# 7. Project Description

## 7.1 Context

The South Road Superway Project begins at the Port River Expressway and Salisbury Highway junction and extends to Regency Road approximately 4.8 kilometres to the south. The project will create a non-stop corridor using an elevated roadway extending over the major intersections of South Terrace, Wingfield rail line, Cormack Road, Days Road and Grand Junction Road (**Figure 1.1**).

South Road will have three lanes in each direction north of Grand Junction Road and two lanes in each direction south of Grand Junction Road. The divided carriageway will be an elevated roadway that will overpass South Terrace, the Wingfield rail line (**Figure 7.1**), Cormack Road, Grand Junction Road and Days Road before returning to an at-grade carriageway in the vicinity of Taminga Street.

Generally the elevated roadway will have a clearance of 9 metres above local roads. Access to and from the elevated roadway will be provided by the Port River Expressway–Salisbury Highway interchange, by ramps at Grand Junction Road and ramps located south of Days Road. Service roads under and parallel with the elevated roadway will provide access to properties and local roads along the existing South Road alignment.

The proposed height of the structure is required to:

- ensure safety during construction
- allow traffic flow under the structure during construction
- allow for double stacked containers to be transported by rail
- create an elegant and striking structure that allows sunlight to penetrate below.

The existing South Road and Grand Junction Road intersection will be replaced with an intersection that incorporates Grand Junction Road, the South Road service road, and the on and off ramps for the elevated roadway (**Figure 7.2)**. Along South Road most intersections will be altered by this project. Traffic signals will be maintained under the elevated roadway at Cormack Road, Kateena Street, Days Road and Regency Road. Alterations to the signalised intersections in the network include:

- Cormack Road becoming a T-junction with the South Road service road (**Figure 7.3**)
- Kateena Street having left in/out and right turn out (detailed design will determine whether the right turn can be maintained)
- Days Road maintaining all movements
- Regency Road retaining its existing intersection layout.

The project will also include a number of local road improvements in the wider study area, including:

- extending Naweena Road and Rosberg Road to Grand Junction Road and providing traffic signals at the resultant intersection
- extending Naweena Road to Regency Road (via Gallipoli Grove) and providing traffic signals at Regency Road
- converting Davis Street, between Cormack Road and Francis Road, to a through road
- providing a connection from Salisbury Highway into Rafferty Street, extend Rafferty Street to Cormack Road and provide traffic signals at the resultant intersection
- upgrading Hanson Road to two lanes in each direction between Grand Junction Road and Cormack Road.

The project also relocates the South Road rail crossing to the Rafferty Street extension.

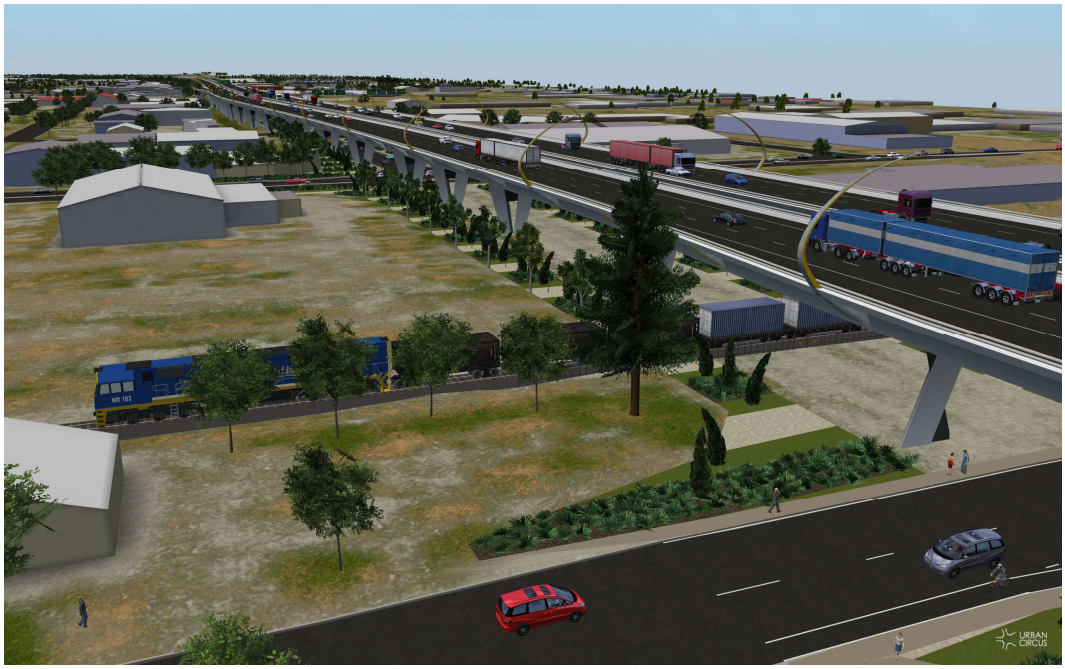


**Figure 7.1 Artist's Impression of South Terrace, Wingfield Rail Line with Superway above**

**Figure 7.2 Artist's Impression of South Road Service Road/Grand Junction Road Intersection with Superway above**

**Figure 7.3 Artist's Impression of Cormack Road T junction with South Road Service Roads with Superway above**

## 7.2 Design standards

### Road and corridor

The proposed route will be a new expressway standard road through an urban environment. It comprises:

- an elevated roadway providing restricted access to the corridor to ensure that road transport efficiencies and safety levels are achieved
- access to the elevated roadway at key locations
- service roads running parallel with the expressway at ground level
- east–west movement under the elevated roadway at key locations
- local road upgrades to maintain access and connectivity to local precincts
- minimisation of effects on adjacent properties and businesses.

Design principles for the project are:

- designed and built to Austroads and Queensland Main Roads standards
- no direct property access to the Superway
- facilities for pedestrians and cyclists provided at ground level
- roadway lighting provided for the elevated roadway, ramps and along service lanes
- posted speed for South Road (Aruma Street to Regency Road): 70 km/h.
- posted speed of the elevated roadway: 90 km/h
- posted speed of the ramps: 60 km/h
- posted speed for the service roads: 60 km/h
- posted speed for local roads: 50 km/h.

Geometric design parameters will be in accordance with the above design speeds and Austroads design standards. All intersection geometry will be in accordance with Austroads design standards, and will allow for appropriate design vehicles (e.g. A-Double access for designated A Double routes).

### 7.2.1 Safety

Road user safety is matched with the operating speed of the proposed elevated roadway and the expected traffic composition. Expected to significantly enhance safety are the:

- high standard of geometric design
- use of advanced traffic management systems to monitor traffic flow and incidents.

The traffic management systems proposed for the project may include:

- ramp metering
- break down bays
- variable speed management
- signage, e.g. variable message signs, changeable message signs, gantry signs
- incident management system
- surveillance, e.g. CCTV camera, video detection, detection loops
- data link with Traffic Management Centre at Norwood.

The project will improve safety by reducing the number of potential conflict points along South Road, particularly signalised intersections, side road junctions and the rail crossing.

### 7.2.2 Landscape and urban design

The Urban Design Framework developed for the proposed South Road Superway Project establishes a set of design objectives and principles to guide development of the engineering, urban and landscape design elements of the project. It has been used to develop the proposed mitigation measures.

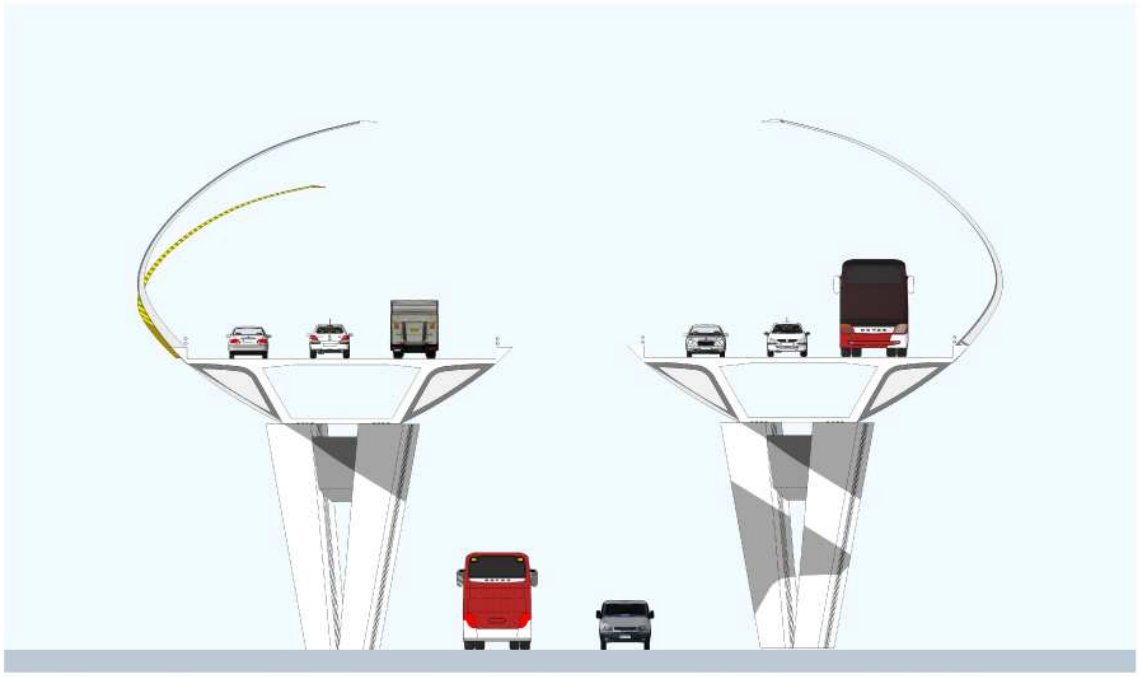
#### A vision for South Road Superway

The South Road Superway Project provides the opportunity to revitalise this critical transport corridor as well as adjacent urban areas. This revitalisation may take place through a number of urban design improvements including upgrades to pedestrian areas such as footpaths and median landscaping, the creation of gateway statements to create a sense of arrival at key destination points, and the opportunity to enhance existing public open space. An elevated roadway structure can also open up views across Adelaide for people travelling along the north–south corridor while maintaining important east–west linkages. Artist's impressions of typical cross sections of the elevated roadway are shown in **Figure 7.4**.

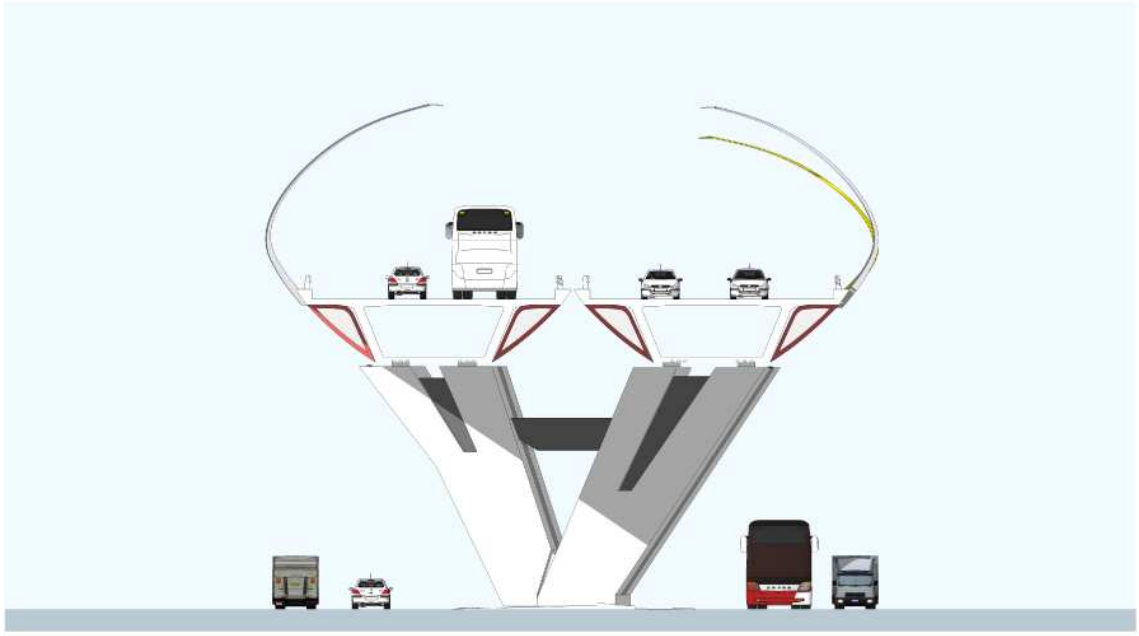
#### Urban design objectives

The urban design vision can be broken down into a series of objectives that will help with the delivery of the vision. They will be considered in addition to economic, safety, engineering and environmental objectives at all stages of project design, construction, operation and maintenance. The objectives are:

- enhance identity and character of the area
- ensure pedestrian spaces are accessible, attractive and safe
- create an iconic elevated roadway structure
- ensure incorporation of water sensitive urban design practices into project design.



Artists impressions of superway design and typical cross sections. Dual pier proposed north of Grand Junction Road.



Artists impressions of superway design and typical cross sections. Single pier proposed south of Grand Junction Road.

*Note: These drawings are conceptual only and final plans will be subject to detailed design requirements addressing traffic managment, cycleways, footpaths and landscape design treatments such as street trees, shrubs and groundcovers*

**South Road Superway Design Typical Cross Sections**
**Figure 7.4**

### Urban and landscape design strategy

The Urban and Landscape Design Framework and Indicative Landscape Concept Plans for the project are shown in **Figures 7.5–7.13.** The Urban Design Framework has been used to guide the design and development of high quality infrastructure elements including the elevated roadway itself, noise barriers and local streetscape improvements. The framework will highlight and improve positive characteristics of the surrounding environments by introducing new elements which add value to the precinct as a whole.

The main features of the strategy:

- provide visual relief to motorists and the community
  - noise barriers, reinforced earth and retaining walls of entry ramps will be treated with patterning, colour and screening planting to reduce their visual intrusion
- ameliorate the visual intrusion of large infrastructure elements
  - using wider footpaths and median strips to provide mass planting to contrast with the structural elements of the elevated roadway structure
  - architectural input into the design of the elevated roadway structure to minimise the visual interruption of east–west views
  - architectural treatments focus on breaking down the scale of the infrastructure to create a visually pleasing structure that sits well in the mixed use environment
- improve biodiversity within the corridor by using native plantings where possible
- create a landscape of suitable scale and drama to complement the surrounding built form and infrastructure
  - beneath the elevated roadway, effort will be made to introduce planting and smaller scale vertical elements to break down the scale of the structure
  - trees and planting along footpaths will be used to provide a 'human scale' to areas where there is pedestrian movement and in particular adjacent the residential areas of Westwood
- create urban design elements to add new value to the overall precinct
- ensure the landscape design minimises water use
- minimise maintenance requirements.

### Superway design

The concept design for the South Road Superway has aimed to create a light, elegant and striking design for each of the infrastructure elements, including piers, elevated roadway, light poles, gantries and barriers. Width to height design principles will be employed to make a visually sensitive and expressive structure.

The concept design includes the use of light and dark grey concrete in a curved form with tree-like columns separating the elevated roadway structure to allow sunlight penetration. Curved metal lighting structures will soften and enhance the structure. Artist's impressions of a typical elevated roadway, single or dual pier designs, are detailed in Figure 7.4.

This design is yet to be subject to detailed design, which may alter the final South Road Superway shape and supporting structure design.

### Streetscape

New footpaths, street trees and verge and median planting will improve the visual character of the corridor and help to break up the visual dominance of the elevated roadway. In particular consistent street tree planting will create a strong visual element and introduce a more human scale into the larger scale of the industrial landscape.

Medians provide a significant opportunity for urban design and landscape improvements. A banded pattern of low planting is proposed. Opportunities to provide vertical sculptural elements within the median may be explored.

**Gateway statements**

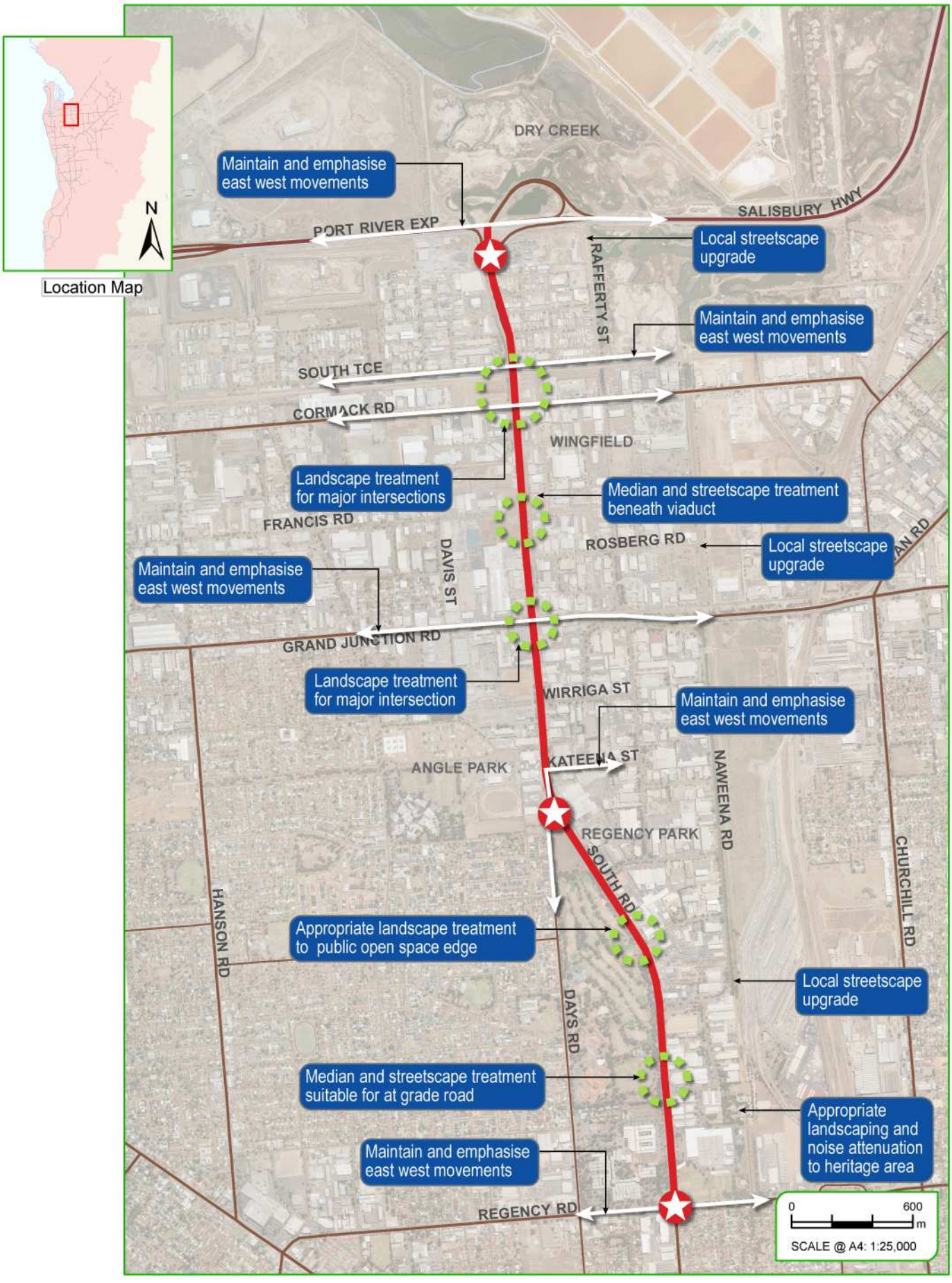
The creation of gateway statements at key points along the corridor will help to link it with the surrounding areas. Iconic urban form at strategic points will create landmarks along the corridor, allowing commuters to identify their location and/or acknowledge arrival at a destination. There is an opportunity to introduce large scale, public art elements into the landscape to delineate zones and create visual excitement for road users and the local community.

**Noise barriers**

Noise barriers may be required in some locations within the study area. Final location, design and construction materials will be determined during the detailed design phase of the project and informed by noise modelling. The noise barriers are an urban design opportunity to be incorporated into the visual treatment of the corridor. The walls could be treated with a number of visual effects including artwork, patterning, colour and screen planting.

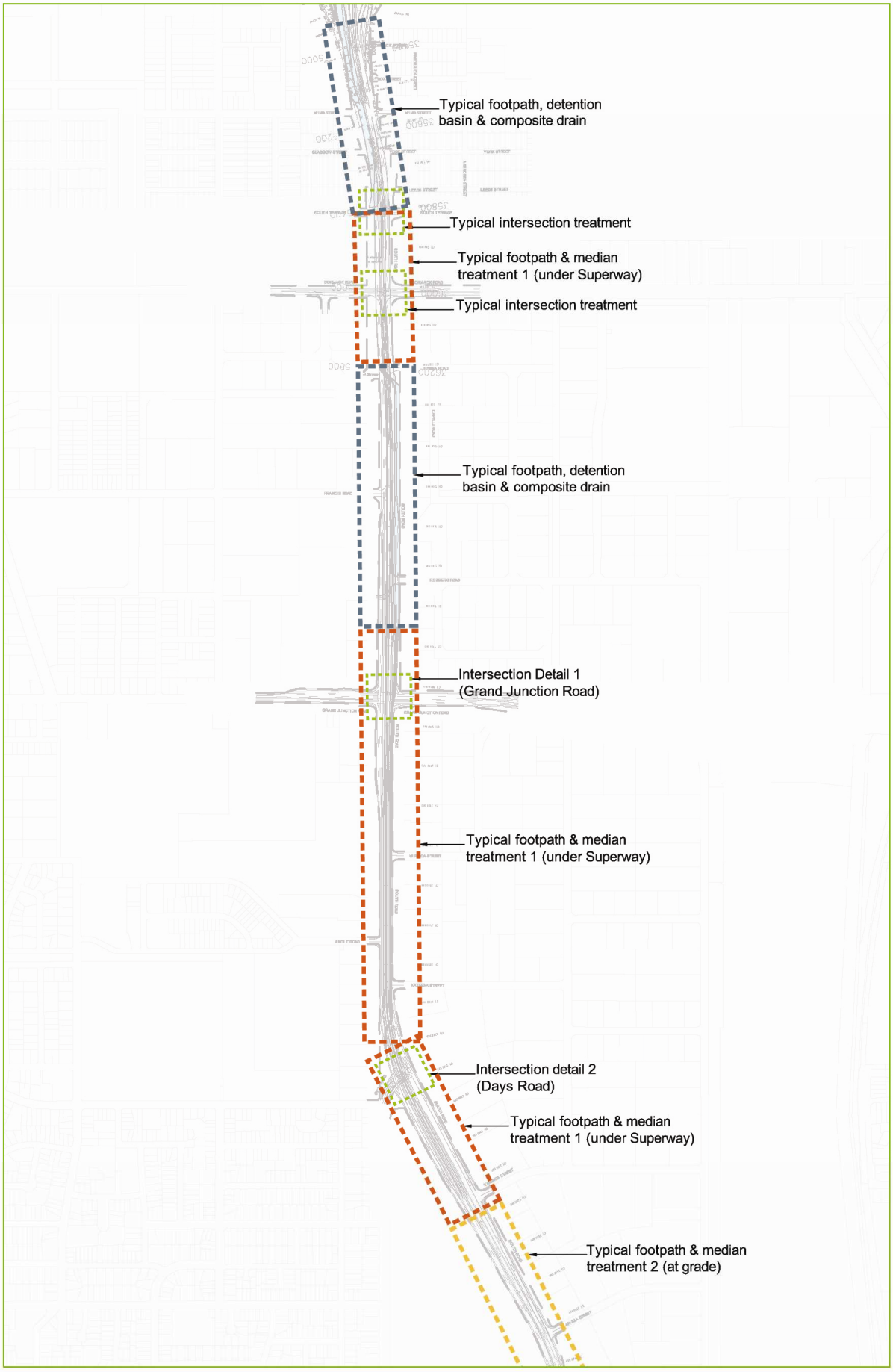
**Local road network changes**

The project proposes several changes to the road network to improve movements of local traffic through the area. The changes will not have significant effects on the area but do have the potential to improve the scenic quality by introducing quality road infrastructure with associated footpaths and street trees.



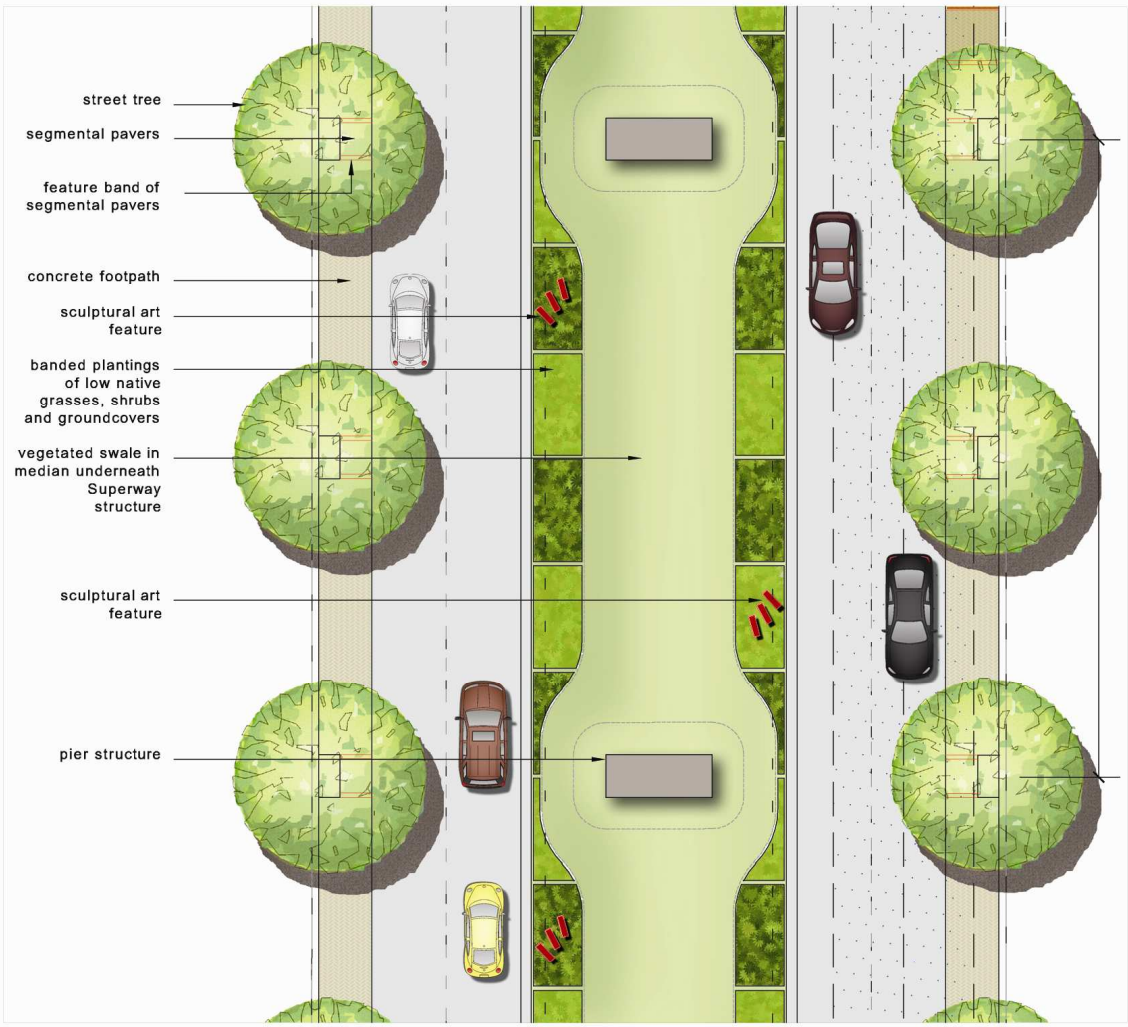

**Urban & Landscape Design Framework**

**Figure 7.5**

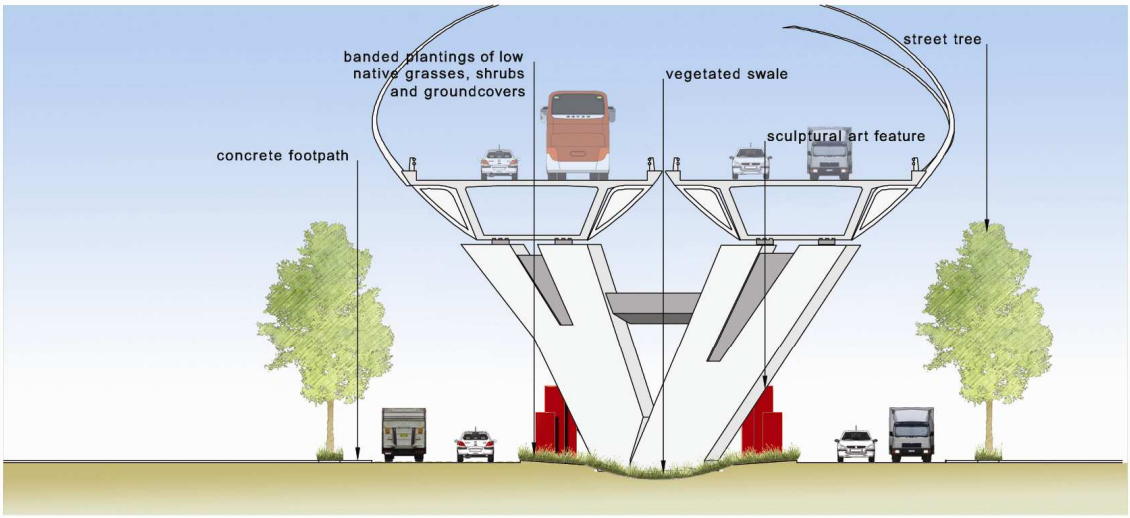



**Landscape Concept Key features**

**Figure 7.6**



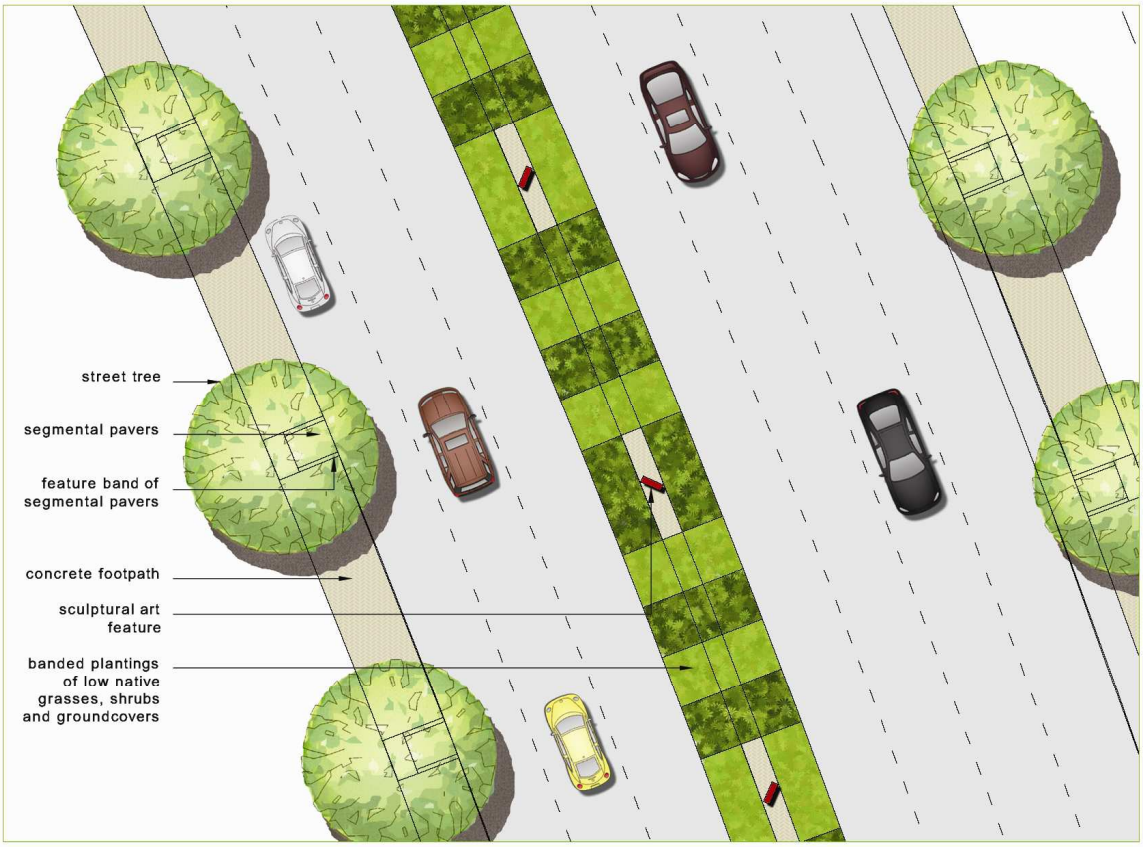

Plan View 1:250



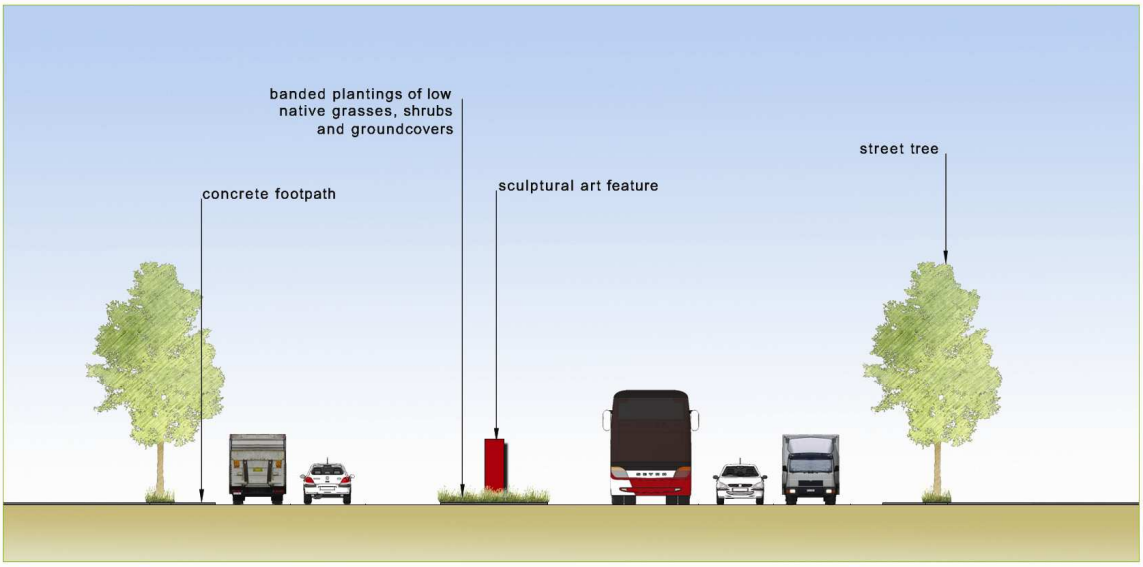

Cross Section 1:250

*Note: These drawings are conceptual only and final plans will be subject to detailed design requirements addressing traffic managment, cycleways, footpaths and landscape design treatments such as street trees, shrubs and groundcovers*

**Landscape Concept**
**Typical footpath & median treatment 1 (beneath Superway)**
**Figure 7.7**



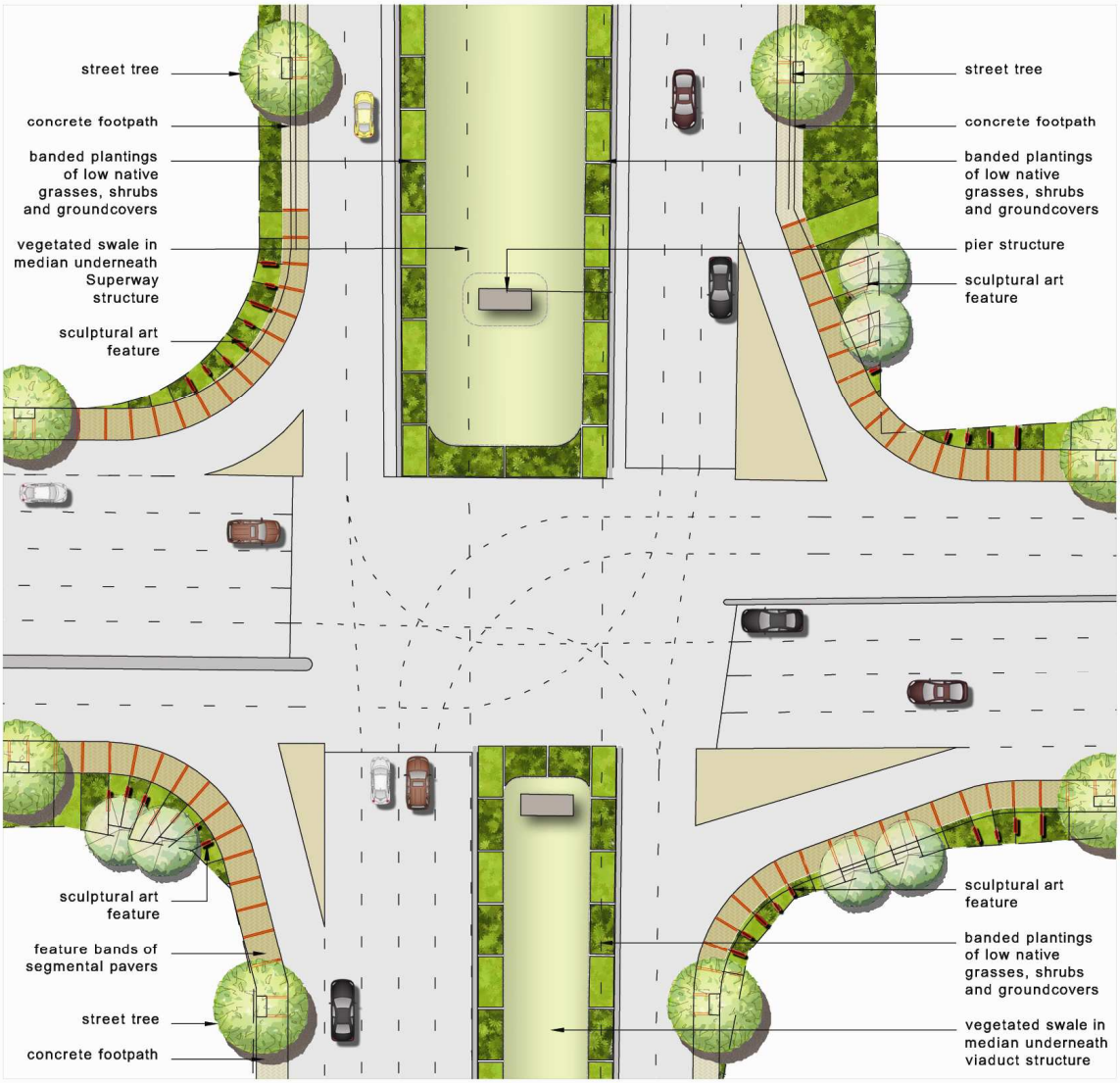

Plan View 1:250



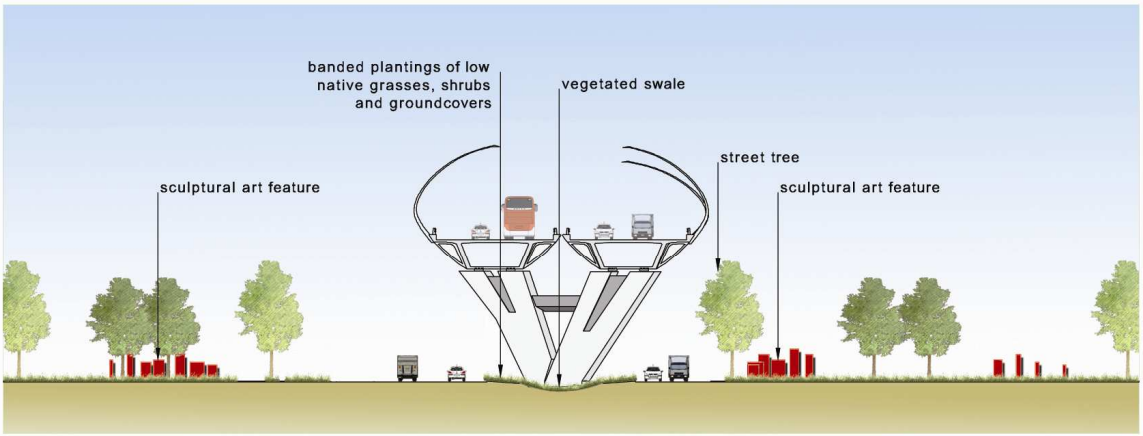

Cross Section 1:250

*Note: These drawings are conceptual only and final plans will be subject to detailed design requirements addressing traffic managment, cycleways, footpaths and landscape design treatments such as street trees, shrubs and groundcovers*

**Landscape Concept Typical footpath & median treatment 2 (at grade)**
**Figure 7.8**




Plan View 1:500



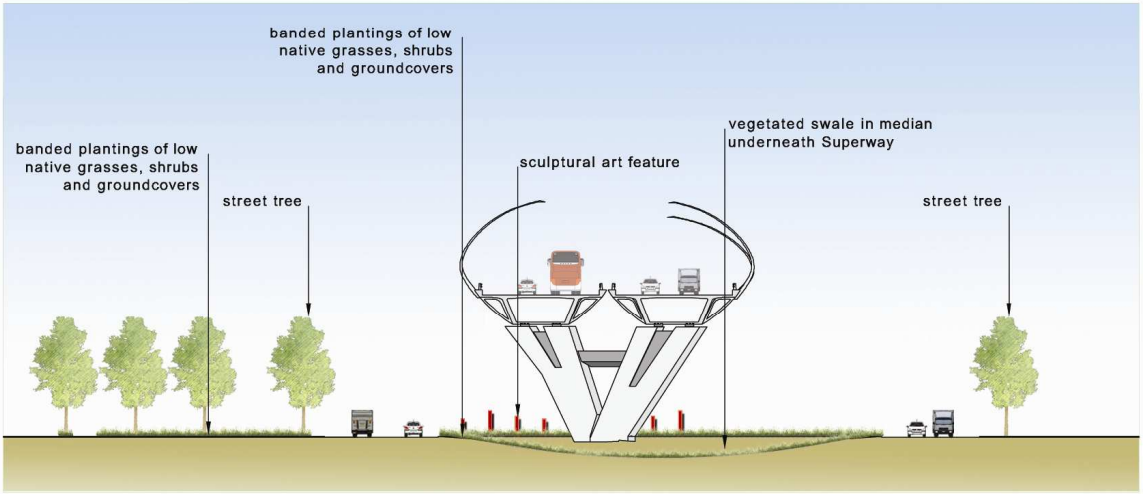

Cross Section 1:500

*Note: These drawings are conceptual only and final plans will be subject to detailed design requirements addressing traffic managment, cycleways, footpaths and landscape design treatments such as street trees, shrubs and groundcovers*

**Landscape Concept**
**Intersection detail 1**
**Grand Junction Road**

**Figure 7.9**


Plan View 1:500

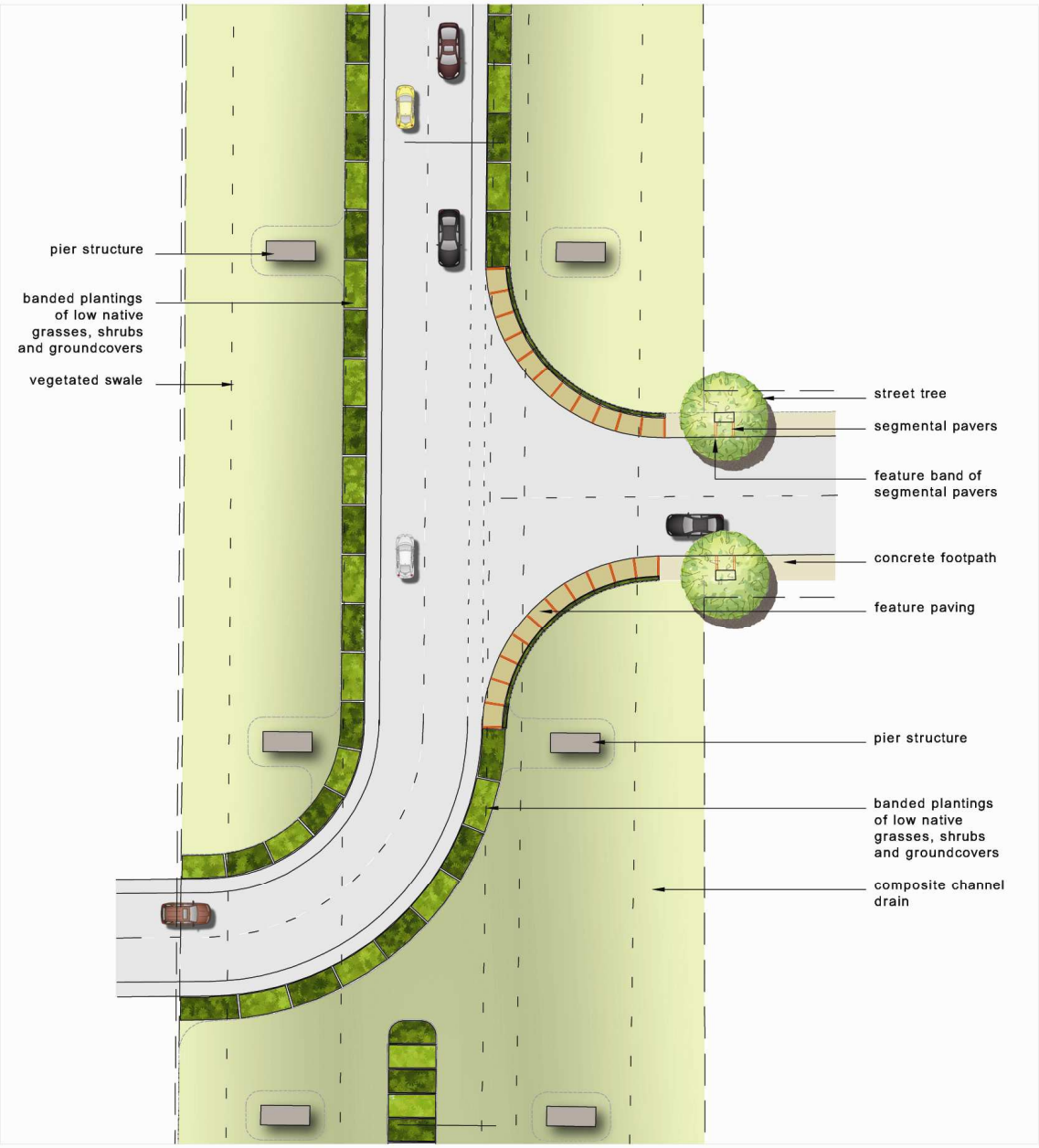



Cross Section 1:500

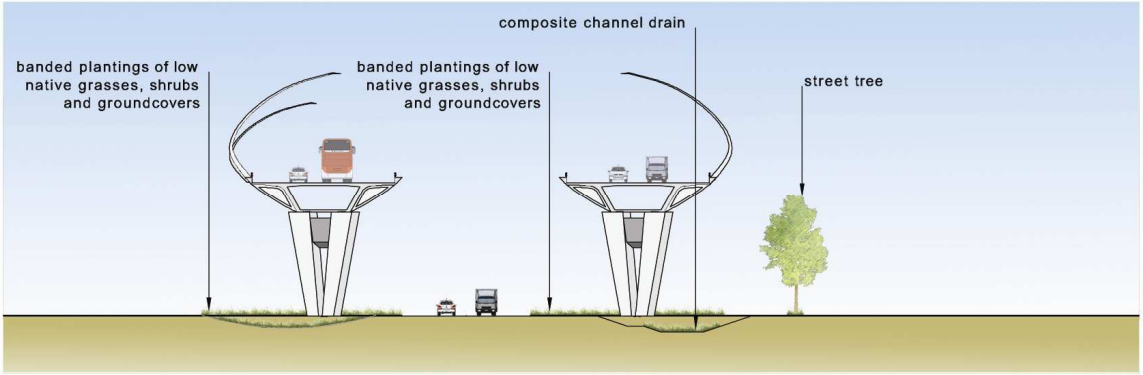
*Note: These drawings are conceptual only and final plans will be subject to detailed design requirements addressing traffic managment, cycleways, footpaths and landscape design treatments such as street trees, shrubs and groundcovers*

**Landscape Concept**
**Intersection detail 2**
**Days Road**

**Figure 7.10**




Plan View 1:500

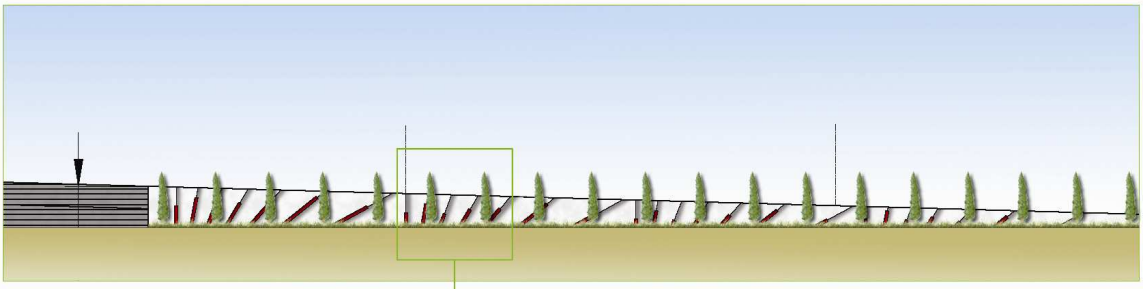



Cross Section 1:500

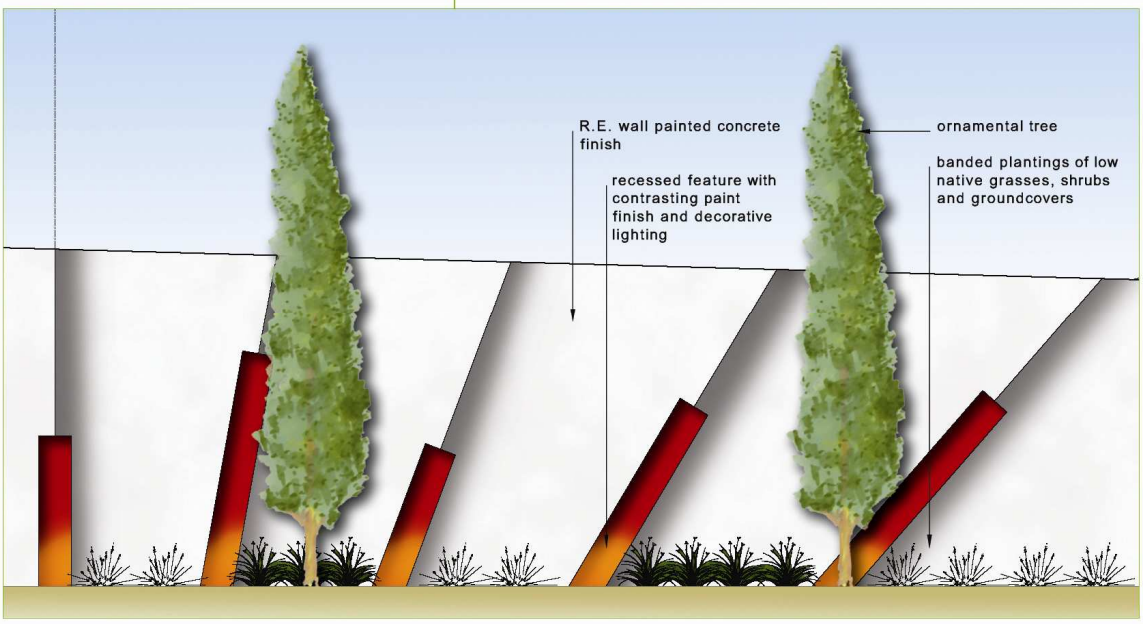
*Note: These drawings are conceptual only and final plans will be subject to detailed design requirements addressing traffic managment, cycleways, footpaths and landscape design treatments such as street trees, shrubs and groundcovers*

**Landscape Concept Typical footpath, detention basin & composite drain**

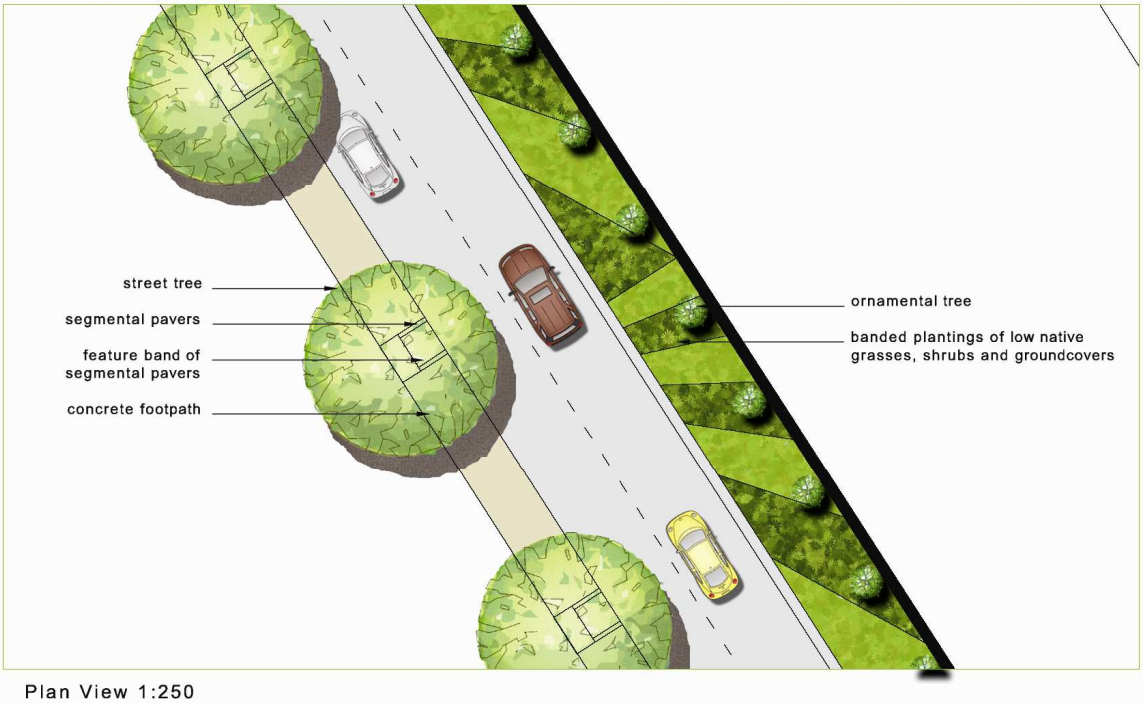
**Figure 7.11**



Long Elevation 1:500




Elevation 1:100




Plan View 1:250

*Note: These drawings are conceptual only and final plans will be subject to detailed design requirements addressing traffic managment, cycleways, footpaths and landscape design treatments such as street trees, shrubs and groundcovers*

**Landscape Concept**
**Typical R.E. detail**

**Figure 7.12**

## LANDSCAPE CONCEPT

- enhance identity and character of the area
- ensure pedestrian spaces are accessible, attractive and safe
- create an iconic Superway structure
- ensure incorporation of Water Sensitive Urban Design (WSUD) practices into project design

The introduction of new footpaths, street trees and verge and median planting will improve the visual character of the corridor and help to break up the visual dominance of the roadway. The typical landscape treatments shown utilise a palette of native species, planted in a horizontal banding pattern. Street trees are a prominent feature of the landscape treatments as they create a strong visual element in the landscape and provide a softer vertical component as compared to the Superway structure. They will help to reduce the scale and bulk of the infrastructure elements.

Medians provide a significant opportunity for urban design and landscape improvements. A banded pattern of low planting is proposed. Opportunities to provide vertical sculptural elements within the median may be explored. Where possible native endemic species will be used, however in some locations they may not be suitable due to the light conditios beneath the Superway. In these locations species that are suitable to the site conditions will be chosen.

***Species suitable for banded planting and feature planting areas***

| | |
|---|---|
| ***Trees*** | |
| Dwarf Sugar Gum | Eucalyptus cladocalyx |
| Smooth Barked Apple | Angophora costata |
| Pink Gum | Eucalyptus fasciculosa |
| Pinnacle' | Syzigium australe 'Pinnacle' |
| ***Low Shrubs*** | |
| Native Rosemary | Westringia fruticosa |
| Twiggy Daisy-Bush | Olearia ramulosa |
| Cusion Bush | Leucophyta brownii |
| Round leaved Wattle | Acacia acinacea |
| Correa 'Dusky Bells' | Correa 'Dusky Bells' |
| Juniper-leaf Grevillea | Grevillea juniperina prostrate |
| Cotton Bush | Maireana brevifolia |
| ***Groundcovers*** | |
| Creeping Boobialla | Myoporum parvifolium |
| Muntries | Kunzea pomifera |
| Lagoon Saltbush | Atriplex suberecta |
| Nodding Saltbush | Einadia nutans ssp. nutans |
| Pale Fan Flower | Scaevola albida var albida |
| Creeping Saltbush | Rhagodia spinescens |
| ***Grasses & Sedges*** | |
| Knobby Club-Rush | Isolepis nodosa |
| Rush Sedge | Carex tereticaulis |
| Spiny Flat Sedge | Cyperus gymnocaulos |
| Black-Anther Flax-Lily | Dianella revoluta var. revoluta |
| Hard Mat-Rush | Lomandra multiflora ssp. Dura |
| Kangaroo Grass | Themeda triandra |

***Species suitable for vegetated swales beneath viaduct***

| | |
|---|---|
| Soft Water Fern | Blechnum minus |
| Rush Sedge | Carex tereticaulis |
| Stiff Flat-sedge | Cyperus vaginatus |
| Red-fruited Sword Sedge | Gahnia siberiana |
| Knobby Club-rush | Isolepis nodosa |
| Pale Rush | Juncus pallidus |
| Finger Rush | Juncus subsecundus |
| Common Nardoo | Marsilia drummondii |
| Red Water-milfoil | Myriophyllum verrucosum |
| Slender Knotweed | Persicaria decipiens |
| Curly Pondweed | Potamogeton crispus |
| Swamp Weed | Sellieria radicans |
| Streaked Arrowgrass | Triglochin striata |
| Native Violet | Viola hederacea |
| Eel Grass | Valisneria spiralis |













Landscape Concept
Planting list

Figure 7.13

### 7.2.3 Surface water drainage

All drainage structures will be designed in accordance with the following design guides:

- Urban Road Design – Guide to the Gemetric Design of Major Urban Roads (AUSTRAODS 2002)
- DTEI Design Standards and Guidelines DD300 Urban Drainage
- Australian Rainfall and Runoff (Pigrim (ed.) 1987).

The project is located at the lower reaches of the North Arm West catchment upstream to the Barker Inlet wetlands before it enters the sea. The prevailing terrain is flat, low lying and prone to flooding.

The existing drainage infrastructure in the project corridor belongs to the City of Port Adelaide Enfield. It mainly consists of open grassed channels from Port River Expressway to Grand Junction Road and an underground piped system, to the south of Grand Junction Road. The prevailing capacity of the system is generally about the 5 year average recurrence interval standard which is less than the ultimate 20 year standard originally proposed by the City of Port Adelaide Enfield. Council has the intention to augment the system to the ultimate capacity in the future.

The proposed new drainage system will maintain the standard of the existing system and make allowance for Council to implement future augmentation. For this reason, the overall design includes open channels and underground drains to retain the existing drainage layout system without placing further pressure on existing inundations. Where width of the channel is not a constraint, open unlined channels have been proposed. In constrained locations both composite (both lined and unlined) and fully lined channels are proposed depending on available widths.

The proposed Superway will enable land beneath the structure to be used for treatment and management of stormwater.

### 7.2.4 Structures

Structures along the South Road Superway will include an elevated roadway, retaining walls, noise barriers, directional signage (gantry signs), culverts and crash barriers.

The Superway will extend from Port River Expressway to Days Road passing over Port River Expressway, South Terrace, Wingfield Rail Line, Cormack Road and Grand Junction Road. The elevated roadway will be approximately 2.8 kilometres long and generally with a clearance of 9 metres.

The Superway will be designed in accordance with Australian Standard AS 5100: Bridge Design.

Specific design principles for the Superway include:

- geometry that conforms with the road design alignment requirements of the Superway
- allowance for features such as overhead gantry signage, lighting, Intelligent Transport System (ITS), and breakdown bays
- where the Superway passes over the rail lines, it must meet the clearance dimensions agreed with the Australian Rail Track Corporation
- where the Superway passes over arterial roads, it must meet the minimum clearance dimensions in accordance with Queensland Main Roads (QMR) standards and specified DTEI over dimensional routes.
- provision of features that achieve urban form objectives.

Large stormwater structures such as reinforced concrete box culverts will be positioned and sized using DTEI technical guidelines, Austroads Guidelines and Australian Standards. Design loads will be assessed using standard Concrete Pipe Association of Australasia procedures and requirements outlined in AS 5100 and AS 1597 for box culvert design.

Other structures such as retaining walls, noise barriers and gantry signs will be designed in accordance with Australian Standards. Crash barriers such as W-beam guard fences, wire rope barriers and New Jersey barriers will be designed in accordance with Austroads standards, relevant Australian Standards and DTEI technical guidelines.

### 7.2.5 Lighting

Roadway public lighting will be designed in accordance with Australian Standard AS1158: Lighting for roads and public spaces. Roads under the care and maintenance of DTEI are further subject to DTEI design and technical guidelines. Similarly, roads under the care and maintenance of Port Adelaide Enfield Council are further subject to Council design and technical guidelines.

The Australian Standard permits the state road authority (DTEI) to make the final determination on whether or not road lighting will be installed in cases where traffic volume is low. It is expected that the length of the proposed Superway and interchanges will be lit.

The lighting proposed along the Superway would typically be designed assuming 12 metre high poles with 250 watt high pressure sodium lamps with varying outreach lengths. Power supplies would be brought from local low voltage supplies.

The effects of lighting on the environment will be minimised by:

- the use of energy efficient lamps and equipment which will have minimal demands and effects on the electricity supply system
- the provision of adequate but not excessive illuminances and luminances for the specific lighting category
- the use of specifically designed luminaries and installation geometry, which will confine most of the emitted light to the carriageway, and minimise sky glow and reduce adverse effects upon residential areas adjoining the road.

The lighting layout will be designed to be in scale with and harmonise with the existing surroundings. The layout and any feature lighting will be developed by the design engineer and urban designers in accordance with the Urban Design Framework.

### 7.2.6 Services

Services will be affected in several locations. The precise nature of these effects will be determined with further investigation and through appropriate design and management arrangements to avoid disruption. Known major service infrastructure is identified at the following locations:

- 150 mm diameter and 450 mm diameter water mains along the corridor between Days Road and Grand Junction Road
- 900 mm diameter water main across the corridor at Grand Junction Road
- high voltage power lines along the corridor (66 kV overhead between Aruma Street and Grand Junction Road and 11 kV underground between Aruma Street and Port River Expressway)
- gas mains along the corridor between Aruma Street and Senna Road
- telecommunications lines along the corridor between Aruma Street and Cormack Road.

### 7.2.7 Construction phase

The construction of the project, including the associated local road improvements, requires a well considered construction management plan. The precise nature of the construction management plan will be determined with further investigation and through appropriate design and management arrangements to minimise disruption.

Where appropriate, construction of the project will occur within or near to the construction site. A project construction site will ideally be located in close proximity and is likely to include a site office,

concrete batching plant, casting yard, sheds, overhead gantry, storage areas and parking. All required approvals and licenses will be obtained from the Environment Protection Authority (EPA) and other relevant authorities.

In broad terms the construction phase will follow the following sequence of events and is expected to last for a three-year period to 2013:

- local road improvements including provision of the Rafferty Road extensions, Naweena Road connections and Davis Street culvert
- services relocation
- drainage relocation
- piling
- pier erection
- deck/superstructure erection
- elevated roadway tie in construction to existing surface including reinforced earth walls and voided box/bridge structures
- ramp construction including reinforced earth walls and voided box/bridge structures
- service road improvements under the elevated roadway and landscaping.

The key aims of the above sequence are to provide alternative routes to South Road and to maintain access to businesses fronting South Road during construction of the Superway. It is expected that there will be considerable night work when sections of South Road may be closed to expedite construction.

### 7.2.8 Physical, social and environmental considerations

A number of physical, social and environmental considerations have guided the initial planning for the project including:

- supporting the needs of industries and businesses who make up the study area
- minimising effects on individual land holdings in terms of land acquisition and disruption to business
- maintaining and enhancing east–west connectivity within the study area
- minimising noise effects generated by traffic within the South Road Superway and associated local road improvements
- avoiding effects on existing services, particularly large trunk mains
- eliminating ground level rail crossings where possible
- minimising effects on the Barker Inlet Wetlands in terms of water quality and ecology
- minimising loss of open space
- minimising and ameliorating noise effects on residents and other sensitive receptors adjacent to the project
- avoiding or minimising effects on the operation of the Wingfield rail line
- avoiding or minimising effects on Aboriginal and non-Aboriginal cultural heritage
- creating an improved urban design outcome
- achieving an attractive landscape along the length of the corridor
- meeting road safety requirements
- minimising effects on businesses, residents and the motoring community during construction.