
Urban Design



02

2. Urban Design

2.1 WestConnex Urban Design Framework

It is important to establish design criteria for all elements of the Motorway design, not only to minimise the potential for poor visual impacts, but also to incorporate and coordinate the urban design objectives and principles for the WestConnex Motorway project as a whole.

The 'WestConnex Motorway Urban Design Framework', RMS Centre for Urban Design and the WestConnex Delivery Authority, September 2013 (hereafter the 'WestConnex Motorway Urban Design Framework') guides the WestConnex urban design outcomes. The King Georges Road Interchange works will be consistent with the vision, objectives and principles contained in the Urban Design Framework. All future urban design iterations of the project will also be guided by these RMS design guidelines,

- 'Beyond the Pavement; Urban Design Policy, Procedures and Design Principles', RMS updated February 2014.
- 'Bridge Aesthetics; Design Guideline to Improve the Appearance of Bridges in NSW', RMS July 2012.
- 'Environmental Impact Assessment Practice Note; Guidelines for Landscape Character and Visual Impact Assessment', RMS EIA-NO4, V2.0, March 2013.
- 'Noise Wall Design Guideline; Design Guidelines to Improve the Appearance of Noise Walls in NSW', RMS February 2007.
- 'Landscape Guideline; Landscape Design and Maintenance Guidelines to Improve the Quality, Safety and Cost Effectiveness of Road Corridor Planting and Seeding', RMS February 2007.
- 'Shotcrete Design Guidelines; Design Guidelines to Avoid, Minimise and Improve the Appearance of Shotcrete', RMS June 2005.

These documents shall inform and guide all future design iterations of the project.

2.1.1 WestConnex Motorway Urban Design Framework Vision

'The WestConnex Motorway will be a sustainable, high quality and transformational project for the people of Sydney and NSW. Exhibiting design excellence as a whole and in all constituent parts, it shall be sensitively integrated into the built and natural environments, and help build local communities. It will enhance the form, function, character and livability and contribute to the future liveability of the city' - Australia's 'Global City'. (WestConnex Motorway Urban Design Framework, p 44)

2.1.2 WestConnex Motorway Urban Design Framework Objectives and Principles

The WestConnex Motorway Urban Design Framework provides specific urban design direction for the development and delivery of WestConnex in the form of design objectives. Each of these *WestConnex Motorway Urban Design Framework* objectives is supported by design principles that guide the urban design and provide a benchmark against which to assess outcomes. The urban design criteria for this project are informed by the Design Framework.



Figure 10 The existing King Georges Road Interchange.



Figure 11 Existing landscape features with noise wall behind.

2.2 Urban Design Criteria

The urban design criteria have been evolved with reference to the *WestConnex Motorway Urban Design Framework* and the RMS design guidelines.

2.2.1 Environmental Responsiveness

The following design criteria are intended to ensure environmental responsiveness based on a natural systems approach (in accordance with Objective 1 of '*WestConnex Motorway Urban Design Framework*', p. 58).

Green Infrastructure

The King Georges Road Interchange project has considered the concept of 'green infrastructure' and its possible application. Wherever possible existing landscape assets will be fully integrated within the Motorway design. The existing landscape systems will be recorded and understood, the project will demonstrate their optimum restoration and integration within the corridor.

Landscape Restoration

Fragmented vegetation and ecologically endangered plant communities will be restored or re-established. Additional public open space will be created where possible and existing open space enhanced around the Motorway corridor plant communities. Where possible wide margins of the corridor will be preserved for the establishment of an 'urban forest'.

The limit of the King Georges Road Interchange project has been established in order to identify residual land that may be available for consolidation and landscape restoration. A re-vegetation strategy has been developed in order to optimise the potential for plant establishment using natural systems. Wherever possible appropriate slope gradients (3H:1V maximum) and a well founded soil conservation and amelioration strategy will be adopted.

Protect and Enhance Waterways

Existing waterways will be protected, re-establishing existing creek lines where possible. Where possible existing waterway function will be improved through the appropriate restoration and enhancement of waterway systems.

Appropriate Built Form and Earthworks

The composition of built form and landscape will optimise planting opportunities by ensuring appropriate slope gradients (3H:1V maximum) that allow successful plant establishment, safe access and appropriate long term maintenance.

The location, mass and overall architectural expression of all Motorway elements will be considered as part of a coordinated, 'whole-of-corridor' design. The location and footprint of all structures and alignments will ensure the best possible 'fit' within the landscape setting. Where appropriate 3D models of the proposed built form within the landscape setting will be developed in order to test scale and form.

Sustainability and Carbon Sequestration

Planting will be maximised wherever possible in order to optimise opportunities for carbon sequestration. The use of design tools such as ISCA IS and Green Star ratings, and guidelines such as TfNSW Sustainable Design Guidelines will be integrated into the design development process.

2.2.2 Connectivity and Legibility

The project should consider connectivity and placemaking beyond the boundaries of the Motorway corridor, (in accordance with Objective 2 of 'WestConnex Motorway Urban Design Framework', p. 60).

Visual Stimuli and Architectural Articulation

The design of major project elements and structures, adjacent landscape settings and opportunities to capture 'borrowed views', should all be considered as part of a narrative sequence along the Motorway, such that they may be considered as 'journey markers'. The development of a visual narrative sequence will aid driver navigation, particularly within and on approach to intersections. The design of the Motorway structures will be considered as a foil to the landscape setting. Transparent noise walls will be provided as appropriate to maintain views to adjacent landscape settings and to provide for solar access.

User Safety

Road user safety will be enhanced by designing for movement and appropriate driver behavior (i.e. to travel at appropriate speeds, slow down or merge). Visual cues will be provided to road users to assist their reading of the road at important journey decision points. The form, material, finishes, and lighting of the Motorway can all assist in the development of such visual cues.

Design Consistency

The design of the major Motorway structures such as bridges, retaining walls and noise walls should be considered in the context of the whole WestConnex project. An integrated design typology for all elements, in particular the Motorway edge condition (eg; safety barriers and associated structures) and lighting will be developed to provide consistent visual cues at critical journey decision points. An integrated corridor-wide lighting strategy will promote efficient asset management; consistent colour temperature along the length of the project will promote driver experience.

Wayfinding

Transition zones such as approach ramps and lane diversions should be clearly articulated with minimum visual clutter. In this respect Motorway furniture, wayfinding and traffic management signage will be carefully rationalised and kept to a minimum.

2.2.3 Placemaking

Places, streets, structures and landscapes should draw their form, character and materiality from local context, (in accordance with Objective 3 of 'WestConnex Motorway Urban Design Framework', p. 62).

Public Places and Placemaking

The potential for significant urban interventions that add to the 'civic character' of the intersection are limited. However, both the impact and contribution that Motorway elements can make to adjacent public realm areas should be considered - for example improved landscape amenity at the King Georges Road Interchange precinct.

Existing Natural and Cultural Features

Landscape and cultural character zones have been identified and the precautionary principle adopted in order to maintain those elements that add value to, or support, 'placemaking'. Opportunities to minimise the Motorway footprint have been considered in order to retain and protect existing features, including opportunities for habitat protection, restoration and enhancement.

Solar Access and Views

Access to sunlight, daylight, breezes and views should be considered and optimised. Where appropriate, for example on the Penshurst Road bridge, transparent noise walls will maximise views in and out of the corridor, and limit over-shadowing.

2.2.4 Urban Renewal and Livability

Opportunities for urban renewal and improved urban amenity should be considered. (in accordance with Objective 4 of 'WestConnex Motorway Urban Design Framework', p. 64).

Reduce Noise Impacts

A noise wall strategy that minimises noise impacts on adjacent communities has been developed whilst achieving the best 'fit' within the existing landscape setting.

Urban Amenity

The existing pedestrian and cycle zones have been reviewed and where appropriate will be enhanced by the project by the addition of new pavements, street furniture and planting. Extensive tree planting of endemic species will be incorporated into the design to achieve continuous tree canopy cover for shade, shelter and habitat creation. Where possible planting opportunities will be optimised by the provision of appropriate slope gradients (1H:3V maximum) and a well founded soil amelioration strategy. A CPTED review will be conducted of all public real areas.

Accessibility

The needs of aging populations, young families and the physically impaired have been considered in order to ensure equitable access for all. All new pathways will comply with access guidelines, in particular AS1428. No Motorway elements will conflict with adjacent pedestrian and cycle networks.

2.2.5 Memorable Identity and a Safe, Enjoyable Experience

A safe, memorable journey experience should be provided for road users and stakeholders. (in accordance with Objective 5 of 'WestConnex Motorway Urban Design Framework', p. 66).

A Whole of Project Design Philosophy

A 'whole of project' design response should be developed to deliver a unified approach to the form, detailing, fabrication and construction of the Motorway design elements, with appropriate reference to local site character. The iconic and architectural potential of all Motorway elements will be considered as an integrated and shared design language throughout the corridor.

Safety and Convenience

The safety and convenience of road users and adjacent stakeholders is a priority. A CPTED review of all of all public domain elements within their settings is required.

Landscape Character and Identity

Different landscape character zones will be established, from broad landscape regeneration through to detailed landscape precincts, in order to create a varied corridor identity (i.e. corridor landscape within the eastern portion of the project compared with the detailed landscape of the intersection precinct itself). The alignment of the Motorway and associated structures will optimise 'green corridor' landscape opportunities.

2.2.6 A New Quality Benchmark

WestConnex should establish a new benchmark for integrated infrastructure design and sustainability. (in accordance with Objective 6 of 'WestConnex Motorway Urban Design Framework', p. 68).

High Quality Integrated Design

The landscape and built elements should be of the highest appropriate quality in order that the whole WestConnex project can establish a new benchmark in urban transport and renewal and embrace world's best urban design practice.

The iconic and architectonic potential of the Motorway structures should be considered as integral to a broader corridor-wide Urban Art Strategy, including the potential contribution of lighting and signage to enhance the travel experience of all users. The intervention of ad hoc art will be resisted.

Where appropriate project elements will be fully integrated and share a common design language, an uncoordinated 'Odds and Adds' approach will not be adopted. The project will seek to 'up-lift' the quality of existing Motorway structures in order to improve the overall quality and amenity of the asset. The design of Motorway structures will not only minimise their impacts upon the landscape and urban setting, but also contribute positive urban design gains. The project will develop simple, elegant Motorway structures that sit comfortably within the landscape setting, clearly expressing materials, simplicity of form and function. Where appropriate full scale prototypes will be employed to validate design and documentation.

Durability and 'Whole of Life' Considerations

The urban design should seek to provide a robust, durable, low cost, minimal maintenance outcome that deters vandalism. All maintenance requirements, including spatial requirements for component delivery and replacement, including landscape elements, will be considered throughout the design development.

All construction elements will be robust and fit for purpose, materials should be selected with reference to the ISCA IS, Green Star, and the TfNSW Sustainable Design Guideline ratings. Careful consideration will be given to limiting vandalism.

2.3 Urban and Landscape Design Concept

2.3.1 Introduction

To deliver a whole-of-corridor approach, the multi-disciplinary design team must develop a shared vision for the WestConnex Motorway project, from design through to procurement, implementation, operation and maintenance. The multi-disciplinary team should be guided by a suitably qualified urban designer with specific responsibility to champion the public domain design objectives.

The adoption of consistent and appropriate design themes for common components such as retaining walls, abutments and concrete finishes should result in a particular visual character and consistent finish. This approach should avoid unnecessary and repetitive design work, as well as provide for agreement and benchmark review with key stakeholders such as local councils.

2.3.2 Design Concept

A landscape and urban concept design (Refer Figure 19 and Figure 20) has been developed in accordance with the WestConnex Urban Design Framework and RMS design guidelines.

The concept design has been developed to:

- Enhance and highlight the interchange as a visual landmark for the Motorway user
- Reinstall vegetation to disturbed areas along the Motorway corridor to integrate with the existing character
- Improve the amenity of the adjoining open spaces with canopy tree planting and appropriate park furniture.

New noise walls with feature panels and accent planting of massed colourful shrubs and groundcovers are proposed at the four corners of King Georges Road Interchange to create a gateway between the M5 South West Motorway and the M5 East Motorway.

The existing landscape character of the Motorway corridor comprises a highly wooded landscape, much of the vegetation lying in the road verges, but with some tree planting in the median. This makes a significant visual contribution to the scale and character of the Motorway. The landscape treatment for areas disturbed by the works endeavors to reinforce and complement the existing vegetation to be retained, with infill planting of casuarinas, eucalyptus, acacias and native shrub and groundlayer species.

Most of the vegetation within the existing noise mounds located south east of Cooloongatta Road bridge will be removed to accommodate the road expansion. The area adjacent to the Motorway pavement will be re-vegetated with new trees, grasses and groundcover species.

New trees adjacent to noise walls will be kept a minimum of 1.5 metres clear of the noise barrier to allow for maintenance, except where strip planting occurs in locations where the noise barrier is close to the shared path.

A proposed preliminary planting palette based on existing species follows on pages 46 to 48 below.



Figure 12 Existing amenity planting has had varied success and requires review.



Figure 13 Example of existing amenity planting along Allambee Crescent, south east of the King Georges Road Interchange.

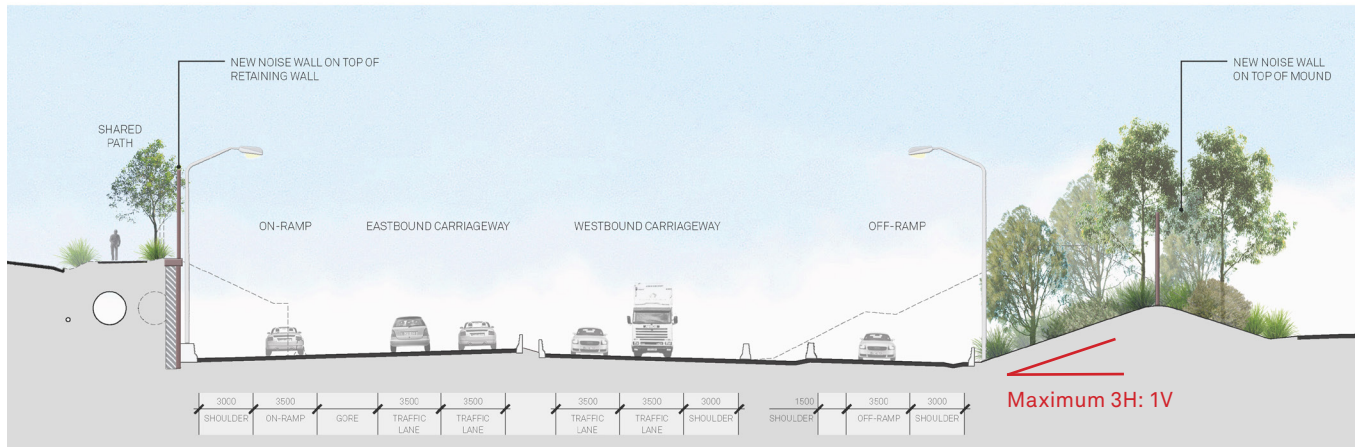


Figure 14 Concept Design Cross Section 3: Typical cross section. The proposed motorway earthworks modifications should not to exceed 3H:1V.



Figure 15 There are 5 different types of existing noise wall within this relatively small project area. These plain panels are adjacent to Kिरrang Street north of the Motorway.



Figure 16 To the west of the King Georges Road Interchange the walls consist of long, narrow aerated concrete panels.



Figure 17 Reinforced earth wall details associated with existing bridges are not well coordinated with other urban design elements such as the adjacent bridge deck.