elgar Road forms part of a designated Easy Ride Route (EW2, part of the Easy Ride Routes project by Whitehorse City Council aiming to develop a Whitehorse Cycling Network), which extends through to Mitcham, via local streets, open space and off-road trails.</p> <p>Proposed landscaping and other enhancements within the Koonung Creek reserve and Elgar Park have been designed to support this initiative by reducing potential barriers to casual and beginner cyclists and improve overall user experience for this group, as follows:</p> <ul style="list-style-type: none"> <li>- inclusion of dedicated 'rest' nodes, including seating and bicycle repair facilities, along the Koonung Creek Trail within the Valda Wetlands, as a key recreational destination</li> <li>- provision of separated primary and secondary path connections through high demand locations, such as the Valda Wetlands, to provide opportunities for less confident cyclists to avoid 'through' traffic on the main trail</li> <li>- ensuring that where paths are required to be realigned and/or reconstructed as a result of project works, they are designed and located to seamlessly tie into the existing path network, including with respect to grades and materials</li> <li>- siting works to avoid impacts to the existing connection between the Koonung and Brushy Creek trails at the north-east corner of Elgar Park</li> <li>- incorporating specific wayfinding signage and/or 'branding' associated with the Easy Ride Routes project into the final design of the path network through this section, in collaboration and consultation with Whitehorse City Council.</li> </ul>

# 5. Consistency with the Urban Design Strategy

## 5.3.2.2 Map K2: Doncaster Road to Elgar Road

Consistency with Urban Design Strategy Place-specific requirements – Koonung Creek Valley Character Area – Map K2 Doncaster Road to Elgar Road.

### Key Design Requirements

Key Design Requirements	Response
<p>2C *Consider providing a high-quality path connection between the Koonung Creek Trail to the Wilson Road pedestrian path (refer to Manningham City Council’s Koonung Creek Linear Park Management Plan 2011).</p>	<p>This UDLP improves nearby connections to the surrounding SUP network through primary and secondary routes along Doncaster Park and Ride, across the Freeway and through the Doncaster Road underpass (located on the south side of the Eastern Freeway). The design does not preclude others from delivering further SUP connections to the surrounding street network, including to Wilson Road.</p>
<p>2D Should project works directly impact existing secondary paths, provide replacement walking paths in high use areas where safe and practicable to reduce the potential for conflict between walkers and cyclists along the Koonung Creek Trail and provide additional amenity for the community.</p>	<p>The design largely avoids direct impacts to secondary paths through this section of the Koonung Creek Corridor, the majority of which have been retained in their current alignment and condition. Refer to the response to 1C above regarding upgrades and enhancements to the secondary path through the Valda Wetlands.</p>
<p>2E *Consider providing low stress cycling routes to key local destinations and facilities (refer to Whitehorse City Council’s proposed Easy Ride Routes).</p>	<p>Since the original approval of the UDS, the Easy Ride Routes Project has significantly progressed with the section of the Koonung Creek Trail described above being the only identified route within this Map area located within the NEL Project boundaries. Refer to the response to 2C above.</p>

### Resilience and Sustainability

<p>3A Support the biodiversity corridor in the Koonung Creek Reserve by increasing indigenous revegetation at wetland and throughout the reserve.</p>	<p>Landscape planting mixes seek to maximise local indigenous vegetation, responding to existing Ecological Vegetation Classes (EVCs) with a wide diversity of proposed species that support a layered range of vegetation and habitat creation opportunities. Enhancements to the Valda Wetlands include a range of aquatic plant species suitable for supporting and enhancing local riparian habitat creation and biodiversity.</p> <p>This UDLP proposes the planting mix schedules, which all include a variety of indigenous plants encompassing:</p> <ul style="list-style-type: none"> <li>- garden beds for wetland and waterway restoration, habitat corridor, grass/tussocks</li> <li>- tree canopy</li> <li>- bioretention area</li> <li>- ephemeral wetlands.</li> </ul> <p>All palettes include a mix of flowering plants to further support biodiversity and habitat creation, increasing potential food sources and opportunities for establishment of ‘pollinator pathways’ within the reserve which connect through to adjacent areas.</p> <p>Refer to planting schedules (NEL-STH-NSA-5900-UUD-DRG Nos. 9570 to 9575) in Attachment 2: Landscape Design.</p> <p>The partnership and collaboration with the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation will continue through the design development of the Project, including to further explore opportunities to incorporate additional or useful specific indigenous plantings.</p>
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# 5. Consistency with the Urban Design Strategy

## 5.3.2.3 Inset K3: Doncaster Park and Ride

Refer to the table on pages 108 to 110 for a design response to each number.



Figure 74: Doncaster Road Interchange

# 5. Consistency with the Urban Design Strategy

## 5.3.2.3 Inset K3: Doncaster Park and Ride

Consistency with Urban Design Strategy Place-specific Requirements – Koonung Creek Valley Character Area – Inset K3 Doncaster Park and Ride.

### Key Design Requirements

### Response

#### Identity

- 1A Create a landscape feature at Doncaster Road which integrates with the Manningham Gateway Sculpture, 'Sentinel' by Inge King. Should relocation of the sculpture be required this is to be undertaken in close consultation with relevant stakeholders.

The 'Sentinel' sculpture is currently located within the landscaped median between the Eastern Freeway off ramp and the Freeway corridor, directly north of the Doncaster Road bridge. Due to the alignment of the new busway to the north and consequent need to relocate the northern off ramp further south, retention of the sculpture in situ has not been able to be accommodated within the Doncaster Interchange design without significant impacts on road geometry, function, and safety. As such, this sculpture is to be relocated to the reserve to the north-east of Doncaster Road and High Street intersection.

The proposed location is considered appropriate having considered that:

- It is to be relocated directly opposite Doncaster Park and Ride and within direct views of motorists across the Doncaster Road bridge, ensuring that the sculpture maintains its significance and prominence as a 'gateway' feature when entering into the municipality of Manningham City Council.
- Existing vegetation and planting (including canopy trees) within the reserve will be retained thereby providing a 'green backdrop' to the sculpture, with new garden bed plantings to be installed at the base.
- The exact location of the sculpture and associated landscaping within the said reserve will be determined as the detailed design development progresses in close collaboration with Manningham City Council, the Department of Transport and Planning and other key stakeholders as relevant.

#### Urban Integration

- 2A Enhance the Doncaster Park and Ride facility that considers:
- Increasing the number of bicycle parking spaces
  - Maintaining or increasing the number of car parking spaces
  - Improving the surrounding landscape, to enhance the gateway role of the Doncaster Park and Ride
  - Potential development opportunities fronting Doncaster Road
  - Connectivity to surrounding walking and cycling network
  - New built form providing sensitive interfaces and be at a pedestrian scale with the adjoining Koonung Creek corridor
  - Creating a landscaped feature with a walking and cycling connection and canopy trees along the western side of Hender Street to provide amenity for pedestrians and a sensitive interface to adjacent residential uses.

This requirement relates to a facility located outside of this UDLP and will be addressed in a future UDLP for the Doncaster Park and Ride facility.

#### Connectivity, Wayfinding and Accessibility

- 3A Integrate new path links with the surrounding network, and consider future improvements to pedestrian connections from the Koonung Trail to Doncaster Road.

The design provides for additional pedestrian and cyclist paths between the Koonung Creek Trail and Doncaster Road within the Doncaster Road reserve west of the Freeway, providing more direct connections for users transitioning from east and west.

Pedestrian paths on and with connections to the Doncaster Road bridge have been improved through the incorporation of wider verges and landscaping adjacent to footpaths, including separation between footpaths and the road pavement, providing a more pleasant, safer pedestrian experience than the current bridge design where footpaths directly abut the road barriers and are spatially constrained by road infrastructure.

Where new or upgraded connections are proposed to the existing path network outside the UDLP boundary, these will be physically and functionally integrated to provide a smooth and seamless transition of grades, surface treatments, and materiality. This will be further investigated and confirmed through development of detailed engineering designs in accordance with relevant standards and guidelines for road infrastructure, and subject to the requirements of the relevant road management authority.

- 3B Improve pedestrian paths and crossing points over Doncaster Road at the freeway interchange to assist pedestrian and cyclists to cross more safely and easily.

The design delivers two designated, traffic free crossings at Doncaster Road north and south of the Freeway interchange through provision of underpasses located in line with the Koonung Creek Trail, providing a direct and continuous route for pedestrians and cyclists moving east-west along the Freeway corridor. This represents a significant improvement in safety and convenience, particularly on the northern side where the closest signalised crossing was at High Street. This crossing has been retained in the design to maintain connectivity for pedestrians and cyclists travelling to/from local streets.

- 3C Provide a walking and cycling connection from the Koonung Creek Trail to Hender Street.

This requirement is located outside of this UDLP and will be addressed in a future UDLP for Doncaster Park and Ride facility. This requirement relates to an existing gravel path connection between the Koonung Creek Trail and the footpath on the western side of Hender Street.

# 5. Consistency with the Urban Design Strategy

## 5.3.2.3 Inset K3: Doncaster Park and Ride

Consistency with Urban Design Strategy Place-specific Requirements – Koonung Creek Valley Character Area – Inset K3 Doncaster Park and Ride.

### Key Design Requirements

### Response

<p>3D Maintain and enhance the local east west pedestrian connection along Doncaster Road adjacent to the Doncaster Park and Ride.</p>	<p>The existing pedestrian connection on the south side of Doncaster Road will be upgraded to a consistent shared use path width from where it connects to the Koonung Creek Trail, in line with other shared use paths within this UDLP. Connectivity through to the Doncaster Road bridge is simplified and improved through the reconfiguration of the Freeway on/off ramps and upgrades to the secondary paths on the bridge itself, with additional landscaping and separation from the road carriageway.</p> <p>Where sections of this path are located within the existing Doncaster Park and Ride outside the boundaries of this UDLP, the above enhancements will be consistently applied as part of the upgrade to this facility, which will be detailed through a separate UDLP.</p>
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<p>3E Should project works directly impact on existing shared use paths, consider upgrades to existing paths between the Doncaster Park and Ride and Massey Street within the project boundary to improve the function and appearance.</p>	<p>The existing section of the Koonung Creek Trail between the Doncaster Park and Ride facility and Massey Street will be retained in its current condition and alignment. Visual amenity for cyclists and pedestrians using this path will also be enhanced through replacement of the existing noise walls, currently comprising unfinished textured concrete panels, with new walls incorporating architectural design and textured finishes.</p>
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### Resilience and Sustainability

<p>4A Retain and enhance the amenity and preserve the natural and ecological values of Koonung Creek adjacent to the west of Doncaster Park and Ride.</p>	<p>The existing section of open creek channel south of Doncaster Park and Ride has been maintained in the design. Planting to the banks and integration of water sensitive urban design treatments on the northern side will contribute to improved waterway health and enhanced ecological values, both within this section of Koonung Creek and downstream receiving waters through reducing sediment and pollutant loads.</p> <p>Additional tree canopy planting north and south of the channel will also provide enhanced visual amenity for cyclists and pedestrians on the shared use path to the north, filtering, and softening views to the noise walls along the Freeway interface.</p>
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# 5. Consistency with the Urban Design Strategy

## 5.3.2.3 Inset K3: Doncaster Park and Ride

Consistency with the Urban Design Strategy – Koonung Creek Valley – Inset K3 Doncaster Park and Ride

### Key Design Requirements

### Response

#### Amenity, Vibrancy and Safety

5A	Ensure noise walls to the north of the Eastern Freeway deter graffiti at lower levels. Use buffer planting to screen and filter views to noise walls.	Noise walls on the east side of the Freeway through this section are largely separated from public access, located on the southern boundary of the open section of Koonung Creek. Buffer landscape planting has also been provided on both the Freeway verge and interfaces with the Koonung Creek Trail where sufficient space is available to provide a physical barrier to access. Where this cannot be accommodated without compromising sightlines or safety, such as through the 'pinch points' along the Koonung Creek Trail south of Hender Street, noise wall types incorporating textured finishes at the lower level will be used to deter graffiti.
5B	Reinstate buffer landscape treatments (such as vegetation and mounding) adjacent to the Eastern Freeway Road reserve to filter views from parkland and residential areas towards the Eastern freeway. Landscaping and planting are to complement the existing open space planting themes and local character.	Where road widening and road works have necessitated the removal of existing vegetation, vegetation treatments are to be reinstated to screen noise walls, ramps, and road infrastructure. Plantings will be chosen from the existing Ecological Vegetation Classes (EVCs) to improve wildlife habitat and complement the existing semi-bushland character of planting within the Koonung Creek reserve and abutting open spaces.
5C	Ensure new noise walls to the south of the Eastern Freeway address visual amenity on the road and residential interfaces and deter graffiti at lower levels while maximising light penetration to enhance solar access to residential properties and the Koonung Creek Trail.  Use landscaping to filter views to walls from surrounding dwellings and from the Koonung Creek Trail.	The design largely retains the existing alignment of noise walls through this section, which run directly adjacent to the rear boundaries of residential properties on Winfield Road, Balwyn North. The visual interfacing amenity of these properties will be enhanced through the replacement of existing walls that comprise solid, blank panels, with noise wall types incorporating transparent acrylic panels to maximise solar access and view lines at the upper level, as well as a greater level of architectural detail at lower level. This will also result in an improved presentation of the noise walls when viewed from the Koonung Creek Trail and the Freeway, with textured elements at the lower level to deter graffiti in combination with retention of the existing open cuttings to limit access.  It is further noted that a sectional shared use path is proposed to not only form a connection with the secondary and existing paths with this area but also establish a linkage with the shared use path to the south-west of the intersection thereby enhancing the walking and cycling network through the open space on the south side of the Freeway. Benefiting from this arrangement, opportunities to incorporate landscaping appear to be limited due to spatial constraints. However, to mitigate the situation, the design makes good use of the areas immediately adjacent to the intersection and to the east where more space is afforded within Koonung Creek Reserve for landscaping purposes. Overall, the design approach, which encompasses a selection of plantings throughout and incorporation of acrylic panels at the upper level of the noise walls, will adequately filter direct views cast onto the noise walls from surrounding dwellings as well as the Koonung Creek Trail.
5D	Ensure visual permeability and solar access from the Doncaster Park and Ride to Koonung Creek to enhance visual amenity.	Views from the Doncaster Park and Ride and adjoining shared use paths to the south of the Koonung Creek have been largely retained through siting noise walls along the Freeway interface and setting the express busway connection below existing ground levels. The only area where this has not been achieved is at the western end of the Doncaster Park and Ride where the retaining walls required to facilitate the express busway underpass have resulted in the abutting shared use path to the west being elevated above the creek corridor. This is considered an acceptable design outcome as it avoids road infrastructure encroaching further into the Koonung Creek corridor and channel at this point, with the path and express busway connection retuning to grade further east.
5E	Maintain view lines across the Koonung Creek corridor from the walking and cycling path to promote passive surveillance and a comfortable journey.	The proposed landscape design in this UDLP around paths that access Doncaster Park and Ride, in particular for planting located around the Doncaster Road Intersection, will further undergo review during design development of the detailed design phase to ensure CPTED principles, including sight lines and passive surveillance are achieved.
5F	Provide a grade-separated walking and cycling crossing of Doncaster Road.	Grade-separated pedestrian and cycling crossings are provided both north and south of the Freeway, including a new underpass on the northern side of the Eastern Freeway. The design delivers two designated, traffic free crossings at Doncaster Road through provision of underpasses located in line with the Koonung Creek Trail, providing a direct and continuous route for pedestrians and cyclists moving east-west along the Freeway corridor. This represents a significant improvement in safety and convenience, particularly on the northern side where the closest signalised crossing is at High Street.
5G	<i>*Consider improving the landscape appearance of the area in front of the Tende Beck Scout Hall (refer to Manningham City Council's Koonung Creek Linear Trail Future Works Program).</i>	The design retains the existing canopy trees in front of the Tende Beck Scout Hall and provides for enhanced landscape plantings using understorey and groundcover species (Garden Bed Type 03). Further design development will inform landscape planting in this location.

# 5. Consistency with the Urban Design Strategy

## 5.3.2.4 Map K4: Elgar Road to Middleborough Road

Refer to the table on pages 112 to 113 for a design response to each number.



Figure 75: Elgar Road

# 5. Consistency with the Urban Design Strategy

## 5.3.2.4 Map K4: Elgar Road to Middleborough Road

Consistency with Urban Design Strategy Place-specific Requirements – Koonung Creek Valley Character Area – Map K4 Elgar Road to Middleborough Road.

### Key Design Requirements

### Response

#### Connectivity, Wayfinding and Accessibility

1A	Replace and relocate existing bridge near Eram Road over Eastern Freeway with a new walking and cycling crossing that connects to the Koonung Creek Trail and surrounding path networks. Entries to the bridge are to be clear, legible and are to include wayfinding to the entry points.	This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Tram Road and Springvale Road.
1B	Ensure any changes or upgrades to the Frank Sedgman Reserve interface support Whitehorse Council's proposed Easy Ride Routes which provide low stress cycling routes to key local destinations and facilities such as Box Hill North Primary School.	Upgrades to the Frank Sedgman Reserve include enhanced landscape and canopy tree planting within its western section on both sides of the existing Koonung Creek Trail alignment. This will provide improved shade and landscape amenity to a key connection through to the future Easy Ride Route on Elizabeth Street (NS2), encouraging greater use by casual cyclists. It is further noted that all existing path connections through the Frank Sedgman Reserve are proposed to be retained under this UDLP; or if located outside of this UDLP, it will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Tram Road and Springvale Road.
1C	*Consider improving the ability for pedestrians to cross Koonung Creek to access underutilised open space within Eram Park.	This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Tram Road and Springvale Road.
1D	Do not preclude provision of a new path to link the Koonung Creek Trail to Colston Close and Hampshire Road play space by others (refer to Manningham City Council's Koonung Creek Linear Park Management Plan 2011).	This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Tram Road and Springvale Road.
1E	Should project works directly impact existing secondary paths at the Koonung Creek Trail on the north side of the Eastern Freeway, provide replacement walking paths in high use areas where safe and practicable to reduce the potential for conflict between walkers and cyclists along the Trail and provide additional amenity for the community.	This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Tram Road and Springvale Road.
1F	Should project works directly impact on existing shared use paths, consider opportunities for upgrades to walking and cycling paths along the Koonung Creek Trail (to the east and west of Elgar Road).	With the exception of a short section of the Koonung Creek Trail within Frank Sedgman Reserve (discussed below), no existing shared use paths within this map area will be permanently impacted by works proposed through this UDLP. While temporary impacts may occur through the construction period, particularly within Elgar Park, any disruption to pedestrian and cyclist movements can be managed through short term diversions or the like. These will be further assessed and confirmed through the development of construction management plans prior to commencement of works in consultation with relevant stakeholders.
1G	Should project works directly impact existing secondary paths in Frank Sedgman Reserve, provide replacement walking paths in high use areas where safe and practicable to reduce the potential for conflict between walkers and cyclists along the Koonung Creek Trail and provide additional amenity for the community.	Works within Frank Sedgman Reserve proposed through this UDLP are limited to landscaping, installation of noise walls along the northern boundary and construction of culverts at its western end to facilitate the diversion of a short section of Koonung Creek underground near Elgar Road. No secondary paths within the Frank Sedgman Reserve will be impacted by these works, as these are located south of this UDLP area. Where sections of the Koonung Creek Trail between Frank Sedgman Reserve and Edgar Road need to be realigned and/or reconstructed to facilitate these works, existing connections to the secondary path network are retained.

# 5. Consistency with the Urban Design Strategy

## 5.3.2.4 Map K4: Elgar Road to Middleborough Road

Consistency with the Urban Design Strategy – Koonung Creek Valley – Map K4 Elgar Road to Middleborough Road

### Key Design Requirements

### Response

#### Amenity, Vibrancy and Safety

<p><b>2A</b> Ensure narrow areas along the Koonung Creek Trail have good lighting, open sightlines and are attractive to users.</p>	<p>Due to the narrow width of the Koonung Creek corridor east of Elgar Road, the Freeway widening to the south will create a 'pinch point' in the Koonung Creek Trail SUP directly adjacent to the Presbyterian Theological College. The design has prioritised safety, amenity and user experience on this section of the trail by:</p> <ul style="list-style-type: none"> <li>– maximising opportunities for solar access and penetration of 'borrowed' lighting from Elgar Road and the Freeway light mast through limiting landscape plantings to low shrubs and grasses and use of noise wall types incorporating acrylic panels and texture/design detail to face the Koonung Creek Trail</li> <li>– maintaining the existing trail alignment parallel to the Presbyterian Theological College boundary to maximise clearance from noise walls and preserve sightlines from the underpass at Elgar Road, increasing passive surveillance</li> <li>– providing clear sightlines through the underpass at Elgar Road, increasing passive surveillance.</li> </ul> <p>In addition, light levels to this section of the trail will be confirmed through a light spill assessment undertaken as part of detailed design development, with supplementary lighting provided if required based on consideration of CPTED (Crime Prevention through Environmental Design) principles through further design development in the detailed design phase.</p>
<p><b>2B</b> Maintain the existing alignment of noise walls south of the Eastern Freeway between Station Street and Middleborough Road where possible to minimise impacts along this narrower section of the Koonung Creek Trail. Ensure any new noise walls maximise solar access (particularly on the southern side) and minimise overshadowing to residential properties.</p>	<p>This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Tram Road and Springvale Road.</p>
<p><b>2C</b> Establish and/or reinstate buffer landscape treatments (such as vegetation and mounding) adjacent to the Eastern Freeway Road reserve to filter views from parkland and residential areas towards the freeway and noise walls. Landscaping and planting are to complement the existing open space planting themes and local character.</p>	<p>The landscape design has reinstated and enhanced existing landscape buffer planting, including canopy trees, along the northern boundary of Frank Sedgman Reserve to provide screening of the adjacent noise walls when viewed from adjacent open space and residential areas further south.</p> <p>The planting palettes for this section include species primarily drawn from local EVCs, consistent with the existing bushland character of the local environment with the Reserve.</p>
<p><b>2D</b> *Consider enhancements to the Tram Road Reserve by providing shade planting around the existing playground and planting vegetation. Consider other open space improvements in consultation with Manningham City Council.</p>	<p>This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Tram Road and Springvale Road.</p>
<p><b>2E</b> *Consider enhancements to the landscaping, plant on hillside and realign path around the north-east side of the Koonung Creek Linear Park (refer to Manningham City Council's Koonung Creek Linear Park Management Plan 2011).</p>	<p>This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Tram Road and Springvale Road.</p>
<p><b>2F</b> Do not preclude the opportunity for enhancements to Eram Park to support dog recreation activities (to be provided by others).</p>	<p>This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for the Eastern Freeway Upgrades between Tram Road and Springvale Road.</p>

#### Resilience and Sustainability

<p><b>3A</b> *Consider improving biodiversity and habitat links between Frank Sedgman Reserve and Tram Road Reserve by providing habitat infrastructure across the Eastern Freeway.</p>	<p>The decision to not proceed with habitat links north south across the project was based on an ecologists' assessment of the fauna present and the existing habitat. More specifically, the ecological assessment concluded that:</p> <ul style="list-style-type: none"> <li>– the feasibility and effectiveness of a habitat link that is non-linear and across the Eastern Freeway would be low (or of little benefit)</li> <li>– the fauna present in these areas would not benefit from a north south habitat link either above or under the Eastern Freeway</li> <li>– more benefit would be gained from enhancing the existing habitat corridors on either side of the Freeway.</li> </ul> <p>The development of landscape plans for this UDLP included ecological input in order to respond to the above findings. This included (but is not limited to) selection of appropriate flora species, planting locations and interfaces with existing areas of vegetation throughout the project area.</p> <p>The design response of this UDLP is informed by ecological advice as outlined above and provides a effective means of supporting habitat connectivity along the Eastern Freeway.</p>
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# **Section 5.4**

## **Detailed Requirements and Benchmarks**

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# 5. Consistency with the Urban Design Strategy

## 5.4 Detailed Requirements and Benchmarks

The element-based requirements for North East Link (NEL) as per Section 7 of the UDS encompasses aspects of the Project including different types of bridges, ventilation structures, portals and tunnels, water, and road signage.

The following element-based requirements are applicable to the scope of works proposed through this UDLP:

### Element-based requirements and qualitative benchmarks

1. Multi-span bridges
2. Road bridges
4. Open cuttings
6. Project buildings and ancillary structures
7. Public open space
8. Local streets, schools and neighbourhoods
9. Walls, fencing, barriers and screens
10. Bus park and ride facilities and bus lanes
11. Car parking
12. Lighting
13. Walking and cycling infrastructure
14. Walking and cycling bridges
15. Walking and cycling underpasses
16. Navigational nodes and thresholds
17. Landscape
18. Water
19. Road signage
20. Materials and finishes.

The Table 3 below demonstrates consistency with Section 7 of the UDS for the Project with regard to the detailed requirements and benchmarks.

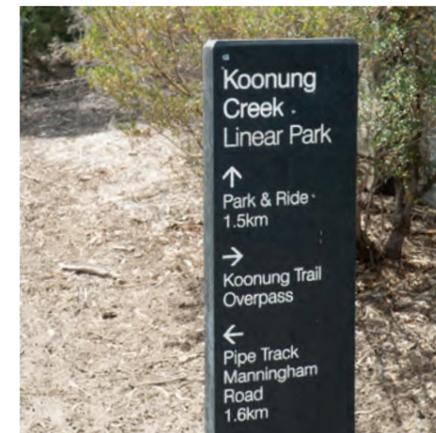


Figure 76: Key Design Elements

# 5. Consistency with the Urban Design Strategy

## 5.4.1 Key Design Requirements

The element-based requirements for the Project as per Section 7 of the UDS encompass aspects of the Project, including different types of bridges, ventilation structures, portals and tunnels, water, and road signage.

The Key Design Requirements of those elements includes:

**Table 3 - Response to Key Design Requirements**

Objective	Description	Response
<b>1.0 Multi-span Bridges</b>		
1.0 Multi-span Bridges	N/A	Eastern Freeway Upgrades generally in accordance with the approved design as detailed in Attachment 5.
<b>2.0 Road Bridges</b>		
<b>Objective 2.1 Bridge design</b>	<p>All new bridges continue the form of the existing Eastern Freeway bridges. New road bridges and modifications to existing bridges are well designed, complement the surrounding area and appropriately address sensitive interfaces.</p> <p>Bridges are designed to a high-quality standard, to minimise visual bulk, and to be visually pleasing when viewed from and to the structure. The overall structure and the various parts of the bridge structure are geometrically proportioned and have a harmonious relationship.</p> <p>Structural solutions are durable and avoid the need for cladding. New piers match existing pier shape, angle and proportion in both directions. Base of bridge beams match the existing beams in profile.</p>	<p>The only new road bridge proposed within this UDLP is at Doncaster Road. The design of this bridge incorporates simple, clean horizontal lines with minimal design detail or embellishment and is aligned to natural ground levels on each side of the Freeway reserve, largely following the form and appearance of the existing bridge at Doncaster Road and those further east at Elgar Road and Station Street.</p> <p>Visual bulk has been minimised through limiting structural elements within the road corridor to a single pier, consistent in scale and appearance to the existing form. The pier, abutments and adjacent retaining walls will be treated with textured and/or tinted concrete, to provide visual interest and an improved design response to motorists passing under the bridge.</p> <p>Design detail and form have been deliberately kept low profile so as not to dominate views on approach and minimise visual clutter. The existing retaining walls to the northwest will be upgraded and improved with a greater mix of textures and colour finishes, drawn from the Doncaster Junction design palette described in Section 4 above.</p>
<b>Objective 2.2 Identity</b>	Sets of bridges within a corridor visually complement one another. There is a clear relationship between bridges, with a consistency of bridge elements demonstrated along the length of the Project.	The design and form of the bridge at Doncaster Road both visually and functionally reference the existing bridges at Elgar Road and Tram Road, as well as at Blackburn Road east of the UDLP boundary. These all utilise simple, horizontal lines with piers, if present, limited to the central median and clearly forming a secondary design element when viewed from the Freeway. Finishes to barriers and bridge decks have been selected from a limited palette of paints and oxides, ensuring corridor-wide consistency.
<b>Objective 2.3 Integration</b>	<p>New bridges and modifications to existing bridges are well integrated with any connected structures or other built elements, the surrounding land form, local context and road network.</p> <p>Superstructure, piers, beams, barriers, railings, associated furniture, deck, abutment, and feature lighting are carefully integrated together to provide a high-quality design solution for all users above and below the structure.</p> <p>Opportunities are maximised to structurally integrate pier crossheads into the bridge superstructure.</p>	<p>The Doncaster Road bridge has been designed to seamlessly integrate with the surrounding road network and adjacent structures. Material, textures and colour finishes reference and are drawn from the surrounding landscape, providing a visually coherent design response that addresses its broader context, not just the Freeway corridor. The design of piers, barriers and other structural elements (such as superstructure, beams, deck and railings) have deliberately been kept simple, in keeping with the existing bridge design and the broader design approach throughout the corridor. Feature lighting (particularly to the two underpasses) has been considered and will be confirmed in the detailed design process in consultation with ultimate asset owner (or land manager if different from ultimate asset owner).</p> <p>Abutments and retaining walls located underneath or adjacent to the bridge decks at Doncaster Road and Elgar Road will incorporate textured and/or tinted concrete panels for visual interest (noting a textured finishes incorporated to match abutment treatments). As such, the design will remain consistent with the existing materiality of piers and other elements of bridges through this corridor.</p> <p>Connections between structural elements and the final design of the pier crossheads will be resolved through detailed engineering and structural design and approvals processes, to include consideration of how these elements will be both visually and physically integrated in the final built form outcome.</p>
<b>Objective 2.4 Views</b>	Scenic views and vistas seen from bridges are maximised for road users and pedestrians.	<p>Views from the Doncaster Road bridge will be maximised through the use of low barriers along the bridge extent. The barriers are designed to meet road safety requirements and provide a physical barrier to potential falls, while sitting at or below the eyeline of pedestrians and motorists.</p> <p>No changes are proposed to the existing road bridges at Tram Road and Elgar Road.</p>

## 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>Objective 2.5</b> <b>Minimising impacts</b>	Road bridges are designed to minimal height and width to reduce landscape and visual impacts and overshadowing of residential properties and other sensitive land uses. The visual impact of the bridge structure on road users is minimised.	Due to the nature of the surrounding topography, the proposed bridge at Doncaster Road will sit at or lower than natural ground level immediately east and west of the Freeway reserve, with the only structural elements on the bridge itself being the safety barriers and street lighting. The design is based on simple, strong horizontal elements, which do not protrude above the adjacent verges, minimising overall visual bulk and clutter when viewed from the Freeway.  Potential overlooking and/or overshadowing upon surrounding residential properties is largely mitigated by distance and topography, with the closest residential land east of Winfield Road (Balwyn North) sitting 2-3 metres above the level of the bridge. As demonstrated on the overshadowing diagrams provided in Attachment 4, all shadow cast by road bridges in this UDLP area, including any connecting ramps, will be fully contained within the Freeway reserve, with no impact to private properties.
<b>Objective 2.6</b> <b>Visual clutter</b>	Visual clutter is avoided and the number of piers are minimised. Piers and towers are located to avoid the need for additional structures (such as protection barriers).  Where pier protection barriers are unavoidable, reduce the scale and carefully integrate with the bridge design. Elements such as the edge of the deck, drainage pipes, services and ducts are concealed from view.	The only new road bridge within this UDLP is the Doncaster Road bridge. It has been designed with a single, continuous blade pier on the Freeway. The overall scale and extent of protection barriers are limited to standard TL ('Test Level') barriers, as the bridge pier has been designed to cater for impact loads. The Doncaster Road bridge has been carefully designed to integrate well with connected structures, other built elements, the land form and local context as described in the response to Objective 2.1 (Bridge design) above. All structural elements will be concealed from views from the Eastern Freeway by the barrier/throw screens, which seamlessly connect with the bridge deck, noting that these details are subject to further refinement and confirmation through the detailed engineering and structural design processes for this bridge.
<b>Objective 2.7</b> <b>Passive surveillance</b>	Where there is public access below structures, passive surveillance is maximised to deter undesirable behaviour.  Materials, textures, and finishes are used effectively to deter graffiti. Solar access is maximised to spaces beneath the structure.	Public access below the proposed road bridge at Doncaster Road and existing bridges at Elgar Road and Tram Road is limited to the underpass connections along the Koonung Creek Trail. The design of these areas maximise opportunities for passive surveillance through clear sightlines (no sharp corners or obscured spaces) and appropriate light provision where required. The potential for public access to the Freeway verges or other areas within the road reserve located beneath these bridges is precluded by the location and alignment of the proposed noise walls and/or retaining walls required to facilitate the Freeway widening. In addition, at Elgar Road and Doncaster Road, dense landscape planting is provided between the on/off ramps and along the Eastern Freeway corridor as a further deterrent barrier to unauthorised access.
<b>Objective 2.8</b> <b>Retrofitting</b>	New built elements (e.g., throw screens, traffic barriers around piers, structures, fencing, walls etc.) on existing road bridges are bespoke, innovative, and designed to complement the original form and aesthetic qualities. The new built elements on the existing Bulleen Road bridge are designed to complement the existing bridge and the wider family of road infrastructure along the Eastern Freeway.	Works to existing road bridges in this UDLP (Elgar Road and Tram Road) are limited to minor modification to abutments to accommodate the Freeway widening. No retrofitting of built form elements to these bridges is proposed.
<b>Objective 2.9</b> <b>Signage on bridges</b>	Advertising and road signage are not located on bridges. Intelligent Transport System (ITS) signage on bridges is avoided or well integrated into the bridge design.	No road signage or advertising will be located on proposed or existing road bridges. All signage, including Intelligent Transport Systems (ITS) signage, will be placed on gantries in order to reduce visual clutter and strengthen the design integrity of the bridges as architectural features. During the design development in the detailed design phase, ITS, which includes electrified road related signage and infrastructure, will be determined in consultation with the relevant stakeholders in accordance with the UDS.
<b>3.0 Land Bridges</b>		
N/A	N/A	Not applicable to this UDLP.

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>4.0 Open Cuttings</b>		
<b>Objective 4.1 Connectivity</b>	<p>The design of open cuttings is part of a holistic urban design response to improve permeability, legibility, and accessibility along and across the corridor, and severance impacts on communities are avoided.</p> <p>The quality and number of path crossings over the Project corridor are maintained to better connect communities, provide access to local facilities and link movement networks.</p>	<p>No new open cuttings are proposed in the design for this section of the Freeway. The design has retained the existing cuttings between Doncaster Road and Elgar Road in recognition of their strong aesthetic value and landscape significance within the Freeway corridor. These are existing landscape features that will be retained and integrated into the urban design response for the Eastern Freeway upgrades. As such, impacts to existing rock face embankments can be mitigated through landscaping.</p> <p>The number of north-south crossings over the Eastern Freeway to connect the local neighbourhoods is maintained with the replacement of crossings (that maintain the quality of a path crossing) at the following locations:</p> <ul style="list-style-type: none"> <li>- Estelle Street SUP bridge</li> <li>- Doncaster Road bridge and associated path network</li> <li>- Heyington Avenue SUP bridge.</li> </ul> <p>The following crossings are existing crossings that connect the north-south neighbouring communities, and proposed to be retained in situ:</p> <ul style="list-style-type: none"> <li>- Musca Street Reserve underpass to Yarra Flats Reserve</li> <li>- Elgar Road bridge</li> <li>- Tram Road bridge.</li> </ul>
<b>Objective 4.2 Cutting design</b>	<p>High quality finishes, materials and hard and soft landscapes are used in cuttings.</p> <p>Cuttings are designed to mitigate adverse amenity impacts for adjacent residents and the local community, and to provide spaces that are considered and well resolved as part of the overall design solution.</p>	<p>Not applicable to this UDLP. As no new open cuttings are proposed within the Project area subject to this UDLP, the existing rock face is retained thereby maintaining a consistent visual effect to the surrounds. New landscaping will be incorporated where practical, noting that the siting of existing cuttings may have adverse impacts on ongoing maintenance.</p>
<b>Objective 4.3 Landscaping</b>	<p>Landscape design and plant species selection within open cut areas are appropriate to local conditions, micro-climate, urban design concepts and local character.</p>	<p>Not applicable to this UDLP. The design has retained existing plantings on the face of the cuttings where present, noting that due to the spatial constraints of the Freeway corridor through this section, the road lane widening is to the base of the cuttings with no verge.</p>
<b>Objective 4.4 Visual considerations</b>	<p>Barriers on or adjacent to land bridges provide good visual connectivity, maximise passive surveillance, and minimise visual obstructions to views and landmarks for the surrounding community.</p>	<p>Not applicable to this UDLP. There are no land bridges that are required or proposed to be delivered.</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>5.0 Ventilation Structures, Portals and Tunnels</b>		
N/A	N/A	Not applicable to this UDLP. There are no ventilation structures, portals or tunnels that are required to be delivered.
<b>6.0 Project Buildings and Ancillary Structures</b>		
<b>Objective 6.1 Siting</b>	<p>New above-ground service and utility infrastructure are located to avoid or minimise impacts to existing to adjoining properties, and to reduce the need to remove vegetation. The number and size of utility buildings and structures within public open space are minimised.</p> <p>Above-ground utility buildings and structures are co-located with nearby existing structures and adjacent to vegetation to better integrate with the surrounding area. They are located to maintain the amenity and function of the places they occupy, and minimise visual impacts on significant buildings, monuments, trees, open spaces and landscape vistas.</p>	<p>The siting of other above-ground ancillary structures such as gantries, flood walls and barriers is designed in compliance with relevant functional requirements and appropriately located to minimise visual and amenity impacts on adjoining residential properties. The schedule of materials and finishes, together with landscaping treatment, ensures that these structures will sit comfortably in the surrounding context. The design will make a positive contribution to infrastructure including bridges, noise walls and other structures. An integrated design approach is implemented in this Project, ensuring architectural elements are designed to share a cohesive approach to materials, textures, colours and form and reflect the embedded Indigenous themes. Overall, the design creates an overall sense of identity and journey through a choreographed sequence of colours and elements and connect to Country through colouration, planting selection and sculptural forms.</p> <p>Key examples are outlined below.</p> <p><b>Bridges</b></p> <p>Two road bridges are located within the project area expanding from Burke Road to Tram Road including one at the Bulleen Road interchange and the other at Elgar Road. The Bulleen Road bridge has been approved in the NEL Tunnels UDLP with the details provided in Attachment 5. The Elgar Road bridge remains unchanged in structure, materials and built form with new abutment treatments incorporated for stabilisation.</p> <p>Refer to the plans (NEL-STH-NSA-5900-UUD-DRW 9161 and 9162, Elgar Road Bridge) in Attachment 1: Architecture and Urban Design.</p> <p><b>Doncaster Road Bridge and Underpasses</b></p> <p>The bridge at Doncaster Road is upgraded to accommodate Eastern Busway, other Freeway Upgrades works and the two underpasses. It provides a minimum height clearance of 5.9m above natural ground level and a maximum height of approximately 13m above natural ground level; and will be constructed of concrete, steel and finishes.</p> <p>A new grade-separated underpass on the northern side of the Doncaster Road bridge will be constructed, providing a continuous path of travel along the Koonung Creek Trail. This underpass is to be straightened as much as possible thereby increasing direct view lines with corresponding low-level landscaping and creating positive realignment with local roads; and further, designed with stainless steel metal mesh to be positioned between the underpass and the express busway so as to ensure safety for pedestrians and cyclists.</p> <p>The existing underpass on the south side will be upgraded and improved as part of the extension of the existing Doncaster Road bridge to provide a distinctive node and wayfinding marker for cyclists and pedestrians with wing walls and landscape treatment. This is complimented by the generous width and straight alignment of the underpass, providing clear sightlines and opportunities for passive surveillance.</p> <p>Refer to the plans (NEL-STH-NSA-5900-UUD-DRG-9141 to 9149) in Attachment 1: Architecture and Urban Design.</p> <p><b>SUP Bridges</b></p> <p>The Estelle Street SUP bridge forms a key urban landmark along an arching bend of the Koonung Creek Reserve. The sculptural pylon holds up the bridge over an extended span improving the north-south connection over the Eastern Freeway. The bridge structure is constructed of steel with the precast concrete deck, stainless steel handrails, stainless steel metal mesh (as screening), metal stanchion and non-reflective/non-glare finishes. Feature lighting has also been considered in the design as annotated on relevant plans. The maximum height of the bridge is measured approximately 48m above the natural ground level.</p> <p>Refer to the plans (NEL-STH-NSA-5900-UUD-DRW 9171 to 9176, Estelle Street SUP Bridge) in Attachment 1: Architecture and Urban Design.</p> <p>The Heyington Avenue SUP bridge seamlessly forms connections with Stanton Street to the north and the shared use and secondary paths within Valda Wetlands to the south. The bridge structure is constructed of steel with the precast concrete deck (accompanied by timber cladding treated with appropriate coating), stainless steel handrail, metal stanchion and non-reflective/non-glare finishes. Integrated lighting has also been considered in the design of the cyclist trail to improve safety. In addition, balustrades are provided along the ramp, the elevated viewing areas (the switchback) and stairs to the south leading to the Valda Wetlands open space. The maximum height of the bridge is measured approximately 30m above the natural ground level.</p> <p>Refer to the plans (NEL-STH-NSA-5900-UUD-DRW 9181 to 9186, Heyington Avenue SUP Bridge) in Attachment 1: Architecture and Urban Design.</p> <p>(Response to Objective 6.1 continued over page)</p>

## 5. Consistency with the Urban Design Strategy

Objective	Description	Response
Objective 6.1 Siting (continued)		<p><b>Noise Walls, Retaining Walls, Barriers and Screens</b></p> <p>Noise walls are predominantly solid, transparent (acrylic) or a combination of solid and acrylic panels along the Eastern Freeway corridor. The non-transparent/solid materials incorporated in new noise walls include precast concrete panels, rotational moulded plastic panels, weathering steel and existing mounds. Some noise walls will be constructed on top of existing exposed rockface embankments facing the Freeway corridor. The new noise wall heights range from 6m to 10m throughout this UDLP, to ensure noise attenuation is compliant with EPRs for noise and vibration. Visual consistency of continuity in solid materials will be achieved by varying the extent of the acrylic panels creating a smoothly transitioned design outcome.</p> <p>Retaining walls will be constructed of concrete with textured finishes. The heights are subject to context and location and will be confirmed in the detailed design assessment. Flood walls have been carefully integrated with underlying land forms and retaining walls; and will be constructed of concrete with a height range of 2m to 10m.</p> <p>Safety fencing, screening and barriers along bridges and paths are considered in the design where necessary. The design approach is to be coordinated to minimise visual and physical clutter within the Freeway reserve and adjoining open spaces by combining these elements and/or integrating them with adjacent structures. These road infrastructures, such as traffic barriers, fencing and screens will be designed to reduce overall visual and physical clutter in the Freeway corridor through further detailed design development in accordance with the road authority and subsequent requirements. Consideration of the layering/interface of the walls, fences, barriers and screens will also be considered by having a level of consistency in material selection across these urban design elements and utilisation of the Munsell colour chart in the detailed design process.</p> <p>Retaining walls, fencing, barriers and screens are designed to reflect the characteristics of each precinct, providing visual connection with retained and enhanced landscaping through this Project.</p> <p>Refer the plans (NEL-STH-NSA-5900-UUD-DRW-9201 to 9208, Noise Walls) and (NEL-STH-NSA-5900-UUD-DRW-9210 and 9212, Retaining Walls and Flood Walls) in Attachment 1: Architecture and Urban Design.</p> <p><b>Gantries</b></p> <p>Gantries are designed to ensure minimal visual clutter and improve user experience and ease of maintenance. Long single-span truss structures minimise the number of vertical interfaces with the Freeway corridor. All gantries are clad in high-quality perforated metal finished in high-quality powder coats to conceal the structure and its associated components, while improving the urban design outcome. The gantries will be constructed of perforated cladding and finished in high quality power coats for easy maintenance. At lower levels where graffiti is more likely, a standard paint finish is used to ensure any cover-ups are seamless and undetectable. The quantity of gantries and toll infrastructure has been reduced by consolidating signage and its associated components, which assists to remove unnecessary visual clutter in the freeway corridor. All gantries are provided with a minimum height clearance of 6m.</p> <p>Refer to the plans (NEL-STH-NSA-5900-UUD-DRW-9213 and 9214) in Attachment 1: Architecture and Urban Design.</p> <p><b>Incident Recovery Amenities Building</b></p> <p>An Incident Recovery Amenities building is to be constructed adjacent to the on ramp to the southwest of the Doncaster Road interchange. It is designed to be modest in scale and co-located with existing or new road infrastructure in order to minimise its visibility. It has a maximum height of 3.8m above natural ground level. The building is constructed of metal cladding, with a metal roof and surrounded by feature metal fencing.</p> <p>As it will be largely concealed by the traffic barrier adjacent to the Eastern Freeway, visual impacts in this interface will be limited. Further, it will be fully screened from views from the Koonung Creek Trail by noise walls. Overall, the simple built form in structure and material palette ensures the building meets functional requirements while creating little visual impacts on the surrounding landscaping.</p> <p>Refer to the plans (NEL-STH-NSA-5900-UUD-DRW-9028 and 9150) in Attachment 1: Architecture and Urban Design.</p> <p><b>Water Pressure Reducing Station</b></p> <p>A Water Pressure Reducing Station (PRS) is a minor utility instillation and will be located to the southwest of Doncaster Road interchange near Gardenia Road, Balwyn North. It is comprised of an underground structure and series of pipes that are located at natural ground level and connect to the underground structure. The PRS and its associated pipes will be fully concealed from public view by a 3m high security fencing. The final design will be confirmed by the service provider and subject to relevant authority's requirements.</p> <p>The Water Pressure Reducing Station as described is not defined as an above-ground building or structure under the NELP Incorporated Document. The location of the minor utility instillation is shown in this UDLP to understand the surrounding landscape design interface, including detail of the associated fencing. It will have little visual impacts onto the surrounding context and is located on the edge of the reserve abutting an existing retained carpark.</p> <p>For detail of the surrounding fencing, refer to the plans (NEL-STH-NSA-5900-UUD-DRW- 9150) in Attachment 1: Architecture and Urban Design.</p> <p>For detail of the surrounding landscape design, refer to the plans (NEL-STH-NSA-5900-UUD-DRG-9543) in Attachment 2: Landscape Design</p> <p><b>Existing Gateway Sculpture 'Sentinel'</b></p> <p>The existing 'Sentinel' sculpture is located within the landscaped median between the Eastern Freeway off ramp and the Freeway corridor, directly north of the Doncaster Road bridge. The sculpture will be relocated to the reserve to the northeast of Doncaster Road and High Street intersection. As no changes are proposed to the design of the sculpture, the proposed relocation maintains its significance and prominence as a 'gateway' feature when entering the municipality of Manningham City Council. The final location will be determined in the detailed design process in consultation with Manningham City Council as the return asset owner and relevant stakeholders.</p> <p>Refer to the plans (NEL-STH-NSA-5900-UUD-DRW 9151) in Attachment 1: Architecture and Urban Design; and (NEL-STH-NSA-5900-UUD-DRG-9544) in Attachment 2: Landscape Design.</p> <p>(Response to Objective 6.1 continued over page)</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>Objective 6.1</b> <b>Siting (continued)</b>		<p><b>Telecommunications Monopole</b></p> <p>The existing telecommunications monopole and associated equipment shelter, located within the bus turnaround area of Doncaster Park and Ride, is required to be relocated to facilitate the broader suite of road works associated with delivery of the Doncaster Road Interchange. The replacement of the monopole and the equipment shelter will be constructed within the northwestern portion of the car park, adjacent to the access from Doncaster Road.</p> <p>The overall height of the replacement monopole is approximately 36m. However, it will unlikely result in any additional visual impact having considered that:</p> <ul style="list-style-type: none"> <li>- The visual impact arising from the relocated monopole shall be in the context of increased infrastructure and built forms at the Doncaster Road Interchange, which is not limited to the Freeway upgrades subject to this UDLP.</li> <li>- The existing monopole is located within the reserve to the west of the car park. Beyond the car park, its visibility is limited to residential properties immediately bound by Finlayson Street, Hender Street and Doncaster Road. Following the relocation, the monopole will sit to the north of the facility, adjacent to Doncaster Road. This means that the extent of visibility remains to be confined within the residential pocket immediately abutting Hender Street with frontages to Doncaster Road and Finlayson Street. As such, the extent of visibility the monopole has on surrounding residential properties will not be unreasonably increased.</li> <li>- The Doncaster Park and Ride site shows a contour difference that arises from west to east, which allows for a level of visual mitigation as the relocated monopole sits on a lower plane than residential properties.</li> <li>- The incorporated new landscaping and perceivable grade changes associated with the new busway underpass designed in this UDLP will also adequately screen the scale of the new monopole thereby mitigating visual impacts.</li> </ul> <p>The replacement monopole also positively contributes to the area in other manners. For instance, the removal of the existing monopole will create new opportunities for an upgraded Doncaster Park and Ride facility (subject to a separate UDLP, which will further improve and enhance landscaping and recreational amenities for users on the Koonung Creek trail). Further, the proposed siting of the new telecommunications facility (encompassing the monopole and associated equipment) is designed to ensure that vegetation removal and disturbance are minimised as much as is practicable, with a reasonable development footprint that will be fully contained within the car park. Whilst it appears that removal of vegetation at a small scale is necessary to facilitate the works, the design has managed to retain other trees, in particular having regard to large mature canopy trees within the abutting nature strip, including the oak tree protected under the Manningham Heritage Overlay. The overall retention of the existing trees will assist in screening the telecommunications facility from oblique angles when viewed from the road and/or lower level structures.</p>
<b>Objective 6.2</b> <b>Integrated and Coordinated</b>	<p>Project buildings, technical shelters, compounds, and structures integrate sensitively with their surrounds, and complement and coordinate with existing nearby structures and fencing where appropriate.</p> <p>The obtrusive appearance of utility buildings and structures from the public realm (public realm refers to all public open space along with other publicly owned land between buildings including streets) is minimised through the use of appropriate landscaping screening (e.g., planting and land form), architectural façades, and/or security fencing that also function as a visual screen.</p>	<p>Project buildings (such as Water Pressure Reducing Station and Incident Recovery Amenities building), technical shelters (such as the security fencing associated with the telecommunications facility), compounds (as required by the Incorporated Document and broadly across the Project area) and other structures are designed to be integrated with the surrounding context and complemented with existing structures and fencing as appropriate. More specifically, it is noted that:</p> <ul style="list-style-type: none"> <li>- The Water Pressure Reducing Station and Incident Recovery Amenities buildings are designed to be modest in scale and co-located with existing or new road infrastructure in order to minimise their spatial and visual impacts on nearby open space and the public realm. These structures utilise simple, minimalist forms and a limited material palette in line with their functional requirements while being complemented by surrounding landscaping.</li> <li>- The Incident Recovery Amenities building will be fully screened from views from the Koonung Creek Trail and open space to the west by noise walls. Due to its proximity to the Doncaster Road bridge, it will be visually read as part of the immediately surrounding road infrastructure, minimising potential visual bulk/clutter within the Freeway corridor.</li> <li>- The Water Pressure Reducing Station will be surrounded and partially screened by metal security fencing, in line with the level of the roof. Replacement garden bed landscaping comprising shrubs, ground covers and small trees will also be provided to the south and east of the PRS, providing additional filtering and softening of the structure when viewed from Doncaster Road and the Koonung Creek Trail.</li> <li>- The telecommunications facility will remain, noting that due to its overall height, it is reasonably prominent within the broader Doncaster Road corridor, particularly when travelling from the east. However, the design has mitigated the overall obtrusiveness of this structure at street level through retention of existing street tree planting to the Hender Street and Doncaster Road frontages, which in combination with the chain mesh security fencing around the compound and use of muted colour finishes, will assist in filtering and softening direct views.</li> <li>- Further visual treatments, including landscaping, to this structure can be investigated and resolved through the preparation of the future UDLP for the Doncaster Park and Ride to ensure this integrates with the broader site design response.</li> </ul>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>7.0 Public Open Space</b>		
<b>Objective 7.1</b> <b>Integration with Surroundings</b>	The design maximises continuity of public realm, extends surrounding public open space (land primarily used for recreation, nature conservation and passive outdoor enjoyment) and movement patterns and mitigates any severing of communities and places. Access to public open space within and at the interface of the project is enhanced. Opportunities to create additional functional and high-quality open space within the project corridor are maximised. The open space function of the open spaces within and along the project corridor is maintained. Encroachment and impacts on adjacent open space by freeway infrastructure and roadside landscaping (planting within the road reserve) is minimised.	<p>The importance and prominence of public open space is a central pillar of the urban design response proposed through this UDLP.</p> <p>While noting the constrained nature of the existing Freeway reserve restricts how existing open spaces can expand in area, the design of the overall footprint of the Freeway widening as well as associated project works maintain the connectivity and continuity of open spaces on both sides of the Freeway through walking and cycling paths and landscaping design. The interconnected walking and cycling paths complemented by landscaping design also demonstrates how the project has maximised the design opportunities creating useable, functional and high-quality open space within the corridor.</p> <p>Encroachment of Freeway infrastructure into key destinations for active and passive recreation, such as the Koonung Creek Reserve, Elgar Park and Frank Sedgman Reserve to the south, and Manningham Park and Katrina Street Reserves to the north, has been minimised through the substitution of batters and/or verges with retaining walls to accommodate the Freeway widening. Noise walls have also been sited as close to the Freeway interface as practicable to minimise impacts on usable open space areas from incorporation of landscaping buffers and earthen mounds as screening measures.</p>
<b>Objective 7.2</b> <b>Open Space Infrastructure</b>	Opportunities to upgrade the existing open spaces along the project corridor are maximised to create consistent, high quality, multifunctional and efficient spaces. This includes public open space infrastructure to enhance the function and enjoyment of the open space, such as seating, natural shade, drinking fountains, dog drinking bowls, emergency markers, bicycle leaning rails/hoops and rest areas. Public open spaces are consistent with local council or Parks Victoria furniture, material palettes and standards, and playground guidelines. Park and recreation facilities are clustered within open spaces to encourage people to gather together and to have positive social interactions.	<p>The Koonung Creek Reserve is the largest existing open space in the North East Link Program, and its redevelopment has been identified as a key opportunity for the Project. The design complements and builds on the upgrades and enhancements identified for that part of the Reserve between Musca Street and Estelle Street within the approved NEL Tunnels UDLP (provided in Attachment 5) through introducing new seating, BBQ areas, picnic tables and other amenities in high use locations such as the Koonung Creek Reserve Wetlands and reinstated areas of public open space.</p> <p>At the Valda Wetlands, new viewing platforms, seating nodes and interpretative signage will be provided as part of the redevelopment to ensure that communities retain the opportunity to directly experience and connect with the water.</p> <p>Dedicated rest nodes incorporating seating and bicycle repair stations have been identified at strategic locations along the Koonung Creek Trail to provide improved facilities for cyclists and encourage greater use by both commuting and recreational users.</p> <p>The final design, location and type of open space infrastructure will be determined through the detailed landscape design, in consultation with and to the satisfaction of the relevant councils as the proposed future owners of these open spaces once development is complete. These approvals processes will also include detailed consideration of councils' existing palettes of materials and standards for open spaces, to ensure all open space infrastructure delivered through this UDLP is fit for purpose.</p>
<b>Objective 7.3</b> <b>Positive Use of Space</b>	The design promotes and enables the positive use of public open space through design, with the resulting spaces being useful, attractive, activated, safe and sustainable. This includes incidental spaces such as those under ramps and viaducts, as well as pocket parks alongside the roadway. Places are well designed to cater for a diversity of uses that promote opportunities for positive social interactions and incidental physical activity.	<p>The design provides a combination of dedicated and impromptu public spaces to create an animated, vibrant, and inclusive environment for all users to enjoy an attractive and activated space. While no new areas of open space can be accommodated due to the spatial constraints of the existing Freeway reserve, existing open spaces on both sides of the Freeway have been improved with additional landscape planting, new and upgraded shared use pathways and provisions for additional recreational infrastructure (such as seating, fitness stations, drinking fountains, etc) that will be sited in consultation with the local councils during further design development. Further design development of open public space will include consideration of CPTED principles to create a safe community environment.</p> <p>The design for each of these spaces maximises flexibility in use, providing multiple opportunities for passive and active recreation activities across different times of the year, age groups, and levels of ability. Examples worth noting are outlined as follows:</p> <ul style="list-style-type: none"> <li>– Secondary path networks are included with seating/rest nodes in high-amenity areas, such as the Koonung Creek Reserve Wetlands and Valda Wetlands, providing opportunities for passive nature play, slow walks and quiet contemplation away from the 'active' focus of the main Koonung Creek Trail.</li> <li>– Open, grassed areas are incorporated, even within primarily 'bushland' settings such as the Valda Wetlands, thereby allowing for picnics, ball games and other informal activities within the broader setting.</li> <li>– Enhanced landscaping and design treatments are incorporated at the entrances of the two SUP bridges at Estelle Street and Heyington Avenue to provide incidental spaces where people can meet, pause, and enjoy views of the wider landscape.</li> </ul>
<b>Objective 7.4</b> <b>Pedestrian Realm</b>	Public open spaces are inclusive, pleasant and welcoming. Seating, shade, shelter, 'pause points' and lighting are provided, as appropriate, and at regular intervals in open spaces at transport stops, on key pathways, and in community spaces associated with the project. Natural daylight is maximised into public spaces below and adjacent structures.	<p>The design identifies a series of 'nodes' within open space reserves and along the Koonung Creek Trail as focal points for the provision of future open space infrastructure, such as seating, bike repair stations, picnic tables, viewing areas etc. These will be strategically located based on an assessment of user needs and accessibility in order to best service and support activation of these spaces. 'Borrowed' lighting from the Freeway light poles near the interface with open space will provide generous levels of night-time illumination, to be supplemented with additional lighting to 'pinch points' on paths if required to address safety and/or CPTED concerns.</p> <p>Daylight and solar access to open space, particularly on the south side of the Freeway has been maximised through the incorporation of transparent acrylic panels to the upper levels of noise walls along the Freeway interface. The final design of these walls and extent of acrylic panel to be provided will be confirmed based on a site-specific assessment of noise attenuation requirements, topography, and location of shadowing, as part of the development of detailed engineering designs.</p>
<b>Objective 7.5</b> <b>Safety</b>	New spaces created around the project feel safe, comfortable and welcoming to users during both day-time and night time, maximising passive surveillance, clear sightlines and appropriate lighting.	<p>The Koonung Creek Reserve and its series of connected parks have been considered as key active commuting routes, both during the day and at night. The urban design for public open space has been created to maximise sightlines, solar access and passive surveillance, supported by 'borrowed lighting' from the Freeway light poles located on the outside edge of the Freeway Road corridor. This will aid in providing artificial lighting at SUP pinch points, underpasses, and bridges, improving safety overall at night.</p> <p>The planting density and type of landscaped areas have also been considered to maximise sightlines in key locations where required, such as at entries/exits to underpasses, and near signalised pedestrian crossings over roads, by opting for high canopy trees instead of very low ground cover planting and avoiding medium dense planting that would have the potential to obstruct sight lines. Where sight lines are not of concern, planting densities remain appropriate for the amount of visual screening required to conceal civic elements from view.</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>8.0 Local Streets, Schools and Neighbourhoods</b>		
<b>Objective 8.1 Pedestrian Friendly Local Streets</b>	Pedestrian-friendly areas and the '20-minute neighbourhood' concept is supported, with streetscapes that are comfortable, safe, inclusive, pleasant, and welcoming to the local community.	<p>The pedestrian experience has been a key driver in the design approach to the Project. Through the extensive network of new and upgraded walking and cycling paths, safe, inviting, and direct connections have been created across the full extent of the Project, ensuring accordance with the 20-minute neighbourhood concept.</p> <p>The design includes relocated and/or upgraded SUPs and linkages along and across the corridor to make it easier, safer, and faster for communities to access services and facilities through active or public transport.</p> <p>Public open space and amenities have been designed to support a wide-ranging scope of use. Formal and informal settings are dotted throughout the Project, encouraging active and passive enjoyment.</p> <p>Examples of 20-minute neighbourhoods are enhanced through:</p> <ul style="list-style-type: none"> <li>– improved connections at cyclist and pedestrian key nodes such as Estelle Street, Doncaster Road bridge intersection and Heyington Avenue, which provide convenient and desirable access to facilities through north-south neighbourhood connection across the Eastern Freeway</li> <li>– maintaining existing north-south connections across the Eastern Freeway, such as Musca Street Reserve underpass to Yarra Flats Reserve, at Tram Road bridge and Elgar Road bridge</li> <li>– the introduction of express busway (this UDLP response to the section between Burke Road and Doncaster Park and Ride) and related park and ride facilities.</li> </ul>
<b>Objective 8.2 Boulevards and Streetscapes</b>	Landscape design of local roads and streets as part of the project contributes positively to the function and character of the area. This includes the introduction of street tree planting, additional greening, pedestrian and cycling infrastructure. The design of local streets is consistent with local authority requirements. Boulevards of canopy trees are prioritised, especially adjacent to shared and pedestrian paths. Seating, shade, shelter, and lighting are provided, as appropriate, and at regular intervals, transport stops, on key pathways and in community places associated with the project.	<p>This UDLP does not include any proposals for new or upgraded boulevards.</p> <p>The Project will connect into the existing state and local road networks. Where the UDLP interfaces with existing streetscapes, it will seek to integrate with the existing character of the local area, including seamless integration of connecting paths, landscape planting.</p> <p>Where required, open spaces furniture will be reinstated, with locations to be agreed during subsequent design stages in consultation with relevant public land managers.</p>
<b>Objective 8.3 Transition</b>	Built elements and landscape are designed to sensitively transition from a highway environment to local streets and neighbourhoods.	<p>A sensitive design approach has been implemented for the transitions between highway environments and local streets – successfully stitching two disparate conditions together through considered landscaping and architecture.</p> <p>Planting mix selections reflect the context in which they are proposed, being sensitive to the existing and proposed urban form, as well as their suitability to the site-specific conditions. Moreover, the planting palette for all transitional zones has been validated against the UDS design character area requirements.</p> <p>Built elements are located, where possible, at the furthest distance away from adjoining properties, particularly from residential areas. Where built elements do exist in close proximity to the residential realm, mitigation measures have been implemented to ensure adequate solar access, privacy and noise attenuation. Architectural footprint and visual bulk have been minimised at every opportunity throughout the entire Project, but particular attention has been given to the transition of these elements at sensitive receptors such as residential areas.</p>
<b>Objective 8.4 School Interfaces</b>	Liaise with schools that interface the project to identify appropriate interface treatments. The design of road infrastructure around schools carefully considers local identity, sense of arrival, legibility of access points and operational requirements. The landscape design response filters and screens any views of road infrastructure from school grounds where appropriate.	<p>No schools directly interface with the works. While noting that Belle Vue Primary School abuts land in the Southern Interface Zone, the design and treatment of this interface has already been approved as shown in Attachment 5 (Southern Interface Zone) and no changes are proposed through this UDLP process.</p> <p>In addition, while not having a physical interface with this UDLP, Birralee Primary School has a functional interface given the importance of the Heyington Avenue SUP bridge as a cross-corridor connection for students. Direct engagement and liaison will be undertaken with the Birralee Primary School during the detailed design and construction periods, to minimise disruption that may occur and ensure that the design integrates with and responds to the needs of children moving across or around the SUP bridge.</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>9.0 Walls, Fences, Barriers and Screens</b>		
<b>Objective 9.1 Noise and Visual Mitigation</b>	Noise attenuation elements are high quality and context sensitive. Innovative methods of noise mitigation are maximised to reflect/refract and/or absorb noise. Landscaping and landscaped embankments enhance and soften the appearance of walls and barriers, reduce height and bulk, and better integrate the structures into the surrounding area.	<p>Noise walls and barriers throughout the Project are critical urban design elements that define the interface between the Freeway, public open spaces, and residential environments, fulfilling both a functional and aesthetic role.</p> <p>A palette of noise wall types has been developed incorporating texture and colours drawn from the immediately surrounding landscape, as discussed in Section 4.3.1. Robust, high-quality materials including weathering steel, tinted concrete oxides, rotationally moulded plastic (RMP) panels and acrylic panels have been chosen to maximise visual interest while minimising maintenance requirements.</p> <p>Innovative methods of noise mitigation are carefully considered and incorporated in the design response. For instance, the design and installation of noise walls are designed to allow for panels to be 'mixed and matched' along the alignment in response to site-specific features while addressing design requirements by ensuring an appropriate visual and structural integrity in the context. Furthermore, use of RMP is innovative by nature for it not only supports a circular economy but also offers a lower carbon footprint (reportedly, over 30%) than concrete and longer life than timber as a product fully recyclable at end of life. Additionally, where appropriate and spatially permissible, noise walls are co-located with earthen mounds to provide additional noise attenuation and reduce to overall scale of wall required.</p> <p>The siting and alignment of noise walls has been fully integrated into the landscape design. Thick landscape buffers and embankments provided along the Freeway interface provide effective screening while softening the presence of noise walls when viewed from adjoining residential areas and open space. Of particular note is that incorporation of acrylic panels at the upper level (where needed) will adequately mitigate visual intrusion to open spaces and adjoining residential areas and provide wayfinding moments as well as visual interests for motorists and pedestrians by way of landscaping portrayed behind/through the panels.</p> <p>The final height and extent of the noise walls will be confirmed through further acoustic modelling based on the final road design and conditions, in compliance with EPR NV1 (Achieve traffic noise objectives).</p>
<b>Objective 9.2 Integrated and Coordinated</b>	<p>Noise walls, flood walls, fences, screens and traffic barriers are coordinated and integrated to minimise visual and physical clutter. These elements integrate with existing or proposed elements to reduce the need for additional structures and transition seamlessly into the existing elements.</p> <p>Opportunities to incorporate new built form as noise mitigation are maximised to replace the need for noise walls. Transitions in wall and fencing heights are well considered and seamless. Materials and colour palettes are coordinated, and finishes are high quality.</p>	<p>The approach to design of noise walls, flood walls, fences, screens, and traffic barriers is to be coordinated to minimise visual and physical clutter within the Freeway reserve and adjoining open spaces from road infrastructure by combining these elements and/or integrating them with adjacent structures. Flood walls have been carefully integrated with underlying land forms and retaining walls. Other road related infrastructure, such as traffic barriers, fencing and anti-throw screens will be carefully coordinated to reduce overall visual and physical clutter in the Freeway corridor through further detailed design development in accordance with the road authority and subsequent requirements. The precinct-specific design palettes discussed in Section 4.3.1 above will be applied to the design of walls through each section, providing visual continuity and coordination between different wall types and heights, presenting a consistent and unified design language along the length of the Freeway corridor.</p> <p>With regard to transitions in wall and fencing heights, it is mostly addressed by way of variations to heights and materials proposed to noise walls and fencing in a particular area respectively (rather than one integrated design element).</p> <p>This can be elaborated as follows:</p> <ul style="list-style-type: none"> <li>– Based on the latest acoustic modelling, the proposed noise wall heights vary throughout the Project area. Despite the height difference along one specific section of the Freeway, visual consistency shown in solid material is achieved by varying the extent of the acrylic panels thereby resulting in a smoothly transitioned design outcome. While design details of noise walls are to be confirmed as the design development progresses based on further acoustic modelling, where further variations to noise wall heights are required, a similar design approach will be considered to ensure visual continuity along the corridor.</li> <li>– In terms of transitions in fencing, the design considerations are context specific and purpose oriented. For instance, the fencing installed between the shared use path and the express busway at Doncaster Road interchange is constructed of stainless steel metal mesh below the clearance height in order to allow adequate separation between SUPs users and motorists and provide passive surveillance for safety. Another example is the Telecommunications monopole, where security fencing is proposed. Simply put, seamless transitions in fencing are demonstrated at a given location or area (rather than the whole Freeway corridor) through responsive and purposeful interaction with the surrounds.</li> </ul> <p>Consideration of the layering/interface of the walls, fences, barriers and screens have been considered by having a level of consistency in material selection across these urban design elements and utilisation of the Munsell colour chart.</p> <p>Finishes of high quality are material specific and reflective of the context it serves. For instance, the proposed polysiloxane paint to the proposed concrete panel (WCF-03) at the bottom of noise walls is an anti-graffiti coating that provides long term protection against erosion and corrosion. And the proposed rotationally moulded plastic (RMP) incorporated in the noise walls exhibits sculptured patterns with textured finishes thereby emphasising integration of craftsmanship into the design response.</p>

## 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<p><b>Objective 9.3</b></p> <p><b>Local Context and Scale</b></p>	<p>Walls, fencing, and screens are designed in response to the surrounding areas, with careful consideration to form, texture and colour on both sides of the walls. Use of colour is appropriate to location, and minimises the impact on residential and sensitive uses, including negative impacts from coloured light from transparent materials. Both faces are designed to the same standard of quality, with a front and a front, rather than a front and a back. Walls are appropriately designed to address the speed at which they are viewed. Design on public and residential interfaces reflects a pedestrian scale, whereas the roadside interface reflects the scale of a high-speed vehicle environment. Walls and other structures are sensitively sited and proportionate to the surrounding structures, landscape and urban elements.</p>	<p>The design of all walls, fencing and screens included within this UDLP has been carefully considered as key features of the overall urban design response.</p> <p>When viewed at speed by road users, these elements can be perceived as a series of frames in a cinematic journey through the Freeway corridor. The design celebrates this transitional journey through the application of a mixed palette of different noise, retaining and flood wall 'types', incorporating colours, materials and textures drawn from the surrounding landscape. Transparent acrylic panels incorporated at the upper levels of the noise walls provide glimpses through to surrounding vegetation and open space, progressively revealing and concealing the landscape to road users, establishing a rhythm that responds to changes in the road geometry.</p> <p>For pedestrians – who will primarily experience these elements from outside the Freeway corridor, within adjoining open space or pathways – the design response is focused on maximising visual appeal and amenity at eye level and minimising overall visual bulk and intrusiveness, noting that noise walls are the dominant form of road infrastructure visible from this interface. Key strategies to achieve this include:</p> <ul style="list-style-type: none"> <li>– where sufficient space is available, co-locating noise walls with landscaped mounds to minimise overall height and provide greater opportunity for vegetation to screen views to the lower levels of the walls</li> <li>– locating noise wall types wholly or partially comprising transparent acrylic panels in areas of visual sensitivity, such as along 'pinch points' in proximity to residential dwellings and large open space reserves to mitigate potential visual bulk at the upper levels</li> <li>– where there is insufficient space available for landscape screening to be provided, such as along narrow sections of the Koonung Creek Trail, installing noise wall types including detailed textures and material finishes to provide visual interest and articulation when viewed by passing pedestrians and cyclists.</li> </ul> <p>All noise wall types have been designed to include design detail – whether through colour, materials finishes, texture or a combination of all three – with the opportunity to apply these to the Freeway corridor face, or the alternative face to the public open space and community interface.</p> <p>The final location, height and design of noise walls are subject to further acoustic modelling and assessment of noise attenuation measures required to meet EPR-NV1 (Achieve traffic noise objectives) and will be confirmed through the detailed engineering design process.</p> <p>Final colour selection for individual sections of noise walls will be based on the design precinct palettes outlined at Section 4.3.1 above so as to be specific to the immediate landscape context and include detailed assessment of the immediate land use context and potential amenity impacts from coloured light or reflective surfaces.</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>Objective 9.4 Interfaces</b>	The creation of unsafe narrow areas between noise walls and residential properties are avoided and minimised. Innovative solutions are included to ensure any narrow spaces are pleasant and safe. Walls respond to the adjacent land uses and boundaries and maximise opportunities for dual use.	<p>Noise walls have been placed on or within the Freeway reserve boundary for the majority of the alignment to avoid encroachment into adjoining open space or residential properties. However, due to the increased height of the noise walls proposed through this UDLP compared with existing conditions and the limited separation between the Freeway reserve and nearby residential properties – particularly on the north side of the Freeway – areas where these setbacks will be quite narrow are identified raising potentially unsafe spaces due to lack of solar access and/or interruption to existing sightlines.</p> <p>The design mitigates these potential issues in the following ways:</p> <ul style="list-style-type: none"> <li>– As an innovative design resolution, transparent acrylic panels are incorporated into the noise walls adjacent to pinch points' between the Freeway reserve and residential properties to maximise solar access and penetration of 'borrowed light' from adjacent Freeway lighting.</li> <li>– Landscape planting is limited to understorey and groundcover species at the foot of the wall only, or incorporating vertical treatments (e.g., climbers or vines) to allow for an adequate level of sightlines for passive surveillance.</li> <li>– Supplementary lighting is provided where required to achieve suitable levels of illumination.</li> <li>– where solid sections of noise wall are visible at the lower levels, the final selection and orientation of the noise walls will provide a high level of architectural detail (e.g., texture, materiality, etc) to the public realm to increase visual amenity to pedestrians and cyclists moving through these sections.</li> </ul> <p>Refer to the Place-specific Requirements assessment at Section 5.3 above for further detail of locations where the above design strategies may be applied, with the final treatments to be confirmed through development of detailed engineering and landscape designs for these areas, including review and incorporation of CPTED principles.</p>
<b>Objective 9.5 Transitions</b>	Transitions in types and materials of walls, barriers and fencing appropriately address adjacent sensitive land use, property boundaries and vegetation. Changes in wall heights and material types in walls, barriers and fencing are well considered.	The design approach ensures the alignment of the top edge of the noise walls is visually consistent. This is achieved in the design by breaking up the diagonal shapes with the inclusion of tapered or flat shapes at the top sections of the noise walls at appropriate locations. This design integration approach offsets visual impacts arising from the change in wall heights, thereby achieving a smooth transition along the element extent as well to interface areas such as residential and landscaping zones. Screen planting has been provided where possible to noise walls on both residential and road infrastructure sides where possible.
<b>Objective 9.6 Visual Connectivity and Solar Access</b>	<p>Transparent barriers are used to take advantage of scenic and adjacent views of surrounding landscape and reduce the bulky appearance of structures.</p> <p>Walls and barriers are designed (for example sited or angled) to avoid or minimise overshadowing of properties, waterways and open space. Transparent barriers are used to optimise solar access, and to maximise visual connectivity across corridor to connect communities.</p> <p>Walls and barriers are responsive to the local environment and allow sunlight to waterways and ecological areas</p>	<p>The noise wall schedule includes types and materials with acrylic panels, including to be incorporated into the upper level of the majority of noise wall types. These wall types will be utilised adjacent to areas of high landscape amenity, including open space, 'pinch points' on the Koonung Creek Trail, and where there is a direct interface with residential properties, in order to maximise solar access, minimise visual bulk, and retain view lines through to nearby vegetation.</p> <p>Safety barriers, privacy screens and anti-throw screens proposed along roads and bridges have also been designed and detailed to maximise visual permeability, either through material choice or minimising the height of solid barriers to sit below the eyeline of pedestrians and motorists.</p> <p>Further examples of visual connectivity, solar access as well as passive surveillance is the use of stainless steel mesh as safety anti-throw barriers on the two new SUP bridges at Estelle Street and Heyington Avenue. The stainless steel mesh as a barrier material on these SUP bridges allow for high transparency providing adequate views from pedestrians entering and exiting the SUP bridges, as well as passing motorists on the Freeway to passively survey pedestrians and cyclists crossing the SUP bridges.</p>
<b>Objective 9.7 Anti-throw screens, public safety barriers (PSB) and privacy screens</b>	<p>Anti-throw screens, public safety barriers and privacy screens are well integrated with bridge and road structures and utilise high quality architectural materials while maintaining a high-quality aesthetic form. The scale and visual bulk of throw screens are minimised.</p> <p>Screens are designed to avoid the perception of entrapment that may become a barrier to use. Anti-throw screens have good visual permeability when viewed from adjacent areas to maximise passive surveillance.</p>	<p>Anti-throw screens and barriers have been seamlessly integrated into the design of the two SUP bridges at Heyington Avenue and Estelle Street, wrapping around the bridge decks to visually and functionally present as a single structure. The scale and dimensions of these elements have been carefully considered to ensure they are proportional to each of the bridges itself and present harmoniously as a singular design response rather than 'tacked on' as an afterthought.</p> <p>The treatment of all material faces has considered the surrounding context and responded accordingly with colour and scale, taken from the relevant design precinct palette (as discussed in Section 4.3.1 above). All screens provide for an adequate level of transparency to maximise opportunities for passive surveillance and views to the surrounding landscape.</p>
<b>Objective 9.8 Flood Walls and Retaining Walls</b>	<p>Walls are carefully integrated with the landform. Opportunities to use earth embankments and screen planting to mitigate the visual height and bulk of walls are maximised. Walls are integrated with traffic barriers, fencing, throw screens and other structures to reduce visual clutter.</p> <p>Walls have a consistent form, design, and material palette. Wall design appropriately reflects the surrounding landscape, urban form and the local context.</p> <p>Walls at the entrance to tunnels and along the road corridor use a consistent design and materials, are integrated with the landscape and have appropriate maintenance access.</p>	<p>Retaining, flood and noise walls have been carefully considered as integrated systems that seamlessly interface with abutting land forms.</p> <p>Within the Freeway corridor, noise, retaining and/or flood walls have been structurally integrated in spatially constrained areas, such as the section between the Valda Wetlands and Elgar Road, to minimise overall clutter and impacts to adjoining land.</p> <p>Retaining walls have also been 'stepped' to minimise overall height and visually intrusiveness in areas with significant changes in levels, such as the Doncaster Junction. The colour, texture and materiality of all walls will be selected from the relevant precinct-based design palette in order to both be contextually responsive, and to provide a consistent and coherent 'design language', which unifies these elements.</p> <p>Screen planting has been considered and incorporated in the design response and is incorporated where possible to reduce visual impacts arising from noise walls and other structures.</p> <p>Due to the constrained width of the Freeway reserve within this UDLP, opportunities to minimise the height and bulk of walls through landscape-based treatments, including mounding/embankments, are limited to areas outside the Freeway reserve (e.g., adjoining open space), as discussed in the responses above.</p>

## 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>Objective 9.9</b> <b>Deterring Graffiti</b>	High quality materials and textured surfaces are used on walls, fencing and screening to deter graffiti, particularly at lower levels of the noise wall. Other opportunities for innovative solutions to deter graffiti are maximised.	<p>Potential opportunities for graffiti or other forms of vandalism to walls, fencing and screening have primarily been addressed through careful siting of road infrastructure and landscape plantings to provide physical barriers to public access. This includes the co-location of noise walls on landscaped mounds within the larger open space areas.</p> <p>Where this cannot be achieved due to spatial constraints, to provide an additional level of deterrence, the following design-based elements have been incorporated into the walls themselves:</p> <ul style="list-style-type: none"> <li>– inclusion of deep texturing and/or patterns to concrete panels, to be sited at the lower levels of noise and retaining walls where the potential for vandalism is highest</li> <li>– limiting the use of acrylic panels, which are particularly susceptible to graffiti, to the upper levels of noise walls only or in areas where public access is completely precluded</li> <li>– avoiding extended sections of blank/smooth wall treatments, which have been limited to bridge abutments and approaches directly abutting the road carriageway.</li> </ul>
<b>Objective 9.10</b> <b>Maintenance</b>	Walls are designed to minimise maintenance burden through the selection of high-quality materials that are durable, not subject to environmental damage and can be accessed to maintain their high quality.	<p>The urban design concept for all walls and barriers has prioritised the use of high quality, durable materials both to reduce overall maintenance and replacement costs, and to ensure the longevity of the intended design response by prioritising materials that are robust and maintain their appearance and integrity over time. Examples include:</p> <ul style="list-style-type: none"> <li>– incorporation of concrete oxides/cement mixes, which provide a visually interest, long-lasting finish with minimal maintenance requirements</li> <li>– incorporation of acrylic panels into the upper levels of noise walls, a widely accepted material choice across Freeways in Victoria, which are attractive but also easy to maintain and replace</li> <li>– use of paint finishes to road/bridge barriers particularly where accessible from the public realm, thereby allowing graffiti or damage to be painted over rather than physically cleaned</li> <li>– incorporation of weathering steel as a key element across a number of noise wall types, the appearance of which is maintained though exposure to the environment.</li> </ul> <p>All wall types have been designed as modular units for ease of replacement and manufacture, where required.</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>10.0 Bus Park and Ride, and Bus Lanes</b>		
<b>Objective 10.1 Bus Interchanges</b>	Bus interchanges provide a high-quality experience for commuters that enhances their journey, provides intermodal connections, and increases neighbourhood connectivity. Interchanges have demonstrated capacity to support or facilitate future service changes.	Not applicable to this UDLP. This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for Doncaster Park and Ride.
<b>Objective 10.2 Bus Station Design</b>	The design of the interchange optimises their dual role as service points for public transport infrastructure and as public landmarks. Architecture of the bus interchange is high quality and provides a positive built-form contribution to the local area. The public realm promotes pedestrian activity, creates vibrant spaces, uplifts connectivity, and integrates the interchange precinct into the surrounding area. Complementary land use and activation opportunities such as commercial, retail and public facilities are maximised. Carparking areas are safe and positive places. Weather protection must be provided such as shelters and passenger lounges. Break rooms and toilets for drivers are conveniently located to minimise disruption to services.	Not applicable to this UDLP. This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for Doncaster Park and Ride.
<b>Objective 10.3 Innovation</b>	Innovative design solutions that add value to project should be incorporated into the design. These are solutions that are not commonly used in the Victoria and are beyond business-as-usual approaches. These solutions include locating of ticketing devices on platforms, creating more attractive 'airport' style waiting spaces, integrating retail and public amenities into station building, initiatives that support intermodal interchange such as shower and change room facilities, integrating future-thinking technologies, and built form sustainability initiatives that contribute to beyond business-as-usual sustainability outcomes.	Not applicable to this UDLP. This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for Doncaster Park and Ride.
<b>Objective 10.4 Transport and Active Travel Connections</b>	Interchanges provide the ability for commuters to undertake effective, safe and comfortable intermodal connections to public transport, vehicles and active transport. Customers are provided with clear and open movement within the bus precinct/station. Walking and cycling along priority routes into the precinct, along desire lines and at entry points (both existing and future) within the precinct is improved. Walking and cycling connections link into the surrounding network, and are convenient, direct and attractive to use. End of trip and bicycle amenities including bicycle parking are provided. Clear sight lines and well integrated connections are provided to feeder bus services and other modes of transport. The entry and exit to facilities and stops are identifiable and easy to access.	Not applicable to this UDLP. This requirement is located outside of this UDLP and will be addressed in a future UDLP prepared for Doncaster Park and Ride.
<b>Objective 10.5 Bus Lanes and Busway</b>	The design creates a clear corridor that supports the efficient, safe and high-speed movement of buses. The corridor infrastructure has a strong visual identity, works to break-up the perceived expanse of freeway, is responsive to the adjacent landscape and urban form, and creates a memorable public transport experience. The busway design is sympathetic to the design of the Eastern Freeway. Busway is designed to achieve high quality urban design and landscape outcomes.	<p>The design for the express busway provides a clear and streamlined corridor for public transport users from the Doncaster Park and Ride through to the western UDLP boundary near Burke Road, with bus traffic fully separated from the surrounding road network by way of the new connections at Doncaster and Bulleen Park and Ride facilities.</p> <p>The design, siting and treatment of road infrastructure on the northern side of the Freeway has been holistically considered to provide a visually interesting and appealing outlook for public transport users for the full length of their journey. At the eastern end of the busway alignment, the design of abutting retaining, and noise walls incorporate colours, materials and textures drawn from the immediately surrounding landscape and the relevant precinct design palette (as described in Section 4.3.1) to create a distinct sense of identity and place. To the west, the design maintains open views across the Yarra Flats reserve, providing a high-quality landscape experience.</p> <p>The design concept for the Express Busway will seamlessly integrate with the approved content and design of the Southern Interface Zone in Attachment 5. The treatment to the northern side of the Freeway through this section is consistent between both UDLPs, comprising textured retaining walls with oxide tints based on the Munsell colour chart.</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>11.0 Car Parking</b>		
N/A	N/A	No new car parking areas are proposed to be delivered through this UDLP, noting that the existing car park within Koonung Creek reserve directly north of Doncaster Road is to be retained in its current condition.
<b>12.0 Lighting</b>		
<b>Objective 12.1 General Lighting</b>	Functional lighting design and light elements for roads and paths integrate with infrastructure and surrounding areas and are appropriate to surrounding land uses and enhance personal safety.  Lighting creates a cohesive identity for the Project and is integrated with built elements and the general lighting approach.	Integrated lighting is a key feature in the urban design response to concurrently mitigate safety concerns and enhance the vibrancy and identity of the broader upgrades to open space and the Eastern Freeway presented through this UDLP.  The overarching approach to functional lighting is generally aligned with that approved through the NEL Tunnels UDLP and can be summarised as follows: <ul style="list-style-type: none"> <li>– <b>Freeway corridor:</b> Mast lights/poles are to be relocated from the central median and sited at the outer edges of the Freeway reserve, minimising visual bulk and clutter within the Freeway corridor for motorists and improving safety by removing structures from the road carriageway. Where existing light masts/poles are no longer fit for purpose and/or have reached the end of their operational life span, these will be replaced with new lighting incorporating similar design elements to provide a consistent visual transition.</li> <li>– <b>Bridges:</b> Lighting is designed to be integrated into the bridge decks where required for wayfinding and in accordance with CPTED principles. Street lighting poles are to be provided to the Doncaster Road bridge as and where required by the relevant road safety guidelines.</li> <li>– <b>Open Space and Shared User Paths (includes Koonung Creek Trail):</b> The primary source of night illumination to these spaces will be via 'borrowed lighting' from the Freeway light poles, which will be sited directly adjacent to the interface with these spaces. Opportunities for penetration of this light will be maximised through the design of adjacent noise walls by way of appropriate inclusion of transparent acrylic panels at the upper level.</li> </ul> Supplementary lighting will be provided where required to achieve adequate illumination levels in line with CTPED principles, as determined by preparation of lux plots through the detailed engineering and landscape design processes. The design of any supplementary lighting to be provided within open space areas will be to the satisfaction of the relevant land manager, to ensure consistency with existing or preferred urban design schemes.
<b>Objective 12.2 Feature Lighting</b>	Feature lighting is integrated with road lighting to enhance navigation and user experience. All lighting appropriately addresses impacts to sensitive adjacent land uses.	Feature lighting has been considered in the design of the two SUP bridges and forms part of the overarching urban design response. The design of feature lighting seeks to be appropriately integrated into the bridge structures, providing a functional bridge while achieving a clear navigation and wayfinding purpose for pedestrians, cyclists and Freeway vehicle users.  It is also worth noting that feature lighting is a key feature of the SUP bridges in the NEL Project as it is context-sensitive and responsive to the design pillars of Connection to Country, Caring for Country and Connecting People.  In addition, feature lighting is to further developed and finalised in the Design Packages to ensure appropriately addressing impacts to sensitive adjacent land uses.
<b>Objective 12.3 Light Pollution</b>	Lighting employed in the Project is designed sensitively for the surrounding environment and to avoid or minimise light pollution.	Lighting within or adjacent to areas of identified fauna habitat or environmental sensitivity, such as the Koonung Wetland, Valda Wetlands and Yarra Flats Reserve, is designed to minimise disturbance as practicable, including baffling or orienting away from specific areas if required. This is further discussed in response to EPR LV4 in section 6 of this Report.  Light fittings and light shields will be provided to concentrate lighting where required from the Freeway corridor light masts. The Project team will undertake modelling of light levels (lux plots) during the design development. Based on the lighting modelling, areas at risk of light spill and potential light pollution to surrounding land (particularly sensitive land uses such as parks, reserves and residential properties) can be identified. The final location and design detail of lighting delivered through this UDLP will be finalised during detailed design ensuring avoidance or minimisation of light pollution to surrounding environment.
<b>Objective 12.4 Maintenance</b>	General and feature lighting include designs and elements that maximise road safety, are environmentally friendly and can be safely maintained.	The design has appropriately considered the potential impacts on residential properties within proximity to the Project area as well as relevant functional and safety requirements. All lighting within the Freeway corridor, specifically the light poles/masts and feature lighting to bridges, are designed to be sited in accordance with the relevant Australian standards for road lighting and subject to a road safety audit; and the design details are to be finalised in accordance with the requirements by the Transport arm of the DTP as the relevant road authority.  Furthermore, low reflectivity materials, such as concrete, weathering steel, and matte coloured acrylic, have been incorporated into the design of all structures within the Freeway reserve in order to minimise glare to drivers and potential light pollution to adjoining areas.  Moreover, the primary source of illumination to adjoining open space and shared user paths, including the Koonung Creek Trail, has considered and integrated 'borrowed light' from the Freeway light poles thereby minimising overall energy consumption and potential light spill. That being said, in light of relevant Australian standards (intersections and underpasses particularly) and safety objectives in the CPTED principles, the design ensures appropriate provision of lighting where required based on lighting modelling (lux plots).  In addition, LED light fittings are proposed for all new lighting to maximise operational life span. The final design and location of all light fittings will be finalised in consultation with councils, relevant authorities and future asset owners as appropriate to ensure easy access for ongoing maintenance.
<b>Objective 12.5 Energy Efficiency</b>	Energy efficient lighting is used to reduce ongoing energy consumption.	Energy efficient LED fittings have been considered as part of the design response and will be finalised as the detailed design development progresses so that appropriate provision can be achieved for all new functional and feature lighting elements along the Freeway corridor, road related infrastructure, as well as the new road and SUP bridges.

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>13.0 Walking and Cycling Infrastructure</b>		
<b>Objective 13.1 Pedestrian and Cycling Network</b>	The project maintains or enhances the existing pedestrian and cycling network. Walking and cycling connectivity through local neighbourhoods is improved with integrated links and connections across the project. Clear visual and movement linkages between streets, footpaths, bicycle paths, and public open spaces connect public transport, neighbourhood activity centres, schools and other key community facilities and services.	<p>Connections to and through neighbourhoods have been enhanced by way of integrating new walking and cycling paths into the existing network, especially connecting from the Yarra Flats Reserve to Musca Street Reserve, throughout Koonung Creek Reserve and along the Koonung Creek corridor.</p> <p>The new and improved connections deliver mostly clear sightlines and movement between suburban precincts, footpaths, public open space, activity centres, public transport and other key community assets located within NEL.</p> <p>The NEL interfaces in many instances with the Strategic Bicycle Network, including the Koonung Creek Trail.</p>
<b>Objective 13.2 Encourage Cross-community Connectivity</b>	Opportunities to remove barriers that discourage walking and cycling, cross-project corridor connectivity, and the community's ability to reach everyday services and facilities within a 20-minute walk are maximised. These barriers include physical obstructions, and a lack of shade and rest stops. Pedestrian and cycle crossings of the project corridor are celebrated and emphasised to encourage greater sense of connectivity.	<p>The design upgrades existing pedestrian and shared use path networks through a series of improvements designed to make walking and cycling a safe, efficient, and pleasant alternative to car-based travel to key destinations and services thereby increasing overall patronage and 'mode switch' for communities adjacent to the Freeway corridor. Examples include:</p> <ul style="list-style-type: none"> <li>– replacement and widening of the existing footbridge crossings at Estelle Street and Heyington Avenue to increase overall capacity for pedestrians, cyclists and people using mobility devices, with ramps and access points all designed to minimise gradients and maximise accessibility</li> <li>– separation of paths from the road carriageway as part of the Doncaster Road bridge design and provision of landscaping strips on the bridge itself, providing a safer, more pleasant environment to encourage the use of this crossing by pedestrians and cyclists (noting Doncaster Road forms part of the Principal Bicycle Network)</li> <li>– provision of dedicated secondary paths for pedestrians/recreational cyclists within key open space destinations on the southern side of the Freeway to reduce conflicts with commuter/'through' cyclists using the Koonung Creek Trail</li> <li>– upgrades to the Koonung Creek Trail on both sides of the Freeway, including widening and provision of additional facilities/amenities such as seating, bike repair stations, drinking fountains</li> <li>– maintenance and improvement works to existing connections between the Koonung Creek Trail and the Principal Bicycle Network to streamline existing movement networks at Doncaster Road, Elgar Road and Tram Road</li> <li>– inclusion of new and upgraded connections between the Koonung Creek Trail and local streets, bringing more residents within easy access to off-road walking and cycling routes.</li> </ul>
<b>Objective 13.3 Pathways and Connections</b>	Connectivity and continuity of on-road and offroad walking and cycling routes along and around the corridor are maintained and enhanced. Any existing trails impacted by works are realigned to retain connectivity. Pathways are direct and convenient. Access is maintained or improved with direct, pleasant and safe pedestrian and cycling links. Opportunities for grade separation of walking and cycling paths from roads are maximised. Off-road walking and cycling paths are high quality, suitably wide, functional, and aligned appropriately. The transition between cycling paths is continuous and seamless with direct routes and consistent design elements. The riding environment is safe and appealing. Extent of local and strategic cycling corridors is maximised.	<p>The design maintains and improves the connectivity and continuity of existing on and off-road pedestrian and cycling paths as well as providing new and/or upgraded links between them. Where required, existing shared user paths will be widened, repaired and/or realigned to achieve better sight lines, with seamless transitions between new, upgraded and existing paths in terms of materials, grades, and consistency in design elements.</p> <p>Noting that a high level of grade separation is already achieved in the UDLP area due to the continuity of linear open space along both sides of the Freeway and dedicated shared use bridge crossings at Heyington Avenue and Estelle Street, the design provides additional separation of walking/cycling paths from roads at the following locations:</p> <ul style="list-style-type: none"> <li>– Doncaster Road <ul style="list-style-type: none"> <li>– paths on both sides of the bridge, separated from road traffic</li> <li>– new underpass north of the Freeway, providing grade separated crossing across Doncaster Road via the Koonung Creek Trail with a direct connection to/from Doncaster Park and Ride</li> <li>– upgraded underpass south of the Freeway, providing grade separated crossing across Doncaster Road via the Koonung Creek Trail</li> <li>– rationalised at-grade/signalised crossing north of the Freeway, allowing for improved connections to and from High Street (part of the Principal Bicycle Network).</li> </ul> </li> <li>– Burke Road <ul style="list-style-type: none"> <li>– new shared use path connection from the Koonung Creek Trail to the western UDLP boundary within Yarra Flats Reserve (north of the Freeway), to be further extended to provide a grade-separated connection to the Main Yarra Trail as part of the delivery of the future package of Freeway upgrades (Burke Road to Hoddle Street) and detailed through a separate UDLP.</li> </ul> </li> </ul>
<b>Objective 13.4 Path Separation</b>	Separated walking and cycling paths are used in high-use areas where appropriate, and avoid and minimise the potential for conflict between intersecting travel paths	<p>Opportunities to include mode separated paths have been explored in the preliminary design stage. Due to spatial constraints both north and south of the Freeway, provision of mode separated paths could not be achieved without adversely impacting on adjoining private property or failing to fully comply with CPTED or landscaping and canopy tree replacement requirements. As such, the design response specifically addresses the benefit of shared use paths throughout the Project area, which is to provide connections for commuters and recreational cyclists using the Koonung Creek Trail to reach a destination rather a destination in and of themselves.</p> <p>Secondary paths are provided in high-use areas, including Koonung Creek Reserve (near the wetland/playground), Valda Wetlands, Doncaster Road Reserve and Musca Street reserve in recognition of their high landscape and/or recreational amenity and level of use. Besides, the design retains the existing pedestrian path networks in the Frank Sedgman and Winfield Road reserves.</p>
<b>Objective 13.5 Pedestrian Crossings</b>	Pedestrian crossings are provided at strategic points to encourage safe travel behaviour and enhanced connectivity. They are regularly spaced. The distances between them minimised.	A number of new signalised and unsignalised pedestrian crossings have been included to encourage safe travel behaviour and enhanced connectivity. Crossings are spaced at regular intervals and distances have been minimised where possible. In locations where SUPs intersect with road intersections, clearly visible crossings have been provided. New and upgraded signalised crossings have been provided at busy locations within the UDLP area to improve safety. Conversely, local crossings have been addressed through road markings, signage and furniture.
<b>Objective 13.6 Perceived Safety</b>	Perceptions of safety along walking and cycling paths are improved for pedestrians and cyclists, through good design, to remove barriers to participation.	<p>Walking and cycling paths have been designed to be wide, welcoming and attractive places to travel along for users of all abilities. Landscape verges are provided on both sides of shared use paths where sufficient space is available to create a sense of openness, and path alignments on approaches to underpasses or through 'pinch points' close to noise walls or rear fencing kept as straight as possible to maximise sightlines.</p> <p>In locations where paths directly abut the roadway, barriers and screens have been included in the design of road infrastructure (including bridges) to ensure public safety. The speed of cyclist movement on paths is controlled through signage and path design – with bends at strategic locations to slow the movement of cyclists where conflicts are more probable.</p> <p>Further assessment of sightlines, grades and illumination levels will be undertaken as part of the detailed landscape plan and/or park master plan approvals process to inform final selection and location of landscape planting and path alignments, in accordance with CPTED principles.</p>

## 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>Objective 13.7</b> Shade	Canopy trees are maximised along pedestrian and cycle routes, to provide amenity and shade.	The design approach for canopy trees will be principally to maximise planting along existing, upgraded and new SUPs and secondary paths to provide shade for both pedestrians and cyclists. Proposed key natural shade areas have been identified at key 'nodes' in public open space, as well as park/street furniture as located to site specific requirements in consultation with councils and public land managers. The landscape design provides for the replacement and/or increase in canopy tree planting along the Koonung Creek Trail and secondary paths in open space reserves to provide shade and environmental comfort for users, except where this is precluded by spatial constraints (for example, at 'pinch points' between the Freeway reserve and residential properties).
<b>Objective 13.8</b> Prioritise Pedestrians	Pedestrian priority is maximised on key walking routes into and around key community facilities and destinations (including activity centres, Park and Rides and nearby schools and aged care facilities) by providing a high-quality walking environment. This includes shade, drinking fountains at appropriate intervals and rest stops with seating. Pedestrian-friendly walkways are free from obstructions and have a smooth surface. Outdoor furniture and fixtures such as bins, bicycle parking and drinking fountains are offset from pedestrian pathways.	Pedestrians are a priority for the urban design approach for NEL, maximising connections between community assets along the corridor. Walkable connections have been created to provide community members with easy access between activity centres, public transport, nearby schools, aged care facilities, sports facilities, and public open space. Shaded rest stops with seating, drinking fountains and bike repair stations will be provided at regular intervals to encourage active transport. These amenities will be strategically located off the path to ensure a pathway free from obstructions.
<b>Objective 13.9</b> Wayfinding	Wayfinding and signage is used to improve the ability for people to find their way to key destinations.	The design and location of wayfinding elements will be explored in the design development phase once the schematic design has been confirmed. The design of these elements will ensure that wayfinding around NEL is easily navigable, clear, reliable, and appropriate and sensitive to the environment and users of varying abilities. Key locations for wayfinding are: <ul style="list-style-type: none"> <li>- Eastern Freeway corridor for motorists</li> <li>- connection to the Bulleen and Doncaster Park and Ride facilities via the road network and walking and cycling networks</li> <li>- Koonung Creek Trail.</li> </ul>
<b>Objective 13.10</b> Wayfinding Signage Design	Wayfinding signage provides clear and reliable information, as well as being appropriate and sensitive to the environment and users of varying abilities. A balance is struck between sufficient signage and visual clutter. Obstructions to key sightlines are avoided or minimised. Signage is consistent and well integrated with any existing local signage systems. Route hierarchy is coherent. Standard route naming is adopted along entire routes, negotiated with the relevant authority. Individual branding incorporating graphic devices is employed, such as the Koonung Creek Trail branding. A list of 'standard' destinations is developed for each route in consultation with the relevant authority.  Names and notation are consistent with those used on other wayfinding signs and maps. Signage is provided where users join the route, at the ends of the route and at any significant intersection with another, route, trail, path or road. Alternative routes are signed where appropriate, such as where the main route may flood. Signage is provided at any point where route continuity is unclear. Signage is high quality, graffiti proof, weatherproof and low maintenance.	Wayfinding will communicate the location of key destinations as well as cultural storytelling. Signage will be durable to minimise ongoing maintenance and utilise a standard palette of graphics and naming conventions. The design approach to wayfinding will also consider, where possible, to integrate with any existing signage systems. Clutter will be minimised by combining and consolidating signage into fewer panels.  The final design and location of wayfinding and directional signage will be confirmed as part of detailed design development in consultation with the relevant authorities, including Councils and the Department of Transport and Planning, and in accordance with any relevant standards and guidelines. This will include consideration of any existing strategies or design themes applied to specific routes or areas, to ensure consistency across the network and to maintain legibility and identity for users.

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>14.0 Walking and Cycling Bridges</b>		
<b>Objective 14.1</b> Walking and Cycling Bridge Design	<p>Walking and cycling bridges are high quality and suitably wide to allow for passive surveillance and maintenance vehicles. Walking and cycling bridges are well designed and proportioned and are visually appealing design elements for the roadway and adjacent communities.</p> <p>Bridges are structurally expressive and durable and the need to enhance the appearance of the bridge by use of cladding is avoided. Walking and cycling bridges use structural form, materials, texture and colour to create an identity for the Project. Bridges respond to the surrounding context and are sensitive to the local character of the area.</p>	<p>Walking and cycling bridges have been considered as an opportunity to connect both physical and cultural landscapes. The two new SUP bridges at Estelle Street and Heyington Avenue respectively will replace the existing connections over the Eastern Freeway through this UDLP. The bridges have been designed in direct response to the three core pillars of Connection to Country, Caring for Country, and Connecting People, as well as to meet the design and functional requirements outlined in the UDS and relevant architectural standards.</p> <p><b>Estelle Street SUP Bridge</b></p> <p>The design of Estelle Street SUP Bridge is based on a 4m clear bridge width, which maximises the user experience for both cyclists and pedestrians. The approach ramps and SUP entry have similarly been maximised to accommodate larger traffic volumes. Clear lines of sight have been created across the bridge and entry/exit ramps, contributing to a safe and inviting design that will increase usership. The design of the bridge has been considerably proportioned in relation to its context and has been designed to work as part of the NEL family of bridges. The significance of this construction on Aboriginal land is recognised, and further consultation with the Wurundjeri Woi-wurrung will be undertaken to give the bridge an appropriate name. With respect for the design pillar of Caring for Country, the Estelle Street SUP bridge is deliberately elegant and of low impact. In this regard, the footprint of the bridge anchors has been reduced and the structural solution has been optimised to reduce the amount of material required to span the freeway corridor. The Estelle Street SUP bridge has also been designed to minimise the impact of overshadowing and overlooking on nearby properties and community assets. The transparent screening specified for the anti-throw screens mitigates these concerns and promotes passive surveillance.</p> <p><b>Heyington Avenue SUP Bridge</b></p> <p>The design of Heyington Avenue SUP bridge is also based on a 4m clear bridge width to maximise the user experience for both cyclists and pedestrians. The entry and exit ramps ensure the best possible user experience for pedestrians. A safe and inviting design has been achieved through a rigorous consideration of sightlines and landscaping. The proportions of the bridge relate to its context and to the NEL family of bridges concept. As with the Estelle Street SUP bridge, the significance of this construction on Aboriginal land is recognised, and further consultation with the Wurundjeri Woi-wurrung will be undertaken to give the bridge an appropriate name. The Heyington Avenue SUP Bridge has also been designed to minimise the impact of overshadowing and overlooking on nearby properties and community assets. The transparent screening specified for the anti-throw screens mitigates these concerns and promotes passive surveillance.</p>
<b>Objective 14.2</b> Entries	Bridges have a sense of openness at the approach, with a clearly identifiable entry and effective wayfinding.	The two new SUP bridges to be delivered through this UDLP, at Estelle Street and Heyington Avenue, have been designed to foster a sense of openness, with clear entries and exits that cohesively interface with sites in logical and intuitive locations. Preference has been given to gentle gradients that avoid the requirement for intermittent landings, which in turn will improve the user experience for cyclists.
<b>Objective 14.3</b> Safety	Bridges provide a high level of passive surveillance and perception of safety.	The urban design approach ensures clear lines of sight between bridges and their surrounding context, achieved through strategic path alignment and landscape species selection. Appropriate lighting, barriers and screens provide the best allowable transparency to maximise passive surveillance.
<b>Objective 14.4</b> Minimising Impacts	Elevated structures are designed to minimise landscape and visual impacts, overlooking and overshadowing of residential and other sensitive areas. The visual impact of the bridge structure on road users is minimised. Planting is used to integrate ramps with their surroundings and reduce their visual impacts.	<p>The design of all SUP bridges seeks to minimise impacts, adhering to the Indigenous design pillars and functional requirements of the UDS. The bridges are elegant and low impact, touching the earth lightly and minimising structural bulk wherever possible.</p> <p>All SUP bridges have been designed to minimise the impact of overshadowing and overlooking on nearby properties and community assets. The transparent screening specified for the anti-throw screens mitigates these concerns and promotes passive surveillance.</p>
<b>Objective 14.5</b> Access	Walking and cycling bridges meet universal access requirements with ramps and stairs for direct access.	<p>The Estelle and Heyington SUP bridges have both been designed to incorporate gentle grades on ramps and the bridge decks, while not required at the Estelle Street SUP bridge. The Heyington Avenue SUP bridge also incorporates steps for direct pedestrian access at its southern end, due to the length of ramp required to manage the level change.</p> <p>The SUP bridges and access ramps have a minimum width of 4m, which provides adequate space to accommodate pedestrians, cyclists and persons using wheelchairs or other mobility aids without the need for separate facilities.</p>
<b>Objective 14.6</b> Views	The design takes advantage of scenic views and vistas, and space for stopping and viewing does not significantly interrupt pedestrian and cycle movement.	Safety barriers on the Estelle and Heyington SUP bridges comprise stainless steel metal (tensile) mesh of high transparency, providing for clear and open views through to the surrounding landscape. Both SUP bridges also incorporate informal 'pause points' at entry, with the southern ramp of the Heyington Avenue SUP bridge designed to incorporate additional space at the bends to provide opportunities for users to stop and look out over the Valda Wetlands, encourage moments of pause, rest and observation of the adjacent Valda wetlands.
<b>Objective 14.7</b> Lighting	Lighting is integrated into the design to make the crossing attractive and appropriate for night time use.	<p>Both feature and functional lighting will be incorporated into the SUP bridges at Estelle Street and Heyington Avenue, providing sufficient illumination for night time use in accordance with the relevant Australian Standards as well as serving as a design and wayfinding feature when viewed from adjacent areas.</p> <p>The final location, treatment and extent of lighting provided to these bridges will be confirmed through further development of detailed engineering and structural designs, including consultation with the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation regarding opportunities for cultural themes and values to be expressed through lighting design.</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>15.0 Walking and Cycling Underpasses</b>		
<b>Objective 15.1</b> Entries	Underpasses have a sense of openness at the approach, with a clearly identifiable entry and effective wayfinding.	<p>The following underpass connections are provided in this UDLP:</p> <ul style="list-style-type: none"> <li>– Doncaster Road (north) – new</li> <li>– Doncaster Road (south) – upgraded as part of redevelopment of the Doncaster Road bridge</li> <li>– Elgar Road (south) – existing</li> <li>– Station Street (south) – existing</li> <li>– Eastern Freeway between Musca Street and Yarra Bend Reserves – existing</li> </ul> <p>All underpasses are located on and linked by the Koonung Creek Trail.</p> <p><b>Doncaster Road (north and south)</b></p> <p>The existing underpass on the south side has been upgraded and improved as part of the extension of the existing Doncaster Road bridge to provide a distinctive node and wayfinding marker for cyclists and pedestrians through the use of wing walls and landscape treatment. This is complemented by the generous width and straight alignment of the underpass, providing clear sightlines and opportunities for passive surveillance. On the northern side of the Eastern Freeway at Doncaster Road bridge, the Koonung Creek Trail is co-located with the new busway connection from Doncaster Park and Ride, with the overall width and design of this structure, providing an open and welcoming shared use path for cyclists and pedestrians, which logically connects with surrounding passive movement networks.</p> <p><b>Elgar Road, Station Street and Eastern Freeway</b></p> <p>No changes are proposed to the three existing underpasses, with the exception of replacement/additional lighting at the Freeway underpass at Musca Street Reserve/Yarra Bend Park as these are all fully integrated into existing structures.</p> <p>Wayfinding and directional signage will be provided to key connecting routes to all underpasses, the final design and location of which will be confirmed as part of the design development during the detailed design phase in consultation with DTP and councils as the relevant road/land managers.</p>
<b>Objective 15.2</b> Connections	Underpasses are strategically located to improve any gaps in the existing path network. Topography and entry points are integrated with the existing path network to provide a seamless and safe journey with clear sight lines. Paths are generously proportioned with room for pedestrians and cyclists traveling in both directions.	<p>The proposed underpasses at Doncaster Road close a key gap in the Koonung Creek Trail by providing a safe, traffic free connection across one of the busiest junctions within the NEL boundaries, as well as to the Doncaster Park and Ride facility.</p> <p>On the northern side, the new underpass provides a direct connection for pedestrians and cyclists between the Doncaster Park and Ride and areas to the north and west, avoiding the High Street and Doncaster Road intersection. At the eastern end, the shared path through the underpass continues the existing alignment of the Koonung Creek Trail, maintaining clear and direct sightlines on approach and providing a seamless transition for cyclists and pedestrians. At the western end, the path connects back into the existing section of the Koonung Creek Trail at a 90-degree angle, maximising visibility and minimising potential conflicts at a key 'intersection' between cyclists travelling through the underpass and to/from the north. On the southern side, the alignment of the Koonung Creek Trail has been straightened through the underpass and for approximately 50m each side, maximising opportunities for passive surveillance.</p> <p>With respect to the existing underpasses at Elgar Road, Station Street and the Eastern Freeway (Musca Street Reserve), a detailed assessment of grades, sightlines and path alignments will be undertaken as part of the development of the detailed landscape designs for these spaces to maximise safety and surveillance, in accordance with CPTED principles. This assessment will also inform the selection and location of landscape plantings around the entrances to these underpasses to ensure that they do not obscure view lines.</p>
<b>Objective 15.3</b> Safety	Underpasses have clear visual connections through to the streetscape and public spaces on either side. Underpasses are wide enough to provide a high level of passive surveillance and perception of safety. The length of underpasses is minimised.	The new/upgraded underpasses at Doncaster Road have been designed to provide a minimum 7m horizontal clearance, providing ample space for two-way travel with additional room to maintain clear sightlines on approach. The alignment of shared paths through and on the approaches to both of these underpasses are straight, avoiding curves or grade changes that could obscure view lines and ensuring these structures are visually connected to the public realm. The overall length of the underpasses is limited to the width of the bridge/road crossings.
<b>Objective 15.4</b> Deterring Graffiti	Internal and external walls use high quality materials with graffiti-resistant surfaces.	Appropriate material selection will be provided to the internal walls of both underpasses at Doncaster Road to provide flexibility for further design development, given the contribution of these elements to the visual amenity of the structure and user experience. The final treatment will either incorporate a textured finish to deter vandalism and/or be easily maintainable to manage graffiti. No works are proposed to the internal or external walls of the existing underpasses at Elgar Road, Tram Road or the Musca Street Reserve, noting that existing surface treatments and maintenance regimes will continue to apply.
<b>Objective 15.5</b> Natural Lighting	Opportunities to incorporate openings for natural daylight are maximised to improve lighting and reduce operating costs.	<p>Examples where the design approach has maximised opportunities for solar penetration include:</p> <ul style="list-style-type: none"> <li>– Doncaster Road new underpass on the north side of the Freeway, to be located next to the express busway; the interface between the underpass and busway is to be partly open, and semi-transparent materials, which will allow natural daylight access to this new underpass</li> <li>– Doncaster Road upgraded underpass on the south side of the Freeway is being widened to 7m. The increased entry/exit points to the underpass will allow increased daylight to access into the upgraded underpass.</li> </ul> <p>Brighter materials and colour treatments have also been selected for the internal walls and surfaces of the southern underpass to minimise the sense of enclosure and darkness, with the northern underpass (reflectivity and glare).</p>
<b>Objective 15.6</b> Artificial Lighting	High quality artificial lighting is used to enhance safety for pedestrians and cyclists. Lighting elements are included as design features integrated into the structure.	<p>The design provides for integrated functional and feature lighting within both underpasses at Doncaster Road, which will be positioned on the soffit of the underpasses to minimise the risk of vandalism and tampering. In addition, existing lighting to the Eastern Freeway underpass at the Musca Street Reserve will be replaced and enhanced in order to address existing safety and CPTED concerns.</p> <p>Specified fixtures will use long-lasting, low-maintenance LED fittings to reduce ongoing energy consumption and maintenance costs, with the location and position of feature lighting that have been considered to ensure all fittings are easily accessible for maintenance purposes.</p> <p>The final location, design and extent of lighting to be provided to these underpasses will be determined following detailed modelling of light levels through the full length of the underpass and at the entries (lux plots), to ensure continuous and consistent illumination is provided in accordance with the relevant Australian Standards and in line with broader CPTED principles.</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>16.0 Navigational Nodes and Thresholds</b>		
<b>Objective 16.1 Hierarchy</b>	A hierarchy of identifiable elements are located along the corridor, in accordance with the key design directions set out in this document, to help the community to navigate and identify their location. These elements should incorporate scenic views to the city, mountains, ridgelines and existing natural or built features; or through the design of elements that respond to cultural and historic values, geology, topography, water course, vegetation, above-ground characteristics and places above tunnels, and/or the urban setting.	<p>A clear and legible hierarchy has been established in the North East Link Program, heightening the significance of key urban design elements. As part of this approach, functional elements that contribute to visual clutter have conversely been hidden where possible.</p> <p>Walking and cycling bridges have been imagined as key wayfinding markers for motorists, cyclists and pedestrians, punctuating the journey with memorable architectural moments that are distinguishable from the surrounding context. A bold use of colour contributes to the elevated hierarchy of these markers.</p> <p>Landscape and open spaces provide points of rest, informal play, education and cultural reflection, strategically placed at nodal points of significance to provide a variety of interesting and engaging moments.</p>
<b>Objective 16.2 Structures as Features</b>	Opportunities are maximised for attractive, identifiable and well-designed structures (interchanges, ramps, bridges etc.) that also act as navigational nodes and threshold treatments. Built features and elements are meaningful and are not superfluous visual elements.	<p>Elegant and identifiable structures have been deployed as wayfinding markers and navigational nodes throughout NEL.</p> <p>The disparate structures that make up the North East Link Program have been considered as a family, where retaining walls, road bridges, noise walls and walking and cycling bridges adopt a cohesive and consistent design language. SUP bridges are integrated with landscape to bolster the design pillar of Connection to Country. Lighting has been deployed as a tool to stitch the North East Link Program together, delivering a consistent identity across many different elements.</p>
<b>Objective 16.3 Visual Clutter</b>	Visual clutter is to be minimised including from road lighting.	The urban design approach reduces visual clutter through the concealment of functional elements, the avoidance of superfluous materials and the use of colours that reflect site context.
<b>17.0 Landscape</b>		
<b>Objective 17.1 Green Corridors</b>	The Project enhances the quality of the surrounding landscape and strengthens existing green corridors. New landscape work complements the existing soft landscaping and is distributed evenly throughout the Project. Landscaping is undertaken early in the construction process where practicable, prioritising areas that will not be impacted by future construction, in order to maintain the green character of the area.	<p>The design presented through this UDLP will include a continuous green corridor along the line of the new reimagined creek within the northern edge of Koonung Creek Reserve. Connections from this green corridor join trees in adjoining residential streets and existing parklands.</p> <p>To the east of Doncaster Road, significant new tree planting builds on existing green corridors on both sides of the Eastern Freeway. In all areas, the design of the landscape improves the quality of public open space, biodiversity, ecology, experience and passive open space for local residents.</p>
<b>Objective 17.2 Roadway Identity</b>	Landscaping unifies the road corridor, contributes to the identity of the roadway and enhances the experience when driving through the area	<p>Landscaping unifies the road corridor, contributes to the identity of the roadway, and enhances the driving experience. As the ecotones of the Ecological Vegetation Classes (EVCs) set out the basis of planting selection to ensure commercial viability and bolster the biodiversity, identity and enhancement are achieved by responding to the EVCs positively; resulting from which, the selected planting will be adaptive to climate change and support ecology.</p> <p>This design approach, combined with corresponding to the local character of respective areas, will create a diverse and unique sequence of landscape experiences that connect to immediate and broad context.</p>
<b>Objective 17.3 Integration</b>	The landscape design integrates the road environment into the existing landscape character and urban fabric. Landscape areas are clearly defined and are not left-over and undesirable spaces.	The landscape design builds on the existing and historic landscape character of the site. It re-establishes waterways and wetland, builds upon existing green corridors and bolsters existing biodiverse plantings in the area. In parklands and public open space, the landscape design improves the amenity and experience of the landscape for residents and users of the SUPs.
<b>Objective 17.4 Minimising Loss</b>	The removal of mature trees, planted and remnant native trees and remnant vegetation, (particularly large amenity trees, heritage vegetation and vegetation within or connected to open space) is minimised. Opportunities to retain all valuable habitat linkages or corridors are maximised. An approach for the reuse of existing vegetation to be removed is developed.	<p>Opportunities to minimise the loss of mature canopy trees and remnant native vegetation have been carefully considered through the design of the Freeway widening and associated works, both in terms of direct impacts from the design footprint and indirect impacts due to construction activities (including access).</p> <p>Examples of where and how this has been achieved include:</p> <ul style="list-style-type: none"> <li>– retention of the heritage listed English Oak on Doncaster Road (Manningham Planning Scheme H048) in the design of the upgraded access and express busway connection to Doncaster Park and Ride</li> <li>– prioritising the retention of trees and vegetation within open space, rather than landscaping on the Freeway verges, by minimising the overall footprint of the Freeway widening through incorporating retaining walls along the interface in constrained areas</li> <li>– siting noise walls on or as close to the Freeway carriageway as possible, reducing the area of land within adjacent open space required to facilitate their construction and minimising overall vegetation loss in areas of high landscape and ecological value, such as the Koonung Creek Reserve</li> <li>– limiting the extent of new road infrastructure to be provided adjacent to the Yarra Flats Reserve, minimising the need for construction access and consequent impacts on vegetation and existing habitat links</li> </ul> <p>Opportunities to further refine the design and construction methodology to retain additional trees will be explored and confirmed through the development of detailed design.</p> <p>The NEL Project proposes the concept of repurposing trees, which essentially involves salvaging and milling reusable timber from trees that need to be removed. NELP are also working with local groups, including councils and schools, to reuse timber from the project for community benefit. This exercise is under continuous development and once finalised, this will be implemented across all works areas to ensure that opportunities for reuse are considered at a 'whole of project' level, rather than within individual UDLP areas, including to reuse felled timber as soft landscaping in returned open public space.</p>

## 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>Objective 17.5 Enhance Habitat and Biodiversity</b>	New landscapes corridors are developed to enhance biodiversity and habitat links (both new and existing). Indigenous vegetation is planted in existing habitat linkages and corridors to strengthen biodiversity and provide habitat links for native fauna to move more easily through the urban landscape. Opportunities to create fauna habitat and links are maximised, including the use of hollow logs, nesting boxes and rope ladders as part of any landscape works undertaken within biodiversity zones and natural open spaces.	<p>An overarching design priority for this UDLP is to ensure that the connectivity and integrity of the linear open spaces framing the Eastern Freeway to the north and south is maintained, not just for their recreational values but as the basis for a continuous, biodiversity rich corridor linking existing and new areas of habitat through Melbourne’s eastern suburbs.</p> <p>Building on the existing bushland character and ecological values within the corridor, the landscape design extends and enhances existing vegetation through a layered palette of groundcovers, understory plantings, large shrubs, and canopy trees. A wide range of flowering plants has been included in the relevant planting mixes to provide opportunities for the establishment of ‘pollinator pathways’ between existing and new vegetation, supporting bees, birds and insects. Tailored planting mixes of aquatic and riparian species have also been developed for use along the banks of the Koonung Creek, in and around the Koonung Creek and Valda Wetlands, and within the open swale to maximise opportunities for the development of ‘blue’, not just ‘green’ habitat links through the corridor.</p> <p>As part of the development of detailed landscape and open space designs, further assessment of existing and potential ecological conditions will be undertaken to inform the final location and selection of plant species, in consultation with the relevant public land manager, to ensure opportunities for the creation of habitat links are identified and fully capitalised on. This process will also include the development and implementation, through the construction phase, of habitat elements such as nesting boxes, placement of hollow logs, and other features targeted towards supporting local fauna populations based on ecological assessment and advice.</p>
<b>Objective 17.6 Visual Mitigation</b>	Landscaping is used to filter or screen views of road infrastructure and head light glare. The punctuation of built form and structures above treed ridgelines is minimised. Support a canopy of mature trees as the dominant visual element throughout the Project corridor. Roadside landscape is used to mitigate the visual impact of large expanses of asphalt and to enhance the driver experience.	<p>The roadway will be enhanced with vegetation, including greening between road barriers and new tree planting adjacent to the road where safe and practical, strategically designed to integrate noise wall and retaining wall features.</p> <p>The design of the new road bridge at Doncaster Road seeks to maximise vegetation and tree planting opportunities adjacent to the Freeway, better integrating new structures and linking with the surrounding landscape.</p>
<b>Objective 17.7 Inspired by Local Assets</b>	The landscape design takes cues and is inspired by nearby local environmental assets including the Yarra Valley parklands, Koonung Creek, Plenty River Gorge, Gresswell Nature Forest, Banyule Creek and Simpson Barracks. Landscapes along river and creek corridors that are impacted by the Project are rehabilitated and naturalised for ecological and experiential benefits.	<p>The overarching landscape design concept presented through this UDLP has drawn inspiration from the remnant elements of the original Koonung Creek alignment retained in open space south of the Freeway and the culturally and ecologically significant landscapes of the Greater Yarra Parklands. The bushland character of these spaces is retained and enhanced through informal, layered planting mixes primarily drawn from historic EVCs to maximise biodiversity and ecological values while improving overall landscape and recreational amenity of users of these spaces and directly adjoining areas.</p> <p>A key driver of the landscape design is to connect these open spaces visually and functionally with the Koonung Creek itself, in order to better communicate its role as a living waterway and part of Birrarung and the wider Yarra River catchment. While the depth to which it has been piped through this section has made ‘daylighting’ the creek west of Doncaster Road unfeasible, the incorporation of the open swale and other WSUD features provides a means of naturalising the corridor, which references its original conditions instead of replicating them. Details of the landscape design will be finalised through design development and will be to the satisfaction of the future asset owners.</p>
<b>Objective 17.8 Urban Forest</b>	New tree planting and vegetation is prioritised within the Project corridor, including adjoining streets, medians, buffers and in carparks, to support the urban forest. Opportunities for tree planting within the roadway landscape, local streetscapes, in buffer planting, and on highpoints and ridgelines is maximised. Innovative engineering solutions are used to maximise tree planting. Where there is a conflict between planting canopy trees and maintaining views, canopy tree and buffer planting may take precedence. Services are located to optimise tree planting.	<p>In addition to replacement and enhancement of existing landscape and tree plantings impacted by the Eastern Freeway widening, this UDLP includes new areas of canopy tree planting in key open public spaces and streetscapes to improve amenity and increase overall canopy cover and shade, including the following:</p> <ul style="list-style-type: none"> <li>– Musca Street Reserve</li> <li>– Koonung Creek Reserve immediately east of Doncaster Road, to provide shade, screening and amenity to new and enhanced paths</li> <li>– along the Koonung Creek corridor, including Valda Wetlands</li> <li>– Stanton Street Reserve</li> <li>– adjacent to the Koonung Creek Trail, both north and south of the Freeway.</li> </ul> <p>Proposed locations for canopy tree planting have been coordinated with technical engineering design processes and utility service providers to avoid and minimise existing and proposed conflicts between trees and service infrastructure. Examples of how this has been implemented through this UDLP and associated design work include:</p> <ul style="list-style-type: none"> <li>– bundling of services where feasible to minimise overall encumbrance in key locations, such as nature strips, and locating service corridors outside of open space and other areas of high amenity</li> <li>– incorporating noise wall mounds where feasible to increase the overall area available for establishment of landscape buffers and canopy tree planting, particularly along open space boundaries</li> <li>– rationalising bridge and other structural designs to reduce the number and location of piers, and increase clearance, providing more space and improved conditions for establishment of landscape buffers within the Freeway corridor. An example of this is the improvements to the Heyington Avenue bridge design discussed at Section 4.1.2.</li> </ul>
<b>Objective 17.9 Plant Health</b>	The design provides sufficient setbacks, soil, and conditions for new and existing trees and vegetation to maintain and support plant health and growth.	<p>All earthworks, including excavation, road batters and retaining walls, have been designed to ensure final grades, and soil depth will support the establishment and ongoing growth of all new landscaping proposed through this UDLP, including the establishment of canopy trees. Minimum soil depths and conditions for planting over structure, such as on the Doncaster Road bridge and culverted sections of Koonung Creek have also been developed as part of this process, to be further refined and confirmed through the development of detailed landscape designs with technical input from structural engineers.</p> <p>Setbacks, soil and conditions for trees to be planted within the Freeway corridor and the reserve near Doncaster Road will be designed to be in accordance with relevant standards, and further design development through the detailed design phase of landscape plans. All other tree planting will be in accordance with the requirements of the relevant Council, or Parks Victoria (Yarra Flats Reserve only).</p> <p>Opportunities to improve conditions for new and existing landscape plantings, particularly within open space, have also been identified through the development of this UDLP, including use of runoff for passive irrigation and increased access to sunlight along noise walls through integration of clear acrylic panels. These opportunities will be further investigated and confirmed through the design development during the detailed design phase of landscape plans, which will involve a careful assessment of species suitability and location based on specific conditions and the maintenance requirements of the future landowner.</p>

## 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>Objective 17.10</b> <b>Plant Selection</b>	<p>Planting throughout the Project is self-reliant, sustainable and requires minimal maintenance. Native species of local provenance are used in environmentally sensitive areas and/or identified biodiversity sites and corridors. The potential for impacts on identified biodiversity and habitat corridors and sites, and the Yarra River corridor by introduced species, is minimised. Trees and other vegetation are selected, to take into account predicted future changes in climate. Plant species selection is consistent with State and local government guidance. New tree planting, within or adjacent to the road reserve, is appropriate to the scale for the road environment and considers maintenance access.</p>	<p>A series of planting palettes have been developed using a mix of species suitable to the range of specific environmental, climatic and functional conditions throughout the UDLP area. Species selection has primarily been based on historic EVCs, with priority given to robust, drought resistant species to minimise ongoing resource and maintenance requirements, 'future proofing' against changes to climate and rainfall patterns.</p> <p>Where applicable, species from adjoining EVCs or the existing landscape context (particularly open space) have also been included to maintain and enhance existing areas of established habitat and biodiversity. No local or State listed weed species have been included within the planting lists. Flowering plants have been included within all garden bed planting palettes to promote the establishment of 'pollen pathways' for bees and birds, enhancing habitat and biodiversity. Ongoing consultation has occurred through the development of this UDLP with Parks Victoria, the relevant local Councils and DTP (Transport division) to ensure that every range of species included within each plant schedule, and where these schedules have been applied, is consistent with their guidelines and requirements as the future landowner(s). Opportunities to incorporate culturally significant species or planting designs will also be further explored as part of the development of detailed landscape designs, in consultation with the Wurundjeri Woi-wurrung Aboriginal Cultural Heritage Corporation.</p>
<b>Objective 17.11</b> <b>Buffer planting and land form</b>	<p>Landscape design elements including buffer planting (planted vegetation situated outside the road reserve) and land form are used to create a visual buffer between the roadway and surrounding areas. Existing buffer planting is retained at the edges of any widened road corridors.</p> <p>Land form is used to reduce the apparent height of walls, barriers and road infrastructure.</p> <p>A suitable width of low planting is used to separate pedestrian and roadside traffic.</p>	<p>Direct views to the Freeway from adjacent areas are largely screened by topography and existing noise walls, which are to be replaced as part of the Freeway widening. The design provides for extensive areas of landscape buffer planting along the new noise wall alignments on both sides of the Freeway, including the replacement and extension of existing plantings along the interface of open space reserves where impacted by Project works, to filter, soften and screen views to this infrastructure. Specific areas where this has been provided include:</p> <ul style="list-style-type: none"> <li>- north of the Koonung Creek Trail alignment within Winfield Reserve, Frank Sedgman Reserve, Valda Wetlands and Elgar Park, maintaining and enhancing the continuous 'green backdrop' that links these spaces</li> <li>- adjacent to the Koonung Creek Trail near Estelle Street, Willow Bend and Massey Avenue in Doncaster</li> <li>- east of the Koonung Creek Reserve Wetlands and Koonung Creek Reserve Playground.</li> </ul> <p>Opportunities for incorporation of mounding within these buffer areas will be further investigated and confirmed as part of detailed design development. Of particular note is that Koonung Creek Reserve is subject to surface water inundation; thus, any changes to topography would involve ongoing discussions with Melbourne Water so that the design is coordinated with an overarching drainage and water quality strategy, preserving the function and amenity of these open space assets.</p> <p>Between Doncaster Road and Elgar Road, views from residential areas on the northern side of the Freeway are largely screened by existing topography, with the Freeway road pavement sitting up to 8 metres below the level of adjacent local roads. These interface conditions are to be retained and enhanced, in places, with replacement/additional landscape planting where impacted by replacement of existing noise walls.</p> <p>Pedestrian traffic is fully separated from road traffic for the full length of the Koonung Creek Trail south of the Freeway, and between Estelle and Stanton Streets on the north side prior to transitioning to the local street network. Landscape buffers of varying widths, including street verges and nature strips, are provided between the pedestrian path network and adjacent roadways, with the exception of the express busway underpass at Doncaster Road where due to spatial constraints this is achieved through grade separation and safety barriers.</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>18.0 Water</b>		
<b>Objective 18.1 Water Sensitive Design</b>	A 'water-sensitive design' approach is used to integrate water management objectives into the project's urban design and achieve a broad range of community and environmental benefits. This includes the use of passive irrigation techniques, and the incorporation of Water Sensitive Urban Design infrastructure such as swales, bio-filtration systems (rain gardens) and wetland. A holistic approach to integrated water management across the entire project should be adopted.	<p>A 'water-sensitive design' approach has been incorporated throughout the project area. Generally, the landscape design incorporates swales, bioretention wetland and open wetland to treat stormwater runoff in accordance with Best Practice Environmental Management (BPEM) guidelines.</p> <p>Key examples include:</p> <ul style="list-style-type: none"> <li>Water sensitive urban design (WSUD) drainage swale is incorporated to act as landscape feature within Koonung Creek Reserve (near Koonung Creek Reserve Wetlands), providing ecological value and conveying water during storm events.</li> <li>A planted bioretention garden is also included within the Koonung Creek Reserve as a landscape feature and stormwater treatment.</li> <li>The existing Koonung Creek open channels (adjacent to Doncaster Park and Ride and located to the south of the Freeway) are retained with the bank conditions improved by installing more ground vegetation cover and tree planting so that landscaping outcome will be improved through a WSUD approach.</li> </ul> <p>Overall, the design refurbishes and expands existing wetland systems to optimise water treatment of Freeway runoff wherever possible, and to improve the quality of local watershed runoff. These elements have been incorporated into adjacent parklands to provide habitat value, improve biodiversity, contribute to urban ecology and add value to the experience of these open spaces for residents.</p>
<b>Objective 18.2 Healthy Waterways</b>	The project maintains or improves the river health of the waterways that it crosses. Drainage infrastructure maximises opportunities to replicate natural processes in the treatment of water, and enhances stormwater management outcomes, as well as broader urban design and ecological values.	<p>Waterway health across the Project is improved by water sensitive urban design (WSUD) in accordance with the relevant environmental performance requirements. A portion of the existing Koonung Creek will be piped underneath the expanded Freeway corridor approximately between Sweeny Street and the west of Valda Wetlands, as well as near Elgar Park ovals and Frank Sedgman Reserve.</p> <p>In all other areas, the Koonung Creek is able to remain 'daylight' and will be improved through enhanced biodiversity planting for wetland and riparian habitats, as well as to improve the quality of the waterway.</p>
<b>Objective 18.3 Daylighting Waterways</b>	Opportunities are maximised to preserve and restore natural and open waterways, and to 'daylight' (restore to a more natural state above ground) sections of creeks and streams that have previously been diverted into a culvert, pipe or drainage system to improve aesthetics, amenity and ecological values. Roadway crossings of waterways and wetland are minimised.	<p>Between Thompsons Road and Doncaster Road the existing Koonung Creek is piped underground (at a depth of 10m in some locations), the Project has reviewed opportunities to daylight the existing piped Koonung Creek. However, it has identified that subsequent negative impacts would likely occur, such as further reduction to open public space from the works required to reconstruct an open waterway, which was not deemed an acceptable outcome for the overall design. Consequently, in accordance with the Project environmental performance requirement LP1, which seeks to minimise land use impacts on parks and reserves including passive open space, the Koonung Creek portion that is piped would remain its current conditions.</p> <p>Notwithstanding the technical limitations to bringing daylight in the existing piped portion of Koonung Creek, the Project will improve the aesthetics, amenity and ecological values of the Koonung Creek corridor where underground daylighting is retained through biodiversity and habitat planting, landscape species selection informed by Ecological Vegetation Classes, and the opportunity to incorporate significant Indigenous planting in consultation with the Wurundjeri Woi-wurrung Aboriginal Cultural Heritage Corporation.</p> <p>The planting process will also involve consultation with Melbourne Water and the councils as return asset owners.</p> <p>East of Doncaster Road, opportunities to retain, protect and enhance the open sections of Koonung Creek both north and south of the Freeway have been maximised through additional planting and rationalisation of the overall project footprint. Three short sections of the Creek are required to be piped to accommodate the Freeway widening due to the narrowness of the existing Freeway reserve, and proximity to existing residences and open space.</p> <p>No new road crossings of the Koonung Creek or wetland are proposed through this UDLP.</p>
<b>Objective 18.4 Minimise Habitat Impacts</b>	Road infrastructure is designed, located and constructed to minimise short and long-term impacts on riparian, riverbed and aquatic habitat.	<p>The Freeway widening works have been designed to minimise direct impacts on existing riparian habitat as much as practicable, with vegetation replaced and enhanced where this cannot be avoided. With the exception of the short sections east of Doncaster Road described above, the overall footprint of the works has been designed to maintain the open sections of Koonung Creek in the current alignment, with additional planting to the banks and riparian corridor improving the quality and connectivity of aquatic habitats.</p> <p>Impacts from increased stormwater runoff on riparian ecology will be mitigated through the upgrades to the existing wetland systems north of Valda Avenue and within the Koonung Creek Reserve to provide additional flood storage and higher levels of stormwater treatment, diverting peak flows away from the open sections of the Koonung Creek and improving the overall quality of water ultimately flowing into the Yarra River. Consultation with Melbourne Water has also been implemented into the design development and is an ongoing process.</p>
<b>Objective 18.5 Drainage infrastructure and retarding basin design</b>	<p>Drainage infrastructure and retarding basins are located and designed to not adversely impact on the function of public open space. Drainage infrastructure within public open space does not inhibit the ability of local residents to have access to open space near where they live. New infrastructure enhances recreational values and contributes positively to the quality and function of the open space.</p> <p>Low points in basins are strategically located to maximise useable open space, and to minimise disruption to the community's enjoyment of open space, particularly following wet periods. Drainage infrastructure is designed to visually blend into the surrounding landscape.</p>	<p>Drainage infrastructure has been designed and sited as an integral component into adjacent landscapes so that it not only serves the primary function but also positively contributes to the quality and function of open spaces throughout the Project area.</p> <p>Stormwater is brought to the surface of parklands where feasible as a landscape feature and contributes to the value of recreational open spaces. For instance, the Koonung Creek open channels are retained as a live waterway but with improved bank conditions (achieved by increased ground vegetation cover and tree planting), the upgraded open channels will benefit the landscaping outcome in relevant areas while improving existing flood conditions. Other new and upgraded assets designed to improve existing flood conditions within open space along the Freeway corridor are also clearly shown with annotations on the landscape plans.</p> <p>Retarding basins have been co-located with existing wetland to avoid encroachment of usable open space and designed to work with the contours of the land so as to blend in with the surrounding landscape rather than dominating the overall design response through retaining walls and other structural elements. As such, the proposed infrastructure will have little impact on public useable parkland and local residents will have adequate access to nearby open space areas.</p> <p>Specific examples of where this has been implemented through the design include:</p> <ul style="list-style-type: none"> <li>an open swale extending through the Koonung Creek Reserve, which has been designed to convey flood flows and runoff through the reserve, increasing the area of usable open space by 'drying out' existing waterlogged areas within the Reserve and creating a high-quality landscape feature that provides a visual and functional connection with the Koonung Creek as a living waterway for the surrounding community; details of the open swale and landscaping through the Koonung Creek corridor will be finalised through design development and will be to the satisfaction of the future asset owners</li> <li>redevelopment of Valda Wetlands to provide both stormwater treatment and flood storage, minimising overall footprint of drainage infrastructure required allowing the existing landscape, recreational and environmental values of this space to be retained.</li> </ul>

## 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<p><b>Objective 18.6</b> Maximise community and environmental benefits</p>	<p>Opportunities for community education and to integrate community recreational infrastructure (e.g., seating, paths, boardwalks) are maximised. Water Sensitive Urban Design infrastructure is prioritised at locations where there are opportunities for water harvesting, treatment and reuse that support community facilities (such as providing a source of treated water for the irrigation of sporting fields).</p> <p>Water Sensitive Urban Design infrastructure does not limit opportunities to use landscape to mitigate visual impacts of the project (that is, by reducing available space for planting of trees and vegetation to filter views towards infrastructure).</p> <p>Water Sensitive Urban Design infrastructure is located and designed to support the proposed hierarchy of navigational nodes.</p>	<p>The design provides for a series of new and enhanced WSUD assets that have been carefully integrated with landscaping treatments and path networks to create an integrated 'blue green corridor' along the length of the Freeway corridor. All proposed WSUD assets, including wetland, are sited and designed to maintain sufficient space for establishment of landscape buffers along the Freeway interface to screen and filter views to noise walls, which will also visually connect with and provide the backdrop for functional wetland and riparian planting.</p> <p>The location of WSUD infrastructure within this UDLP has largely been defined by existing drainage conditions and infrastructure, specifically the existing stormwater treatment wetland north of Valda Avenue and Kosciusko Street. These are highly valued by the community for their recreational, landscape and ecological values, and key destinations in their own right. The design recognises and enhances the importance of these spaces as focal points for the construction of additional recreational infrastructure, including new boardwalks, viewing platforms, seating/picnic areas and path networks, to further support community use and enjoyment of these spaces.</p> <p>These two wetland systems act as 'anchors' for a chain of smaller WSUD assets and treatments extending for the full length of the UDLP area. West of Doncaster Road, these assets are physically linked by the open swale, which reads as a continuation of the waterway proposed in the open sections of Koonung Creek to the east. Details of the open swale and landscaping through the Koonung Creek corridor will be finalised through design development and will be to the satisfaction of future asset owners. Opportunities for community education, stormwater reuse, and other integrated water initiatives will be explored further as part of the detailed design of these assets and broader network planning, in collaboration and consultation with councils and Melbourne Water as the relevant land and waterway managers.</p>
<p><b>Objective 18.7</b> Raingarden and wetland design</p>	<p>Water Sensitive Urban Design infrastructure is integrated with the surrounding context and is designed to enhance the aesthetic appeal and ecological values of the area. Water Sensitive Urban Design maintains existing and planned key walking and cycling movement connections.</p> <p>Wetland and raingardens located within or near the Yarra River floodplain or along creek and waterway corridors are naturalistic in form and aesthetics. The location of these elements avoids or minimises impact on existing recreational values.</p> <p>New wetland shapes respond to the contours of the land. The design provides a balance between</p> <p>natural areas for animal and bird life, and areas for public amenity, including places for respite, recreation, and seclusion.</p>	<p>The design provides for the redevelopment and enhancement of two major stormwater quality wetland systems, located in the Koonung Creek Reserve (directly east of the Estelle Street Bridge) and north of Valda Avenue respectively. The design concept for the expanded wetland prioritises recreational and ecological outcomes in line with the strong value these spaces provide to surrounding communities, including enhanced riparian and plantings, meandering path networks around and across areas of open water, and defined nodes for viewing and rest. Of particular note is that the incorporated wetland systems are integrated into respective open spaces as a design feature that complements the landscaped setting and links to the new and upgrades walking and cycling paths creating 'unintentionally' planned connections.</p> <p>A series of smaller WSUD assets, such as rain gardens and bioretention basins, have also been co-located with the open swale or provided at strategic locations along the open sections of Koonung Creek (for example, adjacent to Doncaster Park and Ride). The final location and treatment of these assets will be resolved through detailed engineering design and open space detailed design processes, in consultation with the relevant public land management authority.</p>

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>19.0 Road Signage</b>		
<b>Objective 19.1 Strategic Approach</b>	A consistent, coordinated, whole-of-corridor signage and wayfinding approach is developed to enhance driver legibility and safety, and to improve the overall experience.	<p>The design, location and extent of all road and wayfinding signage - including pedestrian, cyclist and drivers - will follow the overarching strategy and approach taken within the approved NEL Tunnels UDLP to ensure a coherent and consistent 'whole of corridor' approach which maximises driver legibility and safety. Specifically,</p> <ul style="list-style-type: none"> <li>- A consistent design theme will be provided across all signage types, based on their function (such as freeways, intersections with local roads, and pedestrian/cyclist wayfinding on shared user paths and key routes) and location.</li> <li>- Signage will be sited so as to maximise visibility and legibility while minimising visual bulk and clutter, with signage combined where feasible.</li> <li>- All road signage will be displayed on gantries, rather than bridges, in order to minimise visual clutter.</li> <li>- Where new or enhanced wayfinding signage is proposed to an existing route (e.g., Koonung Creek Trail), this will be designed to follow any existing design or 'branding' strategy so as to maintain consistency and identity for all users unless otherwise specified or agreed with the relevant Councils.</li> </ul> <p>All road and wayfinding signage will be designed and located in accordance with relevant road safety and authority guidelines, standards and requirements, to the satisfaction of the Department of Transport and the relevant Councils.</p>
<b>Objective 19.2 General Signage</b>	<p>Signage, toll points, gantries, and associated infrastructure is sited and designed to be well integrated along the corridor. The scale and character of the area is not undermined with a dominating skyline, or with significant views blocked by signage infrastructure.</p> <p>Minimise visual impacts from signage and toll points on local communities and on the quality of the adjoining public realm.</p> <p>Signage infrastructure is located sensitively, relative to topography, access, safety, security, visual impact, landform, and vegetation.</p>	Road signage and gantries have been carefully considered to minimise impact on the surrounding environment. The considered design of these elements minimises the impacts on neighbouring residents, while elevating the Project design. All signage, including Intelligent Transport Systems (ITS) signage, will be placed on gantries in order to reduce visual clutter and strengthen the design integrity of the bridges as architectural features. During the design development in the detailed design phase, ITS, which includes electrified road related signage and infrastructure will be determined in consultation with the relevant stakeholders in accordance with the UDS.
<b>Objective 19.3 Design</b>	Signage and gantries are consistent, with a simple structure and with consideration to form, shape and colour. Unauthorised access and vandalism are prevented.	The design of signage and gantries reduces visual clutter and improves user experience and ease of maintenance. Long single-span truss structures minimise the number of vertical interfaces with the Freeway corridor. All gantries are clad in high-quality perforated metal to conceal the structure and its associated components, while improving the design outcome. The cladding and finish account for future maintenance and graffiti removal. The perforated cladding of gantries is finished in high-quality powder coats. At lower levels where graffiti is more likely, a standard paint finish is used to ensure any cover-ups are seamless and undetectable.
<b>Objective 19.4 Siting to Reduce Visual Clutter</b>	<p>Signage and gantries are consolidated and rationalised where appropriate to minimise the number of overhead elements.</p> <p>The locating of signage on bridges and structures is minimised. Signage at tunnel entries is avoided.</p> <p>Signage is well integrated with the design of project elements.</p> <p>The locating of gantries on ramps and elevated structures, or within close proximity to bridges is minimised.</p> <p>Gantries are integrated inside tunnel ceilings to avoid visual clutter at portals.</p> <p>Opportunities are maximised to co-locate features such as signage, toll points, Lane Use Management Signs (LUMS), Closed Circuit Television (CCTV), Variable Speed Limit (VSL) signs and Variable Message Signs (VMS) on shared gantries, light poles and other shared assets. Alternative tolling solutions and the 'designing out' of radio frequency (RF) barriers are considered, to avoid or minimise visual impacts.</p>	The quantity of gantries and toll infrastructure has been reduced by consolidating signage and its associated components. Visual clutter is mitigated through the concealment of these elements, screened by semi-transparent perforated metal. Moreover, gantry structures have been rationalised to reduce the number of overhead structures. Colocation of elements has contributed to a reduction in visual clutter, combining road signage, toll points and land use management systems.

# 5. Consistency with the Urban Design Strategy

Objective	Description	Response
<b>20.0 Materials and Finishes</b>		
<b>Objective 20.1 High Quality</b>	Materials and finishes used in the Project are high quality, durable, robust, easy to maintain, and will weather and age well over time.	The selection criteria used for the North East Link Program ensures materials are functional, durable and sustainable. Each material has been selected based on the appropriate design life, in alignment with the UDS.
<b>Objective 20.2 Colour Palette</b>	The colour palette for the materials and finishes is consistent along the Project's design character areas, sensitive to the local environment and reinforces the broader wayfinding approach for the corridor.	The colour palette is a cohesive and continuous language responding to surrounding context and cultural artefacts. The muted earthy tones are rooted in cultural significance and derived from the Munsell soil colour classification system typically used to characterise soil and historic artefacts. The hues, saturations and brightness of each colour used in the Project are a direct derivation of the landscape NEL sits upon – ancient Wurundjeri Woi-wurrung land.
<b>Objective 20.3 Reflectivity</b>	New materials and finishes minimise light pollution in the surrounding areas from reflectivity.	A design priority has been given to materials of low reflectivity that improve safety for motorists, including concrete, weathering steel, matte acrylic and burnished metal. A reflectivity study will be undertaken in the design development stage to ensure the Project meets and exceeds all the relevant functional requirements.
<b>Objective 20.4 Vandalism</b>	Selection and application of materials and finishes discourages and minimises the potential for vandalism including graffiti.	The urban design approach recognises that the most effective measure in mitigating vandalism is to provide a deep, textured finish to vertical surfaces. Where possible, this technique has been implemented, including on noise walls, retaining walls, kerbs and barriers. The textured finish to these elements is supplemented by a high-quality anti-graffiti coating that simplifies ongoing maintenance. In locations where textured relief is not possible to achieve, anti-graffiti coatings have been provided to ensure the best possible maintenance conditions. Moreover, modular elements have been used where possible to ensure elements can be replaced if damaged.
<b>Objective 20.5 Identity Through Design</b>	The design elements along the freeway corridors are coordinated and designed to promote a cohesive identity through colour, materials, patterns and form. These design features include noise attenuation elements, retaining walls, pedestrian bridges, signage and buildings. This coordinated approach creates a consistent, high-quality experience for road users and the local community.	Road components have been thoughtfully coordinated to provide an integrated system of bridges, noise walls, retaining walls, barriers and screens. This approach to component integration contributes significantly to the elegant urban design outcome that has been achieved.
<b>Objective 20.6 Use Resources Efficiently</b>	Opportunities are maximised to use materials that are recycled, recovered, have lower embodied energy and are ethically sourced.	All materials and finishes within the Project have been selected based on their sustainability merit, including embodied carbon and product lifespan, with opportunities to minimise overall material consumption through the re-use of site-won materials and integration of recycled product having been identified and integrated across a series of design packages. Specific examples include: <ul style="list-style-type: none"> <li>– reduction in the proportion of Portland cement, which creates high levels of carbon emissions, used in concrete and replacement with recycled materials such as fly ash and blast furnace slag reuse of excavated soil for earth and noise wall embankments, reducing the overall height and material requirements for the construction of the walls themselves</li> <li>– inclusion of reclaimed asphalt pavement and recycled plastic fibres in the construction of shared use paths, reducing the amount of steel required for reinforcement</li> <li>– targets adopted for the procurement of sustainability labelled products.</li> </ul> Opportunities to further reduce overall material requirements and increase the proportion of reused and recycled materials, including site-won materials, will continue to be identified through the detailed design development process.

## 5. Consistency with the Urban Design Strategy

### 5.4.2 Using Design to Help Manage Construction Impacts

The design approach is to avoid, minimise and mitigate adverse impacts on the community from temporary works and construction activities.

Design requirements for temporary and construction works are to be designed and carried out in accordance with the urban design principles and objectives, and section 7.2 of the UDS, to meet the Environmental Performance Requirement (EPR LV2).

The following key items are listed in the UDS:

- Maintaining access and connections
- Maintaining community functions
- Protecting viability and amenity
- Protecting features
- Landscaping
- Temporary uses
- Visual impacts and presentation
- Waste generation and reuse
- Innovation.

The Construction Environmental Management Plan (CEMP) and associated supporting management plans have been developed, addressing the key items as listed in Section 7.2 of the UDS, demonstrating how the project uses design to help manage construction impacts.

As the construction compounds are located within the Project boundary and suitable control measures will be put in place prior to the commencement of construction activities, any potential impact on the community will be minimised. The location of construction compounds have considered the temporary and permanent works to minimise the need to re-establish construction compounds in other areas at a later date, which also contributes to reducing impacts on the community.

The Construction Environment Management Plan has been prepared to respond to relevant environmental performance requirements and address issues such as:

- noise, dust and vibration controls
- site compound layouts including the locations, security, visual appearance from the public, worker parking
- temporary traffic management including roads, pedestrians and cyclists
- temporary barriers, signage, fencing
- communication protocols
- protection of features such as vegetation, memorials, cultural heritage features
- staging of the works
- hours of construction works.

For locations of the construction compounds, refer to the plans (NEL-STH-NSA-5900-UUD-DRG-Nos. 9580 and 9581) in Attachment 2: Landscape Design.

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# **Section 6**

## **Compliance with Environmental Performance Requirements**

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## 6. Compliance with the Environmental Performance Requirements

### EPRs compliance assessment

The Incorporated Document requires at Clause 4.9.3 that a UDLP must be accompanied by an explanation demonstrating how the UDLP would comply with the EPRs included in the approved EMF. The EPRs set out the minimum environmental outcomes the Project must achieve during design, construction, and operation.



Figure 77: Eastern Freeway/Express Busway, facing west towards Estelle Street Shared Use Path Bridge

### 6.1 Environmental Management Framework

The purpose of the Environmental Management Framework (EMF) is to provide a transparent and integrated governance framework to manage the environmental aspects of the North East Link Program in order to meet statutory requirements, protect environmental values and sustain stakeholder confidence.

In setting out the governance framework for managing environmental effects, the EMF provides clear accountabilities for compliance with the Environmental Performance Requirements (EPRs). The EPRs are a suite of performance-based environmental standards and outcomes that apply to the design, construction, and operation of the North East Link Program. This performance-based approach allows sufficient flexibility to encourage innovation by contractors to determine how each EPR is achieved.

### 6.2 Environmental Performance Requirements

The North East Link Program must be developed in accordance with the EPRs, which define the minimum environmental outcomes that must be achieved during design, construction, and operation. The EPRs have been informed by the Minister for Planning's assessment of the Environment Effects Statement (EES), the Incorporated Document, relevant environmental legislation and policy requirements, and Project specific measures recommended by specialists.

This approach to the development of the EPRs has been used to minimise risk and avoid, reduce, or offset environmental impacts identified through the EES risk and impact assessment process.

The EPRs have been approved by the Minister for Planning as part of the Environmental Management Framework (EMF).

The EPRs are intended to minimise impacts, and the risk of harm to human health and the environment, to within reasonable limits, having regard to contextual factors and the practical delivery of the Project by informing the design, construction and operational approach used throughout all phases.

The EPRs are categorised into the following sections:

1. Environmental Management Framework (EMF)
2. Aboriginal Heritage (AH)
3. Air Quality (AQ)
4. Arboriculture (AR)
5. Business (B)
6. Contamination and Soil (CL)
7. Flora and Fauna (FF)
8. Ground Movement (GM)
9. Groundwater (GW)

10. Historical Heritage (HH)
11. Land Use Planning (LP)
12. Landscape and Visual (LV)
13. Noise and Vibration (NV)
14. Social and Community (SC)
15. Surface Water (SW)
16. Sustainability and Climate Change (SCC)
17. Traffic and Transport (TT)

This section of the UDLP lists all the EPRs and demonstrates how the Project, described in and delivered through this UDLP, would comply with the applicable EPRs.

\* In accordance with the EMF, the NEL UDLPs are not required to include or provide environmental management plans (such as Construction Environmental Management Plan, Worksite Environmental Management Plan, Operation Environmental Management Plan, etc.) that are noted in response to relevant EPRs; and an Independent Environment Auditor has been appointed to review and verify these environmental management plans and conduct audits of contractor works to assessment compliance.

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>1. Environmental Management Framework (EMF)</b>		
– Australian Standard AS/NZS ISO 14001:2015 Environmental management systems – requirements with guidance for use – EPA Publication 1834, Civil construction, building and demolition guide (EPA Victoria November 2020)		
<b>EMF1</b> D C O	<b>Deliver project in general accordance with an Environmental Management System</b> Develop, implement and maintain an Environmental Management System (EMS) that conforms to Australian Standard AS/NZS ISO 14001:2015 Environmental Management Systems – requirements with guidance for use through design, construction and operation of North East Link.	<b>Design, construction and operation</b> The Project has prepared an Environmental Management System (EMS) that conforms with Australian Standard AS/NZS ISO 14001:2015.  The EMS will guide the design and construction of the Project.  The EMS conforms with the Environmental Management Framework (EMF), which is a statutory requirement under the Incorporated Document.
<b>EMF2</b> D C O	<b>Deliver project in accordance with an Environmental Strategy and Management Plans</b> Prepare and implement an Environmental Strategy, Construction Environmental Management Plan (CEMP), Worksite Environmental Management plans (WEMPs), Operation Environmental Management Plan (OEMP) (operator only) and other plans as required by the Environmental Performance Requirements (EPRs) and in accordance with the Environmental Management Framework (EMF).  The Environmental Strategy, CEMP, WEMPs and OEMP must be developed in consultation with relevant stakeholders as listed in the EMF and as required by The State or under any statutory approvals.  The CEMP must be prepared with reference to best practice and EPA Publication 1834, Civil construction, building and demolition guide.	<b>Design, construction and operation</b> The Project has prepared an Environmental Management System (EMS) that conforms with Australian Standard AS/NZS ISO 14001:2015.  The EMS will guide the design and construction of the Project.  The EMS conforms with the Environmental Management Framework (EMF), which is a statutory requirement under the Incorporated Document.
<b>EMF3</b> D C O	<b>Audit and report on environmental compliance</b> Appoint an Independent Environmental Auditor (IEA) to: <ul style="list-style-type: none"> <li>– Review the Environmental Strategy, CEMP, WEMPs, OEMP and other plans required by the EPRs for compliance with the EMF and the EPRs</li> <li>– Undertake environmental audits of compliance with and implementation of the EPRs and the Environmental Strategy, CEMP, WEMPs, OEMP and other plans required by the EPRs.</li> </ul> The IEA must include persons with expertise, based on qualifications and experience, appropriate to allow the roles specified for the IEA in the EMF to be properly carried out; including a person(s) appointed by the EPA as an environmental auditor for contaminated soil and groundwater given the potential risk of acid sulfate soils, and to ensure that there is no risk of vapour or gas intrusion from former landfills.  Audits must occur during construction and for five years after opening of North East Link, or as otherwise agreed with the Minister for Planning.  A six monthly summary report must be provided to the Minister for Planning that summarises the findings of audits carried out during the reporting period. A close-out report must be provided to the Minister for Planning at the conclusion of the auditing and reporting period. The summary reports must be made publicly available on a project website for the period of construction and a minimum of five years after opening of North East Link.	<b>Design, construction and operation</b> NELP has appointed an Independent Environmental Auditor (IEA). Part of the IEA's role is to verify that the UDLP and all relevant EPR plans comply with the Project requirements. Implementation of the plans and elements of the UDLP (where relevant to the EPRs) is regularly audited by the IEA to ensure compliance with the EPRs.  The IEA provides a six-monthly summary audit report to the Minister for Planning that summarises the findings of audits carried out during the reporting period. The summary reports will be publicly available on the Project website during the specified timeframes.
<b>EMF4</b> D C	<b>Complaints Management System</b> Prior to the commencement of works a process for recording, managing, and resolving complaints received from affected stakeholders must be developed and implemented. The complaints management arrangements must be consistent with Australian Standard AS/NZS 100002:2014 Guidelines for Complaints Management in Organisations.  The complaints management system must be consistent with the Communications and Community Engagement Plan required under EPR SC3.	<b>Design and construction</b> A NEL Communications and Community Engagement Management Plan has been prepared as per the requirement under EPR SC3 and made available as per the Incorporated Document. The Plan includes a complaints management system consistent with Australian Standard AS/NZS 100002:2014.

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>2. Aboriginal Heritage (AH)</b> – Aboriginal Heritage Act 2006 – Aboriginal Heritage Regulations 2007		
<b>AH1</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<b>Comply with the Cultural Heritage Management Plan</b> Implement and comply with the Cultural Heritage Management Plan (CHMP) approved under the Aboriginal Heritage Act 2006.	A Cultural Heritage Management Plan (CHMP) No.15576 has been prepared for the North East Link Program and approved under the <i>Aboriginal Heritage Act 2006</i> . <b>Design</b> The CHMP identifies sensitive areas and registered sites within the Project area. The Project will comply with the conditions of the CHMP including: <ul style="list-style-type: none"> <li>– avoiding and minimising impacts on sensitive areas/exclusion zones identified in the CHMP.</li> <li>– ensuring that urban and landscape design considers Aboriginal places and any management triggers.</li> </ul> In addition to compliance with the CHMP, the Project has embedded Indigenous design and consultation with the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation (WWCHAC) throughout the UDLP preparation and design process.  <b>Construction</b> During construction, the Project will carry out development activities in compliance with CHMP No. 15576, including: <ul style="list-style-type: none"> <li>– CHMP inductions chaired by the Registered Aboriginal Party (RAP) representative for all personnel involved in ground disturbing activities</li> <li>– ongoing consultation with the WWCHAC for the Project area.</li> </ul>
<b>3. Air Quality (AQ)</b> – Environment Protection Act 2017 – Environment Protection Regulations 2021 – Environment Reference Standard (Ambient Air) – EPA Publication 1834, Civil construction, building and demolition guide (EPA Victoria November 2020)		
<b>AQ1</b> <span style="color: green;">C</span>	<b>Implement a Dust and Air Quality Management and Monitoring Plan to minimise air quality impacts during construction</b> Prepare and implement a Dust and Air Quality Management and Monitoring Plan(s), in consultation with EPA, which sets out best practice measures and controls to minimise and monitor impacts on air quality during construction. The plan(s) must: <ul style="list-style-type: none"> <li>– Set out how the project will monitor and control the emission of smoke, dust, fumes, odour and other pollution into the atmosphere during construction using best practice measures with reference to EPA Publication 1834, Civil construction, building and demolition guide.</li> <li>– Identify the main sources of dust and airborne pollutants, and the location of sensitive land uses relevant to each construction area.</li> <li>– Describe the monitoring requirements for each construction area including real-time particulate matter monitoring to manage dust control where deemed to be required, and with reference to sensitive receptors and utilising consistent and common monitoring equipment across the project.</li> <li>– Describe the air quality triggers for investigation, the mitigation measures, and the processes for implementing appropriate controls.</li> </ul>	<b>Construction</b> The Project has prepared a Dust and Air Quality Management and Monitoring Plan informed by the requirements of EPA Publication 1834 and in consultation with EPA Victoria. The Dust and Air Quality Management and Monitoring Plan has been verified by the IEA in compliance with the requirements of the EMF.

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
AQ2	<p><b>Design tunnel ventilation system to meet EPA requirements for air quality</b></p> <p>Design, construct and operate the permanent tunnel ventilation system in accordance with the requirements of the EPA Victoria Development Licence and the EPA Victoria Operating Licence. The design should include provision for retrofitting of tunnel ventilation particulates pollution control equipment if subsequently required.</p>	Not applicable - no road tunnels are proposed or required to be delivered within the area subject to this UDLP.
AQ3	<p><b>In-tunnel air quality performance standards</b></p> <p>Design, construct and operate a tunnel ventilation system to introduce and remove air from the tunnels to meet the in-tunnel air quality requirements for carbon monoxide (CO) and for NO2 listed below and in accordance with the EPA Victoria Development Licence and EPA Victoria Operating Licence.</p> <p>In tunnel air quality must meet the following CO standards:</p> <ul style="list-style-type: none"> <li>- Maximum peak CO value of 150 ppm</li> <li>- 15-minute average CO value of 50 ppm</li> <li>- 2-hour average CO value of 25 ppm.</li> </ul> <p>The tunnel ventilation system must also be designed and operated so that the tunnel average nitrogen dioxide (NO2) concentration is less than 0.5 ppm as a rolling 15-minute average.</p> <p>Develop and implement contingency measures to manage in-tunnel air quality in the event of incidents or emergencies.</p> <p>Apply best practice Australian management techniques to minimise impacts on health from in-tunnel exposure to PM2.5 and PM10.</p>	Not applicable - no road tunnels are proposed or required to be delivered within the area subject to this UDLP.
AQ4	<p><b>Monitor ambient air quality</b></p> <p>Develop and undertake an ambient air quality monitoring program in consultation with EPA Victoria to measure the air quality impacts of North East Link during construction and operation. The ambient air quality monitoring program must be undertaken at a minimum of six locations (including a site where the highest increases of air pollution are predicted to occur), unless otherwise agreed by EPA Victoria; include at least one year of monitoring before operation; continue for 5 years after commencement of North East Link operation; and, for the ventilation structures, be in accordance with the EPA Victoria Operating Licence. Monitoring results must be compared against the indicators and objectives (excluding odour) in Table 2.2 of the Environment Reference Standard (Ambient Air). Results (unvalidated) of the monitoring program are to be made publicly available on a website related to the project, or through EPA Victoria's Air Watch website, on a daily basis.</p>	<p><b>Construction and operation</b></p> <p>NELP has developed, and will be undertaking and reporting the results of, an ambient air quality monitoring program in consultation with EPA Victoria in accordance with this EPR.</p>
AQ5	<p><b>Monitor compliance of in-tunnel air quality and ventilation structure emissions</b></p> <p>Monitor the in-tunnel air quality and ventilation structure emissions during operation of the ventilation system to demonstrate compliance with EPR AQ2, EPR AQ3 and the EPA Victoria Operating Licence to the satisfaction of EPA Victoria. Report the monitoring results publicly after validation and in accordance with the EPA Victoria Operating Licence.</p> <p>If standards outlined in EPR AQ2, EPR AQ3 and the EPA Victoria Operating Licence are not met, report to EPA Victoria, investigate the cause of the exceedance, and take remedial action as appropriate to the satisfaction of EPA Victoria.</p>	<p><b>Operation</b></p> <p>NELP has developed, and will be undertaking and reporting the results of, an ambient air quality monitoring program in consultation with EPA Victoria in accordance with this EPR.</p>
AQ6	<p><b>Construction Haulage Vehicle Fleet</b></p> <p>Incentives must be provided for contractors and subcontractors to preferentially select on-road heavy vehicles for haulage that comply at a minimum with the Euro V European emission standards. The incentives must seek to increase the proportion of on-road heavy vehicles that comply at a minimum with Euro V European emission standards within the project's construction haulage fleet over the construction life of the project.</p>	<p><b>Construction</b></p> <p>Incentives and a procurement strategy will be developed to seek to increase the proportion of on-road heavy vehicles that comply, at a minimum, with Euro V European emission standards, within the Project's construction haulage fleet over the construction life of the Project.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>4. Arboriculture (AR)</b> – Planning and Environment Act 1987 – AS4970-2009 Protection of Trees on Development Sites – Guidelines for the removal, destruction or lopping of native vegetation, DELWP December 2017		
<b>AR1</b> 	<p><b>Develop and implement a Tree Removal Plan</b></p> <p>Develop and implement a Tree Removal Plan, as part of the CEMP, that identifies all trees within the Project boundary and includes:</p> <ul style="list-style-type: none"> <li>– Trees to be removed or retained as part of the works</li> <li>– Confirmation of the condition and arboricultural value of the amenity trees to be removed</li> <li>– The canopy area of all trees to be removed</li> <li>– The procedure for tree removal that addresses the requirements of EPR FF1, EPR FF2 and EPR FF5.</li> </ul> <p>Tree retention must be maximised to the extent practicable through detailed design and selection of construction methods to minimise canopy loss, and in accordance with EPR FF1, including by retaining trees where practicable and minimising potential impacts to trees. This includes the River Red Gum (Caltex Tree) at 39 Bridge Street, Bulleen.</p> <p>Arboricultural assessments are to verify existing details and inform the detailed design, Tree Removal Plan and Tree Canopy Replacement Plan (required by EPR AR3) in order to maximise tree retention and long-term viability of amenity plantings in accordance with Australian Standard AS4970:2009 Protection of Trees on Development Sites.</p> <p>The Tree Removal Plan must be informed by a pre-construction site assessment to confirm the area and number of trees and other vegetation proposed to be impacted. Trees to be retained must be protected in accordance with EPR AR2.</p> <p>Vegetation removal is to occur in a staged manner with removal only occurring once necessary for the current stage of works.</p> <p>The area and number of trees and other vegetation actually removed is to be confirmed through a post-construction assessment.</p> <p><b>Note:</b></p> <p>Planted amenity trees are trees and tree groups that are not considered to be ‘Scattered Trees’ nor located within Ecological Vegetation Classes (EVCs) as defined by Victoria’s Department of Environmental, Land, Water and Planning (DELWP) Guidelines for the removal, destruction or lopping of native vegetation.</p>	<p><b>Design</b></p> <p>A Vegetation Impact Assessment and associated workshops were undertaken in the early stages of design development, which identified impacts and retention opportunities to maximise amenity tree retention and therefore minimise tree canopy loss. All trees within the Project Boundary will be further assessed by a suitably qualified professional and the information gathered will be used in the design development to minimise impacts to trees as far as reasonably practicable.</p> <p>The output of the assessment is reflected on the Tree Retention and Removal Plans (Drawing Nos. NEL-STH-NSA-5900-UUD-DRG 9570 to 9575 in Attachment 2: Landscape Design), noting that the plans provide an overview of all trees (native and amenity) as to whether retained, removed or confirmed in the detailed design development.</p> <p>Consistent with the current findings, this UDLP provided for a high-level review of all trees within the UDLP boundary and confirmed that the retention of tree canopy had been maximised through the design response.</p> <p>Notwithstanding the above, the Project team are committed to further maximise tree retentions in the detailed design phase where possible. This will be achieved based on detailed arboricultural assessments, through which extent of tree retention may be furthered through construction methodology or detailed design.</p> <p><b>Construction</b></p> <p>A Tree Protection Plan and a Tree Removal Plan have been developed as a sub-plan to the Construction Environmental Management Plan (CEMP), which has been accepted by NELP and reviewed and verified by the IEA.</p> <p>Ongoing on-site inspections will be carried out by a suitably qualified professional to ensure all works are occurring in accordance with Australian Standard AS4970-2009 Protection of Trees on Development Sites.</p> <p>Trees subject to protection must be monitored for a three year period following completion of construction works in that location to assess ongoing viability, with maintenance or replacement of stressed or damaged specimens to be undertaken.</p> <p>A review of the design and construction footprint associated with this package has been undertaken in accordance with Australian Standard AS4970-2009 Protection of Trees on Development Sites. Tree retention has been maximised through thorough planning from early stages of design to construction and temporary works.</p> <p>During construction, site-specific Arboriculture Impact Assessments consider the relevant construction activities to identify specific mitigations measures required to protect retained trees. Such measures may include establishing tree protection zones (TPZs), structural root zones (SRZs), trunk and ground protection and restricting activities within the TPZ and SRZ.</p> <p>Ongoing on-site inspections will be carried out by suitably qualified arborists to ensure all works are occurring in accordance with Australian Standard AS4970-2009 Protection of Trees on Development Sites.</p> <p>Trees subject to protection must be monitored for a three year period following completion of construction works in that location to assess ongoing viability, with maintenance or replacement of stressed or damaged specimens to be undertaken.</p> <p>A Tree Protection Plan and a Tree Removal Plan have been developed as a sub-plan to the Construction Environmental Management Plan (CEMP), which has been accepted by NELP and reviewed and verified by the IEA.</p> <p>Vegetation removal is to occur in a staged manner, with removal only occurring as necessary for the current stage of works. Additionally, construction methods such as underground boring, hydro excavation and directional drilling will be employed where possible to limit or prevent impact to trees. The area and number of trees and other vegetation removed will be confirmed through a post-construction assessment. Adherence to the Tree Retention and Removal Plan will ensure retention is maximised to the extent practical.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
AR2 D C	<p><b>Implement a Tree Protection Plan(s) to protect trees to be retained</b></p> <p>The CEMP must include a Tree Protection Plan(s), which is to be developed and implemented in accordance with Australian Standard AS4970-2009 Protection of Trees on Development Sites. The Tree Protection Plan(s) must provide details of any tree protection actions that will ensure that trees proposed to be retained are adequately protected from the impact of construction or related activities, prior to those works being undertaken.</p> <p>Tree Protection Plans must be prepared based on detailed construction drawings and surveyed tree locations.</p> <p>Trees subject to protection must be monitored for a three-year period following completion of construction works in that location to assess ongoing viability, with maintenance or replacement of stressed or damaged specimens to be undertaken.</p>	<p><b>Design and construction</b></p> <p>Assessment of arboricultural impact detailing the number, location and extent of trees to be retained forms part of the design process, based on the final design and construction methodology. The assessment is based on arborist tree survey data, validated against feature survey to maximise accuracy and ensure tree protection data can be fully integrated into final construction drawings.</p> <p>Tree protection plans are prepared by a qualified arborist in accordance with Australian Standard AS 4970-2009 and outline the mechanisms through which retained trees will be protected through the construction period. These plans will also detail requirements for monitoring tree health during and post construction.</p> <p>Trees that meet the criteria for monitoring will be monitored by a suitably qualified professional arborist.</p> <p>The Project's Tree Protection Plan has been verified by the IEA in compliance with the requirements of the EMF and details the requirements that must be adhered to throughout construction associated with tree retention.</p>
AR3 D C	<p><b>Implement a Tree Canopy Replacement Plan</b></p> <p>Develop and implement a Tree Canopy Replacement Plan to replace the canopy of native vegetation and amenity plantings removed as a result of the project and achieve a net gain in tree canopy cover by 2045. The plan must:</p> <ul style="list-style-type: none"> <li>Show the location, size (including canopy spread) and species of replacement trees, in consultation with councils and other relevant land managers</li> <li>Specify requirements to support the long-term viability of all replacement plantings including appropriate soil requirements, establishment works and ongoing maintenance.</li> <li>Maintain at least a ratio of 2:1 for replacement of amenity plantings</li> <li>Replanting should generally follow the hierarchy of: <ul style="list-style-type: none"> <li>Within the North East Link Project boundary - as first priority, in locations in close proximity to where trees are removed</li> <li>Outside the Project boundary and within 400m walking catchment from where trees are removed</li> <li>Within Victorian Government and local Council land within the municipalities of Manningham, Boroondara, Nillumbik, Yarra, Whitehorse and Banyule outside the Project boundary</li> <li>Within the wider north east area of metropolitan Melbourne outside the Project boundary, if required.</li> </ul> </li> <li>Within the Project boundary, include understorey plantings in addition to the tree canopy replacement plantings where feasible in consultation with Councils and/or the land manager</li> <li>Specify requirements for the ongoing responsibility for maintenance and monitoring of the Tree Canopy Replacement Plan.</li> </ul> <p>The replacement planting should commence as soon as possible and in stages, once tree removal extent is confirmed and suitable replacement trees have been determined in consultation with relevant councils and authorities.</p> <p>A post-construction assessment is to be undertaken to confirm the extent of tree removal and that the Tree Canopy Replacement Plan will achieve the net gain target set out above.</p> <p>Note: all locations selected must provide for long-term tree growth</p>	<p><b>Design and construction</b></p> <p>A Tree Canopy Replacement Plan has been prepared and will be finalised for the Project, consistent with this EPR. The Plan is informed by current tree data from the EES and will be updated to capture validated data from a full arboricultural assessment of the Project corridor. This includes native and amenity vegetation so that canopy replacement can be accurately informed.</p> <p>As part of implementation of this Plan, the replanting program will ensure that the 2:1 ratio is met for amenity trees impacted by the Project and will fulfil other replanting requirements of this EPR (AR3). This replanting ratio is incorporated in the landscape design, where replanting will be prioritised within the Project where possible. Key locations for amenity replacement plantings include, but are not limited to, Koonung Creek Reserve, Koonung Creek Trail (north of the Freeway), Manningham Park Reserve, and wetland within the Project area.</p> <p>A post-construction vegetation reconciliation report will also be prepared to capture the extent of tree removal so that canopy replacement can be reassessed against target values to ensure it achieves the required net gain.</p> <p>Further engagement will occur with councils, NELP and landowners as relevant, to support the implementation of the Tree Canopy Replacement Plan as required by this EPR.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>5. Business (B)</b> – Planning and Environment Act 1987 – Land Acquisition and Compensation Act 1986 – Australian Standard AS/NSZ 10002:2014 – Guidelines for Complaint Management in Organisations		
<b>B1</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<b>Business disruption mitigation plan</b> Prepare and implement a Business Disruption Mitigation Plan in accordance with the Victorian Small Business Engagement Guidelines (Victorian Small Business Commission) to ensure that business disruption for small businesses, including all disrupted businesses in the Bulleen Industrial Precinct, arising from the project is mitigated to the extent practicable.	<b>Design and construction</b> A Business Disruption Mitigation Plan has been prepared for the Project to eliminate or minimise impacts on businesses within the Project area. Proposed impact mitigation and management strategies will be communicated with the Southern Business Liaison Group (SBLG), with opportunities for feedback on the rollout of activities to mitigate or manage impacts during construction, to ensure activities are fit-for-purpose and effective.  The Business Disruption Mitigation Plan has been verified by the IEA in compliance with the requirements of the EMF.
<b>B2</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<b>Business Relocation Strategy</b> MMTIA must develop and implement a Business Relocation Strategy to assist businesses directly affected by acquisition. The strategy must be developed in consultation with affected businesses, relevant local Councils, relevant local trader associations, and other affected stakeholders affected, immediately on approval of the EMF.  The strategy must include, but not be limited to: <ul style="list-style-type: none"> <li>– Identification of affected businesses and other relevant stakeholders</li> <li>– Provision of a program to support the relocation of businesses including identifying services and support programs.</li> <li>– Appointment of an independent specialised relocation adviser(s) to support affected businesses.</li> <li>– Procedures to disseminate information, including through the Business Liaison Group (EPR B8) regarding the business relocation strategy and services, key project milestones that may impact on business relocations, and other changes that may affect businesses during the closure of existing operations.</li> <li>– Assistance in the provision of targeted marketing and promotional initiatives to build community and customer awareness for relocated businesses.</li> <li>– Procedures to work with business and landowners to endeavour to reach agreement on the timeframe for possession of the land.</li> <li>– Procedures to engage with businesses and other stakeholders, and through which affected businesses and relevant local trader associations can provide comment or feedback in relation to the relocation strategy and its associated services.</li> </ul> The State should also work with councils to identify and assess the feasibility of alternative location options for displaced businesses.  In parallel with the Business Relocation Strategy, the independent specialised relocation adviser(s) must provide individual business planning and support to the businesses in the Bulleen Industrial Precinct, including to prepare and implement individual business plans prepared with each business in the Bulleen Industrial Precinct (except where a business has requested not to be part of such assistance) that: <ul style="list-style-type: none"> <li>– Understands at a fine-grained level their current operation</li> <li>– Desire to relocate or cease operations</li> <li>– Business needs for new sites</li> <li>– Preliminary specific site identification</li> <li>– Practical and reasonable assistance to implement these plans.</li> </ul> Note: the requirements of this EPR are in addition to any rights or entitlements available under compulsory acquisition legislation.	<b>Design and construction</b> NELP will develop and implement a Business Relocation Strategy, which will be complied with across the Project.  There are no businesses directly affected by acquisition within the area subject to this UDLP.

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>B3</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Employee Assistance Strategy</b></p> <p>MTIA must develop and implement an Employee Assistance Strategy to provide relevant workforce support measures for employees of businesses closing or relocating as a consequence of acquisition for the Project.</p> <p>The strategy must include, but not be limited to:</p> <ul style="list-style-type: none"> <li>- The identification of affected businesses and employees</li> <li>- Provide a co-ordinated link to support services for affected employees (for example, access to a range of services such as training advice, careers advice, resume workshopping, advice on government entitlements, referral to other job support services, and skills assessments)</li> <li>- The identification of relevant government agencies and support services</li> <li>- Procedures to disseminate information including through the Business Liaison Group (EPR B85), regarding the employee assistance strategy and services, key project milestones that may impact on business closures and relocations, and other changes that may affect businesses and their employees during the closure of existing operations.</li> </ul> <p>In parallel with the Employee Assistance Strategy, MTIA with appropriate expert advice, must prepare and implement a package of individual employee assistance plans prepared with and for each employee who requests it, in consultation with the employer, that:</p> <ul style="list-style-type: none"> <li>- Understands at a fine-grained level their future employment plans</li> <li>- Need for training and development</li> <li>- Factors that would influence their desire to remain employed with a Bulleen Industrial Precinct business</li> <li>- Practical and reasonable assistance to implement their assistance plan.</li> </ul>	<p><b>Design and construction</b></p> <p>NELP will develop and implement an Employee Assistance Strategy, in accordance with this EPR and applied across the Program.</p> <p>There are no businesses directly affected by acquisition within the area subject to this UDLP.</p>
<b>B4</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Minimise disruption to businesses from land acquisition and temporary occupation</b></p> <p>Minimise disruption to businesses from permanent acquisition or temporary occupation of land to the extent practicable, and work with affected businesses and land owners to endeavour to reach agreement on the terms for possession of the land in accordance with relevant legislation. Efforts to provide for Bulleen Art and Garden's continued operation from its current site should be undertaken.</p>	<p><b>Design and construction</b></p> <p>NELP will develop and implement a Business Relocation Strategy, in accordance with EPR B2 where relevant. The Strategy will be complied with across the Project to address any businesses affected by permanent acquisition or temporary occupation.</p> <p>There are no businesses directly affected by permanent acquisition within the area subject to this UDLP. Any temporary occupation affecting businesses will be minimised to the extent possible.</p>
<b>B5</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Minimise and remedy damage or impacts on third party property and infrastructure</b></p> <p>Through detailed design and construction, and in consultation with relevant land owners and parties as necessary, design and construct the works to minimise, to the extent practicable, impacts to, and interference with, third party property and infrastructure and to ensure that infrastructure and property is protected during construction and operation. Any damage caused to property or infrastructure as a result of North East Link must be appropriately remedied in consultation with the property or asset owner.</p>	<p><b>Design</b></p> <p>The design considers the risk of damage to third party property and infrastructure. Where possible, the footprint of the Project has been minimised to reduce the potential for any damage to private properties and existing infrastructure.</p> <p>Through the detailed design development process, potential impacts to third party properties and infrastructure will be considered and identified, and consultation with relevant property or asset owners undertaken as required. This will include identification of moderate to high-risk activities being undertaken adjacent to businesses/utilities. Implementation of elimination or mitigation measures could include a change in design/construction methodology, asset protection or monitoring (for instance).</p> <p><b>Construction</b></p> <p>Should damage be sustained to third party property or infrastructure that is determined to be caused by the Project, the damage will be appropriately remedied in consultation with the property or asset owner.</p>

## 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>B6</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Minimise access and amenity impacts on businesses</b></p> <p>Any reduction in the level of access, amenity, or function of any business or commercial facility must be minimised to the extent and duration necessary to carry out the relevant construction related works. Affected business and commercial facilities must be provided with adequate notification of potential impacts and temporary access arrangements.</p> <p>Emergency access must be maintained at all times. Access must be maintained for customers, delivery and waste removal unless there has been a prior arrangement with affected businesses.</p> <p>As well as minimising impacts above, temporary occupation of sites for construction must:</p> <ul style="list-style-type: none"> <li>- Minimise impacts on the viability of nearby businesses</li> <li>- Minimise adverse amenity impacts on views and amenity experience from nearby businesses</li> <li>- Minimise significant increases in travel time from residential areas to businesses and shopping precincts including Watsonia Village</li> <li>- Not reduce car parking available to shoppers and traders in shopping areas including Watsonia Village.</li> </ul> <p>All permanent access to business and commercial facilities affected by North East Link works is to be reinstated, or relocated as agreed with the relevant property owner, including associated landscaping and reinstatement works, and temporary access arrangements put in place for construction must be removed when relevant construction activities have ceased.</p>	<p><b>Design</b></p> <p>Impacts on access, amenity or function of businesses are minimised through the design process. Where there is a reduction, access will be reinstated or relocated as agreed with the relevant property owner.</p> <p><b>Construction</b></p> <p>Major access points at businesses will be maintained to ensure that operations of businesses continue during construction of the Project, wherever possible.</p> <p>The Project has prepared construction management plans that include measures for minimising access and amenity impacts during construction, including:</p> <ul style="list-style-type: none"> <li>- Traffic Management Plans (TMP)</li> <li>- Construction Environmental Management Plan (CEMP)</li> <li>- Noise and Vibration Management Plan</li> <li>- Dust and Air Quality Management Plan.</li> </ul> <p>Relevant management plans to facilitate this Project have been verified by the IEA to ensure compliance with the EMF requirements.</p>
<b>B7</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Protect utility assets</b></p> <p>Protect or, where required, relocate utility assets to the reasonable satisfaction of the service provider and/or asset owners.</p>	<p><b>Design and construction</b></p> <p>The Project design has considered major existing and proposed utilities and structures/permanent infrastructure (such as landscaping, shared use paths and buildings) has been located to avoid existing or proposed utilities where possible if avoidance measures cannot be achieved protection or relocation measures will be implemented with consultation with the utility service provider or asset owner.</p>
<b>B8</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Business liaison groups</b></p> <p>Contractors must participate in the Business Liaison Groups established and managed by the North East Link Program to facilitate business and stakeholder involvement for the construction phase of the project. Participation must include:</p> <ul style="list-style-type: none"> <li>- Attendance at meetings</li> <li>- Regular and timely reporting of design and construction activities and key project milestones</li> <li>- Provision of advance notice about changes to traffic and parking conditions and the duration of impact</li> <li>- Timely provision of relevant information, including response to issues raised by the group</li> <li>- Regular reporting and monitoring of business community feedback, impacts and discussion of mitigation measures and their effectiveness</li> <li>- Recording, managing and resolving complaints from affected businesses in accordance with the complaints management process required under EPR EMF4.</li> </ul>	<p><b>Design and construction</b></p> <p>The Project will participate in the Business Liaison Groups (BLGs) established by NELP as required. Participation will accord with the EPR requirements including providing feedback and responses to Project issues if raised.</p> <p>Feedback from the BLGs will be considered and used (as appropriate) to inform continuous improvement in project delivery, stakeholder engagement and construction operation</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
	<p><b>6. Contamination and Soil (CL)</b></p> <ul style="list-style-type: none"> <li>- <i>Dangerous Goods Act 1985</i></li> <li>- <i>Environment Protection Act 2017</i></li> <li>- <i>Environment Protection Regulations 2021</i></li> <li>- Environment Reference Standard (Land, Ambient Air)</li> <li>- <i>Occupational Health and Safety Act 2004</i></li> <li>- National Environment Protection (Assessment of Site Contamination) Measures 2013 (ASC NEPM)</li> <li>- PFAS National Environmental Management Plan 2018</li> <li>- <i>Occupational Health and Safety Regulations 2007</i></li> <li>- AS1940 Storage Handling of Flammable and Combustible Liquids</li> <li>- AS 4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil</li> <li>- AS 4439.2:1997 Wastes, sediments, and contaminated soils (Part 2: Preparation of leachates – Zero headspace procedure)</li> <li>- AS 4439.3:1997 Wastes, sediments, and contaminated soils (Part 3: Preparation of leachates – Bottle leaching procedure)</li> <li>- Industrial Waste Resource Guideline 702 Soil Sampling</li> <li>- Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soil, 2003</li> </ul>	<p><b>Project Response</b></p> <p>EPA Victoria publications:</p> <ul style="list-style-type: none"> <li>• 1698 Liquid Storage and Handling Guidelines</li> <li>• 1834, Civil construction, building and demolition guide (EPA Victoria November 2020)</li> <li>• 1827.1 Waste classification assessment protocol (EPA Victoria 2020)</li> <li>• 1828.2 Waste disposal categories – characteristics and thresholds (EPA Victoria 2021)</li> <li>• 1968: Guide to classifying industrial waste</li> <li>• 655.1 Acid Sulfate Soil and Rock</li> </ul> <p>EPA Victoria publications:</p> <ul style="list-style-type: none"> <li>• 1698 Liquid Storage and Handling Guidelines</li> <li>• 1834, Civil construction, building and demolition guide (EPA Victoria November 2020)</li> <li>• 1827.1 Waste classification assessment protocol (EPA Victoria 2020)</li> <li>• 1828.2 Waste disposal categories – characteristics and thresholds (EPA Victoria 2021)</li> <li>• 1968: Guide to classifying industrial waste</li> </ul>
<p><b>CL1</b></p> <p><b>C</b></p>	<p><b>Implement a Spoil Management Plan</b></p> <p>Prepare and implement a Spoil Management Plan (SMP) in accordance with relevant regulations, standards, and best practice guidelines and with reference to the Spoil Management Strategy contained within the EES (Technical Report O). The SMP must be developed in consultation with EPA Victoria, any relevant public land managers and, in respect of transport of spoil, the relevant road authorities. The SMP must include processes and measures to manage spoil, define roles and responsibilities and include requirements and methods for:</p> <ul style="list-style-type: none"> <li>- Complying with applicable regulatory requirements</li> <li>- Completing a detailed site investigation (in accordance with Australian Standards AS 4482.1:2005 Guide to the investigation and sampling of sites with potentially contaminated soil, AS 4439.2:1997 Wastes, sediments and contaminated soils (Part 2: Preparation of leachates – Zero headspace procedure), AS 4439.3:1997 Wastes, sediments and contaminated soils (Part 3: Preparation of leachates – Bottle leaching procedure), EPA Victoria Industrial Waste Resource Guideline 702 with respect to the twenty times leachable concentration threshold approach (the ‘Twenty Times Rule’), and EPA Publication 1828.2 Waste disposal categories – characteristics and thresholds) prior to any excavation of potentially contaminated areas to identify location, types and extent of impacts and to characterise spoil to inform spoil and waste management</li> <li>- Identifying the nature and extent of spoil (clean fill and contaminated spoil)</li> <li>- Identifying, in consultation with the waste industry, the capacity for contaminated spoil material to be treated and/or disposed</li> <li>- Storage, handling, transport, and disposal of spoil in a manner that protects human health and the environment and is consistent with the transport management plan(s) required by EPR T2. This includes requirements and methods for the appropriate treatment/ remediation of any contaminated excavated spoil and contaminated residual material left on site</li> <li>- Design and management of temporary stockpile areas</li> <li>- Minimising impacts and risks from disturbance of acid sulfate soils (as per EPR CL2), odour (as per EPR CL3) and vapour and ground gas intrusion (as per EPR CL4)</li> <li>- Transport of spoil along appropriate roads with reference to the transport management plan(s) required by EPR T2</li> <li>- Management of hazardous substances, including health, safety and environment procedures that address risks associated with exposure to hazardous substances for visitors, the general public; and local fauna; contain measures to control exposure in accordance with relevant regulations, standards and best practice guidance and to the requirements of WorkSafe and EPA Victoria; and include method statements detailing monitoring and reporting requirements</li> <li>- Identifying where any contaminated or hazardous material is exposed during construction (notably through former landfills, service stations and industrial land) and how it will be made safe for the public and the environment. Environmental values of land and National Environment Protection (Assessment of Site Contamination) Measures 2013 guidance on criteria protective of those environmental values must be considered for the land uses in these areas. This must include methods for: <ul style="list-style-type: none"> <li>- Construction of appropriate cover (soil, concrete, geofabric etc) such that no contamination is left exposed at the surface or where it may be readily accessed by the public and local fauna such that it cannot generate runoff or leachate during rain events</li> <li>- Maintenance of the cover</li> <li>- Identification of the nature and depth of the contaminants</li> <li>- Mitigating impacts during sub-surface works in those areas, e.g., drilling and excavation</li> </ul> </li> <li>- Monitoring and reporting</li> <li>- Identifying locations and extent of any industrial waste, priority waste, reportable priority waste, other waste, and the method for characterising industrial waste, priority waste, reportable priority waste and other waste prior to excavation</li> <li>-</li> </ul> <p>CL1 Continues over ...</p>	<p><b>Construction</b></p> <p>The Project has prepared a Spoil Management Plan (SMP) in consultation with the EPA and in accordance with relevant regulations, standards and best practice to manage spoil, define roles and responsibilities in line with this EPR.</p> <p>The SMP has been accepted by NELP and verified by the IEA in compliance with the requirements of the EMF.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>6. Contamination and Soil (CL) – Continued</b>		
	<ul style="list-style-type: none"> <li>Application of the <i>Environment Protection Act 2017</i> waste management hierarchy, including:               <ul style="list-style-type: none"> <li>Ongoing identification and, where practicable, adoption of options for the re-use of spoil</li> <li>Identification of options for management of spoil</li> <li>Identifying suitable sites for disposal of any waste. This includes identifying contingency arrangements for management of waste, where required, to address any identified capacity issues associated with the licensed landfill's ability to receive PIW and other waste</li> </ul> </li> <li>In areas used for temporary construction works, and the construction of surface water management works, contamination attributable to the project must be appropriately remediated in consultation with the relevant land manager.</li> </ul>	
<b>CL2</b> <b>C</b>	<p><b>Minimise impacts from disturbance of acid sulfate soil</b></p> <p>The SMP referenced in EPR CL1 must include requirements and methods to minimise impacts from disturbance of acid sulfate soil, including but not limited to:</p> <ul style="list-style-type: none"> <li>Characterising acid sulfate soil and rock prior to excavation</li> <li>Developing appropriate stockpile areas including lining, covering and runoff collection to prevent release of acid to the environment, including wetland, and impact to human health</li> <li>Identifying suitable sites for re-use management or disposal of acid sulfate soil and rock</li> <li>Preventing oxidation that could lead to acid formation, if possible, through cover and/or scheduling practices, i.e., ensuring acid sulfate soil and rock is not left in stockpiles for any length of time and/or addition of neutralising compounds.</li> </ul> <p>Requirements and methods must be in accordance with relevant sections of EPA Publication 1834 Civil construction, building and demolition guide, EPA Victoria Publication 655.1 Acid Sulfate Soil and Rock, and the Department of Sustainability and Environment's Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soil.</p>	<p><b>Construction</b></p> <p>The preparation of the SMP referenced in EPR CL1 has considered this EPR. From the initial investigations, the likelihood of potential acid sulfate soil is minimal within the area subject to this UDLP. Where potential acid sulfate soil (PASS) may be intersected, these areas will have specific management controls for the spoil generated as per the SMP for the construction phase.</p> <p>The SMP has been verified by the IEA in compliance with the requirements of the EMF.</p>
<b>CL3</b> <b>C</b>	<p><b>Minimise odour impacts during spoil management</b></p> <p>The SMP referenced in EPR CL1 must include requirements and methods for odour management (in accordance with EPA Victoria requirements) during the excavation, stockpiling and transportation of contaminated material including:</p> <ul style="list-style-type: none"> <li>Identifying the areas of contamination that may pose an odour risk</li> <li>Monitoring of the excavated material for possible odour risk</li> <li>Management measures to minimise odour.</li> </ul>	<p><b>Construction</b></p> <p>The SMP referenced in EPR CL1 has outlined control measures to eliminate or minimise odour if odorous spoil is encountered. This includes avoiding or minimising stockpiling of odorous materials, with direct removal and disposal being the primary objective. If stockpiling is required, odour mitigation measures will be implemented consistent with the controls within the SMP.</p> <p>The SMP has been verified by the IEA in compliance with the requirements of the EMF.</p> <p>The Project Communications and Community Engagement team will work with potentially impacted residents and Councils (where required), in the event that odour is anticipated or reported.</p>
<b>CL4</b> <b>C</b>	<p><b>Minimise risks from vapour and ground gas intrusion</b></p> <p>Relevant North East Link sections must be designed and constructed to prevent ingress of vapours and gases associated with any construction that interfaces with landfill sites or contaminated areas.</p> <p>The SMP referenced in EPR CL1 must include requirements for assessment, monitoring and management of intrusive vapour including potentially toxic, flammable, or explosive conditions in enclosed spaces or other impacts on human health and the environment. The plan must address vapour risks associated with excavation of impacted soils, extraction of impacted groundwater, open excavations and stockpiles and gases associated with landfills. This must include, where relevant:</p> <ul style="list-style-type: none"> <li>Securing of the excavation and stockpile area from the public and signage warning of open excavations</li> <li>Monitoring of vapours and odours while excavations are open, and stockpiles remain onsite</li> <li>Mitigation measures to prevent fugitive releases of vapours and gasses during construction.</li> </ul>	<p><b>Construction</b></p> <p>Considerations during both the design and construction phases of the project will be made to minimise interaction within historic landfill areas. Where interaction with areas of historic landfills is unavoidable, the outcome of contamination investigations will inform the risk of vapour and ground gas intrusion and identify further mitigations to be implemented during the construction phase.</p> <p>Implementation of the SMP will include:</p> <ul style="list-style-type: none"> <li>identification of areas that may pose vapour and ground gas intrusion risk (e.g., former landfills)</li> <li>assessment of design options (elimination/minimisation) and working with the Project's Environment Team to manage risk in line with the SMP.</li> <li>identifying opportunities to further limit the extent of excavation required within areas interfacing with landfill sites or contaminated soils, and implementation through detailed design and construction plans.</li> </ul> <p>In addition, hazardous material events are also captured in the Emergency Response and Incident Management Sub Plan, demonstrating further compliance with these EPR requirements.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
CL5 D O	<p><b>Manage chemicals, fuels and hazardous materials</b></p> <p>The CEMP and OEMP must include requirements for management of chemicals, fuels and hazardous materials including:</p> <ul style="list-style-type: none"> <li>– Minimising chemical and fuel storage on site and store hazardous materials and dangerous goods in accordance with the relevant guidelines and requirements</li> <li>– Complying with the Victorian WorkCover Authority and Australian Standard AS1940 Storage Handling of Flammable and Combustible Liquids and with reference to EPA Victoria Publication 1834 Civil construction, building and demolition guide and 1698 Liquid Storage and Handling Guidelines</li> <li>– Developing and implementing management measures for hazardous materials and dangerous substances, including: <ul style="list-style-type: none"> <li>– Creating and maintaining a dangerous goods register</li> <li>– Disposing of any hazardous materials, including asbestos, in accordance with regulations and relevant guidelines</li> <li>– Implementing requirements for the installation of bunds and precautions to reduce the risk of spills</li> </ul> </li> <li>– Contingency and emergency response procedures to handle fuel and chemical spills, including availability of on-site hydrocarbon spill kits.</li> </ul>	<p><b>Design</b></p> <p>Design has been prepared to avoid, where possible, chemical and fuel storages in locations that may impact on sensitive receivers and human health and the environment.</p> <p><b>Construction</b></p> <p>A Construction Environmental Management Plan (CEMP) has been prepared by the Project to respond to the requirements in this EPR. The CEMP has been verified by the IEA in compliance with the requirements of the EMF.</p> <p><b>Operation</b></p> <p>An OEMP will be prepared for the operation phase. Suitable contingency and emergency responses procedures will be developed in compliance with this EPR and relevant work safety requirements.</p>
CL6 O	<p><b>Minimise contamination risks during operation</b></p> <p>The OEMP must include requirements and methods for minimising contamination risks during operation and maintenance of North East Link including:</p> <ul style="list-style-type: none"> <li>– Maintaining relevant controls and preventing impacts during operation from contaminated material, odour, vapour, and gas</li> <li>– Maintaining controls implemented as part of North East Link to make any known areas of contamination or hazardous material that were exposed during construction (notably through former landfills) safe for the public and the environment</li> <li>– Mitigating impacts during sub-surface works in any identified areas of contamination or hazardous materials, e.g., drilling and excavation</li> <li>– Implementing contingency measures, where required, to address any potential contamination, odour, vapour or gas impacts or incidents.</li> <li>– Monitoring any potential mobilisation of contaminants towards ecological and recreational assets including the Yarra River and wetland and must include a groundwater monitoring program, intervention trigger levels and mitigation actions.</li> </ul>	<p><b>Operation</b></p> <p>NELP will prepare an OEMP to manage soil and groundwater conditions during operation.</p>

## 7. Flora and Fauna (FF)

- Environment Protection and Biodiversity Conservation Act 1999
- Conservation, Forests and Lands Act 1987
- Flora and Fauna Guarantee Act 1988
- Planning and Environment Act 1987
- Water Act 1989
- Wildlife Act 1975
- State Environment Protection Policy (SEPP) Waters 2018 (Vic)
- Environment Reference Standard (Water)
- Guidelines for the removal, destruction or lopping of native vegetation, DELWP December 2017

FF1 C	<p><b>Avoid and minimise impacts on fauna and flora</b></p> <p>The CEMP must include requirements and methods for avoiding, or where avoidance is not feasible minimising to the greatest extent reasonably possible, for:</p> <ul style="list-style-type: none"> <li>– Managing fauna that may be displaced due to vegetation removal or encountered on site during construction works in compliance with the <i>Wildlife Act 1975</i> and in consultation with public land managers where relevant.</li> <li>– Complying with the <i>Fisheries Act 1995</i></li> <li>– Undertaking pre-clearing surveys and inspections to confirm the on-site location of fauna immediately prior to habitat removal or, where relevant, works on waterways, and to assist fauna to safety as necessary.</li> <li>– Prepare a Kangaroo Management Plan for the project interface with Simpson Barracks and for the M80 interchange in consultation with DELWP.</li> <li>– Contingency and reporting procedures for the event that a listed threatened species is identified in order to mitigate any potential for significant impacts on the listed threatened species.</li> <li>– Protection of all vegetation inside and adjacent to the Project area that is not required to be removed, provided that such measures should be limited to activities under taken inside the Project boundary. Surveys, inspections and management actions must be undertaken by a qualified wildlife ecologist or aquatic ecologist with all necessary authorisations obtained prior to removal of fauna habitat.</li> </ul> <p>Surveys, inspections, and management actions must be undertaken by a qualified wildlife ecologist or aquatic ecologist with all necessary authorisations obtained prior to removal of fauna habitat.</p> <p>The CEMP must be prepared in consultation with relevant land managers.</p> <p>A copy of the flora and fauna sub plan(s) of the approved CEMP must be provided to relevant land managers and each relevant municipal Council.</p>	<p><b>Construction</b></p> <p>The Project has prepared a Construction Environmental Management Plan (CEMP) that incorporates the requirements for managing and minimising construction ecological impacts for relevant areas of the Project, as required and outlined under this EPR. This requires 'Avoid and Minimise' statements to be prepared for each stage of construction to justify removal of native vegetation and pre-clearance surveys undertaken prior to construction.</p> <p>A Flora and Fauna Management sub-plan has been prepared as part of the CEMP and has been provided to the relevant land managers and municipal councils as required. The CEMP has been verified by the IEA in compliance with the requirements of the EMF.</p>
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D Design C Construction O Operation

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>FF2</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Minimise and offset native vegetation removal</b></p> <p>Through detailed design, avoid, or where avoidance is not feasible, minimise to the greatest extent reasonably possible, the removal of native vegetation and fauna habitat and impacts on habitat connectivity, in particular in relation to <i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i> or <i>Flora and Fauna Guarantee Act 1988</i> listed threatened species. This must include minimising removal of Matted Flax Lily, the locally endemic Studley Park Gum, and the loss of potential foraging habitat for the Powerful Owl, Swift Parrot and Grey-headed Flying Fox. Key areas for minimisation efforts must include Simpson Barracks, Yarra Bend, Trinity Grammar wetland, Banksia Parkland, River Gum Walk Creek Bend Reserve and the Koonung Creek valley.</p> <p>The CEMP must include requirements for protection of native vegetation and listed species, including establishment of no-go zones to protect vegetation and habitat to be retained and Tree Protection Plan(s) as required by EPR AR2. No-go zones must also be established for:</p> <ul style="list-style-type: none"> <li>– The Grey-headed Flying fox Campsite within the Yarra Bend Park</li> <li>– Bolin Bolin Billabong</li> <li>– The Plains Grassy Woodland community between Enterprise Drive and the M80 Ring Road in Bundoora</li> <li>– The portion of 49 Greenaway Street, Bulleen (former Drive-in) heavily vegetated with trees along the Yarra River</li> <li>– Surface impacts in the Banyule Flats and Warringal Parklands and the Heide Museum of Modern Art.</li> </ul> <p>Every effort must be made to avoid ecological impacts in other locations that are known to provide high habitat value for significant fauna species.</p> <p>Where the removal of native vegetation is unavoidable the project must meet the offset requirements of the Guidelines for the removal, destruction or lopping of native vegetation, DELWP December 2017 except as otherwise agreed to by the Secretary to DELWP.</p> <p>Where appropriate for the landscape and project location, tree replacement (as required by EPR AR3) and landscaping is to use locally indigenous species (utilising seed collected from species within the project boundary where appropriate and practical), which are suited to the landscape profile and setting being revegetated and seek to maximise habitat value and connectivity for native fauna. Where practicable and appropriate for the landscape and project location, best practice measures must be applied to retain and reinstate topsoil to support growing conditions for native species. Where topsoil cannot be retained or reused for North East Link, alternative opportunities for reuse must be explored.</p>	<p><b>Design</b></p> <p>The Project is undertaking an arboriculture and ecological survey to inform constructability and detailed design and ensure that the removal of native vegetation and fauna habitat is minimised to the greatest extent reasonably possible. The arboricultural and ecological surveys are being prepared by suitably qualified professionals* and will inform the required native vegetation removal approvals.</p> <p>The design response presented through this UDLP is consistent with this EPR for the following reasons:</p> <ul style="list-style-type: none"> <li>– The overall footprint of the Freeway widening has been reduced in comparison with the Reference Design, minimising impacts on vegetation within adjoining open space and along road reserves.</li> <li>– New and replacement landscape planting has incorporated low maintenance, local species, with trees for canopy cover wherever possible.</li> </ul> <p><b>Construction</b></p> <p>A Flora and Fauna Management sub-plan has been developed as part of the CEMP. The Flora and Fauna Management Sub-plan includes processes and procedures to minimise native vegetation removal and impacts on fauna during construction. Offsets have been obtained for native vegetation removal within the Project boundary. The sub-plan will also include consideration of best practice measures to retain A Flora and Fauna Management sub-plan has been developed as part of the CEMP. The Flora and Fauna Management Sub-plan includes processes and procedures to minimise native vegetation removal and impacts on fauna during construction. Offsets have been obtained for native vegetation removal within the Project boundary. The sub-plan will also include consideration of best practice measures to retain and reinstate topsoil to support growing conditions for native species. Retention and reinstatement of topsoil will be consistent with the Sustainability Management Plan (SuMP) and Spoil Management Plan (SMP).</p> <p>The CEMP has been verified by the IEA in compliance with the requirements of the EMF.</p> <p><small>* Suitably qualified professionals may include project arborist and other specialists when required by EPRs in relation to ecological, habitat, heritage and/or cultural matters.</small></p>
<b>FF3</b> <span style="color: green;">C</span>	<p><b>Avoid introduction or spread of weeds and pathogens</b></p> <p>The CEMP must include measures to avoid the spread or introduction of weeds and pathogens during construction, including vehicle and equipment hygiene.</p>	<p><b>Construction</b></p> <p>A Construction Environmental Management Plan (CEMP) has been prepared and includes requirements for managing weeds and pathogens. The CEMP has been verified by the IEA in compliance with the requirements of the EMF.</p> <p>This EPR will support the objectives of the UDLP, where the naturalistic setting is to be enhanced by new planting. Control of weeds and pathogens contributes to the success of landscaping.</p>
<b>FF4</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Protect aquatic habitat</b></p> <p>In consultation with public land managers and Melbourne Water where relevant, design, locate and construct structures to minimise short and long term adverse impacts on riparian, riverbed and aquatic habitat in waterways and wetland, including billabongs. The CEMP must contain and require implementation of measures to minimise adverse impacts from construction activities on riparian, riverbed and aquatic habitat and aquatic fauna connectivity.</p>	<p><b>Design</b></p> <p>Where possible, as part of the drainage design solution, measures have been developed to minimise adverse impacts on riparian, riverbed and aquatic habitat in waterways. Particular consideration has been given to the proposed design of the relocated Valda Wetlands between Doncaster Road and Tram Road.</p> <p><b>Construction</b></p> <p>A Flora and Fauna Management sub-plan as part of the Construction Environmental Management Plan (CEMP) will be implemented, containing measures to minimise adverse impacts from construction activities on riparian, riverbed and aquatic habitat. Consultation will occur with public land managers and Melbourne Water as required.</p> <p>This EPR supports the objectives of the UDLP, where aquatic environments such as the Valda Wetlands are to be improved by more effectively treating stormwater runoff. Minimising and controlling impact to aquatic environments during construction will contribute to achieving the objectives of enhanced water quality objectives, both during and post construction.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
FF5 C	<p><b>Obtain Flora and Fauna Guarantee Act 1988 permits</b></p> <p>Prior to commencement of relevant works, a permit(s) must be obtained to take and destroy flora species protected under the <i>Flora and Fauna Guarantee Act 1988</i>.</p>	<p><b>Construction</b></p> <p>In accordance with the Construction Environmental Management Plan (CEMP) and relevant Worksite Environmental Management Plans (WEMPs), and in consultation with DEECA, the Project will obtain any necessary approvals and permits prior to construction activities that may destroy flora species protected under the <i>Flora and Fauna Guarantee Act 1988</i>.</p> <p>This EPR supports the objectives of tree retention within the UDLP.</p>
FF6 C O	<p><b>Implement a Groundwater Dependent Ecosystem Monitoring and Mitigation Plan</b></p> <p>Prepare and implement a Groundwater Dependent Ecosystem Monitoring and Mitigation Plan with no objection from the relevant water authorities.* The Groundwater Dependent Ecosystem Monitoring and Mitigation Plan must be informed by the groundwater modelling and groundwater monitoring required by EPR GW1 and EPR GW2, and must include (but not be limited to):</p> <ul style="list-style-type: none"> <li>– Identification of Groundwater Dependent Ecosystems (GDEs) predicted to be impacted prior to relevant construction commencing, including Bolin Bolin Billabong if relevant.</li> <li>– Details of the monitoring procedures and program for each relevant GDEs including monitoring periods appropriate to each GDE.</li> <li>– Specific procedures to monitor groundwater levels at GDEs predicted to be impacted including monitoring as close as possible to the GDE (considering ecological and access constraints) and for aquatic GDEs monitoring the surface water levels and quality as appropriate, including Bolin Bolin Billabong. These procedures should include: Groundwater monitoring of the alluvium by specific monitoring bores as close as possible to billabongs must be undertaken before, during and after construction. <ul style="list-style-type: none"> <li>– Groundwater monitoring of the alluvium by specific monitoring bores as close as possible to billabongs must be undertaken before, during and after construction.</li> <li>– Monitoring of water levels and water quality in billabongs must be undertaken before, during and after construction.</li> <li>– Estimation of water balance input and output volumes to and from billabongs must be undertaken before, during and after construction, based on analysis of the monitoring of water levels in the billabong and surrounding groundwater monitoring bores. Identification of relevant monitoring and management programs by Melbourne Water or other authorities and how these are referenced in the Groundwater Dependent Ecosystem Monitoring and Mitigation Plan</li> </ul> </li> <li>– Identification of relevant monitoring and management programs by Melbourne Water or other authorities and how these are referenced in the Groundwater Dependent Ecosystem Monitoring and Mitigation Plan.</li> <li>– Measures to mitigate monitored changes in water levels and quality that could impact the billabongs or other GDEs, which take into account the natural variability.</li> <li>– Where the survival of Groundwater Dependent Large Trees not requiring removal is predicted to be affected by groundwater drawdown during construction or operation based on groundwater modelling outputs, include measures to maintain the health of large trees.</li> <li>– In relation to any trees unlikely to survive during operation as a consequence of groundwater drawdown, processes for offsets to be obtained in accordance with EPR FF2.</li> <li>– The process for review of the Plan, including how the groundwater modelling and monitoring under EPR GW1 and EPR GW2 will be considered and the GDE monitoring program and periods subsequently reviewed.</li> </ul> <p>* All reasonable endeavours must be made to reach a position of no objection, provided the stakeholder responds within a reasonable timeframe.</p>	<p><b>Construction and operation</b></p> <p>The need for a Groundwater Dependent Ecosystem Monitoring and Mitigation Plan is determined as part of the Groundwater Management Plan (GMP) (through which the risk is assessed, and a determination made as to whether this Plan is triggered by the Project with relevant procedural requirements outlined).</p> <p>The Project has prepared a Groundwater Management Plan, which has the objective to avoid or minimise adverse effects on groundwater and groundwater-related receptors, including groundwater dependent ecosystems. It is also noted that during the pre-construction works phase, development site-specific risk assessments for the management zones, a monitoring program will be developed into the Groundwater Management Plan as well as the site-specific Worksite Environment Management Plans, and verified by the IEA (including the Groundwater Impact Assessment).</p> <p>The GMP has been verified by the IEA in compliance with the requirements of the EMF.</p>
FF7 C O	<p><b>Implement a salvage and translocation plan for Matted Flax-lily</b></p> <p>Where direct impacts on Matted Flax-lily occur, a salvage and translocation plan must be developed and implemented to the satisfaction of the Department of Environment, Land, Water and Planning and the Commonwealth Department of Environment and Energy, prior to the commencement of relevant works.</p>	<p><b>Construction and operation</b></p> <p>There are no Matted Flax-lily identified within the area subject to this UDLP.</p> <p>As NELP is responsible for implementation of the salvage and translocation plan for Matted Flax-lily in accordance with the EPBC Act approval conditions, the Project team will notify NELP should any Matted Flax-lily be identified.</p>

## 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
FF8 C	<p><b>Minimise intense noise and vibration impacts on Australian Grayling</b></p> <p>The CEMP must include and require implementation of reasonable measures to avoid and mitigate intense noise and vibration impacts in or near the Yarra River (e.g., from activities such as pile driving and similar activities). This must include, to the extent practicable:</p> <ul style="list-style-type: none"> <li>– Selection of work methods to minimise noise and vibration</li> <li>– Avoiding activities that may generate intense noise and vibration and impact on the Australian Grayling during critical migration or breeding periods (March to June, September to November) as defined within the National Recovery Plan for the Australian Grayling <i>Prototroctes maraena</i> (Backhouse, G, Jackson, J &amp; O'Connor, J 2008)</li> <li>– Management and monitoring of noise and vibration in accordance with the CNVMP (EPR NV4).</li> </ul>	<p><b>Construction</b></p> <p>The Project has developed and will implement the Flora and Fauna Management Sub-plan and the Construction Noise and Vibration Management Plan (CNVMP).</p> <p>Programming of excessive noise or vibration generating activities may need to be reviewed against migration and breeding periods, or alternative methods of construction considered (where feasible).</p> <p>These management plans have been verified by the IEA in compliance with the requirements of the EMF.</p>
FF9 D C	<p><b>Protect fauna habitat values in existing waterbodies that are modified for drainage purposes</b></p> <p>Where existing waterbodies within or near the project boundary are to be modified for drainage purposes (for example Simpson's Lake, billabongs, and the southernmost waterbody in the Freeway golf course), the CEMP must include and require implementation of measures to minimise impacts on waterbirds and other fauna that use the wetland including:</p> <ul style="list-style-type: none"> <li>– Retain dead and alive standing trees and other vegetation in and surrounding the waterbody.</li> <li>– As far as practicable, undertake activities outside the typical nesting period for waterbirds (typically Sept to Jan).</li> <li>– Minimise the construction period to the extent practicable and refill the wetland post construction if they have been drained.</li> <li>– Use of gross pollutant traps and water quality treatment measures to the requirements of the relevant waterway manager.</li> </ul>	<p><b>Design</b></p> <p>The Project has been designed to avoid and minimise disturbance to existing waterbodies, particularly Koonung Creek and associated waterbodies. For existing waterbodies that are being modified by the Project, water quality will be enhanced through sediment ponds and other treatment measures.</p> <p><b>Construction</b></p> <p>The Project has developed and will implement the Flora and Fauna Management sub-plan, as part of the Construction Environmental Management Plan (CEMP) to minimise disturbance to existing waterbodies and nesting periods for water birds. The CEMP will include and implement measures to minimise impacts on aquatic fauna during the construction phase.</p>
FF10 D C	<p><b>Studley Park Gum Mitigation</b></p> <p>To mitigate impacts on the Studley Park Gum, a Studley Park Gum Management Framework must be developed, and corresponding management plan must be developed and implemented in consultation with DELWP.</p>	<p><b>Design and construction</b></p> <p>NELP have commissioned a specialist ecologist to review the potential presence of <i>Eucalyptus x studleyensis</i> within the area subject to this UDLP. Any required action will be determined based on the outcome of the field assessment and managed in accordance with relevant requirements in consultation with the Department of Energy, Environment and Climate Action (DEECA).</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>8. Ground Movement (GM)</b>		
<b>GM1</b> D C	<p><b>Design and construction to be informed by a geotechnical model and assessment</b></p> <p>Develop and maintain geological and groundwater model(s) (as per EPR GW1) to inform tunnel and trench design and the construction techniques to be applied for the various geological and groundwater conditions. The model(s) are to:</p> <ul style="list-style-type: none"> <li>Identify sensitive receptors that may be impacted by ground movement.</li> <li>Inform monitoring of ground movement and ground water levels prior to construction to identify pre-existing movement.</li> <li>Inform tunnel design and the construction techniques to be applied for the various geological and groundwater conditions.</li> <li>Assess potential drawdown and identify trigger levels for implementing additional mitigation measures to minimise potential primary consolidation settlement.</li> <li>Assess potential ground movement from excavation and identify trigger levels for implementing additional mitigation measures to minimise potential ground movement.</li> </ul>	<p><b>Design and construction</b></p> <p>A geological and groundwater model has been developed to inform expected ground conditions and groundwater management requirements. The Ground Movement Plan outlines a procedure for identifying high risk activities that have the potential to cause ground movement. Mitigation measures are to be appropriately implemented in response to the Ground Movement Risk Assessment.</p>
<b>GM2</b> D C	<p><b>Implement a Ground Movement Plan to manage ground movement impacts</b></p> <p>Develop and implement a Ground Movement Plan(s). The Ground Movement Plan must be informed by EPR GM1 and EPR GW1 (predictive model) and:</p> <ul style="list-style-type: none"> <li>Address the location of structures/assets which may be susceptible to damage by ground movement.</li> <li>Identify baseline ground movement monitoring prior to construction. A baseline monitoring report is to be compiled summarising the results of the baseline surveys undertaken and included in the plan.</li> <li>Identify appropriate ground movement impact acceptability criteria.</li> <li>Identify appropriate mitigation measures should the geotechnical model (EPR GM1), predictive groundwater model (EPR GW1), or subsequent monitoring program indicate acceptability criteria may not be met.</li> <li>Establish ground movement monitoring requirements for the area surrounding proposed project works to measure ground movement consistency with the anticipated ground movement in the predictive model.</li> </ul>	<p><b>Design and construction</b></p> <p>A Ground Movement Plan has been developed and will be implemented during the construction phase. This management plan will respond to and comply with all items as listed in this EPR. Based on the results of preliminary modelling and local geological conditions, it is unlikely that there will be any material impacts to buildings or structures in proximity to works areas within this UDLP.</p> <p>The Ground Movement Plan has been verified by the IEA in compliance with the requirements of the EMF.</p>
<b>GM3</b> C	<p><b>Carry out Condition surveys for potentially affected property and infrastructure</b></p> <p>Conduct condition survey(s) of property and infrastructure predicted to be affected by ground movement based on the results of the geological and groundwater model (EPR GM1) or, where a property owner reasonably expects to be potentially affected and has requested a pre-construction condition survey. Develop and maintain a database of pre-construction and as-built condition information for each potentially affected structure identified as being in an area susceptible to damage (see EPR GM1) or where a property owner has requested a pre-construction condition survey, specifically including:</p> <ul style="list-style-type: none"> <li>A list of identified structures/assets which may be susceptible to damage resulting from ground movement resulting from project works.</li> <li>Results of pre-construction condition surveys of structures, pavements, significant utilities, and parklands to establish baseline conditions and potential vulnerabilities.</li> <li>Records of consultation with land owners in relation to the condition surveys.</li> <li>Post-construction stage condition surveys conducted, where required, to ascertain if any damage has been caused as a result of project works.</li> <li>Pre-and post-condition assessments must be proactively shared with the property owner.</li> <li>All stakeholder engagement activities must be undertaken in accordance with the Communications and Community Engagement Plan (see EPR SC2).</li> </ul>	<p><b>Construction</b></p> <p>Condition surveys are being undertaken for property and subsurface assets as part of the site investigation enabling works phase. As per the Ground Movement Plan, condition surveys are to be undertaken on assets and structures that have been identified to be at risk of damage from ground movement.</p>
<b>GM4</b> C	<p><b>Rectify damage to properties and assets impacted by ground movement or settlement</b></p> <p>For properties and assets (including natural landscapes and parklands) damaged by ground movement caused by the project, undertake necessary repair works or other actions as agreed with the relevant property or asset owner (or land manager). For places listed on the Victorian Heritage Register, consultation with Heritage Victoria must be undertaken.</p> <p>Establish an independent mediation process for the assessment of claims for property and asset damage that cannot be agreed between the Project and the property or asset owner.</p>	<p><b>Construction</b></p> <p>It is unlikely that the Project scope will trigger any issues associated with ground movement. Verification surveys will be periodically undertaken to monitor potential movement. There are no places on the Victorian Heritage Register that will be impacted by Project civil works.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>9. Groundwater (GW)</b> – Water Act 1989 – Water Industry Regulations 2006 (Vic) – Environment Protection Act 2017 – Environment Protection Regulations 2021 – State Environment Protection Policy (SEPP) Waters 2018 – Environment Reference Standard (Land, Water) – VicRoads Integrated Water Management Guidelines (June 2013)\ EPA Publications: – 1834, Civil construction, building and demolition guide (EPA Victoria November 2020) – 275 (1991) Construction techniques for sediment pollution control – 668 (2006) Hydrogeological assessment groundwater quality) guidelines – 669 (2000) Groundwater Sampling Guidelines – Ministerial Guidelines for Groundwater Licensing and the Protection of High Value Groundwater Dependent Ecosystems (2015) – Australian groundwater modelling guidelines (Barnett et al. 2012)		
<b>GW1</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<b>Design and construction to be informed by a groundwater model</b> Develop a predictive and numerical groundwater model in consultation with EPA Victoria, informed by field investigations, to predict changes in groundwater levels and flow and quality, as they are affected by construction, and develop mitigation strategies, as per EPR GM1. The groundwater model must be of a standard that is at least comparable to the modelling documented within the Report on Additional Groundwater Modelling prepared by GHD and dated July 2019 and must be updated to take account of any changes to construction techniques or operational design features, and additional monitoring data from EPR GW2. The groundwater model must be developed with a process that involves independent review by the Independent Environmental Auditor consistent with the Australian Groundwater Modelling Guidelines (June 2012).	<b>Design</b> The current numerical groundwater model (NGM) will be progressively upgraded and recalibrated to account for changes in design.  <b>Construction</b> The NGM will be verified and updated during construction based on the findings of site investigations and ongoing baseline monitoring data.
<b>GW2</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<b>Monitor groundwater</b> Develop and implement a pre-construction, and construction groundwater monitoring program to: <ul style="list-style-type: none"> <li>– Establish baseline water level and quality conditions throughout the study area, including the delineation (to the extent practicable) of those portions of existing contaminant plume(s) that may be impacted by the project.</li> <li>– Calibrate the predictive model prior to commencement of construction, manage construction activities, and verify the model predictions.</li> <li>– Assess the adequacy of proposed design and construction methods, and where required, identify, and implement any additional measures required to mitigate impacts from changes in groundwater levels, flow, and quality.</li> </ul> A post-construction groundwater monitoring program must be developed and implemented to: <ul style="list-style-type: none"> <li>– Confirm the acceptability of resultant water quality and water level recovery (and potential mounding) as predicted by the numerical groundwater model. Acceptability is to be assessed with consideration to the Groundwater Dependent Ecosystem Monitoring and Mitigation Plan (as required by EPR FF6) and other identified environmental values of groundwater.</li> <li>– Confirm the effectiveness of applied measures as identified in the Groundwater Management Plan (refer EPR GW4) and if required, identify and implement contingency measures to restore groundwater to an acceptable level.</li> </ul> The duration of post-construction monitoring must be a minimum of two years or until acceptable restoration of groundwater and a relatively stable hydrogeological regime, taking into account prevailing climatic conditions and natural variability, has been confirmed by the Independent Environmental Auditor, in consultation with EPA Victoria and Melbourne Water. The pre-construction, construction and post-construction monitoring program(s) must be developed in consultation with EPA Victoria and Melbourne Water, and be consistent with EPA Victoria Publication 668 Hydrogeological assessment groundwater quality guidelines, EPA Victoria Publication 669 Groundwater Sampling Guidelines, and the State Environment Protection Policy (Waters).	<b>Design</b> In the design phase, a staged approach has been adopted to manage groundwater monitoring and meet the requirements of this EPR. The approach includes development of an initial monitoring program to support design.  <b>Construction</b> The construction phase will be informed by site-specific risk assessments for groundwater management zones, and the groundwater monitoring strategy will be implemented. The Project has prepared a Groundwater Monitoring Plan (GWP) that outlines this strategy, and has been developed in consultation with the Victorian Environment Protection Authority and Melbourne Water. The GMP has been verified by the IEA in compliance with the requirements of the EMF.

## 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
GW3	<p><b>Minimise changes to groundwater levels through tunnel and trench drainage design and construction methods</b></p> <p>Design long term tunnel and trench drainage and adopt construction methods which minimise changes to groundwater levels during construction and operation to manage, mitigate and/or minimise to the extent practicable:</p> <ul style="list-style-type: none"> <li>- Requirements for groundwater management and disposal</li> <li>- Mobilisation of contaminated groundwater</li> <li>- Dewatering and potential impacts of acid sulfate soils, including both unconsolidated sediments and lithified sedimentary rock</li> <li>- Potential impacts on waterways and potential groundwater dependent ecosystems, including terrestrial ecosystems</li> <li>- Any other adverse impacts of groundwater level changes such as subsidence. Design and implement engineering control measures and/or ground treatment to limit to the extent practicable groundwater inflow and groundwater drawdown during excavation, construction and operation of tunnels and trenches, cross passages and subsurface excavations.</li> </ul> <p>Design and implement engineering control measures and/or ground treatment to limit to the extent practicable groundwater inflow and groundwater drawdown during excavation, construction and operation of tunnels and trenches, cross passages and subsurface excavations.</p> <p>The Groundwater Management Plan (as required by EPR GW4) must contain measures and/or controls to minimise groundwater inflow during construction to excavations and groundwater drawdown, including contingency measures that should monitor and indicate adverse impacts that are occurring. These must include measures to:</p> <ul style="list-style-type: none"> <li>- Minimise to the extent practicable reduction or loss of groundwater discharge to waterways or loss of water availability for terrestrial ecosystems.</li> <li>- Manage, mitigate and minimise the oxidation of acid sulfate soil materials and acidification of groundwater.</li> <li>- Manage, mitigate and minimise any movement of contamination that is identified.</li> <li>- Manage, mitigate and minimise impacts on environmental values and risk of vapour intrusion.</li> <li>- Ensure that groundwater seepage is collected, treated, and disposed during construction in accordance with the <i>Environment Protection Act 2017</i> waste management hierarchy and EPA Victoria requirements. Obtain a trade waste agreement from the relevant water authority where disposal to sewer is required or approval from EPA and the relevant water authority (as required) if discharge to waterways is determined to be appropriate.</li> </ul>	<p>This UDLP does not include any road tunnels; therefore, this requirement for tunnel and trench drainage design is not relevant to the scope of this UDLP.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>GW4</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Implement a Groundwater Management Plan to Protect groundwater quality and manage groundwater interception</b></p> <p>A Groundwater Management Plan must be developed in consultation with EPA Victoria and Melbourne Water and implemented to protect groundwater quality and manage interception of groundwater including documenting the measures required to achieve EPR GW2 and EPR GW3. The Groundwater Management Plan must be informed by the groundwater modelling required by EPR GW1 and updated where required in response to modelling results, new information resulting from the monitoring programs required by GW2 and assessment of the adequacy or effectiveness of controls.</p> <p>The Groundwater Management Plan must include requirements and construction methods to protect groundwater quality including where appropriate, but not limited to:</p> <ul style="list-style-type: none"> <li>– Selection and use of sealing products, caulking products, lubricating products and chemical grouts during construction that will not diminish the groundwater quality.</li> <li>– Selection and use of fluids for artificial recharge activities that will not diminish the groundwater quality.</li> <li>– Requirements to ensure compatibility of construction material with groundwater quality to provide long term durability for infrastructure design life.</li> <li>– Design and development of drainage infrastructure that minimises clogging and maintenance risks from dissolved constituents in groundwater precipitating out of solution.</li> <li>– Measures to assess, remove and dispose of contaminated groundwater and impacted soils associated with excavation and construction.</li> <li>– Reinjection borefields for hydraulic control of drawdowns (or contaminated groundwater plumes)</li> <li>– Remedial grouting.</li> </ul> <p>The Groundwater Management Plan must include requirements and methods for management of groundwater interception during construction including where appropriate, but not limited to:</p> <ul style="list-style-type: none"> <li>– Identification, treatment, disposal and handling of contaminated seepage water and/or slurries including vapours in accordance with relevant legislation and guidelines</li> <li>– Assessment of barrier/damming effects</li> <li>– Subsidence management</li> <li>– Dewatering and potential impacts on acid sulfate soils, including both unconsolidated sediments and lithified sedimentary rock</li> <li>– Protection of waterways and potential groundwater dependent ecosystems</li> <li>– Management of unexpected contaminated groundwater e.g., using treatments, hydraulic controls, grouting and exclusion methods</li> <li>– Management of possible impact to groundwater monitoring and management by third parties of existing contamination plumes</li> <li>– Contingency actions when interventions are required.</li> </ul> <p>The Groundwater Management Plan must also include a review to confirm the status of potential use of extraction bores within the estimated construction drawdown area. Where required, measures must be developed and implemented, to the satisfaction of Southern Rural Water, to maintain water supply to identified, impacted groundwater users.</p>	<p><b>Design</b></p> <p>The design of the Project has considered, and will address through detailed design, any groundwater potential impacts and suitable mitigation outcomes.</p> <p><b>Construction</b></p> <p>A Groundwater Management Plan (GMP) has been developed in consultation with the EPA and Melbourne Water and implemented to protect groundwater quality and manage interception of groundwater including documenting the measures required to achieve EPR GW2 and EPR GW3.</p> <p>The GMP has been verified by the IEA in compliance with the requirements of the EMF.</p>
<b>GW5</b> <span style="color: green;">O</span>	<p><b>Manage groundwater during operation</b></p> <p>Prepare as part of the OEMP and implement measures for management, monitoring, reuse where possible and disposal of groundwater inflows during operation that comply with relevant legislation and guidelines (and include provisions of EPR FF6 where relevant), including but not limited to:</p> <ul style="list-style-type: none"> <li>– State Environment Protection Policy (Waters)</li> <li>– Environment Reference Standard (Land)</li> <li>– <i>Environment Protection Regulations 2021</i></li> <li>– <i>Water Act 1989</i> and <i>Water Industry Regulations 2006</i></li> <li>– <i>Occupational Health and Safety Act 2004</i> and <i>Occupational Health and Safety Regulations 2017</i>.</li> </ul> <p>The OEMP must include contingency measures and emergency response plans if unexpected groundwater contamination is encountered and requires disposal.</p> <p>A trade waste agreement from the relevant water authority must be obtained in accordance with regulatory requirements, where disposal to sewer is proposed. Approval from EPA and the relevant water authority (as required) must be obtained in accordance with regulatory requirements, where discharge to waterways is proposed.</p>	<p><b>Operation</b></p> <p>An Operational Environmental Management Plan (OEMP) will be prepared by NELP (for the operation phase) to manage groundwater during operation.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>10. Historical Heritage (HH)</b> – Heritage Act 2017 – Guidelines for Investigating Historical Archaeological Artefacts and Sites, Heritage Victoria 2014		
<b>HH1</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<b>Design and construct to minimise impacts on heritage</b> Undertake detailed design of the permanent and temporary works to minimise impacts to the greatest extent practicable on the cultural heritage values of heritage places in consultation with Heritage Victoria and/or local councils (as applicable). Prior to commencement of works with capacity to affect heritage places, structures or features, directly or indirectly, develop and implement in consultation with the relevant heritage authority: <ul style="list-style-type: none"> <li>– Physical protection measures for potentially affected heritage places, structures or features as appropriate</li> <li>– Where required, a methodology for any required dismantling, storage or reinstatement of heritage fabric (with reference to the ICOMOS Burra Charter 2013) and works to ensure an appropriate setting if relocation is required.</li> </ul>	<b>Design</b> One heritage tree, known as English Oak, formally described as Quercus robur and located adjacent to Doncaster Park and Ride (on Doncaster Road) is protected by a Heritage Overlay (Schedule 42, HO42) under the Manningham Planning Scheme. The Project design ensures minimal impacts on this tree and the heritage place where HO42 protects. A separate UDLP will be developed for Doncaster Park and Ride. No other heritage places are identified within the Project area.  <b>Construction</b> The heritage tree will be assessed by suitably qualified professionals* in accordance with Australian Standard AS4970-2009 Protection of Trees on Development Site. The arboricultural assessment report will consider the physical setting of the heritage place and identify mitigation strategies including physical protection measures appropriate to the heritage place during the construction phase.  <small>* Suitably qualified professionals may include project arborist and other specialists when required by EPRs in relation to ecological, habitat, heritage and/or cultural matters.</small>
<b>HH2</b> <span style="color: green;">C</span>	<b>Implement an Archaeological Management Plan to avoid and minimise impacts on historic archaeological sites and values</b> Develop and implement an Archaeological Management Plan in consultation with Heritage Victoria detailing measures to avoid, minimise, mitigate and manage disturbance of archaeological sites and values affected by the project. Undertake investigations in accordance with the Guidelines for Investigating Historical Archaeological Artefacts and Sites, Heritage Victoria 2015 and to the satisfaction of the Executive Director, Heritage Victoria. The Archaeological Management Plan must include: <ul style="list-style-type: none"> <li>– Requirements for background historical research, excavation methodology, research design, reporting and artefact management, artefact conservation, and analysis.</li> <li>– Protocols for managing previously unidentified historical archaeological sites discovered during the works.</li> </ul>	<b>Construction</b> The Project has a contingency plan in place as part of the Construction Environmental Management Plan (CEMP), as there are no identified Victorian Heritage Inventory (VHI) sites within the Project area.
<b>HH3</b> <span style="color: green;">C</span>	<b>Monitor condition of heritage sites</b> Undertake pre-construction and post-construction condition survey(s) in accordance with EPR GM3 for heritage places at risk of impact from settlement and structural integrity disturbance as a result of the project. Measures to manage and monitor potential vibration impacts on heritage places during construction must be implemented in accordance with the Construction Noise and Vibration Management Plan required by EPR NV4 and Groundwater Management Plan required by EPR GW4. Report the results of monitoring for heritage places to the Executive Director, Heritage Victoria and take remedial action, if required, to the satisfaction of the Executive Director, Heritage Victoria.	<b>Construction</b> The Project has a contingency plan in place as part of the Construction Environmental Management Plan (CEMP), as there are no identified Victorian Heritage Inventory (VHI) sites within the Project area. Should any VHI sites be identified as potentially impacted as part of the Project, archival photographic recording will be undertaken in accordance with Heritage Victoria guidelines.
<b>HH4</b> <span style="color: green;">C</span>	<b>Undertake archival photographic recording</b> Prior to commencement of relevant works, undertake archival photographic recording of all heritage places (including trees) and their settings, demolished or modified by the works in accordance with Heritage Victoria's specification for the archival photographic recording of heritage places or alternative applicable Heritage Victoria guidelines as updated, to the satisfaction of the Executive Director, Heritage Victoria.	<b>Construction</b> The Project has a contingency plan in place as part of the Construction Environmental Management Plan (CEMP), as there are no identified Victorian Heritage Inventory (VHI) sites within the Project area. Should any VHI sites be identified as potentially impacted as part of the Project, archival photographic recording will be undertaken in accordance with Heritage Victoria guidelines.
<b>HH5</b> <span style="color: green;">C</span>	<b>Minimise impacts on heritage trees</b> Comply with any requirements of Heritage Victoria if the trees that are to be impacted by the project are listed on the Victorian Heritage Register.	<b>Construction</b> The Project has a contingency plan in place as part of the Construction Environmental Management Plan (CEMP), as there are no identified Victorian Heritage Register trees.

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>11. Land Use Planning (LP)</b> – Planning and Environment Act 1987		
<b>LP1</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<b>Minimise land use impacts</b> The project must be designed and constructed to: <ul style="list-style-type: none"> <li>– Minimise the construction and design footprint and avoid, or, where avoidance is not feasible, minimise to the greatest extent reasonably possible, any temporary and permanent impacts on the following land uses:               <ul style="list-style-type: none"> <li>– Parks and reserves including passive and active open space and pathways</li> <li>– Significant landscapes including those around the Yarra River</li> <li>– Other sensitive land uses such as educational facilities</li> <li>– Sport, recreational and community facilities</li> <li>– Residential properties</li> <li>– Commercial and industrial sites</li> <li>– Sites of identified cultural or social value including Heide Museum of Modern Art and Bulleen Art and Garden.</li> </ul> </li> <li>– Consolidate or minimise the fragmentation of, and provide access to, residual land parcels to support future viable land use to the extent practicable.</li> </ul>	<b>Design</b> The Project is designed to minimise land use impacts by way of reducing the construction and design footprint to the extent feasible, practical and reasonable, with particular regard to impacts on public open space, educational facilities, recreational and community facilities and residential and commercial sites. Specifically, key examples in the Project design demonstrating minimised impacts are outlined as follows: <ul style="list-style-type: none"> <li>– Parks and Reserves, including passive and active open space and pathways:               <ul style="list-style-type: none"> <li>– Any impacts to existing parks and reserves are minimised by reducing the interface with sensitive abuttals directly. For instance, the works surrounding Elgar Park will be sensibly designed in response to direct interfaces during temporary occupation. Restoration and reinstatement to pre-occupation condition or standard will be ensured by the Project team.</li> <li>– The upgraded access and express busway connection from/to the Doncaster Park and Ride is designed to ensure retention of an English Oak that is situated to the north of the Doncaster Park and Ride and protected by a Heritage Overlay (Schedule 42) under the Manningham Planning Scheme. Retention of trees and vegetation where possible for instance, retaining walls and noise walls are integrated into one structure along the interface with open spaces thereby minimising the overall footprint of the Freeway widening works and maximising the trees and vegetations within public open space.</li> <li>– Noise walls are sited on or as close to the Freeway carriage as possible thereby reducing the area within open space required to facilitate construction works and minimising overall vegetation loss in particular in areas of high landscape and ecological value, such as the Koonung Creek Reserve.</li> <li>– The extent of new road infrastructure adjacent to the Yarra Flats Reserve is minimised to reduce the need for construction access and consequential impacts on vegetation and existing habitat links. Detailed arboricultural and ecology surveys have been undertaken for the Project along with the development of tree removal and canopy replacement plans in alignment with AR3 (Implement a Tree Canopy Replacement Plan. Refer to the Tree Retention and Removal Plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9570 to 9575) in Attachment 2: Landscape design, which reflect the key findings arising from the Project arboricultural and ecological surveys and detail the proposed tree retention and replacement outcomes.</li> </ul> </li> <li>– Residential and commercial properties:               <ul style="list-style-type: none"> <li>– The design of the project has limited impacts on residential areas and other sensitive receivers. For instance, the Project ensures no adverse or unreasonable overshadowing or overlooking cast into residential properties in the vicinity as demonstrated on the plans.</li> <li>– The design of the project has minimised the Project footprint. For instance, at the Elgar Road intersection, existing vegetation will be largely retained at all directions, particularly at the Elgar Road access points where residential properties, Presbyterian Theological College and a number of existing commercial services currently improve the area.</li> </ul> </li> <li>– Sport, recreational and community facilities:               <ul style="list-style-type: none"> <li>– Where the design interfaces or includes works to sporting, recreational and community facilities, the approach is to avoid or reduce potential impacts. Where impacts are inevitable, the construction process will take consideration of anticipated community demands for facilities and endeavour to program all the works thereby minimising adverse impacts to the extent reasonably acceptable. The mitigation measures may include temporary access, construction staging, undertaking works during low seasons and traffic management strategies, all as detailed in the Construction Engagement Management Plan (CEMP) and Worksite Traffic Management Plan.</li> </ul> </li> </ul>
<b>LP2</b> <span style="color: red;">D</span>	<b>Minimise impacts from location of new services and utilities</b> New above ground services and utility infrastructure are to be located in a way that minimises impacts to existing residential areas, public open space and recreational facilities. This must include considering options to co-locate infrastructure where practicable.	<b>Design and construction</b> The design and construction methodology will minimise impact on existing vegetation where possible.  <b>Design</b> New above ground services and utility infrastructure has been designed and located to minimise impacts to existing residential areas, public open space and recreational facilities.

## 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>LP3</b> 	<p><b>Minimise inconsistency with strategic land use plans</b></p> <p>Design and development of the project must have regard to relevant approved urban design and land use strategies, plans and frameworks including the Yarra Strategic Plan and Draft Yarra River Bulleen Precinct Land Use Framework Plan when approved or any approved superseding document. Consultation must occur with land managers and authorities responsible for the implementation of the relevant strategic land use plans and policies. in preparing Urban Design Framework Plans required by the Incorporated Document.</p> <p>An integrated approach must be adopted to the Manningham Interchange in consultation with Manningham City Council which supports viable future land uses (such as commercial and industrial) and includes maximising the developable area at surface level to the extent practicable in addition to requirements for the Urban Design Framework Plan for this interchange to be approved under the Incorporated Document as part of the Urban Design Strategy.</p> <p>The project must avoid, or where avoidance is not feasible, minimise to the greatest extent reasonably possible, impacts on residential, commercial, industrial, open space, culturally valued and community facility land uses from project development and operations which would be inconsistent with approved strategic land use policies.</p>	<p><b>Design</b></p> <p>Design and development of the Project has had regard to relevant approved urban design and land use strategies, plans and frameworks, particularly Yarra Strategic Plan (Melbourne Water). The design is consistent with the key directions of the Yarra Strategic Plan including the delivery of a range of improvements to pedestrian and cycling paths.</p> <p>Broadly, consultation has occurred with land managers and authorities responsible for the implementation of the relevant strategic land use plans and policies as part of the UDLP consultation program.</p> <p>The UDLP is consistent with the Urban Design Strategy (UDS), which has had regard to a wide range of state and local strategic planning and urban design documents.</p>
<b>LP4</b> 	<p><b>Minimise overshadowing from noise walls and elevated structures and overlooking from elevated structures</b></p> <p>Overshadowing from elevated structures and noise walls to residential properties (including existing solar panels), community facilities, open spaces, waterways and valuable natural habitats must be minimised through detailed design. Consultation must occur with directly affected property owners and occupiers to inform formulation of parameters for these structures including location, design and materials.</p> <p>Unless with the consent of an affected landowner or in exceptional circumstances, the extent of additional overshadowing of residential properties from non-transparent structures:</p> <ul style="list-style-type: none"> <li>– Should be no greater than the existing overshadowing of secluded private open spaces associated with residential properties cast by existing structures including existing noise walls and other structures (e.g., elevated walkways) between the hours of 9:00 am to 3:00 pm as measured on September 22.</li> <li>– If additional overshadowing occurs it must not be greater than 50% of the secluded private open space or 40 sqm, whichever is the greater, between the hours of 9:00 am to 3:00 pm as measured on September 22.</li> </ul> <p>Overlooking from elevated structures, especially within a distance of 15 metres to secluded open space and habitable room windows of residential properties, must be minimised through detailed design as far practicable. Consultation must occur with directly affected property owners and occupiers to inform formulation of parameters, designs, and materials for these structures.</p>	<p><b>Design</b></p> <p>A detailed assessment and review of potential overshadowing has been undertaken through the development of this UDLP to ensure that the design of noise walls and elevated structures avoids, or where this is not feasible, minimises overshadowing and overlooking to residential properties, community facilities, open spaces and natural areas as much as is practicable in line with this requirement. The overshadowing analysis has been developed based on an assumed worse case scenario pending further design development and rationalisation of wall heights in accordance with the relevant EPRs. Further assessment and analysis of overshadowing impacts will be undertaken as part of the detailed design development phase of the Project.</p> <p>An overshadowing analysis has been conducted against the proposed design solution, which demonstrates compliance against the requirements specified under EPR LP4. For full details, refer to the plans in Attachment 4: Overshadowing assessment.</p> <p>Overlooking assessments demonstrate compliance with the requirements of EPR LP4 for potential impacts at standard eye height of 1.7m at an angle of 45 degrees, with predicted impacts shown at a distance of 15m. Two overlooking assessments are including in this UDLP demonstrating direct views from the following sites would not result in unreasonable overlooking cast onto nearby residences:</p> <ul style="list-style-type: none"> <li>– Estelle Street SUP bridge, looking north (NEL-STH-NSA-5900-UUU-DRG-9176 in Attachment 1: Architecture and Urban Design).</li> <li>– Heyington Avenue SUP bridge, looking south (NEL-STH-NSA-5900-UUU-DRG-9186 in Attachment 1: Architecture and Urban Design).</li> </ul>

## 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
LP5	<p><b>Prepare and implement a Public Open Space Relocation and Replacement Plan</b></p> <p>Prior to operation of the Project, the Proponent in conjunction with the State and in consultation with relevant stakeholders including DELWP, Parks Victoria, Melbourne Water and Birrarung Council, must develop and implement a Public Open Space Relocation and Replacement Plan to provide for replacement of public open space permanently required for the project, where not already being replaced in accordance with EPR SC5. The plan should reflect an underlying philosophy of replacement on a like-for-like basis.</p> <p>The Public Open Space Relocation and Replacement Plan must set out the process for selecting and acquiring replacement public open space, including but not limited to:</p> <ul style="list-style-type: none"> <li>- Identifying public open space to be permanently required for the project, including public land used for parkland, reserves, passive open space, and active open space including recreation facilities (where not addressed by EPR SC5).</li> <li>- A process for the acquisition of replacement land, including within the Public Acquisition Overlay or land in key strategic locations.</li> <li>- Assessment of the suitability of potential replacement land by reference to: <ul style="list-style-type: none"> <li>- the location and characteristics of the land</li> <li>- relevant approved strategic land use plans and policies, including those within planning schemes</li> <li>- existing and proposed public purpose reservations</li> <li>- the Yarra Strategic Plan (when released), reference to the Yarra River Bulleen Land Use Framework Plan (when released)</li> </ul> </li> <li>- An approach for the preparation of functional concept plans for the future use of each replacement site, where the plans will be prepared with input from relevant councils, land managers, public asset owners and stakeholders (in the case of formal sporting uses being replaced)</li> <li>- A program identifying the timing and scope of works to be undertaken to implement the functional concept plans and provide appropriate or upgraded facilities at the replacement sites.</li> <li>- In addition, where public open space is to be temporarily lost during construction, residual public open space should be enhanced where practical to minimise and mitigate land use impacts.</li> </ul> <p>Note: *Land in a Road Zone is excluded from the replacement calculation and land on a land bridge that is part of the access network will not count as replacement public open space.</p>	<p>NELP will develop and implement the Public Open Space Relocation and Replacement Plan in advance of the operation of the North East Link.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code    Environmental Performance Requirement

Project Response

## 12. Landscape and Visual (LV)

– Planning and Environment Act 1987

– Australian Standards AS 4282-1997 Control of the obtrusive effects of outdoor lighting

### LV1

#### Design to be in accordance with the Urban Design Strategy

Urban Design and Landscape Plans must be developed and implemented for permanent above-ground buildings or structures (excluding preparatory buildings and works) in accordance with the North East Link Project – Incorporated Document. The design response must be in accordance with the North East Link Urban Design Strategy and, to the extent practicable:

- Avoid or minimise landscape and visual, overlooking, and shading (with reference to EPR LP4) impacts in extent, duration and intensity.
- Maximise opportunities for enhancement of public and private receptors including public amenity, open space and facilities, and heritage places by the project including by facilitating value add/capture opportunities.
- Respond to opportunities and constraints identified in an Urban Design Framework Plan forming part of the approved Urban Design Strategy for key interchanges, activity centres and interfaces identified in the Incorporated Document (where applicable).
- Identify residential areas with the potential for high visual impact and develop targeted design options to avoid or minimise amenity impacts on these areas, including as a result of the proposed noise walls.
- Detailed design to ensure landmark elements balance visual impact with minimal overshadowing.

### Design

Broadly, the Project design has been prepared in accordance with the UDS; and consistency with the UDS is demonstrated in the compliance table contained in Section 5 of this UDLP.

With regard to Section 4.2 of this UDLP, the design intent and approach is further elaborated through three cultural zones that relate to Wurundjeri ways of life and tell a story of a Journey to the Birrarung and also directly align with the three pillars, providing specific co-design outcomes which link to place-based cultural values. The three zones are 'Making on Country', 'Cultivating Country', and 'Confluence of Country'. For instance, it has been identified that the extensive space between Bulleen Interchange and Doncaster Road provides an opportunity to showcase the Wurundjeri Culture; and such opportunity is maximised by way of multi-layered landscaping along Koonung Creek Trail and incorporation of colours reflective of natural exhibition and cultural responsibilities.

Specifically relevant to LV1, the design provides an appropriate response in the following ways:

- Compliance with overshadowing and overlooking requirements are addressed through EPR LV4 and detailed in relevant drawings contained in Attachments 1 and 4. Relevant to overshadowing, as detailed in Attachment 4 (Overshadowing assessment), the design of permanent above-ground structures, such as noise walls and bridges, has carefully considered the extent, duration and intensity thereby preventing any unreasonable impacts on residential properties and other sensitive land uses.
- Locations where opportunities for enhancement of public amenity, open space and facilities by the Project are identified and considered into the design of the Project as practical and appropriate. For instance, through the careful siting and rationalisation of new shared use paths and secondary paths within the Koonung Creek Reserve, integration with existing paths is formed achieving not only the connection with existing facilities but also a re-establishment of an integrated network enabling the connectivity of walking and cycling paths within the Project boundary and beyond. With regard to landscaping provision, noting that noise walls are designed as a shield between the Freeway and abutting reserves and other land uses, the proposed landscape, consisting of a wide range of species from ground covers to canopy trees, will enhance the planting diversity in public open spaces and also serve as screening planting (where appropriate) thereby minimising visual impacts on surrounding land. As the detailed design development progresses, NELP will continue to work with the relevant councils, key stakeholders and future asset owners to explore and maximise opportunities for enhancement of public amenity, open space and facilities.
- Five key locations are identified at Clause 4.8.3 of the Incorporated Document (December 2019, amended September 2023), where urban design framework plans are required forming part of the UDS. Importantly, none of the five key locations is contained within the Project area subject to this UDLP, (noting that the Southern Interface Zone has been approved with exceptions to the design outlined in section 4.1.3 of this UDLP). For details of the approved design within the SIZ, refer to Attachment 5.
- Residential areas with the potential for high visual impacts (such as overshadowing and visual impacts arising from noise walls) have been identified and carefully addressed. For instance, a comprehensive overshadowing assessment is provided in Attachment 4, detailing the proposed overshadowing upon residential properties that are directly abutting the noise walls (including Jocelyn Avenue, Doncaster Road and Winfield Road) and demonstrating full compliance with EPR LV4. With regard to visual impact, noise walls, retaining walls and the like are framed through a multi-layered vegetated landscape, including lower storey shrubs, earth mounds and canopy trees thoughtfully incorporated throughout the Project area subject to this UDLP thereby creating an organically landscaped interface that also allows sunlight penetration.
- Detailed design of landmark elements, such as the SUP bridges at Estelle Street and Heyington Avenue, provides a balanced outcome that is aesthetically pleasing with minimised visual or overshadowing impacts. For instance, the Heyington Avenue bridge is designed to be above the Freeway with seamless connections with local roads beyond the Project boundary; resulting from which, the visible nature is interpreted as an intentionally articulated design feature. Furthermore, the landing and the switchback of the bridge are merged into the landscaped setting revitalised in the Valda Wetlands reserve; noting that the landscaped surrounds incorporate a more dense and foliage of evergreen species where vegetation functions as a visual screen to mitigate overlooking. Additionally, all components of this bridge are adequately setback from residential property thereby minimising any unreasonable amenity impacts.

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>LV2</b> <span style="color: green;">C</span>	<p><b>Minimise landscape and visual impacts during construction</b></p> <p>Temporary and construction works must be located, designed, and carried out in accordance with a Construction Compound Plan to be approved under the Incorporated Document and the Urban Design Strategy guidance on using design to help manage construction impacts. Areas disturbed by temporary and construction works must be reinstated with no objection from the relevant land manager, waterway manager and any relevant public asset owners.*</p> <p>Design of acoustic sheds used during construction, to contribute to the image and identity of the area.</p> <p>Develop and implement measures to use temporary landscaping, features or structures (including viewing portals) during construction to minimise adverse visual impact of project works and provide visual appeal. Temporary landscape treatments, features or screening must be reused across the project, where appropriate.</p> <p>Implement landscaping enhancement including early tree planting (with reference to EPR AR3 as part of permanent works) prior to construction works commencing, where practicable.</p> <p>* All reasonable endeavours must be made to reach a position of no-objection, provided the relevant stakeholder responds within a reasonable timeframe.</p>	<p><b>Construction</b></p> <p>A Construction Compound Plan (CCP) helps manage construction impacts and the design for a CCP seeks to minimise adverse visual impacts and provide visual appeal where possible. More specifically, a CCP identifies where temporary and construction works will be located and describes the proposed construction activities, hours of operation, potential environment and community impacts including mitigation and management controls associated with the construction and operation of the relevant construction compound in accordance with the requirements in the Incorporated Document (December 2019, amended September 2023) for the NELP and relevant EPRs.</p> <p>The preparation of a CCP will consider all appropriate acoustic measures used during construction; if deemed necessary, the design of acoustic measures will contribute to the image and identity of the area.</p> <p>Each CCP will also provide measures to minimise adverse visual impact of project works and provide visual appeal, which may be achieved by using temporary landscaping, features or structures during construction. If/when temporary landscape treatments, features or screening are employed, these treatments or features may be reused across the project, where appropriate and feasible.</p> <p>Other EPRs (such as AR3) have been considered with relevant measures and treatments recommended and implemented in each CCP as relevant and practical.</p> <p>Five Construction Compound Plans have been approved including Freeway Golf Course Construction Compound Plan, Bulleen Interchange Construction Compound Plan, Doncaster Park and Ride Construction Compound Plan, Doncaster Road Construction Compound Plan and Koonung Creek Reserve Construction Compound Plan. The approved CCPs have detailed how potential impacts to sensible users are managed; and outlined the approach of communications, stakeholder and community engagement as required by relevant EPRs. Construction activities will be undertaken in alignment with the approved CEMP and the CCPs. The construction compound areas will be regularly maintained to ensure a suitable safe and aesthetically acceptable appearance is achieved throughout the construction period.</p> <p>Refer to the plans (NEL-STH-NSA-5900-UUD-DRG-Nos. 9580 and 9581) in Attachment 2: Landscape Design.</p> <p>Any future Construction Compound Plans (CCPs) will be subject to future ministerial approval. Construction related impacts have been considered in the design of tree removal and retention, refer to the Tree Removal and Retention Plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9570 to 9575) in Attachment 2: Landscape Design.</p>
<b>LV3</b> <span style="color: green;">C</span>	<p><b>Minimise construction lighting impacts</b></p> <p>Develop and implement effective measures to minimise light spillage and glare during construction including from construction vehicles and equipment to protect the amenity of adjacent neighbourhoods, parks, community facilities and any known significant native fauna habitat to the extent practicable. Such measures must have regard to the content of guidelines or Australian Standards pertaining to outdoor lighting and best available technology and best practice.</p>	<p><b>Construction</b></p> <p>Design of temporary lighting will consider impacts on sensitive residential receivers and light sensitive native fauna and will include measures to minimise light spill impacts. Lighting design will consider Australian Standards AS4282-1997 Control of the obtrusive effects of outdoor lighting.</p> <p>Construction lighting will be managed in accordance with the Construction Environmental Management Plan (CEMP). The CEMP has been verified by the IEA in compliance with the requirements of the EMF.</p>
<b>LV4</b> <span style="color: red;">D</span>	<p><b>Minimise operation lighting impacts and maximise operational lighting benefits for open space</b></p> <p>Design and install lighting used during operation of permanent structures and resulting from the orientation of all permanent structures (including from vehicle headlights) in accordance with relevant standards, including but not limited to relevant guidelines and Australian Standards pertaining to outdoor lighting and the protection of beneficial uses.</p> <p>Design and install lighting to minimise light spill and disturbance to significant fauna sites including the Grey-headed Flying fox colony at Yarra Bend, wetland and waterways immediately adjacent to roadways.</p> <p>Subject to consultation with and the views of future asset owners, provide sensitively designed lighting to shared user paths and open spaces to provide improved safety for users without causing unreasonable effects on residential amenity or environmental and landscape values.</p> <p>Designs must consider Crime Prevention Through Environmental Design, including effects on safe movements of pedestrians and cyclists; including within undercrofts, bicycle and pedestrian tunnels and open spaces areas.</p>	<p><b>Design</b></p> <p>The assessment against LV4 in the UDLP is an overview of lighting provision seeking to demonstrate the Project team's commitment in design and delivery of a fully compliant design outcome. Lighting design has sought to minimise lighting impacts on the surrounding environment in particular having regard to local fauna sites, which is achieved by using appropriate lighting frequencies to mitigate illumination effects. It is also noted that the Crime Prevention Through Environment Design (CPTED) principles have been used to guide the provision of public lighting throughout the design. An assessment of lighting levels on SUPs, bridges, underpasses and parklands will be finalised in the Design Packages based on lighting modelling as required and are subject to consultation with councils, relevant stakeholders and future asset owners. It is also worth reiterating that each design package subject to this UDLP is assessed against the EPRs by the design team and the environment team to ensure that construction and operational lighting requirements (EPR LV3 and LV4) are fully complied with.</p> <p>Lighting design takes consideration of the current levels of lighting and associated impacts already present within the open spaces as part of the light spill mitigation exercise in areas of fauna sensitivity such as wetland. For instance, it is considered that wetland within the Koonung Creek Reserve adjacent to the Freeway has had a level of exposure to the Freeway light mast; therefore, fauna is likely to have adapted to the existing levels of lighting. As a design resolution, the detailed lighting design (to be finalised in the Design Packages) will ensure no further impacts of light spills onto fauna sensitive areas. The grey headed flying fox colony at Yarra Bend Park is identified further west of the Project area subject to this UDLP (i.e. outside scope). Lighting design will nevertheless ensure that no additional impacts of light spills will occur to the colony and its vicinity noting that the flying foxes are likely to have been accustomed to existing Freeway lighting.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>13. Noise and Vibration (NV)</b>	<ul style="list-style-type: none"> <li>– Environment Protection Act 2017</li> <li>– Environment Protection Regulations 2021</li> <li>– Environment Reference Standard (Ambient Sound)</li> <li>– Australian Standards AS 2187.2, Explosives – Storage and use – Use of explosives</li> <li>– Australian Standard 2436 2010 Guide to Noise Control on Construction, Maintenance and Demolition Site (reconfirmed 2016)</li> </ul>	<ul style="list-style-type: none"> <li>– VicRoads Road Design Note RDN 6-1 Interpretation and application of VicRoads traffic noise reduction policy 2005</li> <li>– VicRoads Traffic Noise Measurement Requirements for Acoustic Consultants – September 2011</li> <li>– EPA Publications:</li> <li>– EPA Publication 1834, Civil construction, building and demolition guide (EPA Victoria November 2020)</li> </ul>
		<ul style="list-style-type: none"> <li>– 1826.4 (2021) Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues</li> <li>– New South Wales Interim Construction Noise Guideline (ICNG) (2009)</li> <li>– New South Wales Roads and Maritime Services Construction Noise and Vibration Guideline (CNVG) (2016)</li> </ul>
		<ul style="list-style-type: none"> <li>– New South Wales Roads and Maritime Services Noise Mitigation Guideline (2015)</li> <li>– ASHRAE Chapter 48 Sound and Vibration Control Standards</li> <li>– German Standard DIN 4150 – Part 3 – Structural Vibration in Buildings – Effects on Structures (2016)</li> <li>– British Standard BS6472- 1:2008 Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting.</li> </ul>
<b>NV1</b>	<p><b>Achieve traffic noise objectives</b></p> <p>Design, construct and maintain the works to meet the following traffic noise objectives.</p> <p>(a) Traffic noise from North East Link Project Roads* must be no greater than:</p> <ul style="list-style-type: none"> <li>– 63 dBA (L10,18hr) measured between 6 am and midnight at Category A buildings**</li> <li>– 63 dBA (L10, 12hr) measured between 6 am and 6 pm at Category B buildings**.</li> </ul> <p>(b) For Category A and Category B buildings on non-Project Roads which:</p> <ul style="list-style-type: none"> <li>– Abut the North East link project roads, or directly intersect with North East Link project roads, and</li> <li>– where total traffic noise for the design year and with Project exceeds the thresholds listed in paragraph (a).</li> </ul> <p>The combined noise from North East Link Project Roads and non-Project roads must not be more than 2 dBA higher than the predicted traffic noise level under the design year 'do nothing' scenario. Intersecting non-Project Roads must be modelled for a distance of 100 m from the intersection with North East Link Project Roads or to the first traffic intersection (whichever is the lesser).</p> <p>(c) Night-time traffic noise for category A buildings must meet the WHO 2009 interim target of LAeq night 55dB when adjusted to Australian conditions as per the EES Technical Appendix C i.e., be no greater than 58dB LAeq 8hr (including façade correction). The 8hour time period is to be between 2200-0600hrs as consistent with the Better Apartment Design Standards.</p> <p>(d) The noise criteria in paragraphs (a), (b), and (c) above and (e) are to apply to the lowest habitable level of Category A buildings and Category B buildings at both the year of opening and 20 years thereafter. Traffic noise mitigation measures must be maintained throughout this period. For the purposes of this EPR, Category A buildings and Category B buildings to be considered are those that are either existing or known to have planning approval prior to exhibition of the North East Link Environment Effects Statement.</p> <p>(e) Where external traffic noise cannot be mitigated through project design solutions to meet the criteria outlined in paragraphs (a), (b) and (c), at-property treatments will be required to be designed and constructed so that internal noise levels achieve the following:</p> <ul style="list-style-type: none"> <li>– 35dBA for bedrooms assessed as an LAeq, 8 h from 10pm -6am</li> <li>– 40dBA for living areas assessed as LAeq, 16h from 6am-10pm</li> </ul> <p>At-property treatments would be undertaken in accordance with section 7.3 of the NSW Road and Maritime Services document 'Noise Mitigation Guidelines 2015 – Roads and Maritime Services', and in consultation with the owner of the relevant building. In circumstances where at-property treatments are proposed, the Independent Environmental Auditor must review the project design solutions to confirm that the criteria outlined in paragraphs (a), (b) and (c), could not be achieved by the adoption of reasonable and feasible detailed design measures.</p> <p>* Project Roads are defined to be the M80 Ring Road (east of Plenty Road), the Greensborough Bypass (west of the Plenty River bridge and up to the M80 interchange with North East Link), the upgrade of the Eastern Freeway (between Hoddle Street and Springvale Road) and the new North East Link freeway (connecting the M80 Ring Road to the Eastern Freeway), including all access ramps.</p> <p>** Category A Buildings and Category B Buildings means:</p> <ul style="list-style-type: none"> <li>– Category A Buildings – Residential dwellings, aged persons homes, hospitals, motels, caravan parks and other buildings of a residential nature</li> <li>– Category B Buildings – Schools (including buildings within the Carey Sports Complex), kindergartens, libraries and other noise-sensitive community buildings.</li> </ul> <p>Note: If a resident of a dwelling advises NELP that they consider their residence to be noise affected, external noise levels must be investigated against the above criteria. If the external noise levels do not comply and mitigation is not feasible (as confirmed by the IEA) then at property treatment to achieve the required internal noise levels must be undertaken in accordance with (e) above.</p>	<p><b>Design</b></p> <p>The design has been informed by noise modelling and will achieve the relevant noise objectives for Project and non-Project roads during the operational phase of the Project.</p> <p>Specifically, the location and heights of noise walls identified in the UDLP have been designed to respond to the anticipated acoustic requirements for sensitive receptors such as residential areas. The noise wall types are detailed on the plans (NEL-STH-NSA-5900-UUD-DRG Nos. 9206 to 9208) in Attachment 1: Architecture and Urban Design. Further refinement of noise walls, informed by noise modelling, will occur through the detailed design process of the Project.</p> <p>The design and alignment of the noise walls presented through this UDLP have been informed by preliminary modelling indicating there are limited areas where the EPR noise levels may be exceeded at specific locations. Further review and modelling of the proposed noise walls will be undertaken through the detailed design process, including an assessment of additional design measures that may be incorporated to further mitigate noise impacts. In an unlikely event where this is unable to be achieved, an assessment will be undertaken by a suitably qualified acoustic engineer to determine appropriate at-property treatment to achieve compliance with NV1, in consultation with the property owner.</p> <p><b>Construction</b></p> <p>Material selection is a consideration that feeds into the noise modelling and installation of at property treatment is required in limited instances.</p> <p><b>Operation</b></p> <p>Compliance with the EPR is measured and conformance to the noise criteria is demonstrated. The timeline and criteria for any remedial action required as a result of the non-compliant noise levels post completion will be determined by the IEA and will be fulfilled by the Project, with subsequent reporting of compliance provided to the Minister for Roads.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
	<ul style="list-style-type: none"> <li>– New South Wales Interim Construction Noise Guideline (ICNG) (2009)</li> <li>– New South Wales Roads and Maritime Services Construction Noise and Vibration Guideline (CNVG) (2016)</li> <li>– New South Wales Roads and Maritime Services Noise Mitigation Guideline (2015)</li> </ul>	<ul style="list-style-type: none"> <li>– ASHRAE Chapter 48 Sound and Vibration Control Standards</li> <li>– German Standard DIN 4150 – Part 3 – Structural Vibration in Buildings – Effects on Structures (2016)</li> <li>– British Standard BS6472-1:2008 Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting</li> </ul>

<p><b>NV2</b></p> <p><b>D</b></p>	<p><b>Monitor traffic noise</b></p> <p>Traffic noise monitoring must be carried out for at least the following time periods:</p> <ul style="list-style-type: none"> <li>– Baseline traffic noise must be re-measured after project award and prior to construction works</li> <li>– Traffic noise must be re-measured within six months of project opening during normal traffic flows (outside school or public holidays). For the purpose of determining compliance, the measurements conducted after project opening must be adjusted to the 10-year traffic flows</li> <li>– Traffic noise must be re-measured 10 years and 20 years after project opening.</li> </ul> <p>All traffic noise monitoring must be undertaken in accordance with the VicRoads Traffic Noise Measurement Requirements for Acoustic Consultants – September 2011, to verify conformance with the external traffic noise objectives set out in EPR NV1. The adequacy of the monitoring program is to be verified by the Independent Environmental Auditor.</p> <p>Remedial action must be taken in the event that the measured traffic noise levels demonstrate that the external traffic noise objectives set out in EPR NV1 are not met. The timeframe and the criterion for remedial action must be determined by the IEA and reporting of compliance must be provided to the Minister for Roads or his/her successor.</p>	<p><b>Design</b></p> <p>NELP has undertaken baseline traffic noise monitoring in accordance with NV2, which will inform the detailed design.</p>
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<p><b>NV3</b></p> <p><b>C</b></p>	<p><b>Minimise construction noise impacts to sensitive receptors</b></p> <p>Construction noise and vibration must be managed in accordance with the Construction Noise and Vibration Management Plan (CNVMP) required by EPR NV4.</p> <p><b>Non-residential sensitive receptors</b></p> <p>For sensitive land uses (based on AS/NZS 2107:2016) implement management actions as per EPR NV4 if construction noise is predicted to or does exceed the internal or external noise management levels set out in the table below, and a noise sensitive receptor is, or is predicted to be, adversely impacted. If construction exceeds the noise management levels below, in determining whether a noise sensitive receptor is, or is predicted to be, adversely impacted:</p> <ul style="list-style-type: none"> <li>– Consider the duration of construction noise</li> <li>– Consider the existing ambient noise levels</li> <li>– Consult with the owner or operator of the noise sensitive receptor</li> <li>– Consider any specific acoustic requirements of land uses listed below to determine whether a noise sensitive receptor is adversely impacted.</li> </ul>	<p><b>Construction</b></p> <p>A Construction Noise and Vibration Management Plan (CNVMP) has been developed and includes measures to meet the construction noise management levels and construction noise guideline targets. Some work activities will be required to be undertaken near sensitive receivers in some isolated locations. Application of the noise hierarchy will be implemented to minimise disruption as far as reasonably practicable. Examples of areas where this could occur include placement of noise walls directly adjacent to sensitive receivers such as residential properties or educational institutions (e.g., Belle Vue Primary School).</p> <p>Construction noise impacts on sensitive receptors will be further mitigated through the following actions:</p> <ul style="list-style-type: none"> <li>– identification of sensitive receivers on Worksite Environmental Management plans (WEMPs)</li> <li>– noise modelling to inform construction phase mitigation techniques</li> <li>– selection of quieter equipment where feasible, noise mitigation and community notification</li> <li>– application of the unavoidable works process, including IEA verification</li> <li>– implementation of the Construction Noise and Vibration Management Plan (CNVMP)</li> <li>– noise monitoring to verify noise levels are consistent with modelling outputs</li> <li>– consideration of construction scheduling/timing</li> <li>– stakeholder consultation.</li> </ul> <p>The CNVMP has been verified by the IEA in compliance with the requirements of the EMF.</p>
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Land use	Construction noise management level, LAeq (15 min) applies when properties are in use
Classrooms in schools and other educational institutions	Internal noise level 45 dB(A)
Healthcare facilities with inpatient care including hospital wards and operating theatres, and rehabilitation centres	Internal noise level 45 dB(A)
Places of worship	Internal noise level 45 dB(A)
Active recreation areas characterised by sporting activities and activities which generate their own noise, making them less sensitive to external noise intrusion	External noise level 65 dB(A)
Passive recreation areas characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example reading, meditation	External noise level 60 dB(A)
School grounds used for teaching purposes are to be considered as passive recreation areas, where feasible and reasonable ***	
Community centres	Depends on the intended use of the centre. Refer to the recommended upper internal levels in AS/NZS 2107:2016 for specific uses
Industrial premises	External noise level 75 dB(A)
Offices, retail outlets	External noise level 70 dB(A)
Other noise sensitive land uses as identified in AS/NZS 2107:2016	Refer to the noise levels in AS/NZS 2107:2016

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response								
	<p><b>Residential receptors</b></p> <p>For residential dwellings, management actions must be implemented as per EPR NV4 if noise from construction works during normal working hours is predicted to or does exceed the noise management levels for normal working hours below.</p> <p>Noise from construction works during weekend/evening work hours and the night period must meet the weekend/evening and night period noise guideline targets in the table below unless they are Unavoidable Works verified by the Independent Environmental Auditor as per EPR NV4. All reasonable strategies to mitigate the impacts of such Unavoidable Works must be applied.</p> <table border="1"> <thead> <tr> <th>Time of day</th> <th>Construction noise guideline targets</th> </tr> </thead> <tbody> <tr> <td> <b>Normal working hours:</b>            7 am – 6 pm Monday to Friday            7 am – 1 pm Saturday         </td> <td>           Noise affected: Background LA90+10 dB            Highly noise affected: 75 dB(A)            The noise affected level represents the point above which there may be some community reaction to noise            The highly noise affected level represents the point above which there may be strong community reaction to noise.  <small>Source: NSW Interim Construction Noise Guideline (ICNG) Chapter 4.1.1 Table 2</small> </td> </tr> <tr> <td> <b>Weekend/evening work hours:</b>            6 pm – 10 pm Monday to Friday            1 pm – 10 pm Saturday            7 am – 10 pm Sunday and public holidays         </td> <td>           Noise level at any residential premises not to exceed background noise (LA90) by:            – 0 dB(A) or more for up to 18 months            – 5 dB(A) or more after 18 months  <small>Source: EPA Publication 1834 Chapter 4</small> </td> </tr> <tr> <td> <b>Night period:</b>            10 pm – 7 am Monday to Sunday         </td> <td>           Noise inaudible within a habitable room of any residential premises  <small>Source: EPA Publication 1834 Chapter 4</small> </td> </tr> </tbody> </table> <p><b>Note:</b></p> <p>Where any reference is made to the rating background level (RBL) or background LA90; the 'average background':</p> <ul style="list-style-type: none"> <li>– it applies to each discrete time period to ensure that averaging does not necessarily occur over day, evening or night-time hours. For example, background noise between 0100 and 0400 may be substantially different to that between 2200 and 0100 and hence should not be averaged over the entire night-time period; and</li> <li>– over the assessment period as per Victorian noise policy practices is to be used. This applies to all receptors and all time periods.</li> </ul> <p>** In relation to sensitive receptors, the construction noise guideline targets apply to construction works and construction compounds.</p> <p>*** Consultation with affected schools should be undertaken to designate the most sensitive areas where teaching occurs within school grounds.</p> <p><b>Unavoidable Works</b></p> <p>Unavoidable Works must be verified by the Independent Environmental Auditor for each instance they are undertaken, as per EPR NV4 and include the following:</p> <ul style="list-style-type: none"> <li>– the delivery of oversized plant or structures that police or other authorities determine require special arrangements to transport along public roads</li> <li>– Emergency work to avoid the loss of life or damage to property, or to prevent environmental harm.</li> <li>– Maintenance and repair of public infrastructure where disruption to essential services and/or considerations of worker safety do not allow work within standard hours</li> <li>– Tunnelling works including mined excavation elements and the activities that are required to support tunnelling works (i.e., spoil treatment facilities)</li> <li>– Road and rail occupations or works that would cause a major traffic hazard</li> <li>– Other works where a contractor demonstrates and justifies a need to operate outside normal working hours and exceed the noise guideline targets such as work that once started cannot practically be stopped.</li> </ul>	Time of day	Construction noise guideline targets	<b>Normal working hours:</b> 7 am – 6 pm Monday to Friday 7 am – 1 pm Saturday	Noise affected: Background LA90+10 dB Highly noise affected: 75 dB(A) The noise affected level represents the point above which there may be some community reaction to noise The highly noise affected level represents the point above which there may be strong community reaction to noise. <small>Source: NSW Interim Construction Noise Guideline (ICNG) Chapter 4.1.1 Table 2</small>	<b>Weekend/evening work hours:</b> 6 pm – 10 pm Monday to Friday 1 pm – 10 pm Saturday 7 am – 10 pm Sunday and public holidays	Noise level at any residential premises not to exceed background noise (LA90) by: – 0 dB(A) or more for up to 18 months – 5 dB(A) or more after 18 months <small>Source: EPA Publication 1834 Chapter 4</small>	<b>Night period:</b> 10 pm – 7 am Monday to Sunday	Noise inaudible within a habitable room of any residential premises <small>Source: EPA Publication 1834 Chapter 4</small>	<p>See previous page.</p>
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# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>NV4</b> <span style="color: green; font-weight: bold;">C</span>	<p><b>Implement a Construction Noise and Vibration Management Plan (CNVMP) to manage noise and vibration impacts</b></p> <p>Prepare, implement, and maintain a Construction Noise and Vibration Management Plan (CNVMP) in consultation with EPA Victoria, relevant councils and relevant stakeholders. The CNVMP must comply with and address the Noise and Vibration EPRs, be informed by the noise modelling and monitoring results and must include (but not be limited to):</p> <ul style="list-style-type: none"> <li>– Identification and assessment of noise and vibration sensitive receptors along the project alignment, including but not limited to:               <ul style="list-style-type: none"> <li>– habitat for listed threatened fauna likely to be impacted by the project (refer to EPR FF8)</li> <li>– buildings used for shop, gallery, commercial, office or industrial purposes including Bulleen Art and Garden and the Heide Museum of Modern Art</li> <li>– school buildings and school grounds</li> <li>– residential buildings</li> </ul> </li> <li>– Construction noise and vibration targets as per EPRs NV3, NV5, NV8, NV9, NV10, NV11 and NV12, including any details of conversions between alternative metrics</li> <li>– Details of construction activities and an indicative schedule for construction works, including the identification of key noise and/or vibration generating construction activities that have the potential to generate airborne noise and/or surface vibration impacts on surrounding sensitive receivers</li> <li>– How construction noise (including truck haulage) and vibration would be minimised (see EPR T2)</li> <li>– A requirement for preliminary tests using the actual equipment to validate modelling for vibration and regenerated noise and review, with predictions to be remodelled as necessary and confirm prevention/mitigation/remediation measures confirmed</li> <li>– Management actions and notification and mitigation measures to be implemented with reference to the Appendix B and Appendix C of the New South Wales Roads and Maritime Services Construction Noise and Vibration Guideline 2016 (CNVG)</li> <li>– Any processes and measures to be implemented as part of the Communications and Community Engagement Plan including managing matters of interest raised by key stakeholders through CCEP processes, and measures concerning complaints management (see EPR SC2)</li> <li>– Requirements to assess and manage vibration impacts to scientific or medical establishments to the higher of ambient levels or ASHRAE VC Standards (as defined in the 2015 handbook), or manufacturers equipment levels (unless by agreement with occupant)</li> <li>– Measures to ensure effective monitoring of noise and vibration associated with construction with consideration to the construction noise and vibration targets</li> <li>– Measures to minimise noise and vibration impacts from temporary traffic diversions and altered access to parking facilities</li> <li>– The Unavoidable Works (refer to EPR NV3) that would be undertaken, including their location, timing and duration. The CNVMP must either include a clear rationale for defining works or a list of the type of planned works that constitute Unavoidable Works and response strategies to mitigate the impacts of these Unavoidable Works, consistent with Chapter 4 of EPA Victoria Publication 1834 Civil construction, building and demolition guide and with reference to Appendix B and Appendix C of the CNVG. The Independent Environmental Auditor must verify that the proposed Unavoidable Works meet the definition of Unavoidable Works (refer to EPR NV3) for each instance they are undertaken. Details of Unavoidable Works must be made publicly available. For emergency Unavoidable Work, a rationale must be provided to the satisfaction of the Independent Environmental Auditor as soon as practicable</li> <li>– Noise from construction works during weekend/evening work hours and the night period must meet the weekend/evening work hours and night period noise guideline targets unless they are unavoidable works verified by the Independent Environmental Auditor. All reasonable measures must be implemented to mitigate the impacts of such unavoidable works. A clear framework for managing Unavoidable Work must be developed and include noise level thresholds and details of mitigation measures. The framework must be approved by the Independent Environmental Auditor</li> <li>– The CNVMP must be reviewed (including consultation with external stakeholder as required) and updated as appropriate on a six-monthly basis and verified by the Independent Environmental Auditor.</li> </ul> <p><b>Note:</b></p> <p>* The CNVMP applies to construction works and construction compounds.</p>	<p><b>Construction</b></p> <p>A Construction Noise and Vibration Management Plan (CNVMP) has been developed and includes measures to meet the construction noise and vibration guideline targets. The CNVMP includes requirements for noise modelling to predict impacts on sensitive receivers and establish noise management levels, which will inform mitigation measures. The CNVMP has been prepared in consultation with the EPA and relevant councils.</p> <p>The CNVMP has been verified by the IEA in compliance with the requirements of the EMF.</p>

# 6. Compliance with the Environmental Performance Requirements

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<b>NV5</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Establish vibration guidelines to protect utility assets</b></p> <p>Prior to commencement of relevant works, undertake condition assessments of above and below ground utility assets (EPR GM3) and consult with asset owners to establish and agree construction vibration guidelines to maintain asset integrity. In all cases the asset owner’s criteria takes precedence.</p> <p>Where construction vibration guidelines are not proposed by the asset owner, reference should be made to the relevant sections of German Standard DIN 4150 – Part 3 – Structural Vibration in Buildings – Effects on Structures (2016) for guideline assessment procedures for buried pipework or underground infrastructure. The integrity of the asset should be reviewed and assessed (by the contractor, in conjunction with the asset owner) to confirm these values are appropriate. If necessary, based on this assessment, limits must be reduced to the level necessary to maintain asset integrity.</p> <p>Monitor vibration levels during construction to demonstrate compliance with agreed vibration guidelines. Identify contingency measures to be implemented if guidelines are not met. Where necessary rectify any defects that are attributable to the project.</p> <p>An overview of the key vibration guidelines values is presented below. In all cases, the supporting documentation within the Standard which describes, clarifies, and sometimes modifies the tables below must be considered.</p> <p><b>Table A: Guideline values for <math>v_i</math>, max, for evaluating the effects of short-term vibration on the lining of underground cavities</b></p> <table border="1"> <thead> <tr> <th>Line</th> <th>Lining material</th> <th>Guideline values for <math>v_i</math>, max in mm/s perpendicular to lining surface</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Reinforced or sprayed concrete, tubbing segments</td> <td>80</td> </tr> <tr> <td>2</td> <td>Concrete, stone</td> <td>60</td> </tr> <tr> <td>3</td> <td>Masonry</td> <td>40</td> </tr> </tbody> </table> <p>Note: The guideline values were measured during nearby mine blasting operations and apply only to the lining of underground structures, but not to any associated installations</p> <p><b>Table B: Guideline values for <math>v_i</math>, max, for evaluating the effects of short-term vibration on buried pipework</b></p> <table border="1"> <thead> <tr> <th>Line</th> <th>Lining material</th> <th>Guideline values for <math>v_i</math>, max in mm/s perpendicular to lining surface</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Steel, welded</td> <td>100</td> </tr> <tr> <td>2</td> <td>Vitrified clay, concrete, reinforced concrete, prestressed concrete, metal (with or without flange)</td> <td>80</td> </tr> <tr> <td>3</td> <td>Masonry, plastics</td> <td>50</td> </tr> </tbody> </table>	Line	Lining material	Guideline values for $v_i$ , max in mm/s perpendicular to lining surface	1	Reinforced or sprayed concrete, tubbing segments	80	2	Concrete, stone	60	3	Masonry	40	Line	Lining material	Guideline values for $v_i$ , max in mm/s perpendicular to lining surface	1	Steel, welded	100	2	Vitrified clay, concrete, reinforced concrete, prestressed concrete, metal (with or without flange)	80	3	Masonry, plastics	50	<p><b>Design</b></p> <p>The Project has undertaken necessary steps to assess, consult and design as required by this requirement. As the detailed design development progresses, full compliance with this requirement will be the minimum.</p> <p><b>Construction</b></p> <p>A Construction Noise and Vibration Management Plan (CNVMP) has been developed and includes measures to meet the construction noise and vibration guideline targets.</p> <p>The CNVMP has been verified by the IEA in compliance with the requirements of the EMF.</p>
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3	Masonry, plastics	50																								
<b>NV6</b>	<p><b>Design permanent tunnel ventilation system and relevant fixed infrastructure to meet EPA requirements for noise</b></p> <p>Design and construct the permanent tunnel ventilation system and relevant fixed infrastructure that is subject to EPA Publication 1826.4 Noise Protocol to achieve compliance with EPA Publication 1826.4 Noise Protocol and in accordance with the EPA Victoria Development Licence.</p> <p>Where EPA Victoria Publication 1826.4 Noise Protocol does not apply, design and implement the permanent tunnel ventilation system to comply with the internal lower Recommended Design Sound Levels as defined in AS/NZS 2107 for the types of occupancies, relevant to spaces within the affected Category A and Category B buildings, as defined in EPR NV1.</p> <p>If the existing internal background noise level within any identified relevant Category A or Category B buildings already exceeds the upper Recommended Design Sound Level in AS/NZS 2107 for the types of occupancies relevant to spaces within these buildings, then noise from the fixed plant associated with the Project must not exceed the existing background levels within these buildings.</p>	<p>The Project does not include any road tunnels; therefore, this requirement for tunnel ventilation is not relevant to the scope of this UDLP.</p>																								
<b>NV7</b>	<p><b>Design permanent tunnel ventilation system and relevant fixed infrastructure to meet EPA requirements for noise</b></p> <p>Measure noise from the permanent tunnel ventilation system and relevant fixed infrastructure that is subject to EPA Publication 1826.4 Noise Protocol on commencing road operation and monitor noise from the tunnel ventilation system post opening of the North East Link, as agreed with EPA Victoria, to verify compliance with EPA Publication 1826.4 Noise Protocol and the EPA Victoria Operating Licence.</p> <p>Identify and implement contingency measures to be implemented if noise level limits are not met.</p>	<p>The Project does not include any road tunnels; therefore, this requirement for tunnel ventilation is not relevant to the scope of this UDLP.</p>																								

# 6. Compliance with the Environmental Performance Requirements

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<b>NV8</b> <span style="color: green;">C</span>	<p><b>Minimise construction vibration impacts on amenity</b></p> <p>Implement management actions if the following guideline target levels for vibration from construction activity to protect human comfort of occupied buildings (including heritage buildings) are not achieved (levels are calculated from the British Standard BS6472-1:2008 Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting.).</p> <table border="1"> <thead> <tr> <th rowspan="2">Type of space occupancy</th> <th colspan="4">Vibration Dose Values (m/s 1.75)</th> </tr> <tr> <th>Day (7am to 10 pm) Preferred Value</th> <th>Maximum Value</th> <th>Night (10pm to 7am) Preferred Value</th> <th>Maximum Value</th> </tr> </thead> <tbody> <tr> <td>Residential</td> <td>0.2</td> <td>0.4</td> <td>0.1</td> <td>0.2</td> </tr> <tr> <td>Offices, schools, educational institutions, places of worship</td> <td>0.4</td> <td>0.8</td> <td>0.4</td> <td>0.8</td> </tr> <tr> <td>Workshops</td> <td>0.8</td> <td>1.6</td> <td>0.8</td> <td>1.6</td> </tr> </tbody> </table> <p>Notes</p> <ol style="list-style-type: none"> <li>The Guideline Targets are non-mandatory; they are goals that should be sought to be achieved through the application of practicable mitigation measures. If exceeded, then management actions would be required.</li> <li>The Vibration Dose Values may be converted to Peak Particle Velocities within a noise and vibration construction management plan.</li> <li>For the purpose of this EPR, the guideline target levels for 'offices, schools, educational institutions, places of worship' also apply to the Heide Museum of Modern Art and the outdoor sculpture exhibition area at Heide Museum of Modern Art.</li> </ol>	Type of space occupancy	Vibration Dose Values (m/s 1.75)				Day (7am to 10 pm) Preferred Value	Maximum Value	Night (10pm to 7am) Preferred Value	Maximum Value	Residential	0.2	0.4	0.1	0.2	Offices, schools, educational institutions, places of worship	0.4	0.8	0.4	0.8	Workshops	0.8	1.6	0.8	1.6	<p><b>Construction</b></p> <p>A Construction Noise and Vibration Management Plan (CNVMP) has been developed and includes measures to meet the human comfort goals where reasonable and feasible.</p> <p>The CNVMP has been verified by the IEA in compliance with the requirements of the EMF.</p>																
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<b>NV9</b> <span style="color: green;">C</span>	<p><b>Minimise construction vibration impacts on structures</b></p> <p>Construction vibration targets for structures based on German Standard DIN 4150 – Part 3 – Structural Vibration in Buildings – Effects on Structures (2016) must be adopted. All sections of the German Standard DIN 4150 – Part 3 – Structural Vibration in Buildings – Effects on Structures (2016) standard apply, noting the guideline levels detailed in Section 5 and Section 6 (and any references sections).</p> <p>An overview of the key vibration guidelines values is presented below. In all cases, the supporting documentation within the Standard which describes, clarifies, and sometimes modifies the tables below must be considered.</p> <p><b>Table A: Guideline values for vibration velocity, <math>v_i</math>, max, for evaluating the effects of short-term vibration on structures</b></p> <table border="1"> <thead> <tr> <th rowspan="3">Type of structure</th> <th colspan="5">Guideline values for <math>v_i</math>, max in mm/s</th> </tr> <tr> <th colspan="3">Foundation, all directions, <math>i = x, y, z</math>, at a frequency of:</th> <th>Topmost floor, horizontal direction, <math>i = x, y</math></th> <th>Floor slabs, vertical direction, <math>i = z</math></th> </tr> <tr> <th>1 Hz to 10 Hz</th> <th>10 Hz to 50 Hz</th> <th>50 Hz to 100 Hz (a)</th> <th>All frequencies</th> <th>All frequencies</th> </tr> </thead> <tbody> <tr> <td><b>Column Line 1</b></td> <td><b>2</b></td> <td><b>3</b></td> <td><b>4</b></td> <td><b>5</b></td> <td><b>6</b></td> </tr> <tr> <td>1 Buildings used for commercial purposes, industrial buildings, and buildings of similar design</td> <td>20</td> <td>20 to 40</td> <td>40 to 50</td> <td>40</td> <td>20</td> </tr> <tr> <td>2 Residential buildings and buildings of similar design and/or occupancy</td> <td>5</td> <td>5 to 15</td> <td>15 to 20</td> <td>15</td> <td>20</td> </tr> <tr> <td>3 Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (eg listed buildings)</td> <td>5</td> <td>5 to 15</td> <td>15 to 20</td> <td>15</td> <td>20 (b)</td> </tr> </tbody> </table> <p>Note: Even if guideline values as in line 1, columns 2 to 5, are complied with, minor damage cannot be excluded.</p> <p>(a) At frequencies above 100 Hz, the guideline values for 100 Hz can be applied as minimum values.</p> <p>(b) Paragraph 2 of 5.1.2 must be observed.</p>	Type of structure	Guideline values for $v_i$ , max in mm/s					Foundation, all directions, $i = x, y, z$ , at a frequency of:			Topmost floor, horizontal direction, $i = x, y$	Floor slabs, vertical direction, $i = z$	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz (a)	All frequencies	All frequencies	<b>Column Line 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	1 Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50	40	20	2 Residential buildings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15	20	3 Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (eg listed buildings)	5	5 to 15	15 to 20	15	20 (b)	<p><b>Construction</b></p> <p>A Construction Noise and Vibration Management Plan (CNVMP) has been developed and includes measures to meet the construction noise and vibration guideline targets.</p> <p>The CNVMP has been verified by the IEA in compliance with the requirements of the EMF.</p>
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1 Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50	40	20																																					
2 Residential buildings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15	20																																					
3 Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (eg listed buildings)	5	5 to 15	15 to 20	15	20 (b)																																					

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response																												
	<p><b>Guideline values for vi, max, for evaluating the effects of long-term vibration on buildings</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Column Line</th> <th rowspan="2">1</th> <th>Type of building</th> <th colspan="2">Guideline values for vi, max in mm/s</th> </tr> <tr> <th></th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>Topmost floor, horizontal direction, all frequencies</td> <td>Floor slab, vertical direction, all frequencies</td> </tr> <tr> <td>1</td> <td>Buildings used for commercial purposes, industrial buildings, and buildings of similar design</td> <td>10</td> <td>10</td> <td></td> </tr> <tr> <td>2</td> <td>Residential buildings and buildings of similar design and/or occupancy</td> <td>5</td> <td>10</td> <td></td> </tr> <tr> <td>3</td> <td>Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (eg listed buildings)</td> <td>2.5</td> <td>10 (a)</td> <td></td> </tr> </tbody> </table> <p>Note: Even if guideline values as in line 1, column 2, are complied with, minor damage cannot be ruled out.            (a) Section 6.1.2 must be observed.            (b) Vibration levels above apply to all works, including unavoidable works as defined in NV3.</p>	Column Line	1	Type of building	Guideline values for vi, max in mm/s			2	3				Topmost floor, horizontal direction, all frequencies	Floor slab, vertical direction, all frequencies	1	Buildings used for commercial purposes, industrial buildings, and buildings of similar design	10	10		2	Residential buildings and buildings of similar design and/or occupancy	5	10		3	Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (eg listed buildings)	2.5	10 (a)		
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NV10	<p><b>Minimise impacts from ground-borne (internal) noise</b></p> <p>Implement management actions in consultation with potentially affected land owners to protect amenity at residences where the following ground borne noise guideline targets based on Section 4.2 of the New South Wales Interim Construction Noise Guidelines are exceeded during construction.</p> <table border="1"> <thead> <tr> <th>Time of Day</th> <th>Internal noise level measured at the centre of the most affected habitable room</th> </tr> </thead> <tbody> <tr> <td>Evening (6 pm to 10 pm)</td> <td>LAeq (15 minute) = 40 dBA</td> </tr> <tr> <td>Evening (6 pm to 10 pm)</td> <td>LAeq (15 minute) = 35 dBA</td> </tr> </tbody> </table> <p>Notes            1 Levels are only applicable when ground borne noise levels are higher than airborne noise levels.            2 Management actions include community consultation to determine acceptable level of disruption and provision of respite accommodation in some circumstances.            3 Noise levels above apply to all works, including unavoidable works as defined in NV3</p>	Time of Day	Internal noise level measured at the centre of the most affected habitable room	Evening (6 pm to 10 pm)	LAeq (15 minute) = 40 dBA	Evening (6 pm to 10 pm)	LAeq (15 minute) = 35 dBA	<p><b>Construction</b></p> <p>The Project has developed and implemented a Construction Noise and Vibration Management Plan (CNVMP).            The Project does not include any road tunnels; therefore, this requirement that seeks to minimise impacts from ground-borne (internal) noise is unlikely to be triggered by the scope of works within this UDLP.</p>																						
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NV11	<p><b>Minimise amenity impacts from blast vibration</b></p> <p>Implement management actions if the following vibration values are not achieved. Blasting activities must comply with Australian Standard AS2187.2-2006, Explosives – Storage and use Part 2 – Use of explosives for all blasting.</p> <table border="1"> <thead> <tr> <th>Category (as defined in AS 2187.2-2006)</th> <th>Type of blasting operations</th> <th>Peak Overpressure Value (dBL)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Sensitive Site</td> <td>More than 20 blasts</td> <td>5 mm/s for 95% blasts per year 10 mm/s maximum (unless by agreement with occupier)</td> </tr> <tr> <td>Less than 20 blasts</td> <td>10 mm/s maximum (unless by agreement with occupier)</td> </tr> <tr> <td>Non-sensitive site (with occupants)</td> <td>All blasting</td> <td>25 mm/s maximum value (unless by agreement with occupier).</td> </tr> <tr> <td>Scientific equipment</td> <td>All blasting</td> <td>Existing ambient levels or ASHRAE VC Standards (as defined in the 2015 handbook) (whichever is the higher) or manufacturers equipment levels (unless by agreement with occupier)</td> </tr> </tbody> </table>	Category (as defined in AS 2187.2-2006)	Type of blasting operations	Peak Overpressure Value (dBL)	Sensitive Site	More than 20 blasts	5 mm/s for 95% blasts per year 10 mm/s maximum (unless by agreement with occupier)	Less than 20 blasts	10 mm/s maximum (unless by agreement with occupier)	Non-sensitive site (with occupants)	All blasting	25 mm/s maximum value (unless by agreement with occupier).	Scientific equipment	All blasting	Existing ambient levels or ASHRAE VC Standards (as defined in the 2015 handbook) (whichever is the higher) or manufacturers equipment levels (unless by agreement with occupier)	<p>The Project does not include any blast vibration; therefore, this requirement is not relevant to the scope of this UDLP.</p>														
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# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response											
NV12	<p><b>Minimise amenity impacts from blast overpressure</b> Implement management actions if the following overpressure values are not achieved. Blasting activities must comply with Australian Standard AS2187.2-2006, Explosives – Storage and use Part 2 – Use of explosives for all blasting.</p> <table border="1"> <thead> <tr> <th>Category (as defined in AS 2187.2-2006)</th> <th>Type of blasting operations</th> <th>Peak Overpressure Value (dBL)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Sensitive Site</td> <td>More than 20 blasts</td> <td>115 dBL for 95% blasts 120 dBL maximum (unless by agreement with occupier)</td> </tr> <tr> <td>Less than 20 blasts</td> <td>120 dBL for 95% blasts 125 dBL maximum (unless by agreement with occupier)</td> </tr> <tr> <td>Occupied non-sensitive sites such as factories and commercial premises</td> <td>All blasting</td> <td>125 dBL maximum (unless by agreement with occupier) For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturers specification or levels that can be shown to adversely affect the equipment operation</td> </tr> </tbody> </table>	Category (as defined in AS 2187.2-2006)	Type of blasting operations	Peak Overpressure Value (dBL)	Sensitive Site	More than 20 blasts	115 dBL for 95% blasts 120 dBL maximum (unless by agreement with occupier)	Less than 20 blasts	120 dBL for 95% blasts 125 dBL maximum (unless by agreement with occupier)	Occupied non-sensitive sites such as factories and commercial premises	All blasting	125 dBL maximum (unless by agreement with occupier) For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturers specification or levels that can be shown to adversely affect the equipment operation	The Project does not include any blasting activities; therefore, this requirement is not relevant to the scope of this UDLP.
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NV13 <span>C</span>	<p><b>Noise mitigation – noise walls</b> Construction of permanent noise attenuation must, where feasible, be installed in advance of adjacent works. Where the ultimate wall cannot be constructed prior to demolition of the existing wall and noise sensitive premises will be exposed to significantly increased traffic noise for an extended period, install temporary noise walls where practicable.</p>	<p><b>Construction</b> Construction of new and replacement noise walls will be managed to provide continuity of noise protection through the construction process, particularly to residential interfaces and schools. Final details of construction staging, including where temporary noise walls may be required, will be planned and implemented in accordance with the requirements of the Construction Noise and Vibration Management Plan (CNVMP).</p>											
NV14 <span>D</span> <span>C</span>	<p><b>Reduce impacts from engine brake noise</b> Measures to encourage heavy vehicle drivers to reduce use of engine brakes must be considered and implemented, where practicable.</p>	<p><b>Design</b> Changes to existing road conditions within this UDLP are limited to the redevelopment of the Doncaster Road interchange, which involves replacement of the existing road bridge as well as reconfiguration of the entry/exit ramps, and modifications to the westbound on-ramp at Elgar Road. Design measures to reduce potential noise impacts from heavy vehicle braking at these locations include reducing the design and posted speed limit from 70km/h to 60km/h on Doncaster Road between Winfield Road and Hender Street, as well as extending the on/off ramps in order to lower overall gradients to minimise the extent to which braking is relied upon to manage speed.</p> <p><b>Construction</b> The Project will ensure heavy vehicles are fitted with a maintained Original Equipment Manufacturer exhaust silencer or a silencer that complies with the National Transport Commission’s ‘In-service test procedure’ and standard.</p>											
NV15 <span>D</span> <span>O</span>	<p><b>Noise at public open space and school recreation grounds</b> Predicted noise levels at existing public open space and school grounds detailed in updated noise modelling for the final design and as-built construction of the Project must not exceed the predicted design year noise levels detailed in the EES – Technical Appendix C. Noise monitoring at appropriate locations must be performed post construction to verify that predicted levels have been achieved. Monitoring must be performed 10 years and 20 years after Project opening.</p>	<p><b>Design</b> The Project is designed to achieve predicted design year noise levels. Additional noise modelling will be undertaken during the development of the design and suitable acoustic treatments applied to the Project to ensure all relevant EPRs are met. Mitigation measures such as noise reducing pavements and extending noise walls will be explored, where appropriate, as part of the detailed design.</p> <p><b>Operation</b> Operational phase monitoring will be undertaken by NELP.</p>											

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
NV16 O	<p><b>Monitoring of Ongoing performance of operational traffic noise mitigation measures</b></p> <p>Permanent noise monitoring stations must be established in representative locations based on a programme developed in consultation with the IEA and the EPA, to enable the ongoing real time monitoring of operational traffic noise.</p> <p>Where open graded asphalt is used and is relied on to achieve compliance with noise limits the acoustic performance of the OGA must be assessed at least once in each 12 months to ensure that it continues to reduce operational traffic noise to the project traffic noise objectives in EPR NV1.</p> <p>The NELP interactive noise tool</p> <p>The following information is to be made freely available on a publicly accessible website as interactive layers:</p> <ul style="list-style-type: none"> <li>- Existing (pre-Project) noise levels</li> <li>- Final operational road traffic noise contours for the Project</li> <li>- Operational noise criteria for the Project</li> <li>- Operational noise monitoring data for the Project.</li> </ul> <p>The maps are to be interactive so as to enable the public to locate their location on a map, identify the operational noise criteria and data relevant to their location and submit a query or complaint to NELP online.</p>	<p><b>Operation</b></p> <p>Permanent noise monitoring stations will be established by NELP in representative locations based on a program developed in consultation with the IEA and EPA Victoria, to enable the ongoing real time monitoring of operational traffic noise.</p>

## 14. Social and Community (SC)

- Planning and Environment Act 1987  
- Australian Standard AS/NSZ 10002:2014 Guidelines for Complaint Management in Organisations.

SC1 D C	<p><b>Reduce community disruption and adverse amenity impacts</b></p> <p>Design and construct the project to reduce disruption to residences, community infrastructure facilities and open space from direct acquisition or temporary occupation to the maximum extent reasonably possible to preserve acceptable levels of amenity.</p>	<p><b>Design</b></p> <p>Where possible, the Project infrastructure has been located to reduce disruption to residences, or direct acquisition or temporary occupation of community infrastructure and open space, and to preserve acceptable levels of amenity. Many of the locations of permanent infrastructure such as the SUP bridges and the road bridges have been determined by the location of existing bridges and the Eastern Freeway design.</p> <p><b>Construction</b></p> <p>The location and footprint of temporary construction compounds and site facilities have been carefully considered regarding acceptable levels of amenity and impacts. The layout and location of construction compounds will ensure that the impacts of temporary occupation and the temporary loss of open space is minimised. Occupation durations will only occur for the minimum time required to facilitate construction, and pedestrian and cyclist access will be maintained during this period.</p>
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SC2 D C	<p><b>Minimise and manage impacts of land acquisition and occupation</b></p> <p>Where private land is to be permanently acquired or temporarily occupied, the project must:</p> <ul style="list-style-type: none"> <li>- Minimise the extent of the acquisition or the extent or duration of the occupation</li> <li>- Use a case-management approach for project interactions with affected land owners and occupants. including appointing a social worker, buyers' advocate or equivalent to assist households with special needs to manage the transition, except where a land owner or occupier has requested not to be part of such assistance</li> <li>- Endeavour to reach agreement on the terms for possession of the land including purchasing properties early when identified for permanent acquisition and agreed by the landowner</li> <li>- Consider the relative vulnerability and special needs of land owners and occupants</li> <li>- Communicate likely timing and steps to be taken including updates as relevant</li> <li>- Return private land not required for permanent project infrastructure to its pre-existing use post-construction as soon as practicable, unless otherwise agreed with the land owner.</li> </ul> <p>Where public land is to be permanently acquired or temporarily occupied, the project will:</p> <ul style="list-style-type: none"> <li>- Minimise the extent of the acquisition or the extent or duration of the occupation</li> <li>- Stage works to the greatest extent reasonably possible to maintain functionality of the land for all users either within the site or on proximate land, subject to the Public Open Space Relocation and Replacement Plan required by EPR LP5</li> <li>- Endeavour to reach agreement with the land manager on the terms for possession of the land</li> <li>- Return public land not required for permanent project infrastructure to its pre-existing use post-construction as soon as practicable, including with all relevant reinstatement works, unless otherwise agreed with the land manager</li> <li>- In the case of public land used for formal active recreation, ensure that impacts are minimised in accordance with SC5.</li> </ul>	<p><b>Design</b></p> <p>There is no compulsory acquisition of private land required in this UDLP area.</p> <p><b>Construction</b></p> <p>The Project has developed a Land Access Management Plan that has been approved by NELP. During construction, the Project will minimise temporary occupation of any private and public land, including for construction access. Where access to land is required, the Project will stage access and only use land as required.</p> <p>The acquisition of public land is necessary to build the approved project solution. Where possible, the design of the permanent Project infrastructure such as SUP bridges and road bridges have been determined by the location of existing bridges and Eastern Freeway design to minimise the extent of permanent acquisition of public land. The temporary occupation of open space has been carefully considered and staged with our construction works and planned to return the land to the pre-existing use/condition as soon as possible or as otherwise agreed with the landowner/manager.</p> <p>The Land Access Management Plan and Asset Transfer Strategy detail the process for returning land to the appropriate landowner/manager.</p>
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D Design C Construction O Operation

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<p><b>SC3</b></p> <p><b>D</b> <b>C</b> <b>O</b></p>	<p><b>Implement a Communications and Community Engagement Plan</b></p> <p>Prior to construction, prepare and implement a Communications and Community Engagement Plan to engage the community and potentially affected stakeholders and communicate progress of construction activities and operation. The plan must include:</p> <ul style="list-style-type: none"> <li>– A process for identifying community issues and the recording, management, and resolution of complaints from affected stakeholders including business owners, community service providers, education providers, public and active transport key user groups and residents, consistent with Australian Standard AS/NZS 10002:2014 Guidelines for Complaint Management in Organisations</li> <li>– Approach to stakeholder identification</li> <li>– Enquiry management and record keeping approach and procedures including making available an attended 24-hour telephone number, postal address, and an email address and publishing these on the project website</li> <li>– Approach to communicating and engaging with the community and potentially affected stakeholders in relation to: <ul style="list-style-type: none"> <li>– Construction activities including temporary facilities and impacts that may affect the community, businesses, or individual stakeholders (e.g., dust, noise, vibration, and light) and relevant mitigation (e.g., relocations policy)</li> <li>– Changes to transport conditions and relevant mitigation (e.g., road closures, detours)</li> </ul> </li> <li>– Changes to transport conditions and relevant mitigation (e.g., road closures, detours)</li> <li>– Timelines and an outline of works that will affect particular local areas, to be updated to reflect current and anticipated conditions</li> <li>– Identifying how stakeholders can access information on environmental performance that is to be made publicly available</li> <li>– Incident and emergency communications, including notification methods and timeframes in the event of a major incident or overrun</li> <li>– Approach and processes to ensure that the workforce has appropriate community awareness and sensitivity including to prevent the workforce from parking in local roads and in public parking in the vicinity of local shopping areas except when frequenting those areas for private purposes</li> <li>– Innovative communications tools and methods to enhance the project’s ability to effectively communicate and engage with the community and stakeholders including best available technology in addition to conventional means</li> <li>– Approach to engaging with local schools to ascertain safety requirements (including evacuation procedures) and to provide education opportunities on project activities</li> <li>– Approach to making relevant project information available to the community, including updates on project works, with specific consideration to vulnerable groups (including culturally and linguistically diverse groups) and a responsive process for resolving complaints by vulnerable groups or individuals</li> <li>– How it will evaluate the effectiveness of the communication and engagement under the Communications and Community Engagement Plan.</li> </ul> <p>The Communications and Community Engagement Plan must consider and where appropriate address matters of interest or concern to the following stakeholders, and provide for the appointment of a dedicated liaison officer (as appropriate):</p> <ul style="list-style-type: none"> <li>– Municipal councils</li> <li>– Recreation, sporting clubs and community groups</li> <li>– Schools and other educational institutions</li> <li>– Potentially affected residents and property owners</li> <li>– Potentially affected business</li> <li>– Other public facilities in proximity</li> <li>– Religious and worship groups</li> <li>– Vulnerable groups</li> <li>– Traditional owners</li> <li>– Public transport users.</li> </ul>	<p><b>Design</b></p> <p>This UDLP is informed by significant consultation with key stakeholders such as councils, agencies and the community, as per the requirements of the North East Link Incorporated Document (December 2019, amended September 2023). The UDLP was made publicly available for inspection and comment through the public exhibition period between 9 October and 29 October 2023 prior to finalisation and submission to the Minister for Planning.</p> <p><b>Construction and operation</b></p> <p>The Project has prepared a Communications and Community Engagement Plan to guide community engagement and communications through construction and operation of the Project. The Plan aligns with the requirements of EPR SC3, including a process for identifying community issues and recording, managing, and resolving these issues.</p> <p>Regular engagement and timely communications will be maintained through letterbox drops, newsletters, community meetings, information sessions and social media posts, to maintain awareness of the Project and communicate overall Project benefits, ensure stakeholders are kept informed of construction progress and acknowledge and work through community and stakeholder matters of interest or concern.</p> <p>The Communications and Community Engagement Plan has been verified by the IEA in compliance with the requirements of the EMF.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>SC4</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<b>Participate in the Community Liaison Group</b> Contractors must participate in the Community Liaison Group (CLG) that has been established and managed by North East Link Project, to facilitate community and stakeholder involvement for the design and construction phases of the project. Participation must include: <ul style="list-style-type: none"> <li>– Attendance at meetings</li> <li>– Regular reporting of design and construction activities</li> <li>– Timely provision of relevant information, including response to issues raised by the Group</li> <li>– Regular reporting and monitoring of community feedback, impacts and discussion of mitigation measures and their effectiveness.</li> </ul>	<b>Design and Construction</b> The Project design solution has been and will continue to be informed by consultation with key stakeholders such as councils and the community, through public exhibition activities during the public exhibition period. The Southern Community Liaison Group (SCLG) is also a key stakeholder. The Project will participate in the Community Liaison Group (CLG) and the Business Liaison Groups (BLGs) established by NELP, as required, which will include feedback and responses to project issues, as required by the EPR.
<b>SC5</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<b>Minimise impacts of displacement of formal active recreation facilities</b> The project must be designed and delivered to minimise displacement of formal active recreation facilities including facilities on private land such as schools. Where formal active recreation facilities are displaced by the construction or operation of the project, the project must facilitate the reasonable relocation of all such facilities to enable their continued functionality at a reasonable level of service for those activities (except where otherwise agreed with the relevant facility owner or where other compensation is provided by agreement or under relevant legislation). The Proponent must work in collaboration with facility operators, local Councils, public land managers and relevant State authorities, to prepare and implement a Formal Active Recreation Facilities Relocation Plan. The Plan must: <ul style="list-style-type: none"> <li>– seek to relocate all formal active recreation facilities to reasonable relocation sites to the extent possible before existing facilities are discontinued</li> <li>– document measures to be provided by the Proponent to provide reasonable replacement facilities at all relocation sites.</li> <li>– where facilities are not permanently displaced, document measures to be provided by the Proponent to restore facilities that have been vacated to at least the same standard than when the use was discontinued, accounting for identified growth of clubs (where applicable) and for any decline in condition of the facility during the time of disuse.</li> <li>– consider and provide a suite of reasonable measures to enable the ongoing viability of relevant sporting and recreation clubs affected by displacement and to reduce material disadvantage.</li> </ul>	<b>Design</b> NELP has developed and implemented, in consultation with relevant councils and other stakeholders such as sports clubs, a Formal Active Recreation Facilities Relocation Plan for sports clubs impacted by the North East Link Program. The Project design solution has minimised impacts to formal active recreation facilities, including facilities on private land such as schools, to avoid any permanent displacement or encroachment into these facilities as a result of Project works. <b>Construction</b> Consultation will occur through the UDLP process with NELP, relevant councils and any impacted recreational groups. This includes the temporary occupation of the north-western oval at Elgar Park to facilitate adjacent road and civil works. Reinstatement and restorative works will be undertaken prior to Project completion. Design and construction teams will work collaboratively on programming works, minimising construction footprint and assessing options (where possible) to drive the best outcomes for the community. The Project team will work closely with NELP on stakeholder liaison.
<b>SC6</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<b>Minimise impacts on formal active recreation and other facilities</b> Where construction or operation activities directly impact formal active recreation facilities or community infrastructure facilities not on public land such as schools, child care centres, and aged care centres, consultation must occur with facility operators, owners and user groups of the facilities to understand and implement any practical measures that can be taken to avoid or minimise impacts. Such measures must provide for the continued operation of each facility (except where the facility is permanently displaced), with suitable access, provision of generally proximate parking comparable to pre-development conditions (where possible), reasonable protection of amenity, and maintenance of the current level and nature of activity, except where otherwise agreed with relevant facility owners.	<b>Design</b> The design has minimised impacts on formal recreation facilities or community infrastructure facilities not on public land such as schools, child care centres, and aged care centres. Consultation has occurred with operators of key facilities to inform any specific design considerations. An example of this is consultation with Birralee Primary School to ensure the Heyington Avenue SUP Bridge design and construction program and methodology will not adversely impact the school's operations. <b>Construction</b> Further consultation will occur with facility operators, owners and user groups of the facilities to understand and implement any practical measures that can be taken to avoid or minimise ongoing construction impacts. A Communications and Community Engagement Plan has also been developed and is being implemented by the Project. Additionally, relevant sub-plans, such as traffic management plans, will be developed to address relevant functionality and access requirements in consultation with relevant stakeholders. Communications and Community Engagement sub-plans will also be developed as required, outlining measures to minimise construction impacts on formal active recreation facilities or community infrastructure facilities not on public land such as schools, child care centres, and aged care centres. Controls may include notification to stakeholders of construction activities and contingency measures where disruptions cannot be avoided. Details of full compliance with this EPR are also provided in the detailed design process.

## 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>SC7</b>  	<p><b>Implement a Community Involvement and Participation Plan (CIPP)</b></p> <p>Develop and implement a CIPP in consultation with local councils for communities within those council areas affected by the impacts of the Project to improve community connectedness and cohesiveness, enhance the local area and create a positive project legacy. The plan must include:</p> <ul style="list-style-type: none"> <li>– Identification of affected communities relevant to the CIPP</li> <li>– Approach and processes for funding allocation with funding to be proportionate to the level of impact on each community.</li> <li>– Identification of types of initiatives that the CIPP may facilitate including community led, community partnership programs; community support grants; community events; sponsorships of local sporting clubs; small capital works projects targeting community, sporting, and recreation facilities.</li> </ul>	<p><b>Construction and operation</b></p> <p>NELP will develop and implement a Community Involvement and Participation Plan (CIPP) in consultation with councils in accordance with this EPR.</p>
<b>SC8</b>  	<p><b>Implement a voluntary purchase scheme for residential properties</b></p> <p>Develop and implement a voluntary purchase scheme for residential properties that satisfies defined criteria relating to significant amenity impacts.</p> <p>The voluntary purchase scheme must include principles and criteria for eligibility of residential properties for inclusion in the voluntary purchase scheme. The principles and criteria must be developed having regard to:</p> <ul style="list-style-type: none"> <li>– Construction impacts including proximity of the residential property to major works and likely extent and duration of proximate works; and</li> <li>– Built form impacts on the residential property including visual intrusion and overshadowing.</li> </ul> <p>In applying the principles and criteria of the voluntary purchase scheme, consideration must also be given to the presence of vulnerable occupants of residential properties.</p>	<p><b>Construction and operation</b></p> <p>NELP is developing a Voluntary Purchase Scheme (VPS) for residential properties that satisfies defined criteria relating to significant amenity impacts. The VPS will be applicable to residents affected by the final project design, where defined criteria are met.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>15. Surface Water (SW)</b>		
	<ul style="list-style-type: none"> <li>– Water Act 1989</li> <li>– Conservation, Forests and Lands Act 1987</li> <li>– Water Industry Regulations 2006 (Vic)</li> <li>– State Environment Protection Policy (Waters) 2018 (Vic)</li> <li>– Environment Reference Standard (Land, Water)</li> <li>– Victorian WorkCover Authority and Australian Standard AS1940 Storage Handling of Flammable and Combustible Liquids</li> <li>– DELWP Integrated Water Management Framework for Victoria (September 2017)</li> <li>– VicRoads Integrated Water Management Guidelines (June 2013)</li> <li>EPA Publications:               <ul style="list-style-type: none"> <li>– 275 (1991) Construction techniques for sediment pollution control</li> <li>– 1834, Civil construction, building and demolition guide (EPA Victoria November 2020)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>– 596 (1998) Point Source discharge to streams: protocol for in-stream monitoring and assessment</li> <li>– Victorian Stormwater Committee’s Best Practice Environmental Management Guidelines for Urban Stormwater (as published by CSIRO in 1999 with assistance from EPA Victoria and others)</li> <li>– Industrial waste resource guidelines IWRG701 Sampling and analysis of waters, wastewaters, soils and wastes</li> </ul>
<b>SW1</b> D C	<p><b>Discharges and runoff to meet State Environment Protection Policy (Waters)</b></p> <p>Meet the State Environment Protection Policy (Waters) requirements for discharge and run-off from the project, including by complying with the Victorian Stormwater Committee’s Best Practice Environmental Management Guidelines for Urban Stormwater (as published by CSIRO in 1999 with assistance from EPA Victoria and others).</p>	<p><b>Design and construction</b></p> <p>The proposed drainage design and water sensitive urban design (WSUD) will meet the State Environment Protection Policy (Waters) – also referred to as Environmental Reference Standard (ERS) – for discharge and runoff from the Project, including by complying with the Victorian Stormwater Committee’s Best Practice Environmental Management Guidelines (BPEMG) for urban stormwater. Pollutants potentially generated by the Project and WSUD mitigation measures have been assessed using MUSIC (‘Model for Urban Stormwater Improvement Conceptualisation’) software to confirm compliance with the BPEMG. This MUSIC model will be further updated during the detailed design phase to further ascertain the level of pollutant reduction to be achieved and where additional WSUD features may be required.</p>
<b>SW2</b> D C O	<p><b>Design and implement spill containment</b></p> <p>Design and construct the spill containment capacity of the stormwater drainage system for all freeway pavements (including ramps) to manage the risk of hazardous spills from traffic accidents at or prior to every stormwater outlet, to meet AustRoads requirements (Part 5 Drainage – General &amp; Hydrology Considerations). The design and location of spill containment must consider the risk and potential impact of a spill, as well as the effectiveness in reducing the risks associated with a spill on the environment. Develop procedures for freeway roads and ramps to be implemented in response to a hazardous spill. The OEMP must include requirements to maintain spill containment infrastructure and implement associated procedures.</p>	<p><b>Design</b></p> <p>Spill containment capacity of the stormwater drainage for all Freeway pavements will be considered in the detailed design phase.</p> <p><b>Construction and operation</b></p> <p>The Project will be constructed with consideration of spill containment capacity of the stormwater drainage system for all Freeway pavements. The Operational Environmental Management Plan (OEMP) will include further requirements to address this EPR.</p>
<b>SW3</b> C	<p><b>Waste water discharges to be minimised and approved</b></p> <p>The Surface Water Management Plan (refer EPR SW5) and OEMP must include requirements and methods for minimising, handling, classifying, treating, disposing and otherwise managing wastewater.</p> <p>Any proposed discharge of wastewater from the site must be approved by the relevant authority prior to discharges occurring and meet the State Environment Protection Policy (SEPP) (Waters) requirements.</p>	<p><b>Construction</b></p> <p>The Project has developed a Surface Water Management Plan (SWMP) for construction in consultation with the EPA. The SWMP includes requirements and methods for minimising, handling, classifying, treating, disposing and/or otherwise managing wastewater. All proposed discharge of wastewater from the site will be approved by the relevant authority prior to discharges occurring and will meet Victorian Government requirements.</p> <p>The SWMP has been verified by the IEA in compliance with the requirements of the EMF.</p>
<b>SW4</b> D C	<p><b>Monitor water quality</b></p> <p>Develop and implement a surface water monitoring program prior to commencement of, and during construction, to assess surface water quality in multiple locations at suitable distances upstream and downstream of works to establish baseline conditions and enable assessment of construction impacts on receiving waters.</p> <p>The surface water quality monitoring program must be implemented for a period up to three years after commencement of North East Link operation, or a lesser period agreed with the EPA, to assess the discharges and runoff from the project against SEPP (Waters) requirements and confirm the effectiveness of environmental controls.</p> <p>The monitoring program must be developed in consultation with EPA Victoria and the asset owner/manager and as appropriate with reference to applicable policies and guidelines, including SEPP (Waters), Victorian Stormwater Committee’s Victoria Best Practice Environmental Management Guidelines for Urban Stormwater (as published by CSIRO in 1999 with assistance from EPA Victoria and others), EPA Victoria Publication 596 Point source discharges to streams: protocol for in-stream monitoring and assessment and Industrial Waste Resource Guideline 701 Sampling and analysis of waters, wastewaters, soils and wastes. The surface water monitoring program is to be used to inform the development and refinement of the Surface Water Management Plan (EPR SW5).</p>	<p><b>Design</b></p> <p>The surface water monitoring program has been developed incorporating relevant requirements relating to the Project design, ensuring that monitoring locations are suitable based on the extent of work and proposed activities</p> <p><b>Construction</b></p> <p>The Project will implement the surface water monitoring program in consultation with EPA Victoria and the asset owner/manager as appropriate, with reference to applicable policies and guidelines.</p> <p>A Surface Water Management Plan (SWMP) for construction has been implemented in consultation with EPA Victoria. The SWMP has been verified by the IEA in compliance with the requirements of the EMF.</p>

## 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
SW5 C	<p><b>Implement a Surface Water Management Plan during construction</b></p> <p>Develop and implement a Surface Water Management Plan, in consultation with EPA Victoria, for construction that sets out requirements and methods for:</p> <ul style="list-style-type: none"> <li>– Best practice sediment and erosion control and monitoring, in general accordance with EPA Victoria publications 275 Construction techniques for sediment pollution control, 1834 Civil construction, building and demolition guide, and Industrial Waste Resource Guideline 701 Sampling and analysis of waters, wastewaters, soils and wastes</li> <li>– Maintaining the key hydrologic and hydraulic functionality and reliability of existing flow paths, drainage lines and floodplain storage</li> <li>– Retaining existing flow characteristics to maintain waterway stability downstream of construction</li> <li>– Locating and bunding of any contaminated material (including tunnel spoil and stockpiled soil) to the 1% AEP flood level and to the requirements of EPA Victoria and the relevant drainage authority</li> <li>– Works scheduling to reduce flood related risks</li> <li>– Bunding of significant excavations including tunnel portals and interchanges to an appropriate level during the construction phase</li> <li>– Protecting against the risk of contaminated discharge to waterways when working in close proximity to potential pollutant sources (e.g., landfill or sewer infrastructure)</li> <li>– Documenting the existing condition of all drainage assets potentially affected by the works (including their immediate surrounds) to enable baseline conditions to be established and potential construction impacts on these assets to be assessed and managed.</li> </ul>	<p><b>Construction</b></p> <p>The Project has developed a Surface Water Management Plan (SWMP) for construction in consultation with EPA Victoria. The SWMP has been verified by the IEA in compliance with the requirements of the EMF.</p>
SW6 D	<p><b>Minimise risk from changes to flood levels, flows and velocities</b></p> <p>Permanent works and associated temporary construction works must not increase overall flood risk at relevant locations or modify the flow regime of waterways without the acceptance of the relevant flood plain manager, drainage authority or asset owner (typically Melbourne Water) and in consultation with other relevant authorities (e.g., Council, Department of Transport, Parks Victoria, SES, emergency services).</p> <p>Prior to commencement of relevant works, flood risk should be appropriately assessed using modelling of the design of permanent and temporary works to demonstrate the resultant flood levels and risk profile in accordance with Melbourne Water Standards for Infrastructure Projects in Flood-Prone Areas (2019).</p> <p>This modelling analysis is to include sufficient events (at least up to and including the 1% AEP event) and scenarios (e.g., with and without blockage) to support the estimation of tangible (e.g., average annual damages) and intangible flood damages. If significant increases in flood risk are predicted for any events analysed, an assessment of overall flood risk considering tangible and intangible flood damages must be prepared and presented with appropriate mitigation measures for the acceptance of the relevant drainage authority or asset owner prior to commencement of construction for the relevant section of the works. If there are significant design changes during construction, the model must continue to be updated, as appropriate to represent those changes.</p>	<p><b>Design</b></p> <p>The Project has carefully reviewed and considered the Incorporated Document (December 2019, amended September 2023) and all background materials in the EES process including EES Report, EES Technical Report, IAC Final Report and the Minister’s Assessment (all publicly available on the Victoria Big Build’s website); and is committed to appropriately mitigating potential surface water impacts as required by relevant EPRs. The response to SW6 is outlined below:</p> <ul style="list-style-type: none"> <li>– During the Detailed Design phase, relevant acceptances will be obtained through consultation with relevant authorities (particularly having regard to floodplain management authority, in this case, Melbourne Water) thereby minimising risk from changes to flood levels, flows and velocities.</li> <li>– The UDLP shows the final built form for the Project design as required by the Incorporated Document. Design details such as flood levels or exact flow paths and velocities are not required to be shown, however have been considered in development of this UDLP. However, the UDLP plans have incorporated annotations confirming that all amenities and facilities will be placed and maintained with ultimate future owners (which does not preclude floodplain management authority).</li> <li>– The design of permanent structures, buildings and landscaping is informed by flood modelling, which demonstrates any change to overall flood risk and includes an analysis of sufficient events up to and including the 1% AEP, and scenarios to support tangible and intangible flood damages and proposed mitigations); and detailed in the design development.</li> <li>– During the Design Packages review period, the Project will actively carry out consultation with relevant authorities as required, which may include coordination meetings and workshops where reviews of design packages are undertaken so as to obtain relevant acceptances prior to commencement of relevant works in accordance with this EPR.</li> <li>– Prior to the commencement of development of permanent above-ground buildings or structures (excluding preparatory buildings and works), the acceptance of the relevant floodplain manager (Melbourne Water) will be obtained, where permanent or associated temporary constructions will increase overall flood risk or modify the flow regime of waterways.</li> </ul>
SW7 C O	<p><b>Develop flood emergency management plans</b></p> <p>Develop and implement flood emergency management plans for each of construction and operation. Flood emergency management plans are to include but not be limited to measures to manage flood risk to construction sites (including consideration of scheduling works), the tunnels and tunnel portals including interchanges and substations, and operation, maintenance and emergency management procedures for flood protection works.</p>	<p><b>Construction and operation</b></p> <p>The Project has developed and implemented a Flood Emergency Management Plan (FEMP) for construction. The FEMP has been verified by the IEA in compliance with the requirements of the EMF.</p>

## 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>SW8</b> 	<b>Minimise impacts from waterway modifications</b> Where waterway or flow regime modification is necessary, modifications will be designed and undertaken in a way that mitigates to the extent practicable the effects of changes to flow and minimises, to the extent practicable, the potential for erosion, sediment plumes, impacts on bed or bank stability and exposure or mobilisation of contaminated material during construction and operation to the requirements of Melbourne Water or the relevant drainage authority.  Waterway modifications are to be designed and undertaken in a way that supports the visual and aesthetic amenity and environmental conditions (including habitat, connectivity, refuge, and hydraulic conditions) to support aquatic ecosystems of the waterways having regard to relevant strategies, policies and plans for that waterway and in consultation with Melbourne Water or the relevant drainage authority.	<b>Design</b> Where waterway or flow regimes are to be modified, with a particular focus on Koonung Creek modifications, these modifications will be designed and undertaken in consultation with Melbourne Water with the intent to mitigate (to the extent practicable) any negative effects, such as erosion or impacts on bank stability. Any residual impacts to nearby waterways will also be considered.  This UDLP identifies the landscaping design elements relating to any modified waterways and considers the visual and aesthetic amenity and any environmental conditions of these waterways, such as Koonung Creek.  <b>Construction</b> A Surface Water Management Plan (SWMP) will be implemented and will consider the impacts resulting from the modification of waterways and the flow regime.
<b>SW9</b> 	<b>Maintain bank stability</b> Develop and implement appropriate measures to minimise erosion and protect bank stability of waterways affected by construction or operation activities both directly or indirectly (for example as a result of site access), to the requirements of Melbourne Water or the relevant drainage authority.	<b>Design</b> Where waterways or flow regimes will be permanently modified (for example Koonung Creek in some locations), appropriate mitigations will be included within the drainage design solution to maintain bank stability. Bank stability will be assessed as part of the geotechnical design process to the satisfaction of Melbourne Water or the relevant drainage authority.   <b>Construction</b> A Surface Water Management Plan (SWMP) that includes reference to erosion and sedimentation controls has been implemented.
<b>SW10</b> 	<b>Provide for access to Melbourne Water and other drainage assets</b> Provide adequate clearances and access for ongoing maintenance of Melbourne Water and other drainage authority assets to the requirements of the relevant drainage authority.	<b>Design and Construction</b> An Asset Allocation Strategy has been developed and implemented to manage access to stakeholder assets, including drainage authority assets. The permanent design will include adequate access for asset owners post construction.  Adequate clearances and access will be provided for the ongoing maintenance of Melbourne Water and other drainage authority assets within the Project.

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
SW11 D	<p><b>Adopt Water Sensitive Urban and Road Design</b></p> <p>Adopt and implement water sensitive urban design and integrated water management principles in the stormwater treatment design in consultation with the relevant flood plain manager, drainage authority, asset owner or land manager and in general accordance with the Urban Design Strategy, the specifications of the relevant local council as applicable, and VicRoads Integrated Water Management Guidelines (June 2013), the Victorian Stormwater Committee’s Victoria Best Practice Environmental Management Guidelines for Urban Stormwater (as published by CSIRO in 1999 with assistance from EPA Victoria and others) and the DELWP Integrated Water Management Framework for Victoria (September 2017).</p>	<p><b>Design</b></p> <p>Water Sensitive Urban Design (WSUD) principles are being implemented on the Project in consultation with relevant authorities and land managers in accordance with this EPR and the Urban Design Strategy. Targeted consultation continues to occur with Melbourne Water and Councils as asset owners / land managers as part of detailed design and is part of the consultation process for this UDLP. The stormwater treatment design has considered the principles of WSUD and integrated water management.</p>
SW12 D C	<p><b>Minimise impacts on irrigation of sporting fields</b></p> <p>Maintain existing storage and available water supply of a quality that is suitable for the irrigation of sporting fields impacted by the project as necessary in consultation with the impacted stakeholders.</p>	<p><b>Design and construction</b></p> <p>The Project seeks to maintain existing storage and available water supply of a quality that is suitable for the irrigation of sporting fields impacted by the Project, as necessary and in consultation with impacted stakeholders.</p>
SW13 D	<p><b>Consider climate change effects</b></p> <p>The flood risk assessment (as required by EPR SW6) must consider current climate conditions as well as the potential effects of climate change on pre and post work scenarios for future climate conditions (i.e., increased rainfall intensity and sea-level rise) as predicted at the end of the asset’s design life using RCP8.5 projections from CSIRO to the requirements of Melbourne Water or the relevant drainage authority.</p>	<p><b>Design</b></p> <p>The flood risk assessment (as required by EPR SW6) considers current climate conditions as well as the potential effects of climate change on pre and post work scenarios for future climate conditions in accordance with this EP requirement; which informs the Project design. It is also noted that drainage design has been appropriately considered and incorporated within this UDLP.</p>
SW14 D C	<p><b>Meet existing water quality treatment performance</b></p> <p>Retain or replace existing water quality treatment assets to meet or exceed water quality treatment performance as originally designed for that asset. In consultation with relevant asset owner or land manager, consider climate change effects and the potential for improved treatment outcomes where practicable.</p>	<p><b>Design and construction</b></p> <p>The Project will implement the Surface Water Management Plan (SWMP) and Water Sensitive Urban Design (WSUD) to meet baseline as a minimum.</p> <p>In the SWMP, existing water quality treatment assets are clearly outlined and where improvements through the WSUD strategy can be made are specified. The existing water quality treatment assets that may be affected by the Project will be assessed and managed to ensure baseline conditions are met or improved. This process also involves consultation with relevant asset owners and/or land managers and considers climate change effects and the potential for improved treatment outcomes where practicable.</p>
SW15 D C O	<p><b>Water Sensitive Urban Design asset transfer strategy</b></p> <p>Prepare a strategy identifying Water Sensitive Urban Design assets constructed as part of the Project to be transferred to public authorities. The strategy must include a process to consult with relevant asset managers to confirm the relevant delivery and maintenance standards to be met.</p>	<p><b>Design and construction</b></p> <p>The Project team will develop and implement a Asset Transfer Strategy, which would include the Water Sensitive Urban Design assets.</p>
<p><b>16. Sustainability and Climate Change (SCC)</b></p> <p>– Protocol for Environmental Management (Greenhouse Gas Emissions and Energy Efficiency in Industry) – Infrastructure Sustainability Council of Australia rating tool</p>		
SCC1 D C	<p><b>Implement a Sustainability Management Plan</b></p> <p>North East Link Project must set sustainability targets and specify ratings to be achieved under the Infrastructure Sustainability Council’s Infrastructure Sustainability Rating Tool. Contractors must develop and implement a Sustainability Management Plan that contains measures to meet, as a minimum, the sustainability targets and specified ratings.</p>	<p><b>Design and construction</b></p> <p>The Project is targeting a minimum 50 points (Silver rating) under the Infrastructure Sustainability (IS) v2.1 Design and As Built Rating Tool.</p> <p>A Sustainability Management Plan (SuMP) has been developed and implemented on the Project to support achievement of the Project’s sustainability objectives and targets, including the Infrastructure Sustainability rating. The SuMP details the measures in place to meet the sustainability targets and specified ratings for the Project.</p> <p>The SuMP has been verified by the IEA in compliance with the requirements of the EMF.</p> <p><b>Operation</b></p> <p>The verified SuMP details that handover documentation must be prepared for the operator at the completion of the Project. This will include sustainability targets, operational sustainability initiatives, roles and responsibilities for objectives, reporting and review requirements.</p>

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>SCC2</b> <span style="color: red;">D</span> <span style="color: green;">C</span> <span style="color: blue;">O</span>	<b>Minimise greenhouse gas emissions</b> Integrate sustainable design practices which are best practice for major road and tunnel infrastructure projects into the design process and implement these to minimise, to the extent practicable, greenhouse gas emissions arising from construction, operation and maintenance of North East Link. In detailed design, select materials and consider energy and carbon during construction, to target: <ul style="list-style-type: none"> <li>– At least a 30% reduction in carbon emissions from the construction of North East Link against an Infrastructure Sustainability Council of Australia (ISCA) verified base case calculated in accordance with their independent standards (IS v1.2 Ene-1 Level 3 or v2.0 equivalent)</li> <li>– Use of a minimum of 50% of renewable energy for electricity used to construct North East Link (IS v1.2 Ene-2 Level 1.5 or v2.0 equivalent)</li> <li>– Net zero emissions in the operation and maintenance of North East Link (excluding emissions from traffic) with reference to the IS v2.0 energy and carbon guideline</li> <li>– Reduction of the amount of Portland Cement content in concrete across the project by a minimum of 30% against Green Building Council of Australia reference mix design levels subject to durability and strength requirements.</li> </ul>	<b>Design and construction</b> The Project approach to meeting greenhouse gas emissions minimisation targets includes the following initiatives: <ul style="list-style-type: none"> <li>– use of biodiesel and electrification of construction plant and equipment, as well as significant design optimisation to achieve a 30% reduction in construction phase greenhouse gas emissions</li> <li>– 100% of electricity used to construct the Project to be renewable energy</li> <li>– concrete specification to meet a minimum 40% reduction in Portland cement across the Project</li> <li>– reduced embodied carbon in Project material specification, including use of Recycled Asphalt Pavement (RAP), recycled plastic reinforcement of SUPs instead of steel, and recycled plastic pipes</li> </ul> Throughout the detailed design and construction phases, the Project will continue to investigate opportunities in the selection and procurement of materials and the construction methodology and practices that will minimise greenhouse gas emissions.  <b>Operation</b> The Project will support the achievement of net zero emissions during operation and maintenance via: <ul style="list-style-type: none"> <li>– efficient road lighting design that reduces operational electricity demand</li> <li>– consideration of maintenance and end-of-life adaptability and reuse.</li> </ul>
<b>SCC3</b>	<b>Apply best practice measures for energy usage for tunnel ventilation and lighting systems</b> Best practice measures for energy usage are to be applied for the tunnel ventilation and lighting systems in accordance with the Protocol for Environmental Management (Greenhouse Gas Emissions and Energy Efficiency in Industry), the EPA Victoria Development Licence and the EPA Victoria Operating Licence.	The Project does not include any road tunnels; therefore, this requirement for tunnel ventilation is not relevant to the scope of this UDLP.
<b>SCC4</b> <span style="color: green;">C</span> <span style="color: blue;">O</span>	<b>Minimise and appropriately manage waste</b> Develop and implement management measures for waste (excluding soils) minimisation during construction and operation in accordance with the <i>Environment Protection Act 2017</i> waste management hierarchy and management options, to address: <ul style="list-style-type: none"> <li>– Litter management</li> <li>– Construction and demolition wastes including, but not limited to, washing residues, slurries and contaminated water</li> <li>– Organic wastes</li> <li>– Inert solid wastes.</li> </ul>	<b>Construction</b> Considerations that have been incorporated in the Project design to contribute to the minimisation and appropriate management of waste during construction include the following: <ul style="list-style-type: none"> <li>– use of precast elements where appropriate, resulting in reduced waste generated on site</li> <li>– identification within the design of opportunities to utilise demolished materials such as non-structural fill and crushed concrete.</li> </ul> A waste management sub-plan has been developed as part of the Construction Environmental Management Plan (CEMP), outlining actions to design for resource and waste efficiency through considerations of potential reuse of materials to the extent reasonably practical and minimise and appropriately manage waste. The CEMP has been accepted by NELP and verified by the IEA.  <b>Operation</b> Adaptability and end-of-life considerations will be integrated into design development to support minimisation of waste in operation and maintenance of the asset.
<b>SCC5</b> <span style="color: green;">C</span>	<b>Minimise potable water consumption</b> Stormwater, recycled water, and groundwater inflow to tunnels or other water sources must be used in preference to potable water for construction activities, including concrete mixing and dust control, where this is available, practicable, of suitable quality, and meets health and safety requirements.	<b>Construction</b> Specific strategies to minimise potable water consumption include the following: <ul style="list-style-type: none"> <li>– rainwater harvesting and reuse for the site compounds to serve toilet flushing and other appropriate demands such as washdown and irrigation</li> <li>– drought tolerant landscape design including specification of local indigenous plants.</li> </ul> The Sustainability Management Plan (SuMP) and Construction Environmental Management Plan (CEMP) have been verified by the IEA in compliance with the requirements of the EMF.

# 6. Compliance with the Environmental Performance Requirements

EPR Code	Environmental Performance Requirement	Project Response
<b>17. Traffic and Transport (TT)</b> – Planning and Environment Act 1987 – Road Management Act 2004		
<b>T1</b> <span style="color: red; font-weight: bold; border: 1px solid red; border-radius: 50%; padding: 2px;">D</span>	<b>Optimise design performance</b> Optimise the design of the works in consultation with appropriate road management authorities, public transport authorities, relevant land managers and local councils as part of the detailed design process to: <ul style="list-style-type: none"> <li>– Minimise adverse impact on travel times for all transport modes, including walking and cycling</li> <li>– Maintain and where practicable, enhance the traffic movements at interchanges and adjacent intersections within the project boundary</li> <li>– Design the road, walking and cycling and public transport elements to meet relevant road and transport authority requirements</li> <li>– Design any truncation of local access roads in consultation with directly affected residents</li> <li>– Maintain, and where practicable, enhance pedestrian movements, bicycle connectivity, and shared use paths, including access (both vehicular and pedestrian) to public open space and reserves</li> <li>– Work with relevant public transport authorities and road authorities to minimise impacts on buses, trams and rail and, where practicable, enhance public transport facilities and services that cross or run parallel to the alignment of North East Link</li> <li>– Replace and enhance commuter car parking, where affected by the Project, in consultation with the Department of Transport</li> <li>– Minimise loss of other car parking in consultation with relevant local councils and other directly affected stakeholders.</li> </ul>	<b>Design</b> The Project seeks to optimise design performance as the design of the works is further developed through consultation with the appropriate road management authorities/public transport providers, land managers and local councils through detailed design. The design meets or exceeds minimum authority requirements and has sought to: <ul style="list-style-type: none"> <li>– enhance pedestrian and bicycle connectivity and SUPs along Koonung Creek Reserve and improve connections over SUP bridges at Estelle Street and Heyington Avenue</li> <li>– integrate pedestrian and cycling connections with key public transport nodes.</li> </ul> The Project does not include any road truncations. Any proposed changes to local road access will be conducted in consultation with directly affected residents and local councils as appropriate and in line with the IAP2 (International Association of Public Participation) Spectrum of Public Participation, to optimise design performance. The Project will work closely with the transport arm of the Department of Transport and Planning (DTP), public transport operators, local councils and other directly affected stakeholders to minimise public transport disruptions and car parking loss. Where disruption or loss of car parking spaces is unavoidable, the Project will clearly communicate this information in a timely manner to relevant stakeholders and the local community.
<b>T2</b> <span style="color: green; font-weight: bold; border: 1px solid green; border-radius: 50%; padding: 2px;">C</span>	<b>Transport Management Plan(s) (TMP)</b> Prior to commencement of relevant works, develop and implement Transport Management Plan(s) (TMP) to minimise disruption to affected local land uses, traffic, car parking, public transport (rail, tram and bus), pedestrian and bicycle movements and existing public facilities during all stages of construction. The TMP must be informed and supported by an appropriate level of transport modelling and must include: <ul style="list-style-type: none"> <li>– Requirements for maintaining transport capacity for all travel modes in the peak demand periods.</li> <li>– Requirements for limiting the amount of construction haulage during the peak demand periods.</li> <li>– A monitoring program to assess the effectiveness of the TMPs on all modes of transport.</li> <li>– Where monitoring identifies adverse impacts, implement practicable and appropriate mitigation measures.</li> <li>– Consideration of construction activities for other relevant major projects occurring concurrently with construction activities for North East Link and potentially impacting modes of transport in the same area.</li> <li>– Potential routes for construction haulage and construction vehicles travelling to and from the project construction site, recognising sensitive receptors and avoiding the use of local streets where practicable.</li> <li>– Suitable measures, developed in consultation with emergency services, to ensure emergency service access is not inhibited as a result of project construction activities.</li> <li>– Provision of alternative parking where practicable to replace public, private and commuter parking lost as a result of project construction activities.</li> <li>– Requirements to minimise impacts on local streets, community and commercial facilities by providing parking for construction workers at construction compounds where practicable.</li> <li>– Measures to ensure connectivity and safety for all transport network users during construction.</li> <li>– Measures to limit the extent of road closures.</li> <li>– Consultation with the Department of Transport, relevant transportation authorities and relevant local Councils.</li> <li>– A TMP may be split into precincts where appropriate but must consider other precinct TMPs through the Transport Management Liaison Group as per EPR T3.</li> <li>– TMPs must be submitted to the relevant authority for approval.</li> </ul>	<b>Construction</b> A Traffic Management Plan (TMP) has been developed and will be implemented prior to commencement of relevant works to minimise disruption to all affected land uses and transport modes during the construction of the Project. Worksite TMPs will be approved by the relevant road authority. The TMP has been verified by the IEA in compliance with the requirements of the EMF.

EPR Code	Environmental Performance Requirement	Project Response
<b>T3</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Transport Management Liaison Group</b></p> <p>A Transport Management Liaison Group (TMLG) must be established and convene prior to the commencement of any works that may impact on existing roads, paths, or public transport infrastructure. The TMLG must include representatives from the State, the Department of Transport, emergency services, the project, relevant transportation authorities and relevant local councils.</p> <p>The TMLG will be a forum for exchange of information and discussion of issues associated with Transport Management Plans. This must include review of proposed haulage routes for construction sites to minimise reliance on a single haulage route between Bell Street and the M80 Ring Road and facilitate different sites using different haulage routes.</p> <p>The TMLG must be provided with the Transport Management Plans, details as to timing of implementation, information about construction traffic monitoring conducted by the project, relevant sections of road safety audit reports and other reports, as relevant.</p> <p>Where construction activities have the potential to significantly impact on specific stakeholder or community group facilities, the TMLG should be satisfied that there has been adequate consultation to inform the Transport Management Plans and should consider inviting stakeholder representatives to relevant TMLG meetings.</p> <p>The TMLG must meet at least monthly until the completion of construction.</p>	<p><b>Design and construction</b></p> <p>NELP has established the Transport Management Liaison Group (TMLG) as part of the Early Works Program.</p> <p>The Project team has prepared a Transport Management Plans which has been verified by the IEA. The Project representatives will attend the TMLG meetings and fulfil other obligations as specified in this EPR requirement.</p>
<b>T4</b> <span style="color: red;">D</span> <span style="color: green;">C</span>	<p><b>Road safety design</b></p> <p>Undertake independent road safety audits after each stage of detailed design and during and after construction. The project design and operational activities must meet all relevant road and transport authority requirements with respect to transport network user safety.</p>	<p><b>Design and construction</b></p> <p>The Project will appoint an independent road safety auditor to undertake road safety audits, to ensure all relevant road and transport authority requirements have been met with respect to transport network user safety. The design will be prepared in accordance with Project specific design requirements, and relevant design standards and guidelines.</p>
<b>T5</b> <span style="color: red;">D</span> <span style="color: green;">C</span> <span style="color: blue;">O</span>	<p><b>Traffic monitoring</b></p> <p>Undertake traffic monitoring on selected roads (arterial and non-arterial) identified in consultation with the relevant transportation authorities and local council pre-construction, at six monthly intervals during construction, and up to two years after construction is complete. As part of the selection process, consideration must be given to roads that carry public transport services. Ensure any material adverse traffic impacts of the Project are mitigated by implementing local area traffic management strategies, including other works as required in consultation with the relevant road management authorities.</p> <p>Develop and implement traffic performance management to monitor conditions during construction. Real time traffic information must be provided to drivers.</p>	<p>The Project will develop and undertake a traffic monitoring program in accordance with EPR T5.</p> <p><b>Design</b></p> <p>During the current design phase, there have been opportunities identified to incorporate Intelligent Transport System (ITS) monitoring capabilities enabling the monitoring of traffic. This will be explored further in the detailed design phase.</p> <p><b>Construction and operation</b></p> <p>Monitoring will also be undertaken in consultation with the relevant transportation authorities and local councils pre-construction, at six monthly intervals during construction, and up to two years after construction is complete. Operational phase monitoring is the responsibility of NELP.</p>

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