



Transport  
Roads & Maritime  
Services

# WESTCONNEX MOTORWAY URBAN DESIGN FRAMEWORK

WestConnex - "City Shaping Infrastructure"

WESTCONNEX DELIVERY AUTHORITY  
RMS CENTRE FOR URBAN DESIGN

October 2013

This report was prepared by HASSELL in collaboration with the RMS Centre for Urban Design and the WestConnex Delivery Authority, September 2013.

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Front cover image: Cross City Tunnel,  
Sydney, NSW. Image provided by RMS

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## Foreword

WestConnex is one of the largest infrastructure projects to be built in Sydney. It connects up the Sydney motorway network; provides improved access into and out of the city; and provides improved freight access to the port and airport. It also reduces the reliance on Sydney's congested arterial roads, providing more and better travel choices for road users.

But it is more than just a motorway and in collaboration with the Department of Planning, Local Authorities and private developers, many urban renewal and revitalisation opportunities are possible, enabled by the motorway, most notably on Parramatta Road but also elsewhere.

Such a significant project needs an urban design vision to maximise these benefits and make the project a thing of value and beauty for the people of Sydney, NSW and Australia. We have learnt over the years, through the projects we have built, that motorways need to be well designed with a grandeur and distinctive presence. They need to be well vegetated to provide a softening of the hard spaces, habitat, shade, seasonal changes and screening. They need to respect the neighbourhoods in which they are situated ensuring good connections, a good outlook, opportunities for commerce and low noise. Above all we have learnt that engagement with communities and road users is vital in improving designs and creating a valued sense of place.

This Urban Design Framework prepared under the guidance of the award winning RMS urban design policy - 'Beyond the Pavement' - is intended to capture these lessons and provide inspiration and an urban design benchmark. It contains an overarching vision, governing urban design objectives and design principles for the motorway project at the broad scale and the details. This provides a consistency across the 33km project, especially important as it will be built in several stages, over many years and by different teams.

I commend this framework and its use on all the WestConnex motorway projects from the planning and design phases to the building phases and encourage design teams to pursue the vision, objectives and principles in their day to day and long term decisions.

Chief Executive  
**WestConnex Delivery Authority**

Chief Executive  
**Roads & Maritime Services**

**‘Urban design occurs across all parts of a city, from the inner city to the suburbs and outer metropolitan fringe. Urban design is relevant to developments, whatever their nature and size. City-wide transport and infrastructure networks, urban infill projects, regional towns, new suburban developments, shopping malls, streets, office blocks, university campuses and hospitals are all the result of urban design.**

**High quality urban design becomes even more important as we increase the density of our cities and cater for a growing and changing population. It requires excellent planning, design and management of our built environment and the supporting social and economic infrastructure.’**

**Creating Places for People**  
An Urban Design Protocol for Australian Cities



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## Executive Summary

WestConnex is one of the NSW Government's major infrastructure projects. It will include a 33 kilometre link between Sydney's west with the airport and the Port Botany precinct and will accommodate the growing transport needs of greater Sydney and strengthen access for industry to commercial centres, improving growth opportunities for local businesses.

It is not just a motorway project. In providing an alternative transport route it is also a catalyst for the stimulation of urban renewal opportunities along some of Sydney's most congested arterial roads including Parramatta Road.

This combination of new large scale infrastructure and a capacity to enable urban growth means that WestConnex is a transformational project for the city - 'city shaping' in its scope and breadth. It is certainly more than just a motorway project with its significant transport benefits it is also an enabling project for urban revitalisation and public domain improvements at the metropolitan, corridor and district scales.

Such a large piece of work needs an urban design vision to provide design direction, especially as it will be built in separate stages by different teams.

***The WestConnex motorway shall 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 should be sensitively integrated into the natural and built environment, help build communities and contribute to the future livability of the city - Australia's 'Global City'.***

As well as providing this vision, the Urban Design Framework will help unify and shape the different stages of the project with common objectives, principles and design elements. Six objectives have been developed to implement this vision and create a project that best benefits both the road users and the community:

- \_ leading edge environmental responsiveness
- \_ connectivity and legibility
- \_ place making
- \_ livability and urban renewal
- \_ memorable identity and a safe, pleasant experience
- \_ a new quality benchmark

Each of these objectives will be used to guide the project design and be used to review the outcomes. Each of the objectives is supported by design principles and guidelines.

At the front of the framework there is a broad scale analysis of context to inform the design and ongoing visual and landscape character assessment. Towards the back of the framework there is a section on design elements which sets a benchmark and flavour for the desired outcomes.

Finally the framework sets down the requirements for collaboration with the RMS Centre for Urban Design and the engagement of urban design contractors at the options, concept design, environmental assessment and construction stages of each project.

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# Introduction



Figure 1.2 Tugun Bypass, Queensland. Photography by Christopher Frederick Jones



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# 01 Introduction

## 1.1 Urban Design and Transport Infrastructure

Urban design is both a process and product which shapes transport infrastructure so that it fits as sensitively as possible into its setting; contributes to movement and connectivity for all modes; and provides a high quality public domain (Beyond the Pavement).

Urban design must be part of the project management process in each of the following phases:

- \_ The **initiation phase** - in relation to network and route strategy activity that influences projects
- \_ The **development phase** - as part of options investigation and route selection, then concept design development
- \_ The **implementation phase** - including detail design and construction
- \_ The **finalisation phase** - in terms of project review and monitoring of maintenance. (Beyond the Pavement).

## 1.2 Purpose of the Urban Design Framework

The purpose of the framework is to provide specific urban design direction for the development and delivery of the WestConnex motorway. It does not cover the urban renewal work and other projects that will arise as a result of the motorway. It is intended for all the project managers, engineers, road, bridge and tunnel designers, environmental and planning specialists, architects, landscape architects and urban designers working on the project in the whole and the individual projects.

The program of work is significant, a 33 km arc of motorway, in tunnel, on bridge and on the surface, traversing the suburbs and the centre of Sydney with all the junctions, portals, connecting roads, landscape, bridges and walls that such infrastructure needs.

This motorway must respect its location in Australia's largest city for;

- \_ its city shaping role in terms of built form and economic prosperity;
- \_ its impact on the character and liveability of the villages, suburbs and communities of Sydney;
- \_ its potential to enable urban renewal;
- \_ the quality of the experience of road users which includes social and commuter users, public transport users, freight drivers, tradespeople, city visitors and tourists.

The scale of the undertaking dictates that it must be carried out in a staged manner by a variety of different design teams and contractors over many years. Therefore, a framework is needed to ensure that a consistent high quality standard of urban design thinking is applied across all the projects of the WestConnex motorway.

The framework addresses the project's form and size, its setting and role. It applies the latest urban design policy and guidance as set down in 'Beyond the Pavement: Urban Design Policy, Procedures and Design Principles' - the NSW state and federally recognised road urban design policy and Australia Award for Urban Design winner in 2010.

It provides a common vision; objectives to achieve the vision; and a set of design principles to shape the outcome. It also provides design guidance on the key urban design elements; both built form and landscape specific to the WestConnex motorway.

It does not replace the necessary detailed analysis and design development for the subsequent individual projects but will avoid expensive repetitious design thinking and help unite the whole outcome.

The photographs used are intended to provide a flavour and benchmark for the motorway project only. They are not intended to reflect actual design solutions.

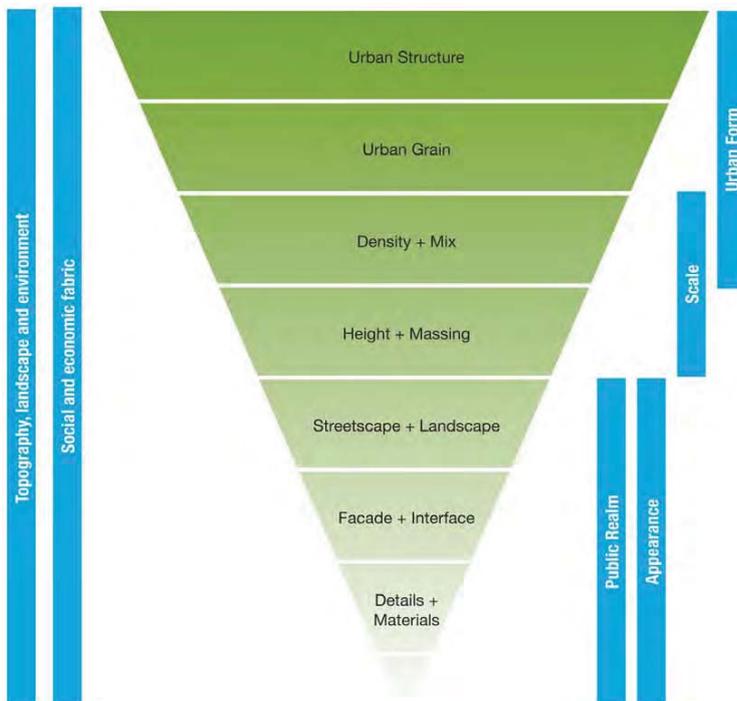


Figure 1.3 Elements of urban form - macro to micro scale  
*Creating Places for People - An Urban Design Protocol for Australian Cities*

**“ Urban design is the generally accepted name for the process of giving physical design direction to urban growth, conservation and change. It is understood to include landscape as well as buildings, both preservation and new construction, and rural areas as well as cities.”**

Jonathan Barnett 1982  
referenced in Beyond the Pavement

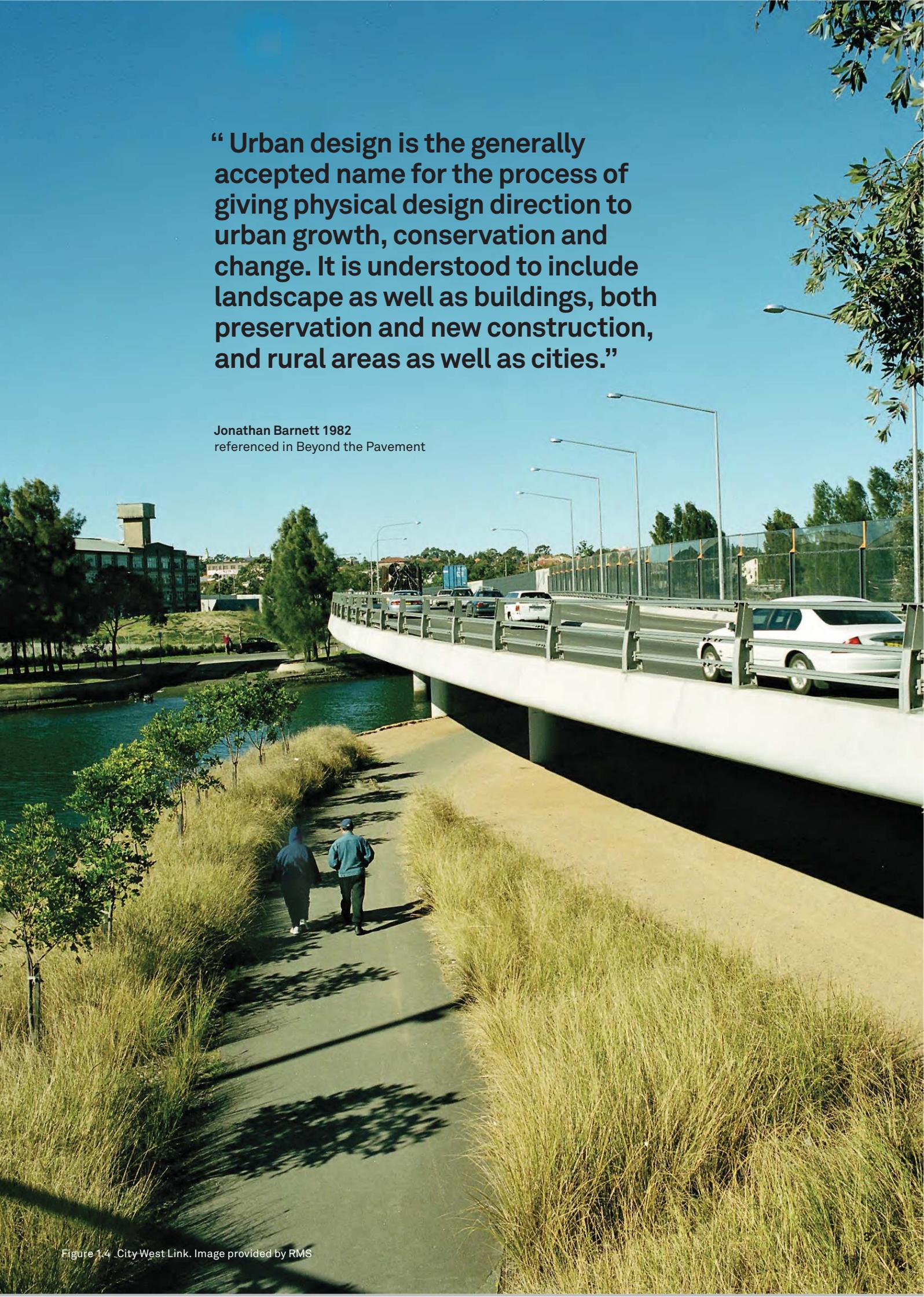


Figure 1.4 \_City West Link. Image provided by RMS

**We shape our cities,  
thereafter our cities  
shape us.**

### 1.3 WestConnex Project Overview

WestConnex is a motorway extending the M4 Motorway to Sydney Airport and the M5 Motorway. It amalgamates a series of ideas that have been in the public arena for the past decade into a strategy that best enhances Sydney's transport network.

Currently, the M4 Motorway terminates at North Strathfield leaving a missing link between Sydney's west and international gateways at Sydney Airport and Port Botany.

Parramatta Road is presently taking the burden of the important east-west connection and to date has not evolved with Sydney's growing population and transport needs. Subsequently, Parramatta Road is a congested, inefficient and polluted carriageway with poor urban amenity.

WestConnex seeks to address these issues, supporting Sydney's long term economic and social growth with both transportation / infrastructure strategies and urban design / master planning strategies.

It is imperative that the WestConnex project be a legible and enduring piece of transport / urban infrastructure that can be delivered in stages. This is a city shaping motorway project that will unlock the opportunity for urban renewal along existing arterials such as Parramatta, Canterbury and New Canterbury Roads and improve the livability and dynamic vitality of Sydney's villages in the inner west and south west.

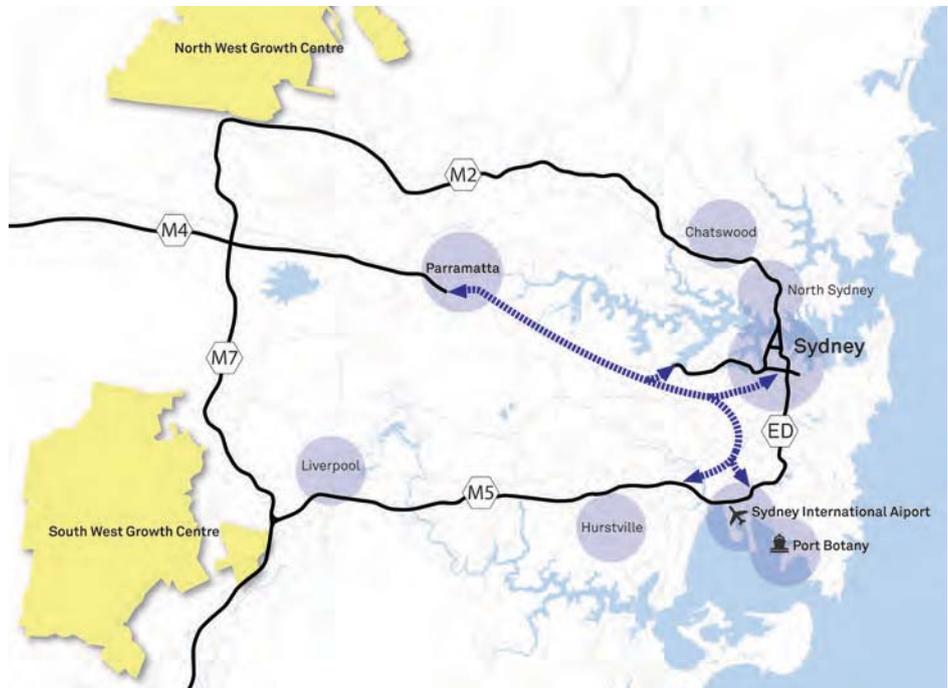


Figure 1.5 Sydney's Orbital Network and Major Urban Centres

-  Motorway Tunnel
-  Motorway
-  Road / Motorway Connections
-  Arterial Road / Motorway Connections
-  Heavy Rail Line & Stations

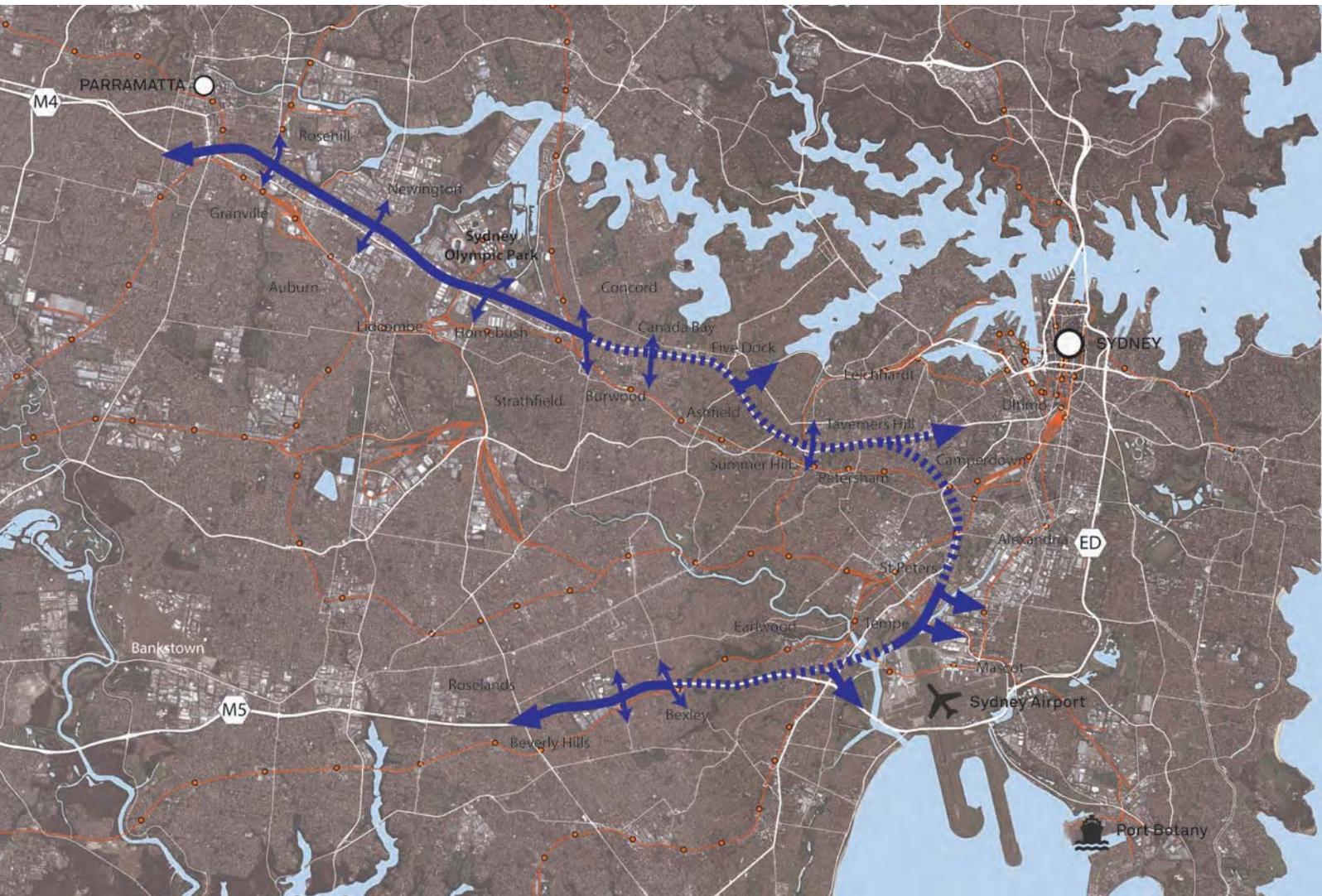


Figure 1.6 Overview of WestConnex Proposal

**“WestConnex will link Sydney’s west and southwest with the City and airport in a continuous motorway completely free of traffic lights... it will revolutionise the way motorists travel around and across our city ”**

WestConnex fact sheet. Stage 1:  
Parramatta Road to City West Link

# 01 Introduction

## 1.4 RMS Guiding Documents

The overarching Urban Design document prepared by the **RMS Centre for Urban Design** for all road infrastructure projects is

1. ***Beyond the Pavement***, RMS Urban Design Policy, Procedures and Design Principles, RMS, July 2009

As a compendium to this high level policy document, a suite of detailed urban design guidelines, dealing with specific issues and elements were produced (and periodically updated) by RMS including:

2. ***Bridge Aesthetics***: Design Guidelines to Improve the Appearance of Bridges in NSW, Centre for Urban Design, RMS, July 2012
3. ***Landscape Guideline***: Landscape Design and Maintenance Guidelines to Improve the Quality, Safety and Cost Effectiveness of Road Corridor Planting and Seeding, RMS, June 2008
4. ***Noise wall design guidelines***: Design Guidelines to Improve the Appearance of Noise Walls in NSW, RMS, February 2007
5. ***Shotcrete Design Guidelines***: Design Guidelines to Avoid, Minimise and Improve the Appearance of Shotcrete, RMS, June 2005
6. ***Contributing to Liveable Communities: Roads as linking places***

Other relevant RMS documents prepared by the **RMS Environment Branch** include:

7. ***Biodiversity Guidelines***: Protecting and managing biodiversity on RMS projects, September 2011

These and any future detailed guidelines should be read in conjunction with the *Beyond the Pavement Policy* and this *WestConnex Urban Design Framework*

The relationship and hierarchy of the various urban design documents in relation to the *WestConnex* project is illustrated overleaf in Figure 1.7. Each informs the other; from the broad vision to more specific design guidelines.

Also refer to the other relevant RMS policies and guidelines listed in *Beyond the Pavement*.

## 1.5 Other Relevant Strategy Documents

The following strategy documents inform and are related to the *WestConnex* Motorway project:

- \_ ***Our Cities, Our Future: a national urban policy for a productive, sustainable and liveable future***, Department of Infrastructure and Transport, May 2011
- \_ ***Creating Places for People, an urban design protocol for Australian Cities***, The Council of Australian Governments / State and Federal Governments, November 2011
- \_ ***Draft Metropolitan Strategy of Sydney to 2031, a strong global city, a liveable local city***, NSW Government, March 2013
- \_ ***First things First State Infrastructure Strategy 2012 - 2032***, Infrastructure NSW, 2012
- \_ ***NSW Long term Transport Master Plan***, Transport for NSW, December 2012
- \_ ***WestConnex - Sydney's next motorway priority***, Sydney Motorway Project Office, September 2012
- \_ ***Contributing to liveable communities: roads as linking places***, Centre for Urban Design, Roads and Maritime Services.

A brief overview of how each strategy informs the *WestConnex* project is provided in Chapter 4 (4.2 Relationship to Key Government Documents)

## 1.6 Parramatta Road: WestConnex Urban Renewal Framework

Sydney Motorway Project Office,  
by HASSELL, June 2013

This document presents strategic urban renewal concepts for Parramatta Road. It was a key input to the *WestConnex* Business Case undertaken in 2013. The implementation of the *WestConnex* Motorway is a catalyst for this urban renewal project.

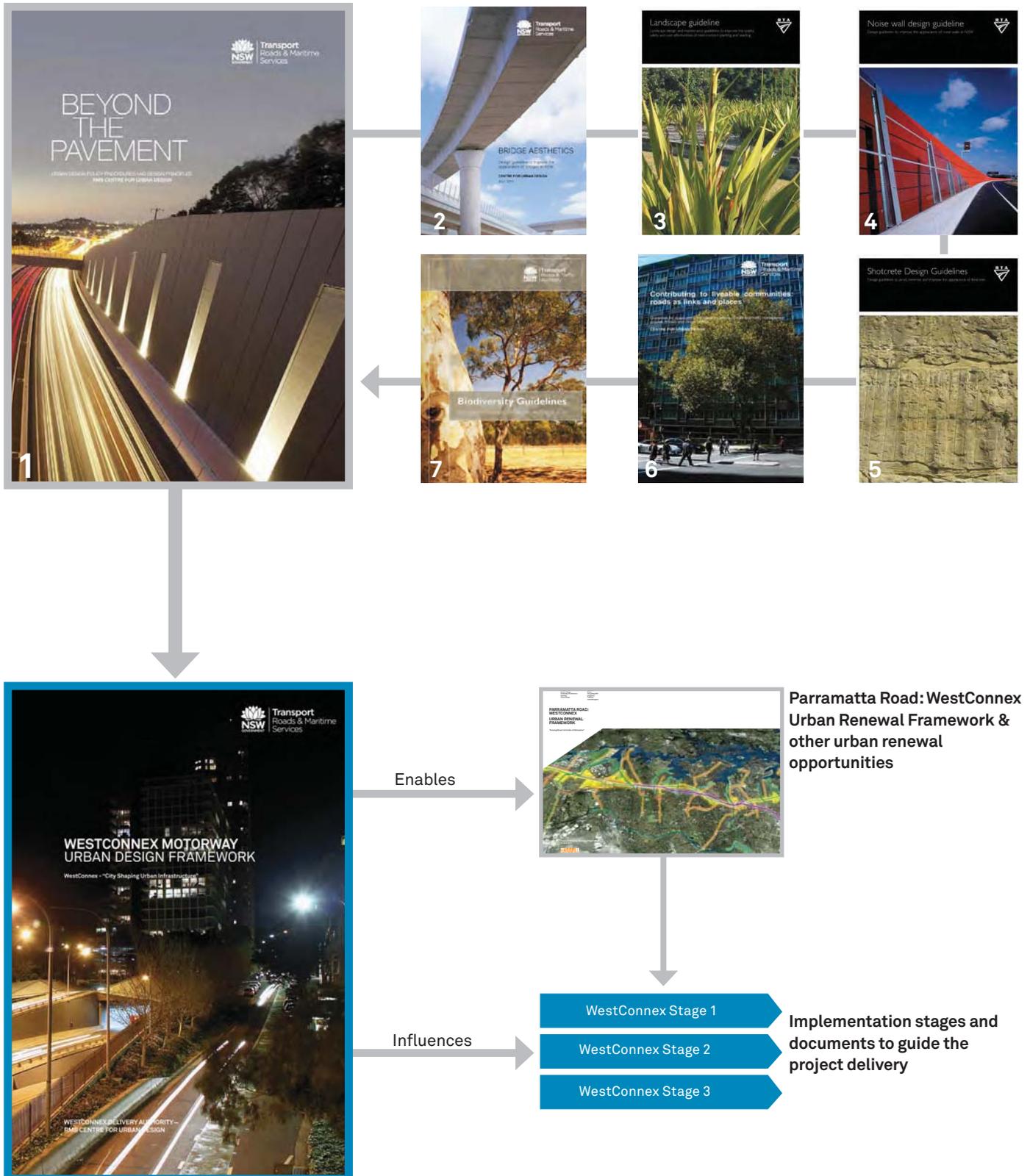


Figure 1.7 Hierarchy of RMS Guiding Documents

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# The WestConnex Program

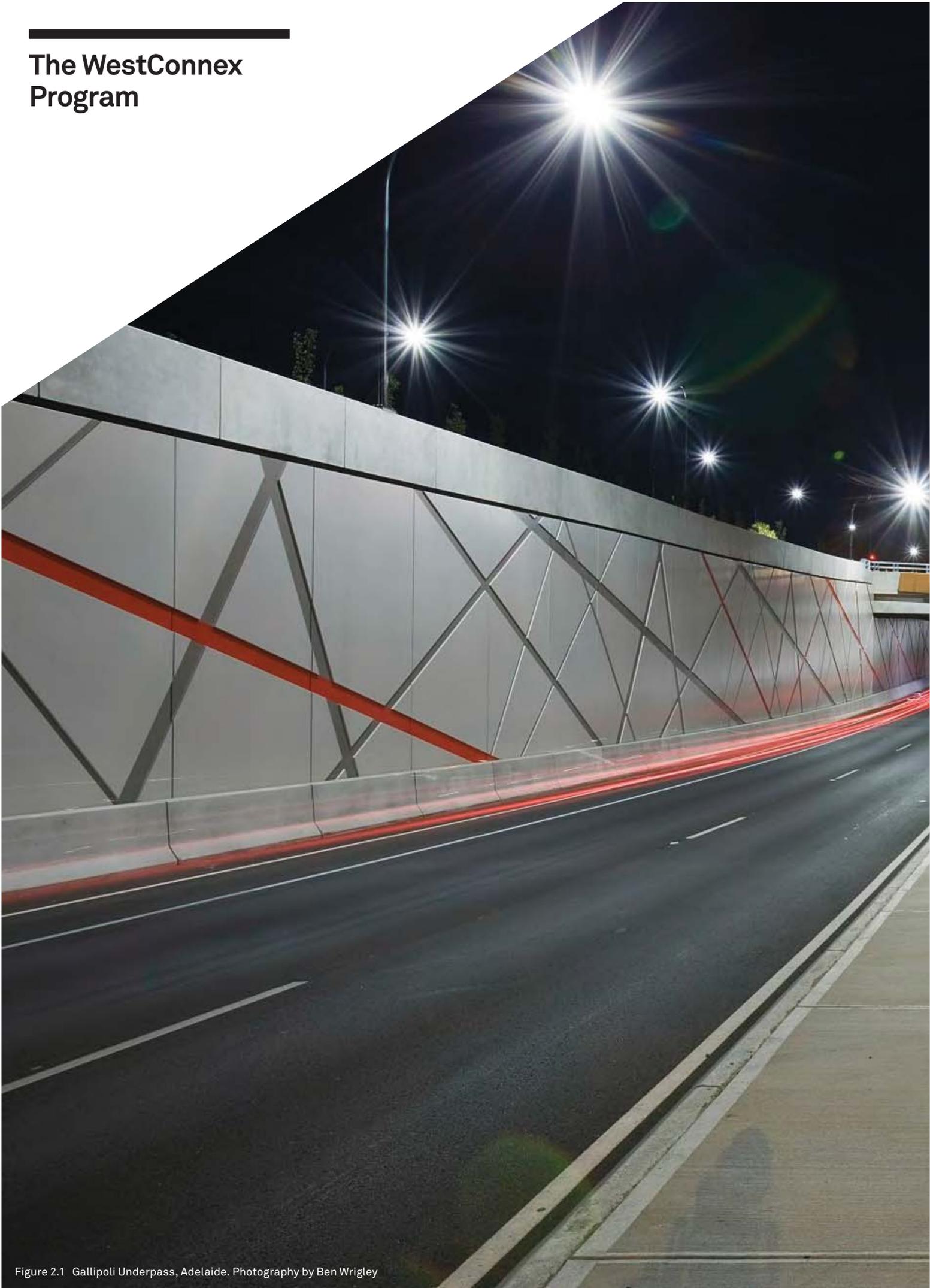
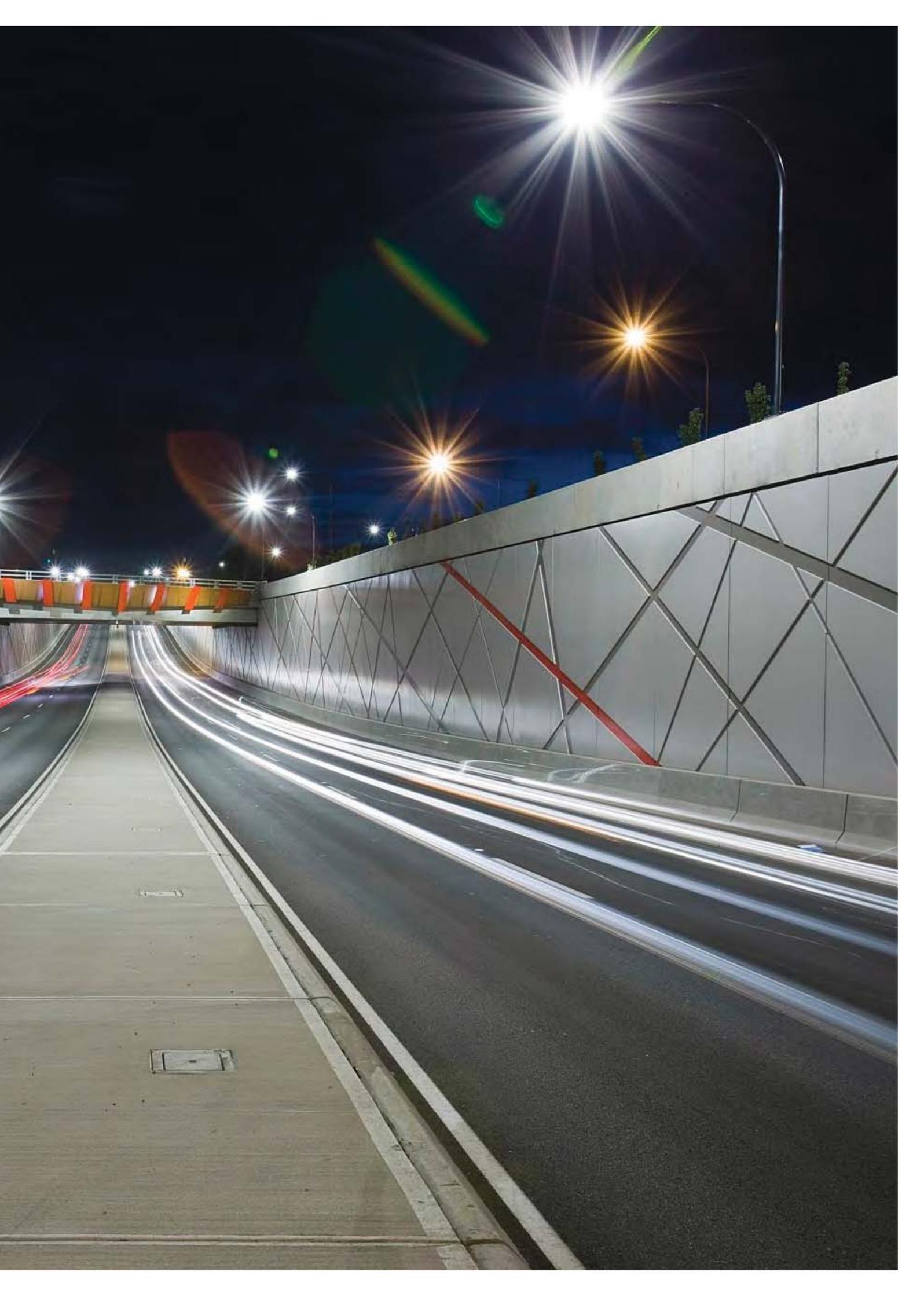


Figure 2.1 Gallipoli Underpass, Adelaide. Photography by Ben Wrigley



## 02 The WestConnex Program Staging

### 2.1 Staging

The WestConnex Motorway is expected to be delivered in three stages over the course of 10 years (2013 - 2023). Detailed layouts and designs are not yet developed, and each stage will undergo an intensive planning, design and construction phase in the context of the whole project. It is likely that the staging will be refined as the project develops and potentially be split into a number of sub stages. A more detailed overview of the motorway location and intervention is tabulated below and illustrated on the adjacent page in Figure 2.3

Proposed Stage	Project	Length	Design
<b>01</b> Parramatta to Haberfield	<b>M4 Widening</b> Church Street Parramatta to Homebush Bay Drive	7.5km	Surface and viaduct
	<b>M4 East</b> Homebush Bay Drive to Parramatta Road and City West Link	6.0km	Tunnel - 2 x 3 lanes
<b>02</b> Beverly Hills to St Peters	<b>M5 East Airport Link</b> King Georges Road, Beverly Hills to St Peters	11km	Tunnel - 2 x 4 lanes & surface and viaduct connections
<b>03</b> Haberfield to St Peters	<b>M4 South</b> Haberfield to St Peters via Camperdown	8.5km	Tunnel - 2 x 3 lanes

Figure 2.2 Indicative WestConnex Motorway Route Stages 1 - 3, subject to review

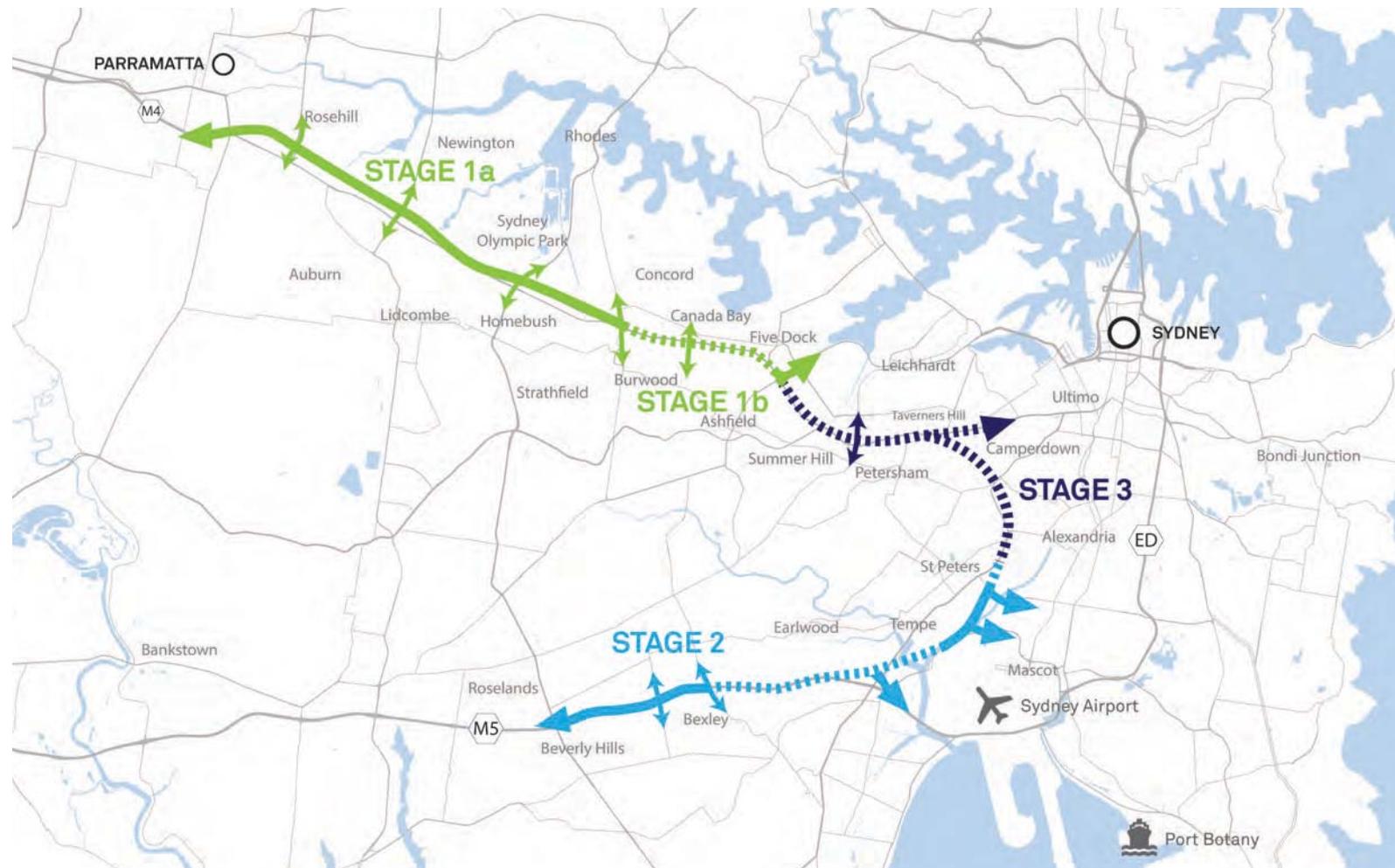


Figure 2.3 Indicative WestConnex route map for stages 1 - 3, subject to review

**‘WestConnex is the largest road project in Australia, linking Sydney’s west and south-west with the city and airport in a motorway, completely free of traffic lights.’**

NSW Government  
 Stage 1 : Parramatta to City West Link

## 02 The WestConnex Program

### Urban Renewal Opportunities: Case Study

#### 2.2 Case Study in Urban Renewal: Parramatta Road: WestConnex Urban Renewal Framework



Figure 2.4 Parramatta Rd.  
Photography by HASSELL

Stage 1 of the WestConnex Motorway comprises surface widening of the M4 from Church Street Parramatta to Concord Road and new tunnelling works beneath Parramatta Road from Concord Road to Wattle Street where it will connect with the City West Link.

This work enables the improvement of Parramatta Road and the initiation of a range of catalyst development projects, place making and engineering works to promote urban renewal in this important corridor linking the Sydney and Parramatta central business districts.

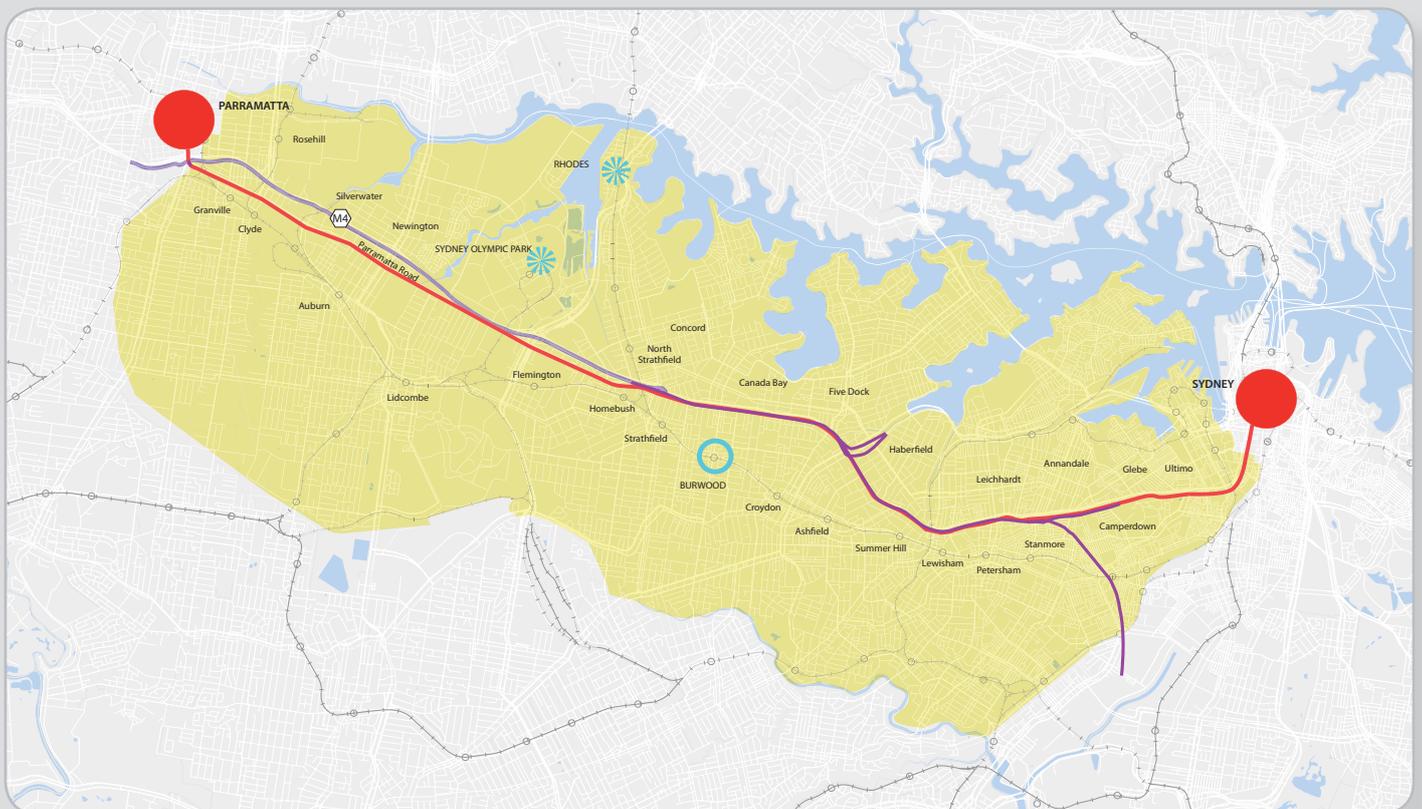


Figure 2.5 Proposed area of Influence - River to River. by HASSELL  
Source: Parramatta Rd: WestConnex Urban Renewal Framework

# 'It stretches through 18 suburbs yet Sydney's busiest arterial road is a multi-billion-dollar wasteland. Parramatta Rd is a ghetto of boarded-up shopfronts.'

Daily Telegraph  
April 18<sup>th</sup> 2011

The Parramatta Road urban design objectives complement and extend the strategic objectives of the draft Metropolitan Strategy, the WestConnex Motorway Project and the WestConnex Urban Renewal Objectives.

These urban design objectives for Parramatta Road are predicated on a primary, over arching imperative: the creation of high quality, liveable, connected, sustainable and enterprising communities.

Six key design principles are proposed. The regeneration of Parramatta Road will:

- \_ **Adopt a People Focussed Approach**
- \_ **Protect and Enhance Natural Systems**
- \_ **Build Beautiful, Diverse and Layered Places**
- \_ **Enable Integrated, Efficient and Safe Movement Networks**
- \_ **Promote City Enterprise and Local Economies**
- \_ **Safeguard the Long Term, Sustainable Growth of the City**

These design principles will guide the future planning, design, construction and long term management of Parramatta Road and its many places.

The achievement of design objectives and performance indicators will be the responsibility of:

- \_ government,
- \_ the delivery agencies such as Sydney Motorway Project Office and Urban Growth NSW
- \_ private sector partners and developers, and
- \_ long term governance and management entities such as the Department of Planning & Infrastructure and local government bodies



Figure 2.6 A potential future street view embodying the key design principles, by HASSELL  
Source: Parramatta Rd: WestConnex Urban Renewal Framework

# Corridor Analysis



Figure 3.1 Aerial view of Sydney from Anzac Bridge. Image provided by RMS



03

**‘nature is a dynamic process that is rarely independent of human interaction. Nevertheless, we must intervene in a way that facilitates, rather than disrupts natural [& social] processes’**

**Gary Strang**  
Infrastructure as Landscape (1996)



Figure 3.2 Aerial of Sydney from Sydney Airport  
Source: [sydneyairport.com](http://sydneyairport.com)

## 03 Corridor Analysis

### 3.1 Study Area and Corridor Definition

The influence of the WestConnex project is not confined to the motorway itself. This section attempts to broadly capture the biophysical and socio-economic features that underpin the project context. The intention is that these features should underpin a design process for a 'place-based' motorway that is legible, identifiable and integrated into Sydney's urban fabric.

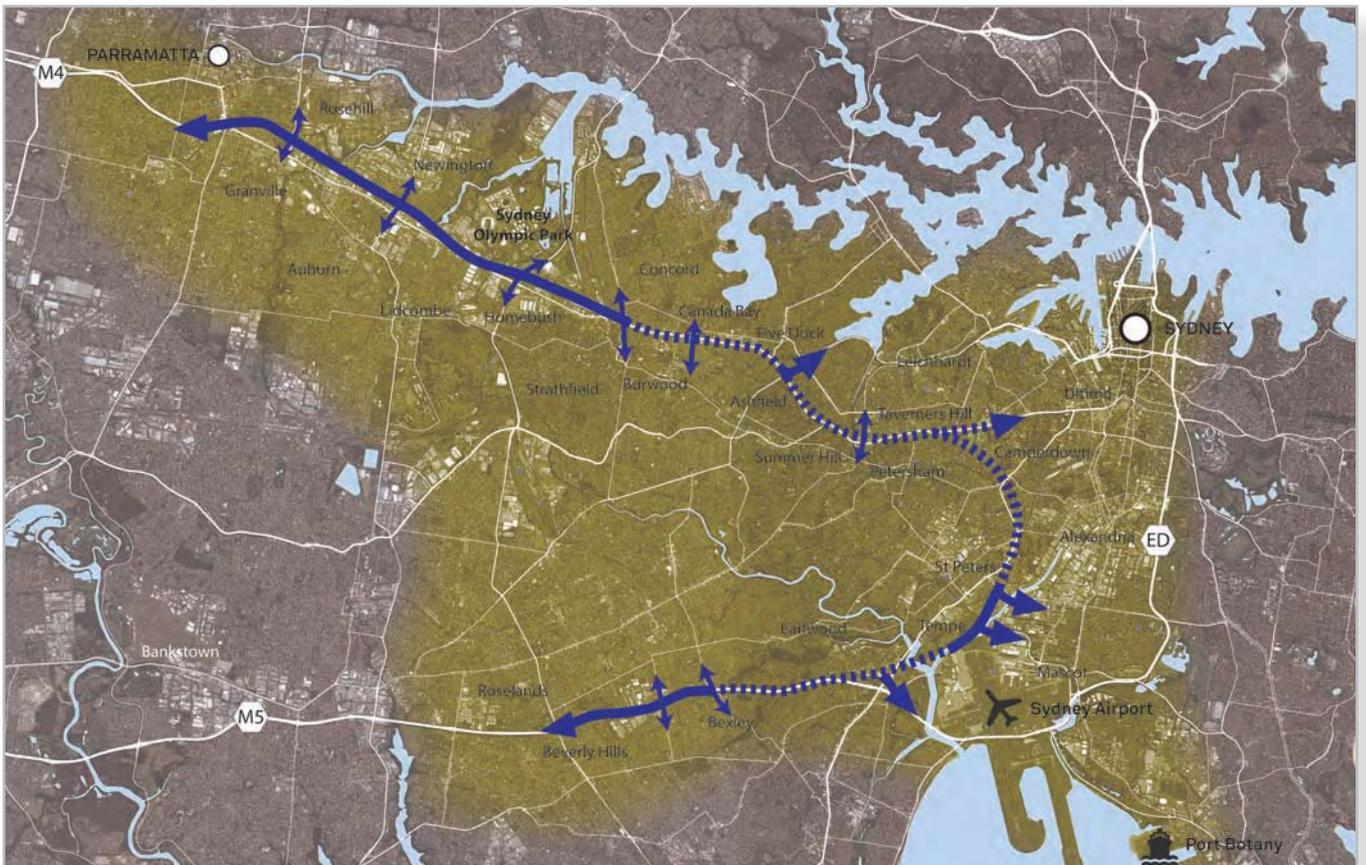


Figure 3.3 The potential regional influence of the WestConnex Motorway

# 03 Corridor Analysis

## Geology



Figure 3.4 The geology of the Sydney Basin  
Source: geology dataset, GIS

### Geology

The nature of this city and the essential infrastructure of the WestConnex Motorway should be informed by the natural systems and processes of the Sydney Basin.

WestConnex will pass through a sequence of sedimentary geologies which are characteristic of the Sydney Basin: comprising sandstones, siltstones and shales, which include the prevalent Hawkesbury Sandstone and the overlying Wianamatta Group Ashfield Shale formation.

The underlying geological sequence of the WestConnex corridor dates from the Triassic Age (250-200 million years ago) with vast beds of Ashfield Shale, a dark grey, fine grained sedimentary rock with rich clay loam soils often with poor drainage. These overlay deep beds of Hawkesbury Sandstone. This sandstone is a highly layered and fractured sedimentary rock composed of silica and iron minerals in varying proportions, bound with a clay matrix producing infertile, free draining and shallow soils.

### Opportunities

1. Revealing Sydney's underlying geology will create a consistent and memorable identity across the WestConnex project
2. The textures, colours and hues of shale and sandstone should inform the landscape and urban design palette



Ashfield Shale



Hawkesbury Sandstone

# 03 Corridor Analysis

## Hydrology

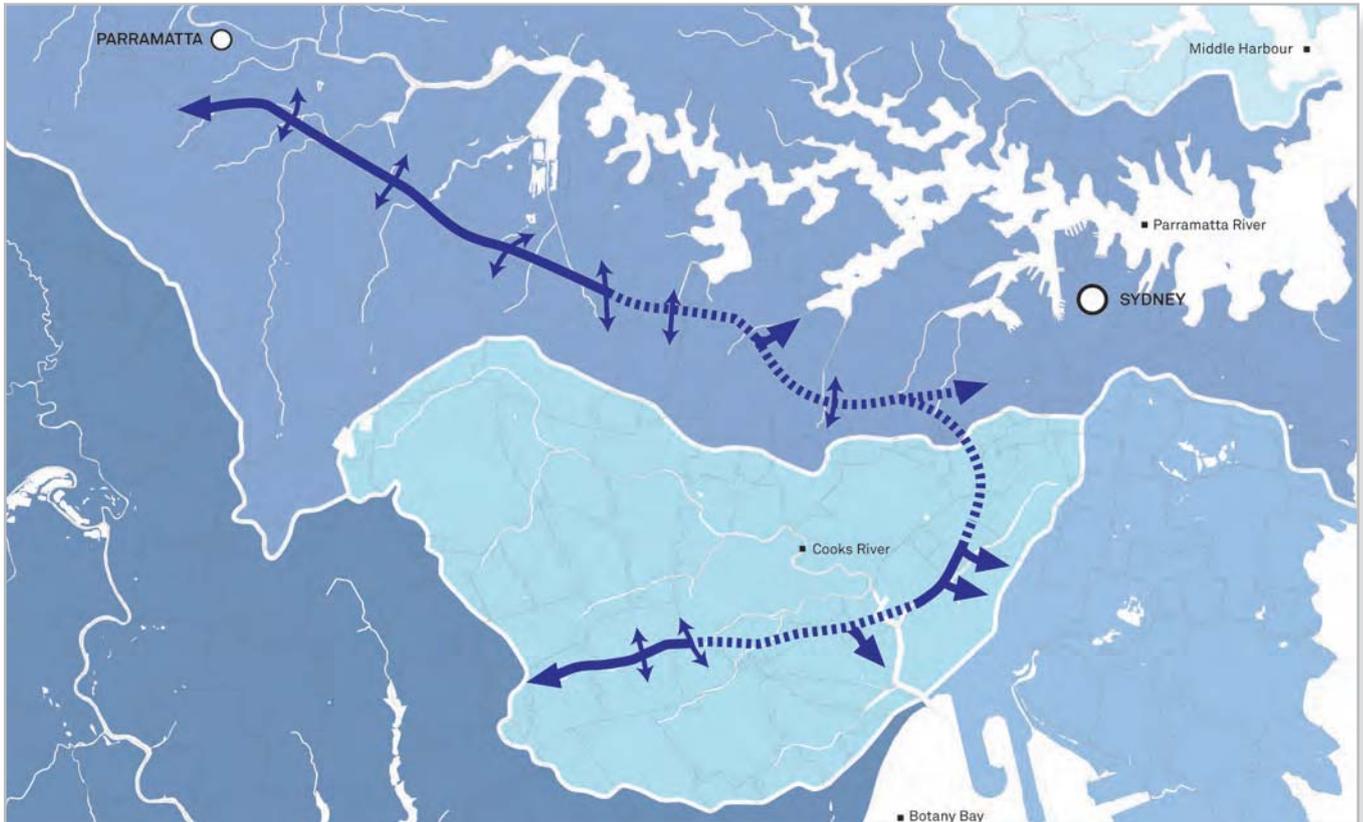


Figure 3.5 The hydrology of the Sydney Basin  
 Source: NSW Department of Environment & Heritage catchment maps 2013

### Hydrology

The health of any river is impacted by the health of the systems that drain into it. WestConnex will transition through two water catchments: Parramatta River and Cooks River Catchments.

### Opportunities

1. Utilise major infrastructure investment to enhance Sydney's waterways, in particularly when crossing existing creeks or rivers
2. Explore best practice Water Sensitive Urban Design (WSUD) measures to improve the environmental performance of the motorway and the drainage systems of western Sydney.
3. Consider the impact on storm water flows and the long term health of the riparian system.

- Parramatta River catchment
- Cooks River subcatchment
- Botany Bay catchment
- Georges River catchment
- Middle Harbour catchment

# 03 Corridor Analysis

## Vegetation



Figure 3.6 The pre-european landscape of the Sydney Basin  
 Source: Taken for Granted: the bushland of Sydney and its suburbs Benson, D.H., 1949

### Natural Vegetation - Pre European Landscape

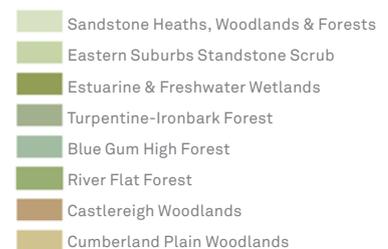
The nature of the original vegetation communities is influenced by a combination of factors including climate, topography and geology. Over time, the landscape of the Sydney Basin has been given over to the needs of a growing city, from agricultural lands and small villages, to the expansion of Sydney's outer suburban areas. The WestConnex project presents an opportunity to contribute to a grand landscape legacy - the re-vegetation of the Sydney Basin.

The WestConnex Motorway will traverse 4 distinct vegetation types:

- \_ Turpentine-Ironbark forests;
- \_ Sandstone Heath Woodlands & Forests;
- \_ Estuarine & Freshwater wetlands and;
- \_ Cumberland Plain woodlands.

### Opportunities

1. Wherever possible priority shall be given to the reinstatement of pre-European vegetation communities.
2. Re-establish green corridors along natural drainage lines and open space networks.
3. Use these linear parks to connect suburbs, clean stormwater and build new habitat for wildlife



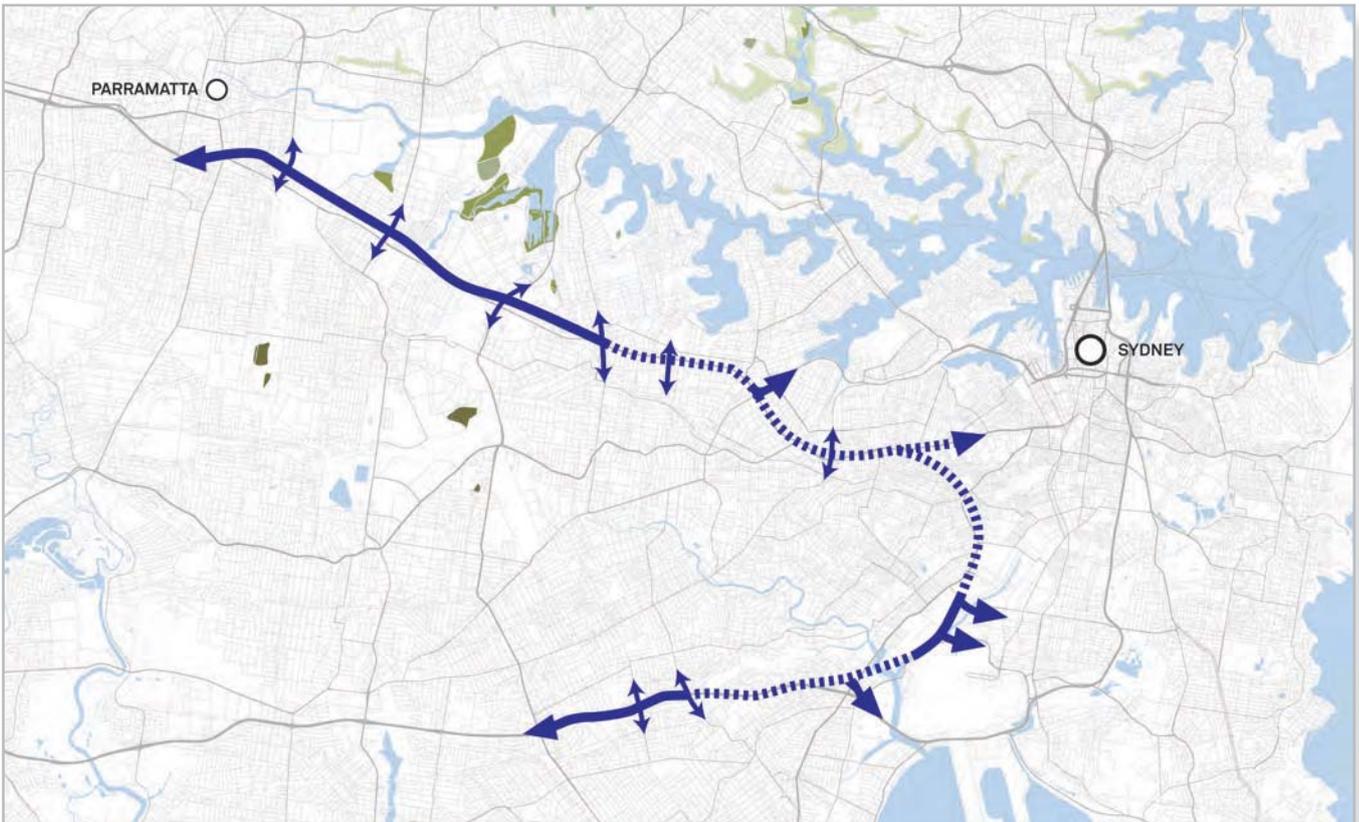
Turpentine-Ironbark Forest



Estuarine and Freshwater Wetlands



Cumberland Plain Woodlands



**Natural Vegetation - Remnant Vegetation Communities**

The vast majority of the natural vegetation in the area around the WestConnex alignment has been cleared. The remaining remnant wetland vegetation predominantly occurs along creek lines and in reserves and along the Parramatta River

**Opportunities**

1. Where possible enhance pedestrian & cycle through these natural communities
2. Protect and mitigate any impacts to existing vegetation communities

Figure 3.7 Remnant vegetation in Sydney  
Source: vegetation dataset, GIS

# 03 Corridor Analysis

## Open Space

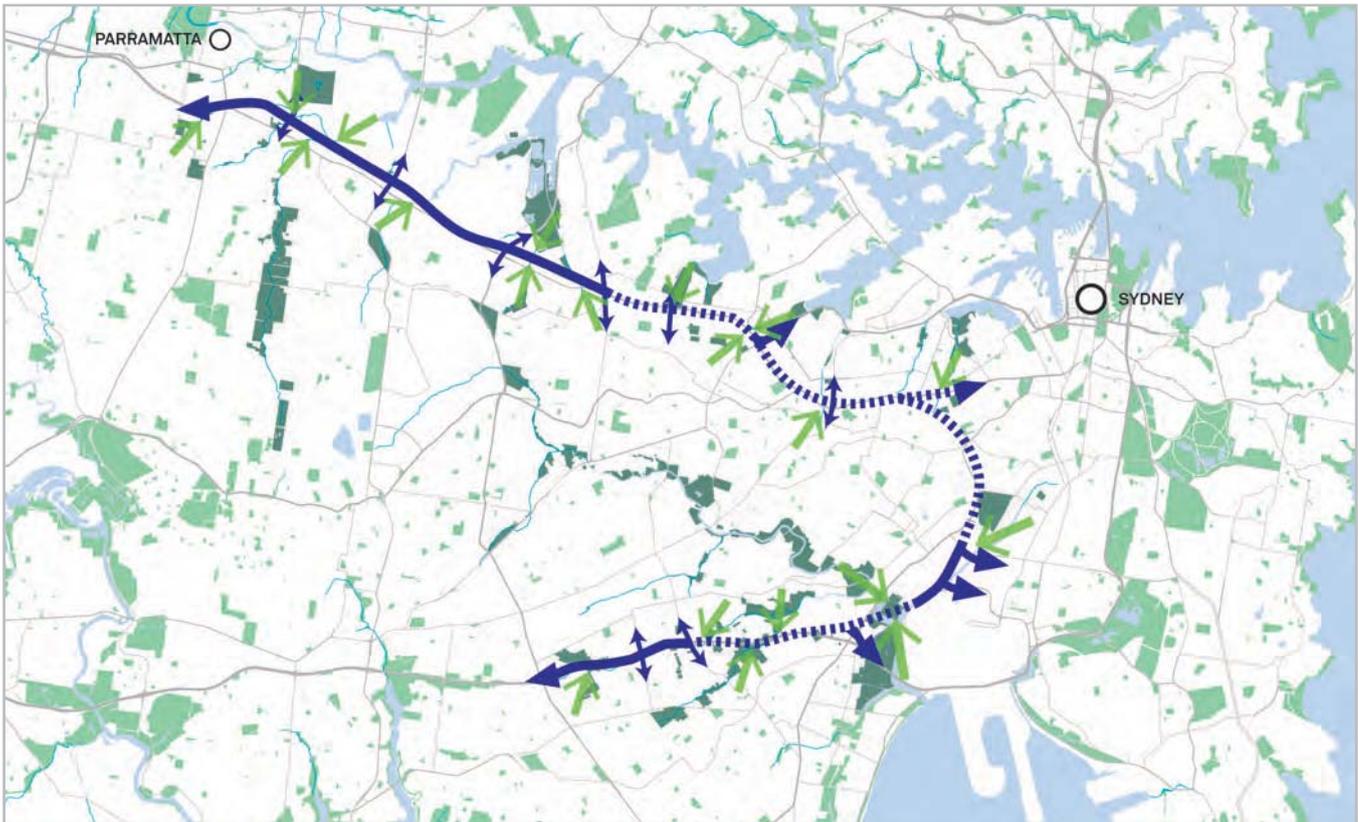


Figure 3.8 Sydney's open space network  
Source: open space data set, GIS

### Open Space

Sydney's open space network is an intrinsic part of the city's landscape character and sense of place. Currently an untapped resource, the majority of open spaces are fragmented, poorly developed and maintained. The WestConnex Motorway will need to engage sensitively when passing under/over/through these areas.

### Opportunities

1. Connect existing fragmented open spaces through integrated property acquisition / consolidation and new development, to create extended recreation, habitat creation and micro-climate corridors leading to / from the river and the harbour.
2. Enhance interface between existing open spaces and the motorway and improve pedestrian connections.



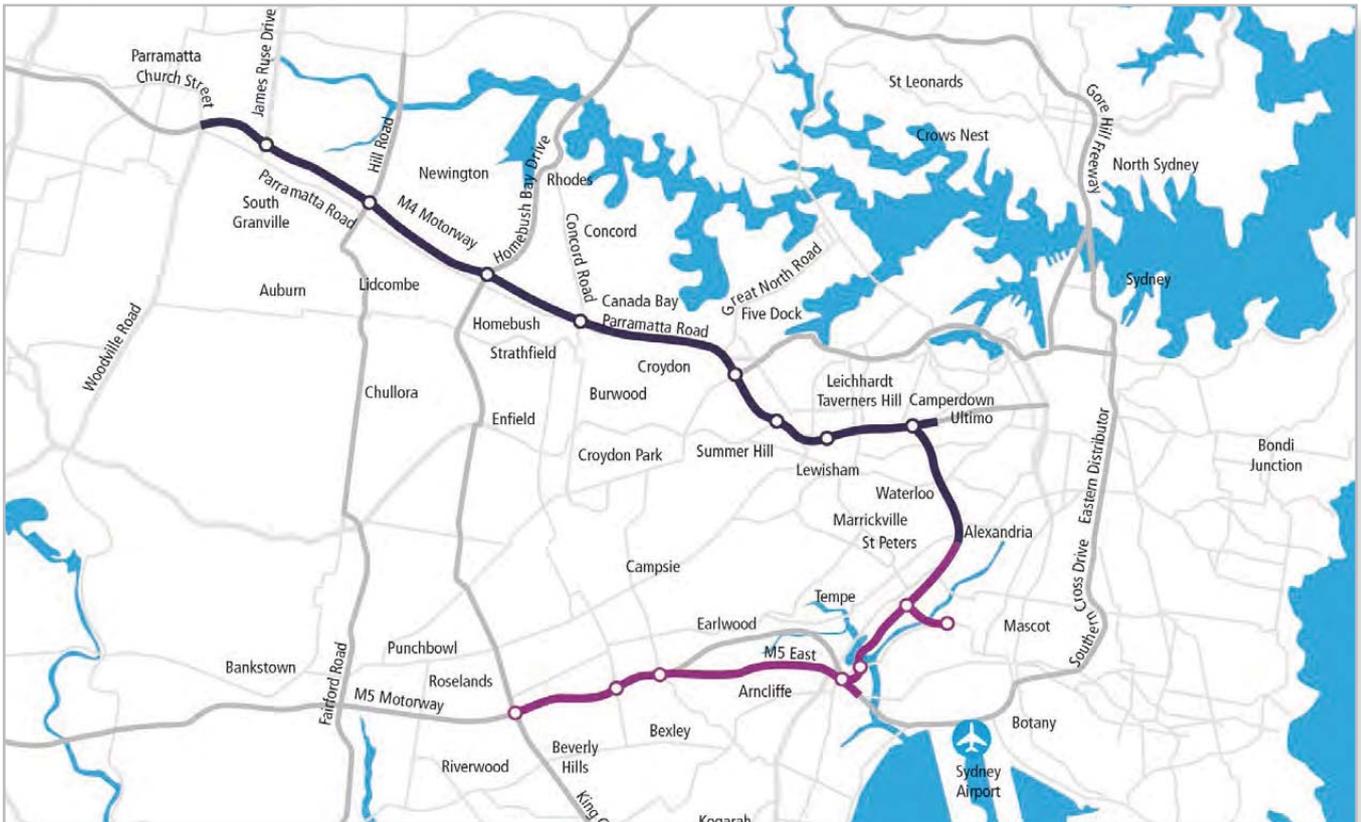
Hawthorn Canal, Taverners Hill



Haslems Creek, Homebush

## 03 Corridor Analysis

### Transport



#### Transport

WestConnex is the ‘the missing link’ to creating a connected Sydney (*NSW Long Term Transport Masterplan*). It will improve connectivity to major attractors and destinations and reduce traffic volumes on choking arterials such as Parramatta Road, Liverpool Road, Canterbury and New Canterbury Roads.

#### Opportunities

1. Enhance urban amenity of main roads such as Parramatta Road and other lower order roads
2. Create opportunities for urban renewal, improved livability at key on/off points to the motorway
3. Establish safe, legible and seamless transitions at all entry and exit points and enhance pedestrian connectivity.
4. Facilitate integration with all transport modes.

Figure 3.9 Proposed WestConnex Alignment  
Source: *NSW Long Term Transport Masterplan*, December 2012, pg 142

# 03 Corridor Analysis

## Land Use

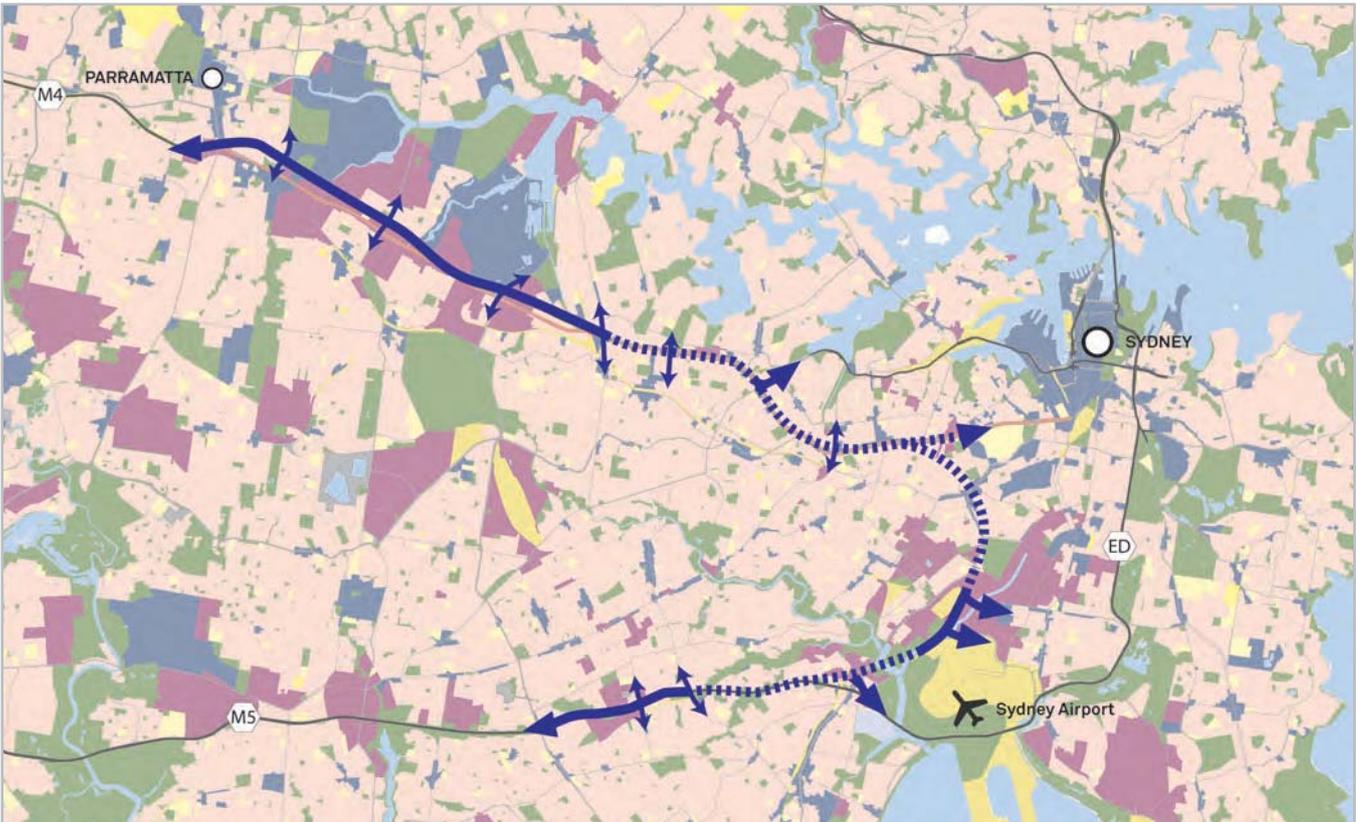
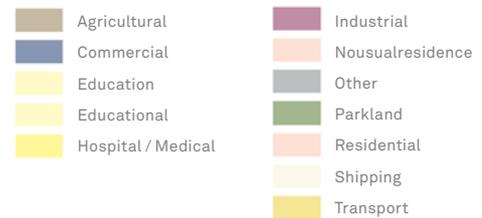


Figure 3.10 Land Uses in Sydney  
 Source: land use data set, GIS

### Land Use

The history of Sydney’s growth and development has traditionally seen residential estates occupying the higher elevations and employment lands and open spaces utilising the lower, ‘less desirable’ elevations along creek lines and marsh lands.

WestConnex will connect two special use precincts: Sydney Olympic Park and Sydney Airport. It will also connect key employment lands around Alexandria, Mascot, Silverwater, Camellia and Homebush



Sydney Olympic Park



Sydney International Airport

## 03 Corridor Analysis

### Governance & Community

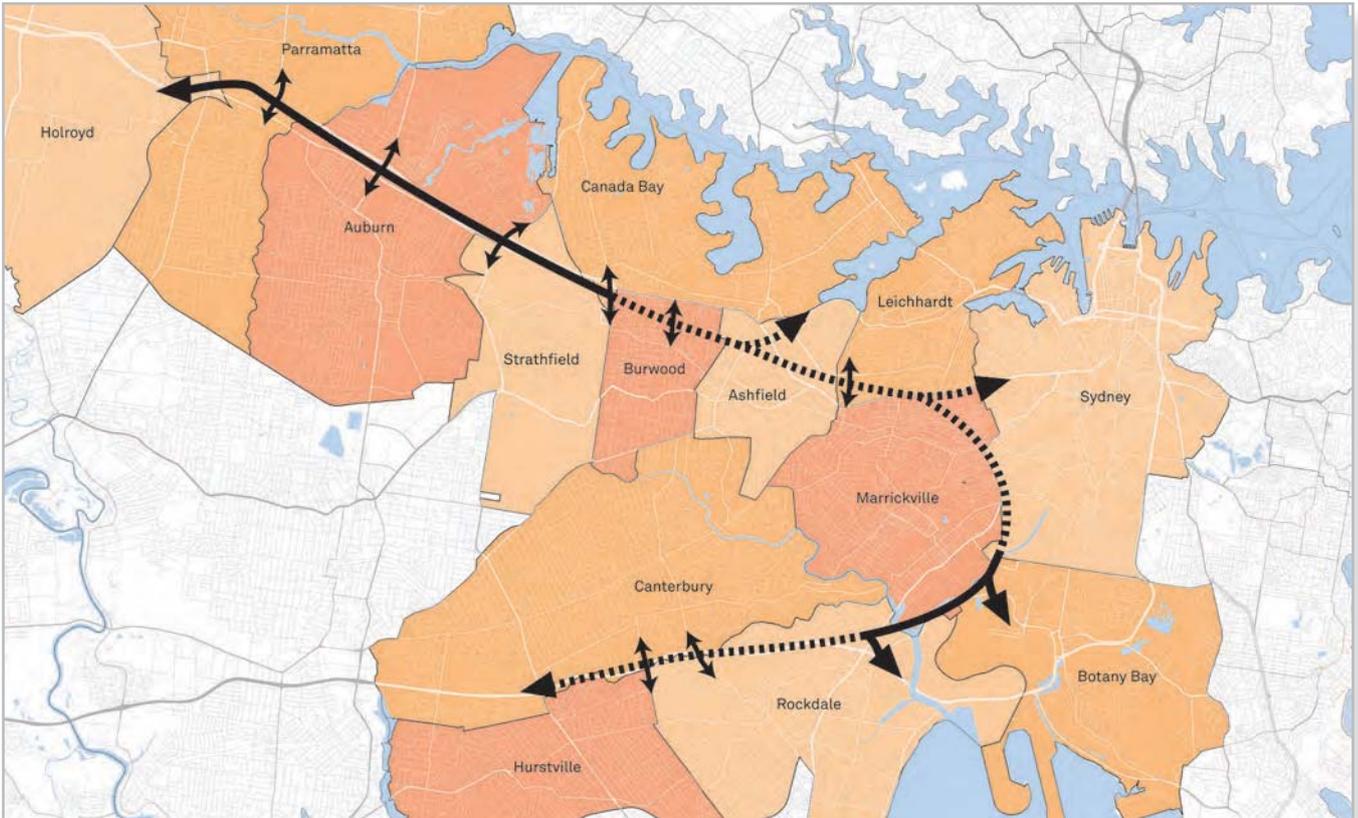


Figure 3.11 Map of Local Government Areas  
Source: government boundary data set, GIS

#### Local Government Areas

WestConnex will extend through 14 local government areas in Sydney. Each Council is influential with strong communities and potentially different goals, ambitions, procedures and policies which need to be considered.

Sydney is a multicultural city. Its diversity is an essential part of Sydney's identity and economy. It is important for WestConnex to recognise and work with local communities through the design and implementation process in order to boost and develop the city's macro and micro economies.

#### Opportunities

1. Develop a consistent set of landscape and urban design strategies across the whole corridor in advance of detail design.
2. Develop an integrated communications and engagement strategy to harness local support and to build community ownership and responsibility.

## 03 Corridor Analysis

### Aboriginal Heritage

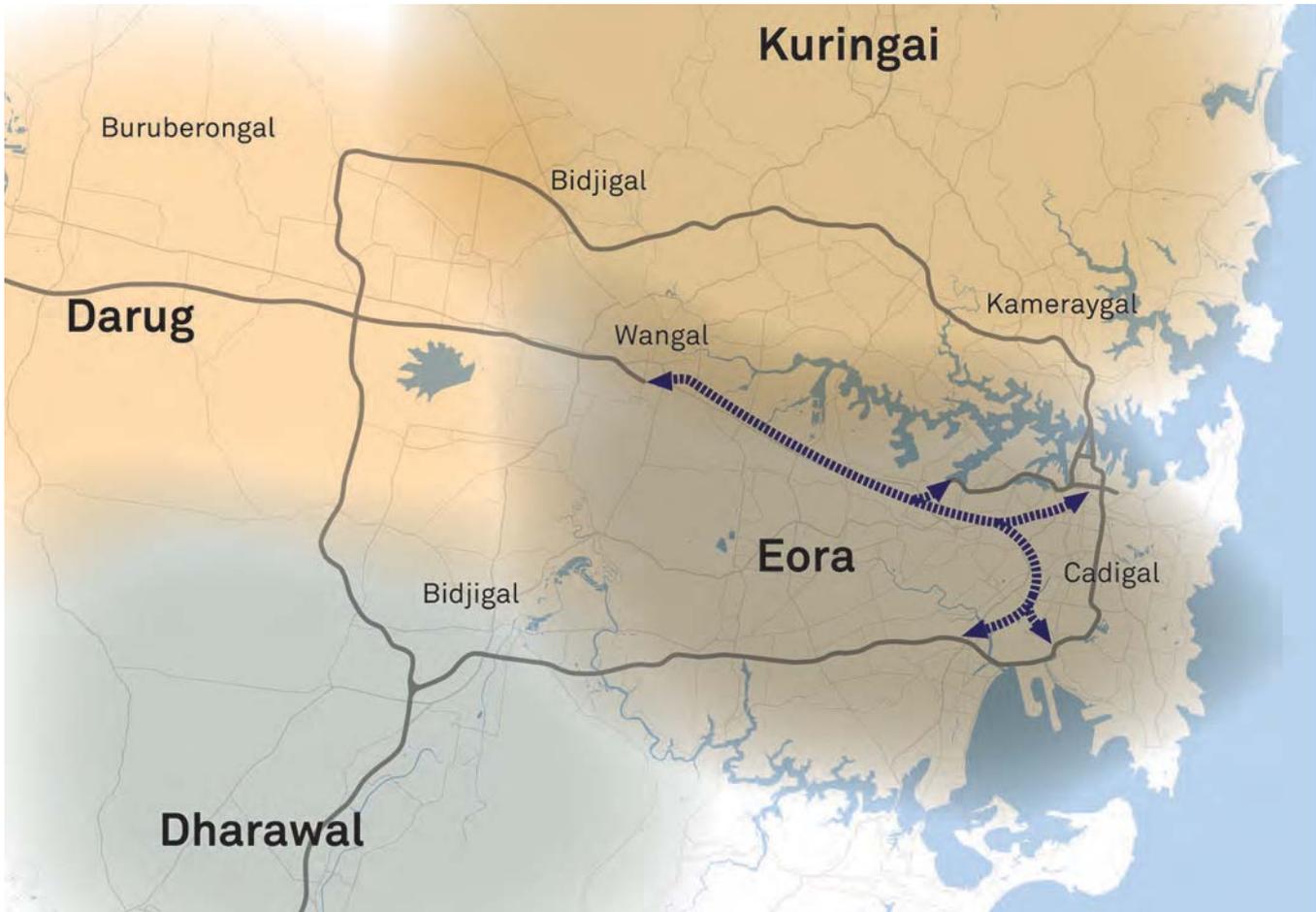


Figure 3.12 Aboriginal Language Map of Sydney  
Source: Royal Botanical Gardens & Domain Trust, [www.rbg Syd.nsw.gov](http://www.rbg Syd.nsw.gov).

#### Aboriginal Clans

The aboriginal clans of Sydney were a mixture of diverse cultures and languages. Their boundaries were highly blurred and fluid points of exchange and interaction between clans.

Patterns of development throughout Sydney's history have seen the eradication of the cultural boundaries of the Eora people that once occupied the lands of Sydney. The plan above is an indicative representation of the clans in Sydney and their cultural areas.

#### Opportunities

1. Examine opportunities to work with local aboriginal communities.
2. Identify key heritage sites for interpretation.
3. Develop an integrated art strategy that is reflective of Sydney's aboriginal heritage and identity

**'If one accepts the simple proposition that nature is the arena of life, and that a modicum of knowledge of her processes is indispensable... it is amazing how many apparently difficult problems present ready solutions'**

**Ian McHarg**  
Design with Nature, 1967



# 03 Corridor Analysis

## Character Areas & Road User Experience

**We need to... ‘consider both the people that use our roads as well as the people that have to live with our roads.’**

Contributing to liveable communities: roads as links and places  
RMS

### 3.4 Character Areas Overview

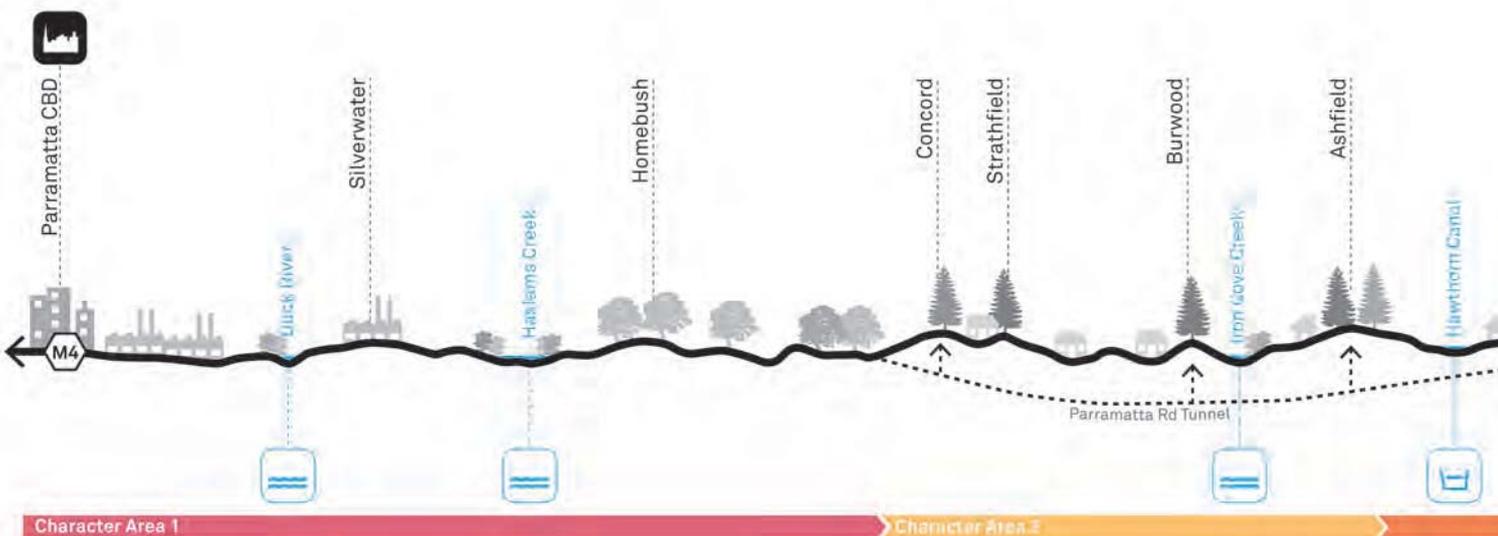
WestConnex is a significant infrastructure project that will profoundly influence the areas of Sydney through which it passes. It needs to have a clear identity but also respond sensitively to a variety of urban conditions and land uses.

These varying urban conditions have been broadly categorised under a strategic character area assessment, each of which will have a series of sub-character zones to be explored in more detail in subsequent pieces of work. The following section describes six areas of common character which will be broken down further during the next stages of work:

- Character Area 1\_ Industrial, commercial & retail
- Character Area 2\_ Motor services & retail
- Character Area 3\_ Medium density residential
- Character Area 4\_ Education, civic & health
- Character Area 5\_ Port & airport
- Character Area 6\_ Low density suburban residential & recreation

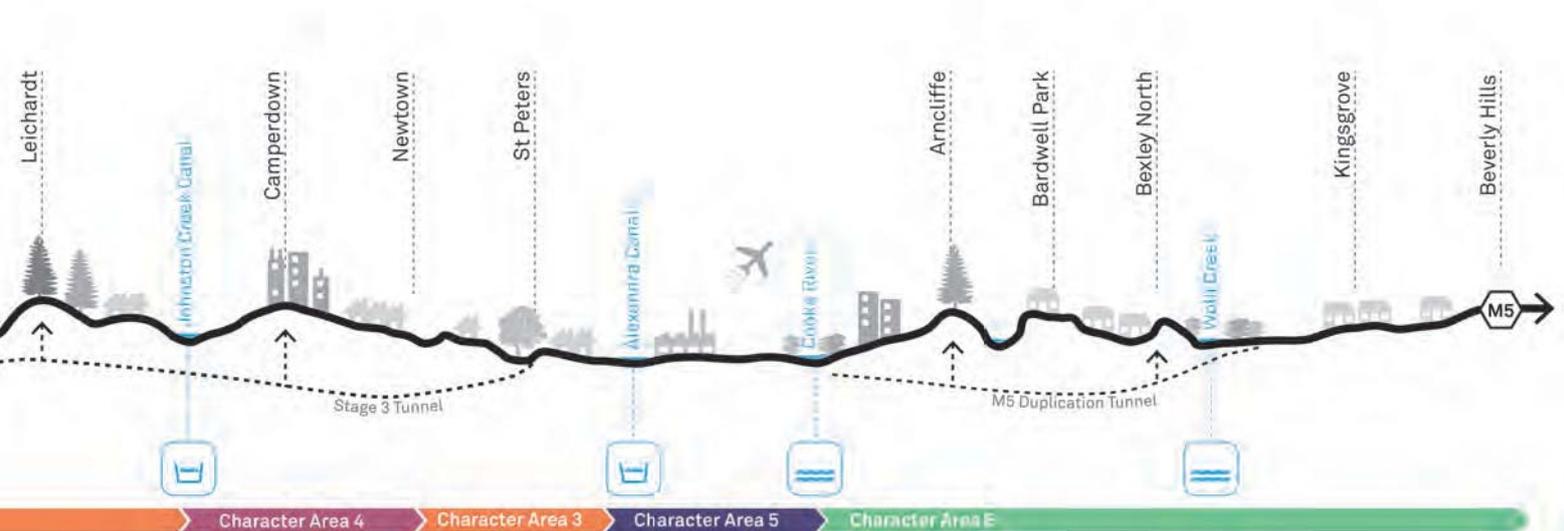
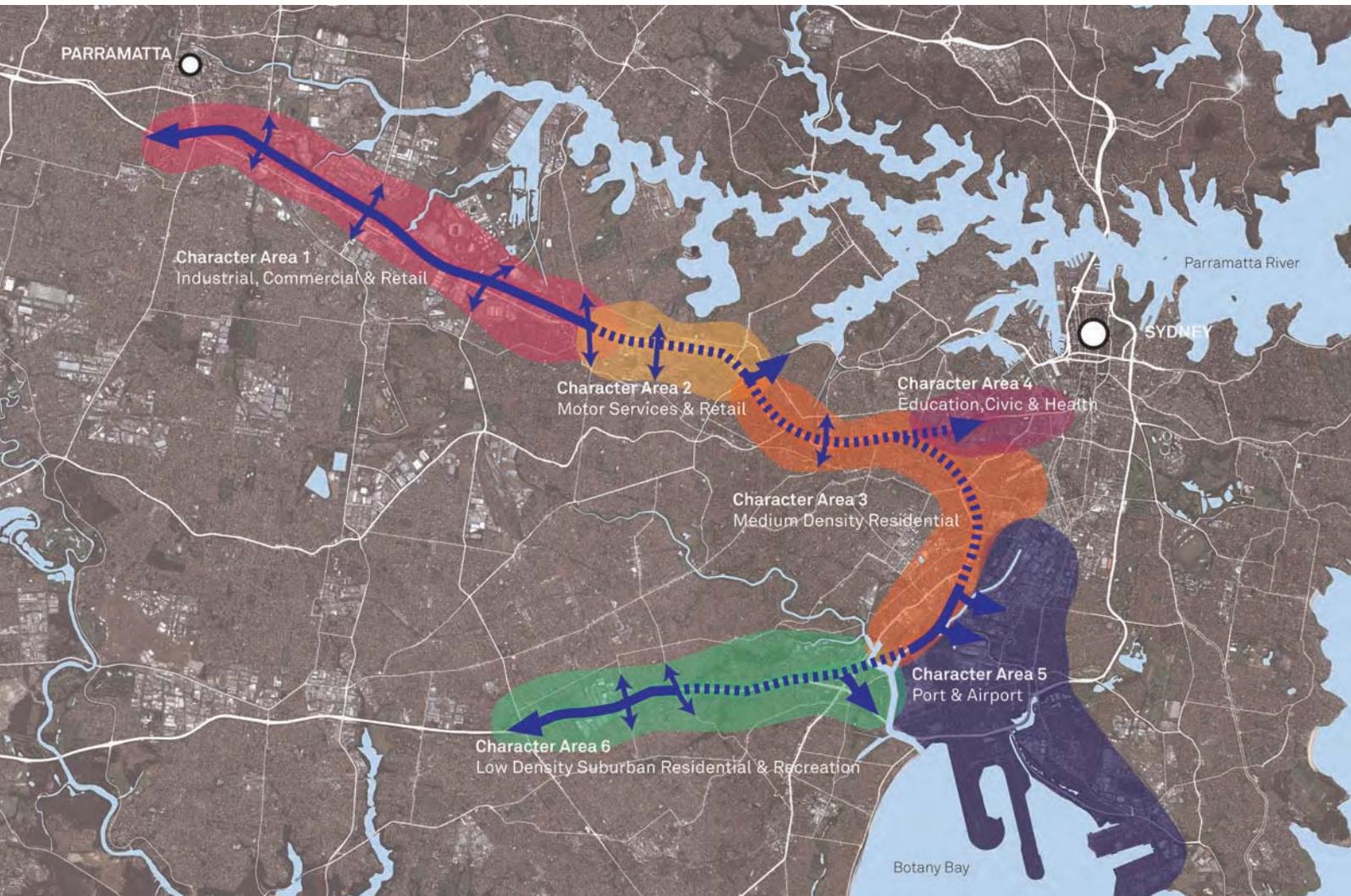
This section also analyses the experience from a road user perspective within each character zone, often highlighting the disparity between the two, and thus the potential for change and re-connecting the motorway into Sydney’s urban fabric.

The diagram overpage captures the broad character zones of the WestConnex motorway which has been interpreted below in a long character section that illustrates the relationship between Sydney’s topography, its cultural landscape and the potential experience and narrative of travelling along the motorway.



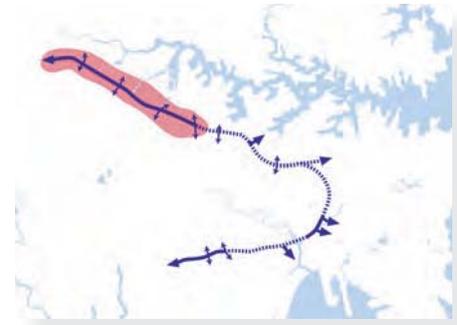
-  Airport & Port Botany
-  Historical housing estates & landmark planting
-  Significant cultural planting &/or open space
-  Riparian vegetation & wetlands
-  Urban centre / high density development
-  Industrial / employment lands
-  Single dwelling suburbs
-  Small Lot Terrace suburbs
-  Natural waterway
-  Open water canal

Figure 3.14 A Broad Character Map of the WestConnex Alignment  
Source: HASSELL



# Character Area 1

## Industrial, commercial & retail



### Character Area Description

This character area lies between Concord and Parramatta. The M4 and Parramatta Rd run parallel through a predominantly industrial landscape with a gentle topography until they merge at Concord Rd.

In this area, Parramatta Road is largely tree-less, industrial corridor of big-box commercial and retail buildings, industrial precincts and wide open streetscapes that provide little to no amenity for people. The area presents with significant urban degeneration due to the high volumes of traffic that create a barrier to north-south pedestrian movements and eliminate public amenity

Two main creek lines flow into Parramatta River: Duck River and Haslams Creek. The latter has undergone major regeneration as part of Millennium Park.

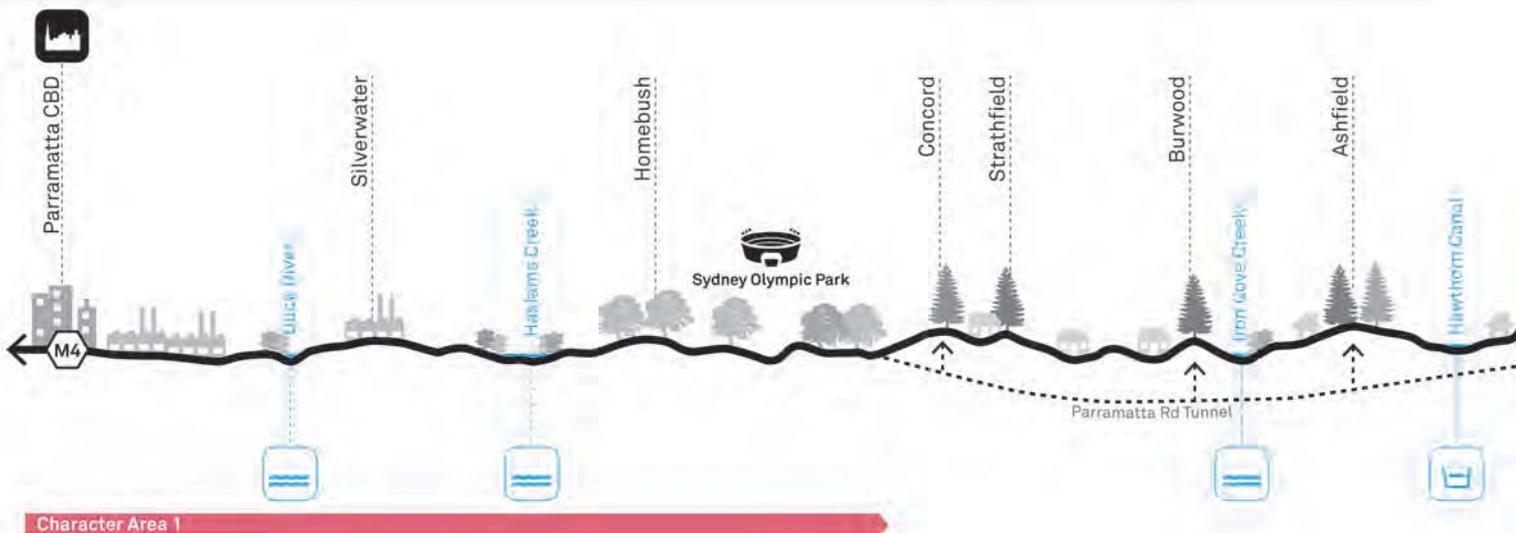
Major attractors include Sydney Olympic Park, Rosehill Racecourse, Flemington Markets and Sydney Speedway.



01 Industrial and Residential mix at Granville  
Photography by Google Street View

02 Industrial, bulky goods corridor along Parramatta Rd  
Photography by Google Street View

03 Flemington Markets  
Image source: unknown



## Road User Experience: The M4

Between Church St, Parramatta and Concord Rd the M4 motorway is experienced through a sequence of viaducts, at-grade sections and cuttings. This experience is mostly enclosed by noise walls or vegetated barriers where contextual views are constrained to the elevated sections of the motorway, or when bridging over existing roads. The main visible landmarks include Millennium Parkland and the Camellia Industrial Estate.

The at grade and cutting sections of motorway create obtrusive physical barriers of low design quality and consistency. This lack of consistency extends across all built elements of the motorway e.g. noise walls and bridges creating a disjointed experience that lacks legibility and identity

The on-grade sections of the motorway vary between sunken and raised conditions with well established plantings along embankments and medians adding to the experience of the journey.

The M4 provides limited crossing points for pedestrians to traverse the corridor and is hostile to pedestrian activity.



04 M4 - section of elevated viaduct between xxxx  
Photography by HASSELL

05 M4 - on grade condition with vegetated median and side embankments  
Photography by HASSELL

06 M4 - raised condition with vegetated embankments  
Photography by HASSELL



# Character Area 2

## Motor Services & Retail



### Character Area Description

This character area extends between Concord and Ashfield. The predominant housing types are detached single dwellings and Californian bungalows peppered with 1970's red-brick apartment blocks.

There is a clear disparity between the degraded commercial environment along Parramatta Road and the old residential suburbs of Ashfield, Burwood and Strathfield which lie immediately beyond the road corridor.

Historically, these suburbs served as early dormitory suburbs of the city and a midway point between Sydney and Parramatta. They were thriving centres of trade which led to the establishment of large housing estates, forming part of the cultural landscape of Sydney. The residential estates are characterised by Pre-War & Post-War / Federation bungalows and terraces houses set in tree lined streets. Occasionally, signature trees such as Bunya Pines and Norfolk Island Pines were planted on ridge tops and these today provide important visible landmarks.

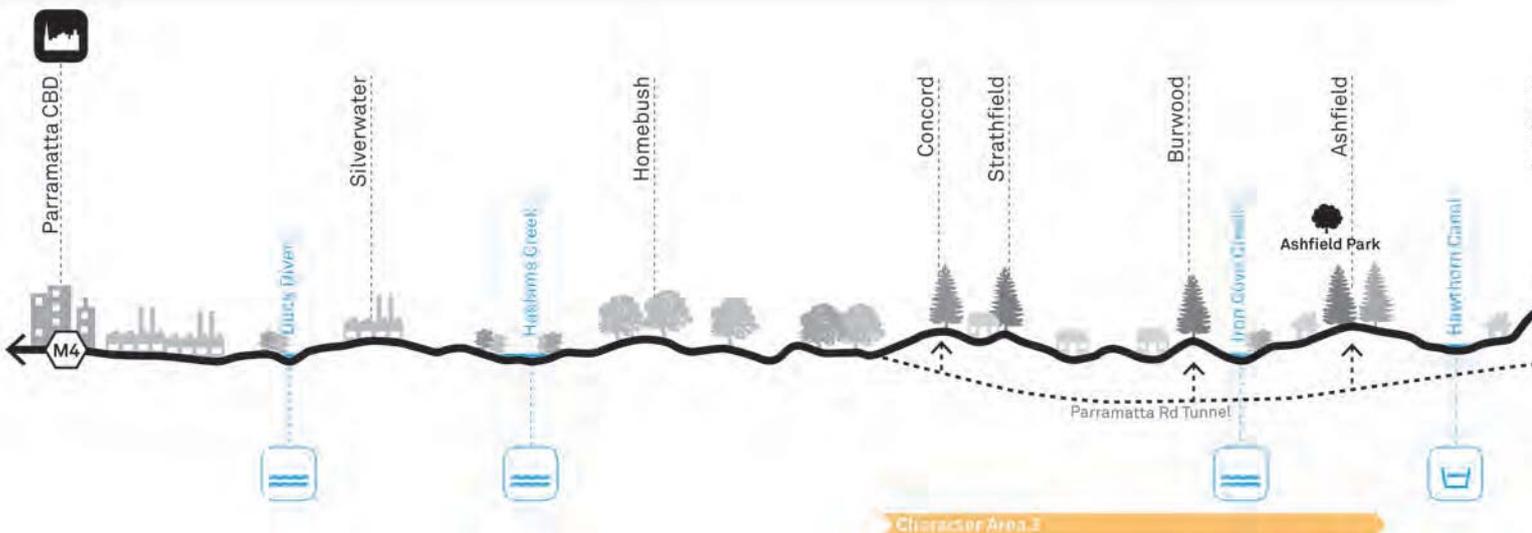
At key transport nodes, medium and high-density apartment dwellings are emerging.



01 Significant historic and cultural landmarks throughout the zone - Ashfield Park  
Photography by HASSELL

02 Example of typical detached dwellings and Californian bungalows common to the inner west  
Photography by HASSELL

03 New landmark, high density developments are beginning to populate the inner west  
Photography by HASSELL



04 The degraded condition of Parramatta Rd  
Photography by HASSELL

05 The existing condition along Parramatta Rd:  
Caryards and commercial outlets - A lifeless  
road that provides poor amenity for people  
Photography by HASSELL

06 A view over the congested intersection of  
Frederick St and Parramatta Rd.  
Photography by HASSELL

## Road User Experience: Parramatta Road

In this area Parramatta Road is a congested arterial dominated by car yards, showrooms and motor vehicle service centres. The street lacks vitality and identity, with congestion, noise, and pollution the predominant experience.

Although the WestConnex will be in tunnel through most of this precinct, it is important to consider the character of the Inner West and how the motorway reflect it. Particular attention should be paid to reflect the design approach of tunnel portals and vent stacks through this zone.

The traffic relief provided by the WestConnex project will create opportunities for urban renewal through this zone and should be in keeping with the character of the area.

The Parramatta Road Urban Renewal Framework has established a strategy for the rejuvenation of Parramatta Road and surrounding suburbs.



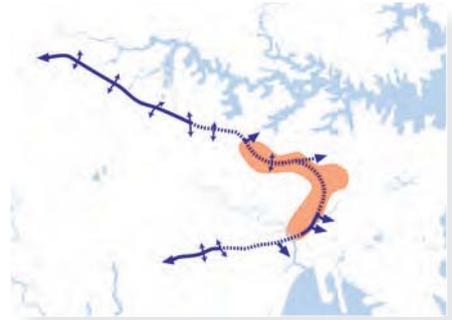
**'It stretches through 18 suburbs yet Sydney's busiest arterial road is a multi-billion-dollar wasteland. Parramatta Rd is a ghetto of boarded-up shopfronts.'**

Daily Telegraph  
April 18<sup>th</sup> 2011



# Character Area 3

## Medium Density Residential



### Character Area Description

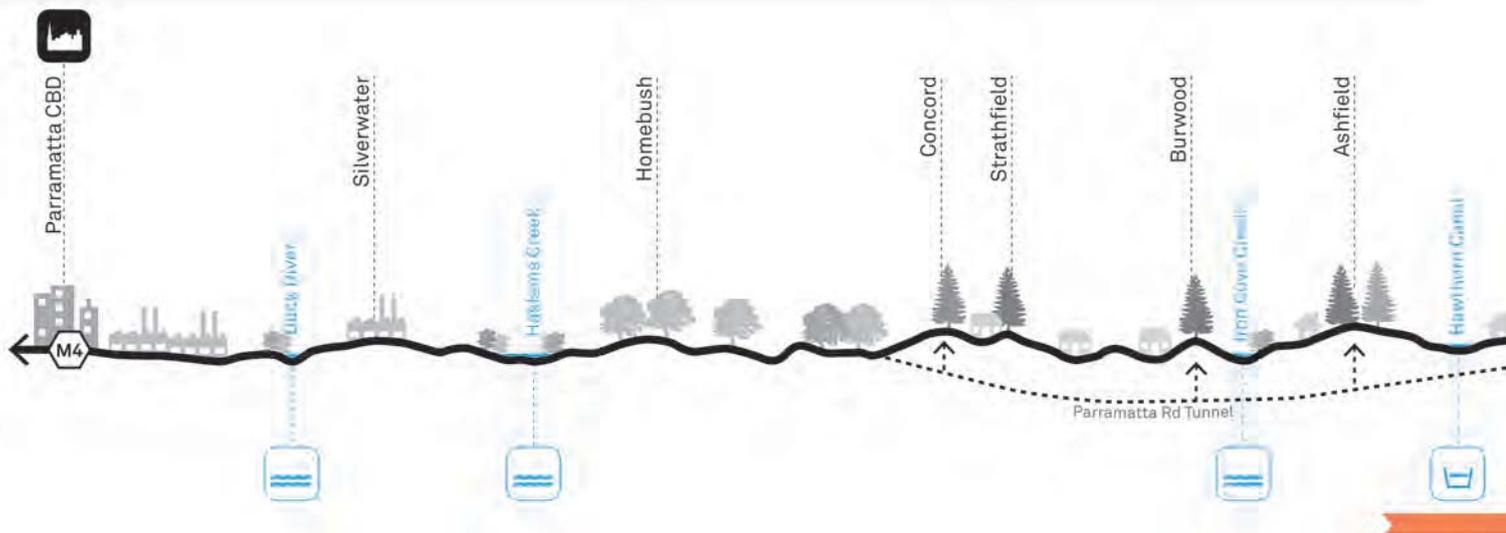
This character area extends from Ashfield through to Camperdown, Newtown and south towards the airport along the western side of Alexandra Canal.

The Inner city is characterised by gently rolling topography of low hills and shallow valleys. Small lots and compact terraces dominate the urban landscape with well established, tree-lined streets that are bursting with character and vitality. Local parks and plazas are highly utilised, offsetting the compact living arrangements of these fine grain suburbs. The main roads such as Parramatta Road and King Street comprise linear historic shop-tops and are vibrant urban villages of cultural and commercial activity.

The character of these suburbs is rapidly evolving. High-density mixed-use developments and other urban renewal projects are increasing the livability and population densities within this area.



- 01 Heritage shop-top buildings along Parramatta Road  
Photography by HASSELL
- 02 Example of typical detached terrace and small lot housing through the inner city  
Photography by Google Street View
- 03 Landmark shops in Haberfield  
Photography by HASSELL



## Road User Experience: Parramatta Road

In this area Parramatta Road is a retail focused artery that is economically degraded and out of touch with the the historic shop-top suburbs of the corridor. Built form along the road is a consistent lineage of mixed-use buildings.

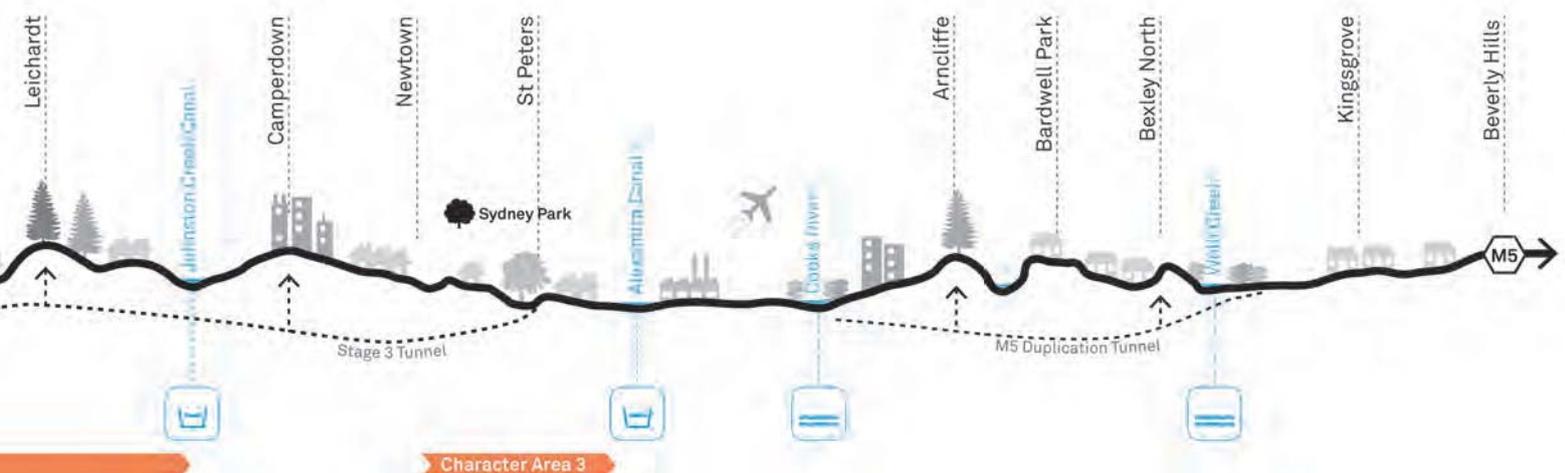
Between Haberfield and Five Dock the streetscape 'opens up' to variety of larger-scale buildings, including car and furniture showrooms, walk-up apartments and commercial buildings.



04 Consistent wide streetscape with poorly activated footpaths and limited street trees  
Photography by HASSELL

05 Consistent wide streetscape with poorly activated footpaths and limited street trees  
Photography by HASSELL

06 A mixture of large block commercial buildings shop tops between Camperdown and Leighardt.  
Photography by HASSELL



# Character Area 4

## Education, Health & Civic



### Character Area Description

This character area extends between Camperdown and Broadway. It is the site for major health and educational institutions, high-density mixed use development and significant open space and mature tree plantings that are easily identifiable civic landmarks.

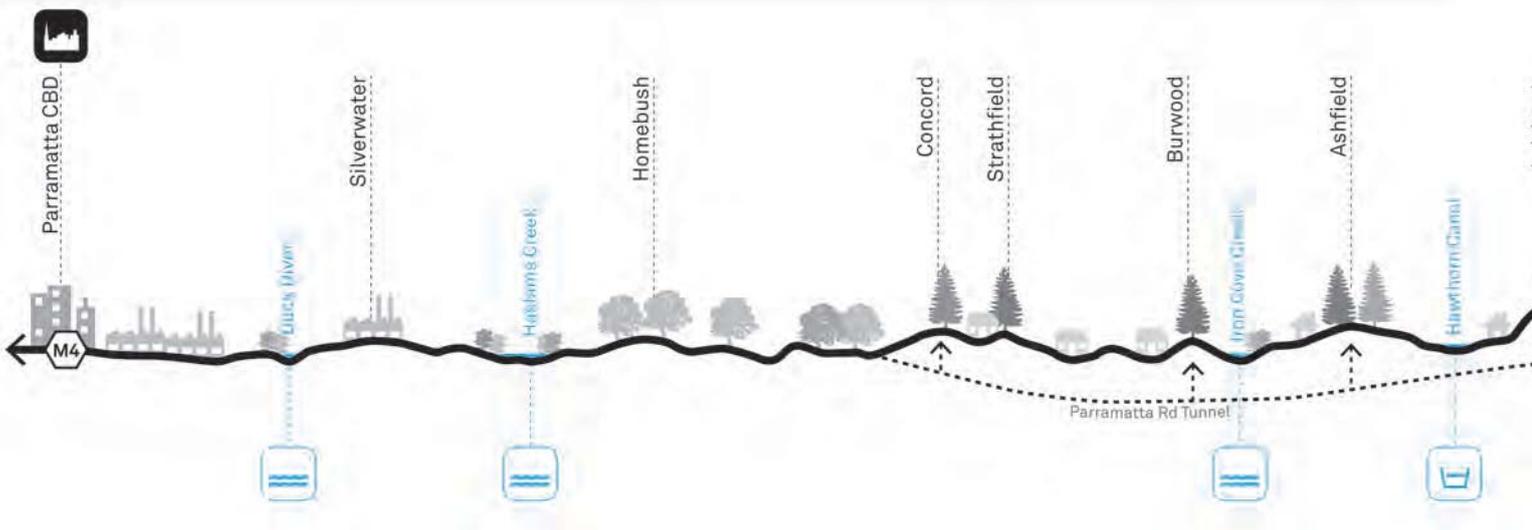
This is an active precinct with high public amenity provided by Victoria Park and the high quality, old sandstone buildings of Sydney University and the surrounding residential suburbs of Glebe and Forest Lodge.



01 Significant open space and cultural plantings around Broadway - Victoria Park  
Photography by HASSELL

03 Dilapidated shopfronts along Parramatta Rd  
Photography by HASSELL

02 Entrance to the University of Sydney - distinct architecture and streetscape  
Photography by HASSELL



## Road User Experience: Parramatta Road

In this area Parramatta Rd is a mixed-use corridor that is well connected to the broader precinct. There are 3 clear experiences when driving along this portion of Parramatta Road.

Beginning from Broadway the road user is immersed in the grandeur of Broadway and Sydney University and Victoria Park. This character then changes into a wide, and open streetscape adjacent to Sydney University that is flanked by retaining structures and pedestrian bridges, and is lifeless and contextually lost. Approaching Missenden Rd, the character changes again along the less glamorous side of Sydney University, differing greatly to the bulky, under-utilised commercial buildings along the northern side of Parramatta Rd. Although higher quality high density residential units are beginning to appear as the surrounding areas gentrify.



04



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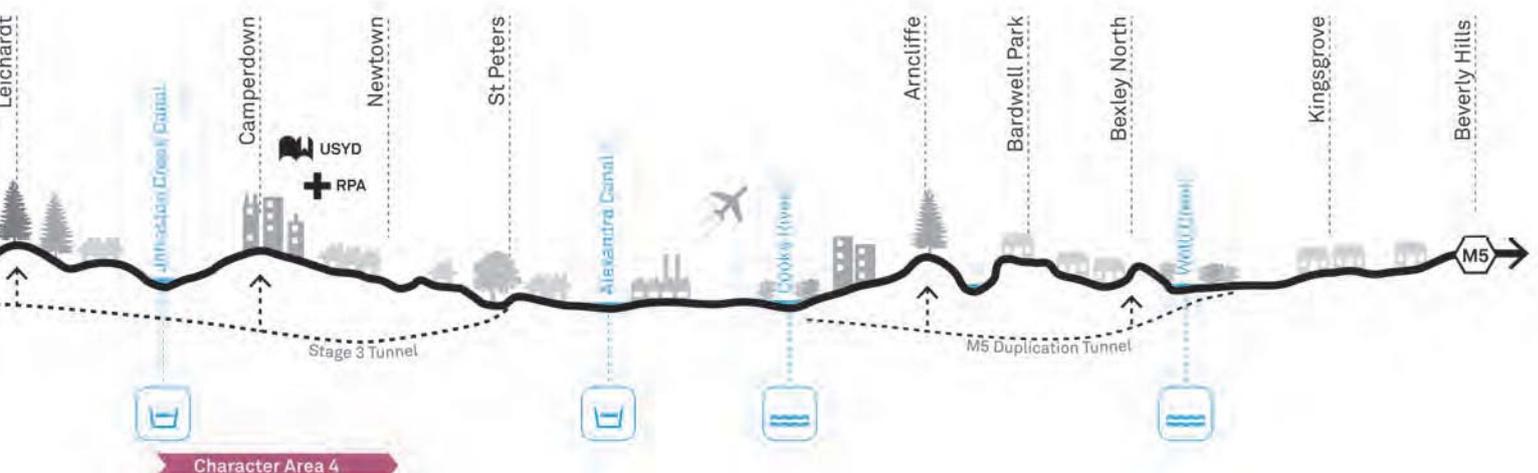


06

04 View at Broadway shopping the distinct civic nature of this section of Parramatta Rd  
Photography by HASSELL

06 An underutilised portion of shop top buildings beyond Missenden Road.  
Photography by HASSELL

05 Lack of activation of street edge with poor passive surveillance.  
Photography by HASSELL



# Character Area 5 Port & Airport



## Character Area Description

Located on the low-lying lands between the Cooks River and Alexandra Canal, this zone is characterised by Sydney's major transport and freight infrastructure - the International Airport and Port Botany.

The area is distinctly different to its surrounding context, built around the performance requirements set by maintaining efficient freight movements and opportunistic advertising.

The surrounding parklands, open space, and golf courses are of scenic value. Both Cooks River and Alexandra Canal are channelled waterways, the latter being one of the most polluted waterways in Australia, through years of industrial enterprise.

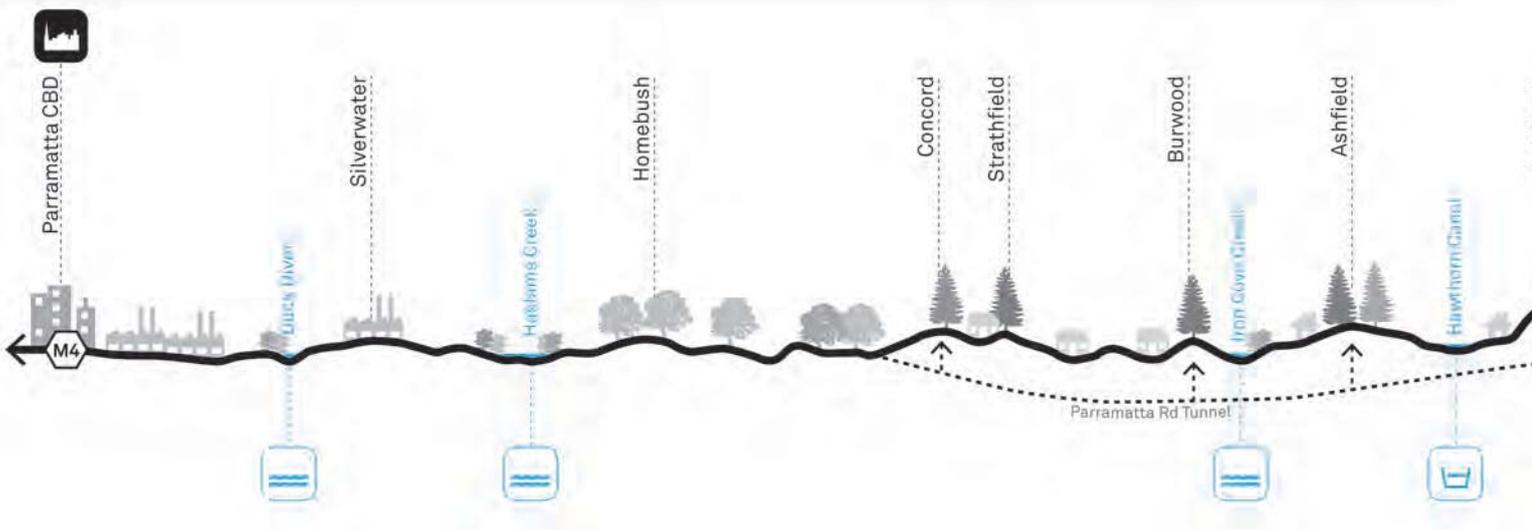
The adjacent residential suburbs of Mascot and Botany are characterised by post-war detached workers cottages, with new infill high density developments focused around Mascot train station and generic commercial buildings along main arterials



01 View of Cooks river from Quantas Drive  
Photography by HASSELL

02 Vegetated embankments and ramps to access Sydney International Airport  
Photography by HASSELL

03 Commercial and industrial districts that surround the airport  
Photography by HASSELL



## Road User Experience

In this area, the road user experience is of a utilitarian, efficient, transport dominated and industrial character. The character does not reflect the essence of Sydney. Advertising and generic commercial enterprise dominate the journey and sweeping, open views across the airport and Cooks River provide the only way of recognising that this is, Sydney.

WestConnex has the opportunity to reinvent the identity of Sydney's International Gateway



04



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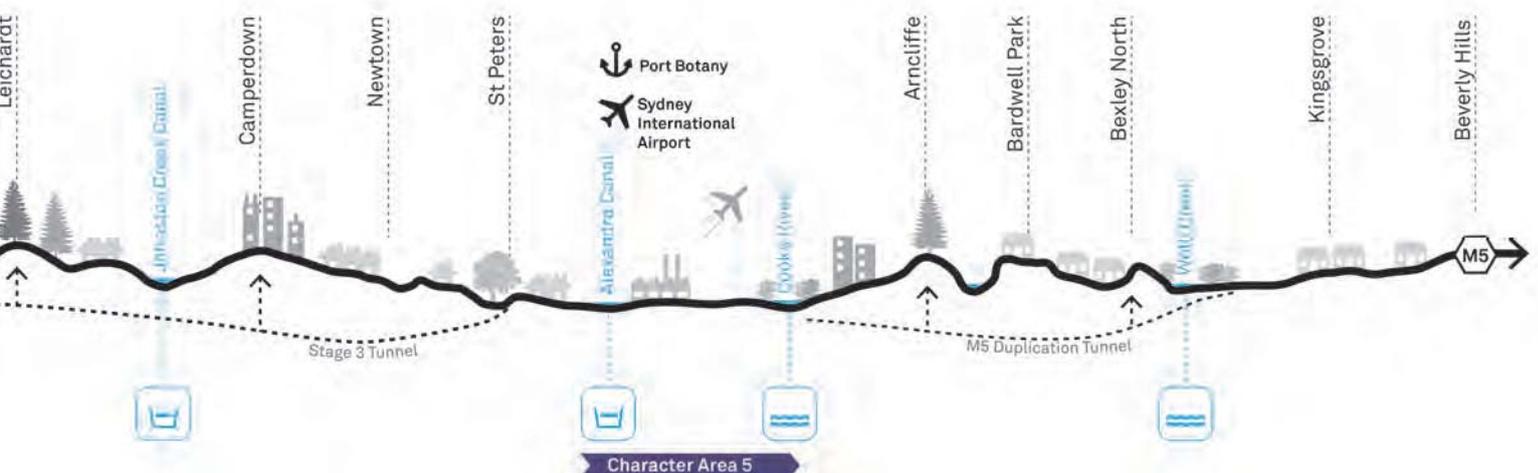


06

04 Quantas Drive  
Photography by HASSELL

05 A sea of billboards and dated commercial buildings around the airport  
Photography by HASSELL

06 Generic buildings are landmarks around the airport  
Photography by HASSELL



# Character Area 6

## Low Density Suburban Residential & Recreation



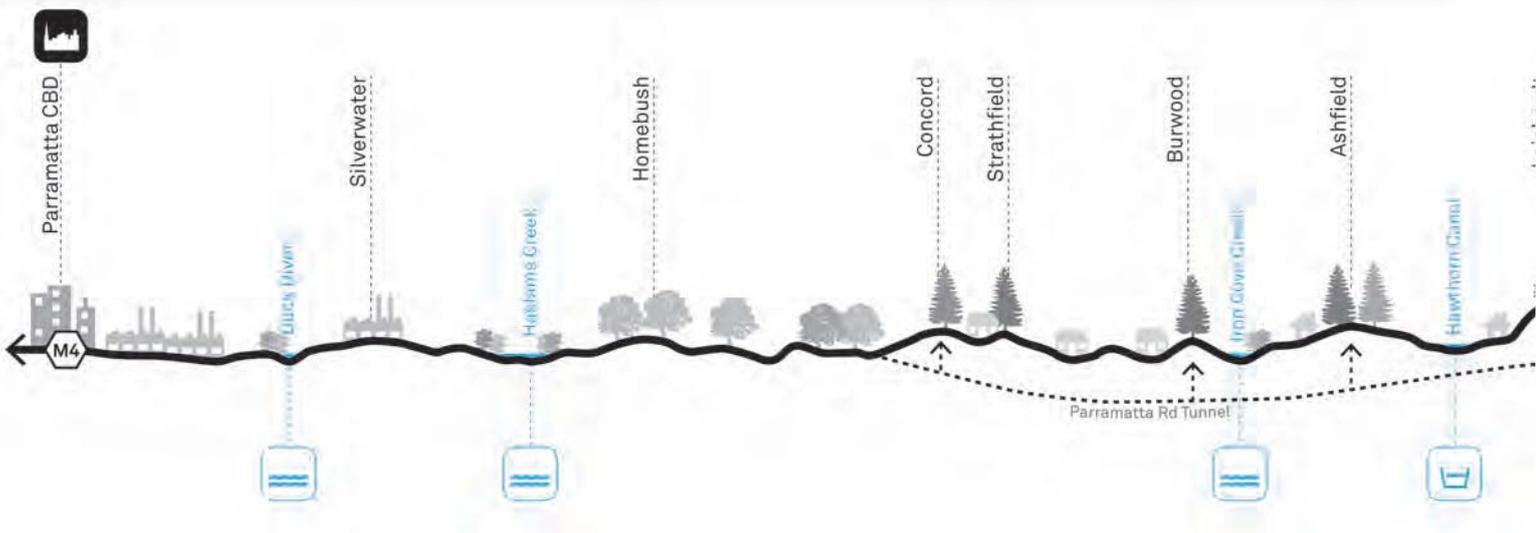
### Character Area Description

This character zone extends between the Cooks River and Beverley Hills, following the existing M5 alignment.

The predominant land use is medium-low density residential, characterised by single dwellings on medium to large blocks. The suburbs between Wolli Creek and Bexley North are older neighbourhoods established on the ridge lines with their valleys currently utilised as open space corridors.



- 01 View across Cooks River toward Wolli Creek  
Photography by Google Street View
- 02 Old suburbs of Arncliffe characterise by old single dwelling homes  
Photography by Google Street View
- 03 Modern suburbia through the inner south west  
Photography by Google Street View



## Road User Experience: M5 East

The M5 east is a relatively new infrastructure project that connects the Airport to the M5 at Beverley Hills.

The majority of this journey is homogenous and in tunnels as the road passes under the hilly suburbs of Arncliffe, Bardwell Park and Bexley North. Between Wolli Creek and Beverley Hills the motorway is held within an at-grade but spatially constrained corridor with narrow vegetated embankments against noise walls.

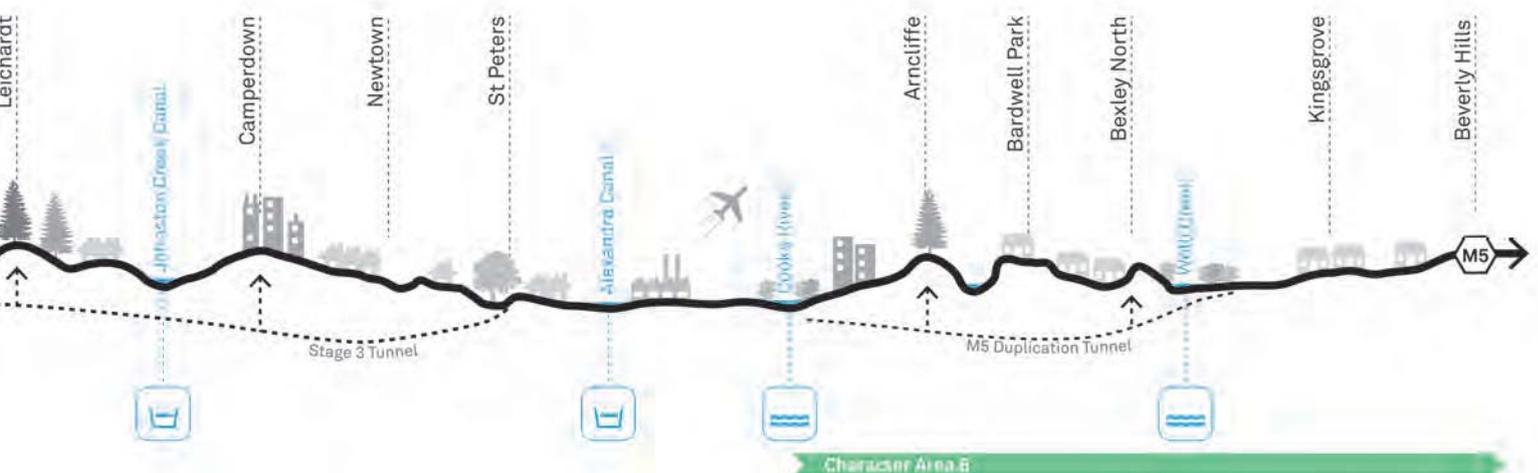
Rare glimpses beyond the motorway corridor occur when the motorway bridges over other main roads such as Kingsgrove Road.



04 Tunnel Portal entrance to the M5 tunnel  
Photography by HASSELL

05 Narrow and enclosed section of the M5 with constrained planting and noise walls  
Photography by HASSELL

06 A wider, vegetated M5 corridor towards Beverley Hills  
Photography by HASSELL

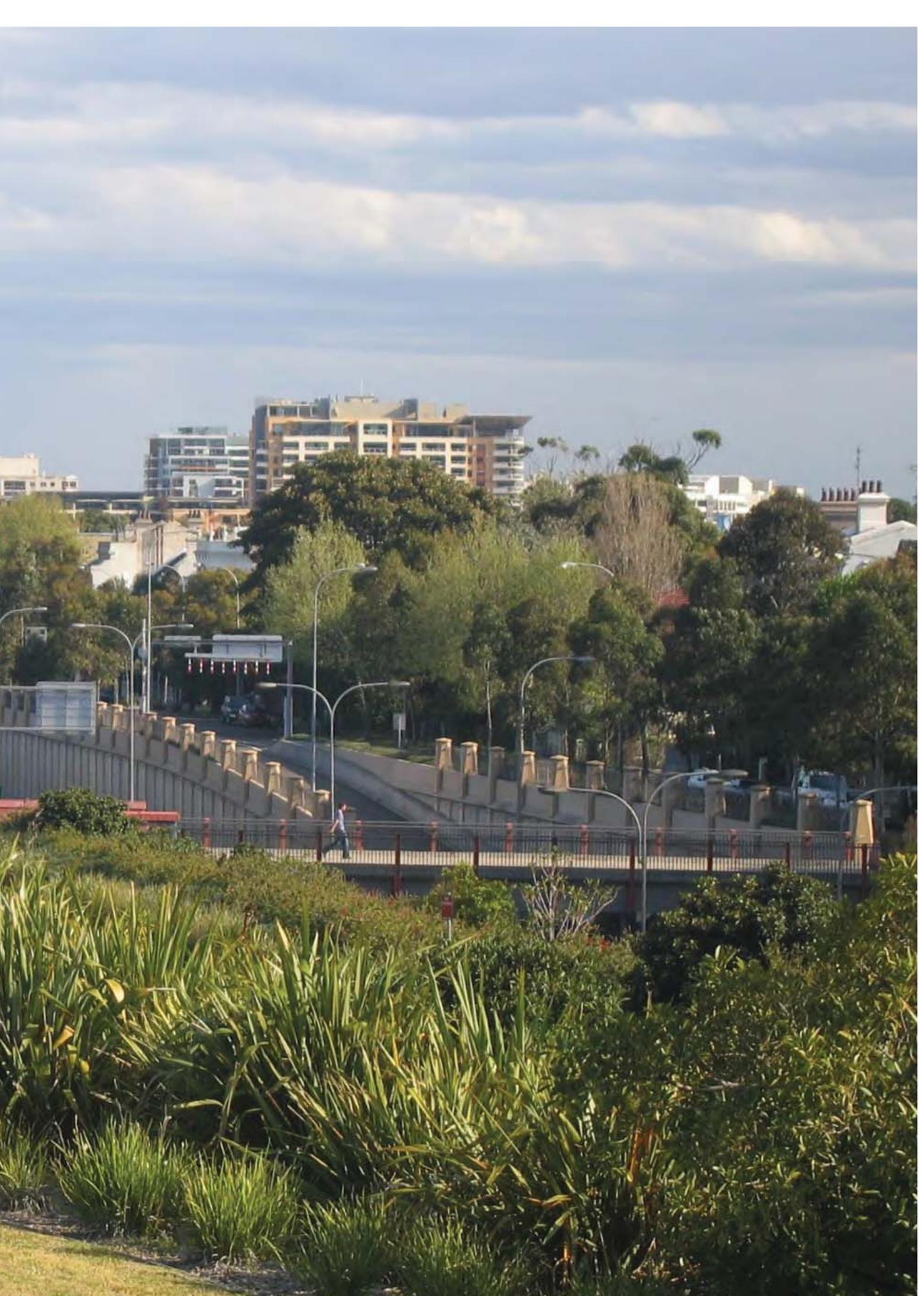


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# Urban Design Vision



Figure 4.1 Eastern Distributor. Image provided by RMS



## 04 Visions

### Strategic Approach

**‘First life, then spaces, then buildings: the other way around never works.’**

Jan Gehl  
**Creating Places for People**  
An Urban Design Protocol for Australian Cities

#### 4.1 Strategic Approach

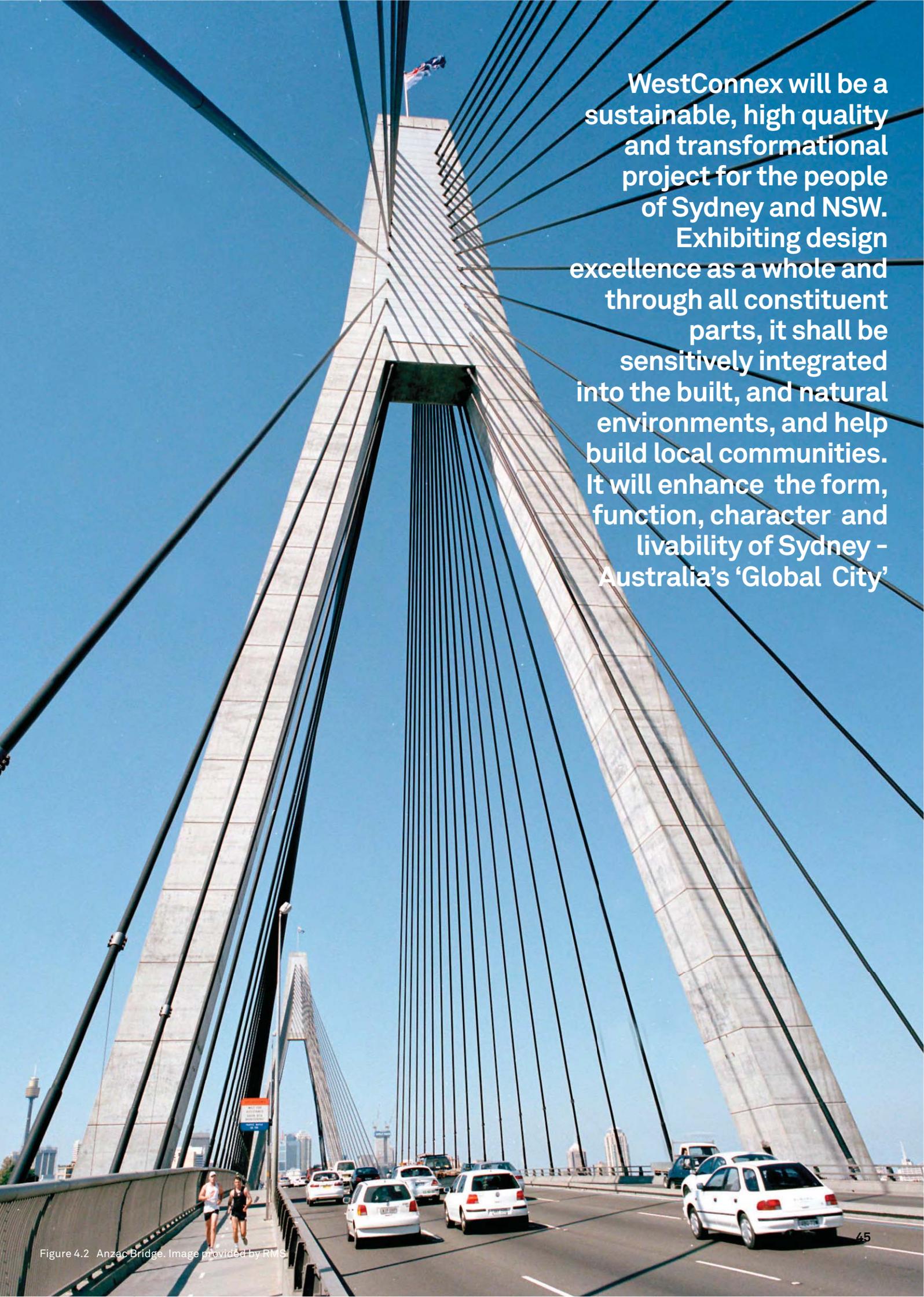
The WestConnex motorway will re-shape the way people move through Sydney and generate urban renewal opportunities. It provides the critical link between the M4 and M5 to complete Sydney’s motorway network.

Passing predominantly through built up areas, the motorway will be on the surface, bridge and in tunnel, primarily within a visually contained corridor. Occasionally, broader views from and to the motorway are possible where it traverses a water body (Cooks River), becomes a raised viaduct or where there is a rise in topography. While the character varies along the route, there will be repeated design elements which will help to unify the WestConnex experience and contribute to the successful implementation of this ‘city shaping’ urban infrastructure.

**WestConnex will be a sustainable, high quality and transformational project for the people of Sydney and NSW. Exhibiting design excellence as a whole and through 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 of Sydney - Australia’s ‘Global City’**

A ‘whole of corridor’ design approach shall be adopted, to ensure the realisation of a memorable motorway experience that is legible, identifiable and integrated into the existing urban fabric. Art is to be integrated as a fundamental to the motorway design whereby ‘Integrated Art’ embodies the artistic fusion of art, ecology, landscape and architecture.

A combined transport and urban design approach is key to achieving an enduring legacy that is unique to Sydney, enriches our culture, creates places and uses infrastructure to revitalise and capture the ‘essence’ of Sydney.



**WestConnex will be a sustainable, high quality and transformational project for the people of Sydney and NSW. Exhibiting design excellence as a whole and through 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 of Sydney - Australia's 'Global City'**

Figure 4.2 Anzac Bridge. Image provided by RMS

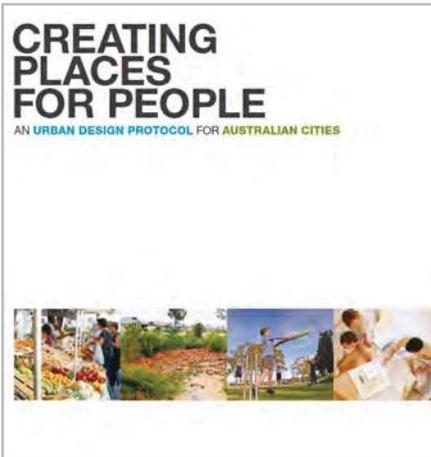
## 04 Visions

### Relationship to Key Government Documents

#### 4.2 Key government documents

The following documents set the strategic framework for the WestConnex Motorway and shall be referred to in all planning, design, documentation, construction and maintenance of the corridor.

### Australia



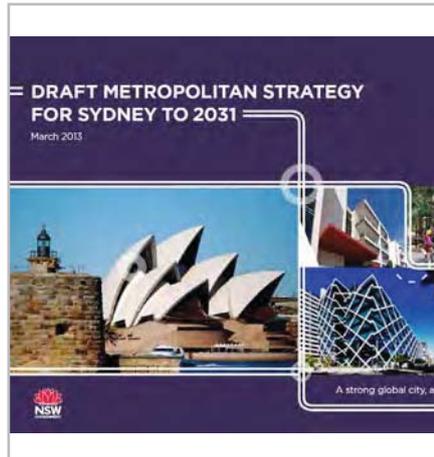
**Creating Places for People, an urban design protocol for Australian Cities**  
*November 2011*

The Urban Design Protocol for Australian Cities works alongside the National Urban Policy by providing a set of broad urban design principles, which take into account the unique characteristics of location and community, and encouraging excellence in the design and custodianship of urban places.

It provides a definition for 'What is good urban design', establishes 12 principles for quality urban places in Australia, principles that may be applied to any project or location – whether it is in a large capital city, regional centre or rural town.

The Urban Design Protocol is founded on five pillars: productivity, sustainability, livability, leadership and design excellence. When integrated together, these pillars form the aim of the protocol.

### NSW

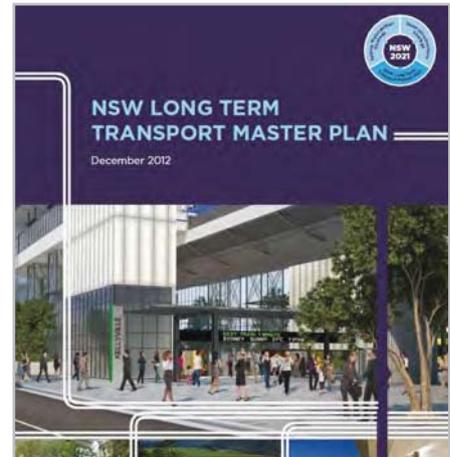


**Draft Metropolitan Strategy of Sydney to 2031, a strong global city, a liveable local city**  
*NSW Government, March 2013*

The draft Metropolitan Strategy for Sydney sets out the NSW Government's vision for balanced and sustainable growth for Sydney. The strategy presents a fully integrated vision for land use, transport and infrastructure, and is intended to work alongside the NSW Government's detailed plans for transport and infrastructure, the Long Term Transport Master Plan, and the State Infrastructure Strategy.

The Parramatta Road Corridor is identified within the strategy as the significant growth corridor between the Sydney CBD and Parramatta - the premier Regional City and Sydney's second CBD.

The WestConnex Motorway is identified as the major transport link within the corridor that will provide prime regeneration opportunities to create lively, well designed centres with improved north-south linkages currently limited by the busy Parramatta Road.



**NSW Long term Transport Master Plan**  
*Transport for NSW, December 2012*

The NSW Transport Master Plan is the first integrated transport strategy for NSW. It brings together land use planning with transport planning, and integrates planning for freight and passenger movements, as well as all modes of transport. It includes actions for road, rail, bus, ferries, light rail, cycling and walking. The Transport Master Plan identifies the Parramatta to the Sydney CBD corridor as the main corridor connecting residents of Western Sydney to the Global Economic Corridor, carrying the highest number of transit passengers of any corridor in Sydney (with over 40,000 in the peak hour period towards the CBD). WestConnex is identified as Sydney's next motorway priority, and is one of the first new Motorway projects to complete the missing links in Sydney. It is described in two sectors – the Northern Sector comprises the M4 extension, upgrades to the existing M4 between Strathfield and Parramatta, and a tunnel between the Taverners Hill area in Petersham and the St Peters area. The Southern Sector comprises the M5 East Expansion and the new connections proposed around Sydney Airport.



**First things First State Infrastructure Strategy 2012 - 2032**

*Infrastructure NSW, 2012*

The State Infrastructure Strategy by Infrastructure NSW presents a 20 year plan for infrastructure planning across the state of NSW. One of the Infrastructure Strategy's key initiatives is the WestConnex Motorway - proposed as Sydney's next motorway.

The WestConnex Motorway is designed to reduce congestion on Parramatta Road through the widening and extension of the M4 motorway, and giving improved access to the major international gateways of Port Botany and Sydney Airport.

It is also intended to be a catalyst for urban renewal and transformation in the parts of Sydney through which it passes.

The WestConnex project is intended to develop as an integrated land use and transport scheme delivering on road transport, urban renewal and public transport outcomes.



**WestConnex - Sydney's next motorway priority**

*Sydney Motorway Project Office, September 2012*

The purpose of this document is to advise the Premier of NSW on the next motorway priority to commence in Sydney. It has been prepared by an integrated project team from Infrastructure NSW, Transport for NSW (TfNSW) and Roads & Maritime Services (RMS). Infrastructure NSW recommends WestConnex as Sydney's next motorway priority, to meet the immediate transport needs of Sydney and to form part of the future Sydney motorway network identified in the State Infrastructure Strategy (SIS) and the NSW Government's Draft Long Term Transport Master Plan (DLTTMP)

## 04 Visions

### Relationship to Key Government Documents

#### RMS

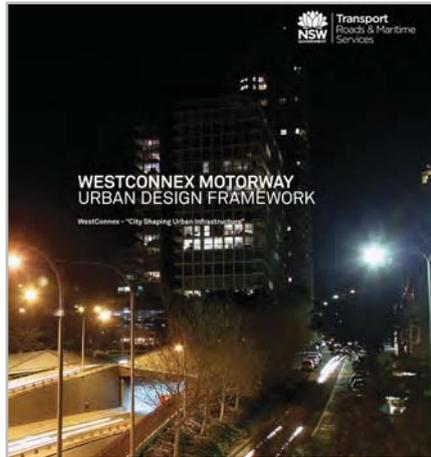


**Beyond the Pavement; RMS urban design policy, procedures and design principles**  
*Roads and Maritime Services, 2013*

The purpose of this policy is to provide guidance for project managers and teams responsible for the design implementation of RMS infrastructure projects.

The document is the over-arching control for urban design within RMS. All subsequent urban design guidelines are supplementary policies which feed back up into Beyond the Pavement.

#### WestConnex



**WestConnex Urban Design Framework**  
*Roads and Maritime Services, 2013*

This document will help unify and shape the different stages of the project with common objectives, principles and design elements. Each of these objectives will be used to guide the project design and be used to review the outcomes. Each of the objectives is supported by design principles and guidelines.

At the front of the framework there is a broad scale analysis of context to inform the design and ongoing visual and landscape character assessment. Towards the back of the framework there is a section on design elements which sets a benchmark and flavour for the desired outcomes.

Finally the framework sets down the requirements for collaboration with the RMS Centre for Urban Design and the engagement of urban design contractors at the options, concept design, environmental assessment and construction stages of each project.



**Parramatta Road: WestConnex Urban Renewal Framework**

*Sydney Motorway Project Office, HASSELL, June 2013*

The WestConnex Urban Renewal Framework was undertaken by HASSELL in close consultation with the Sydney Motorways Project Office and specialist consultants, to assist in the development of a vision for urban renewal for the project. The framework includes urban renewal principles that support the realisation of this vision, as well as prescribing a set of urban design guidelines for discrete areas along the corridor.

Also included in this framework is detailed analysis of 3 large and 5 small demonstration sites along the corridor, to show potential density and yield scenarios.



Figure 4.3 M7 motorway. Image provided by RMS

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# Urban Design Objectives

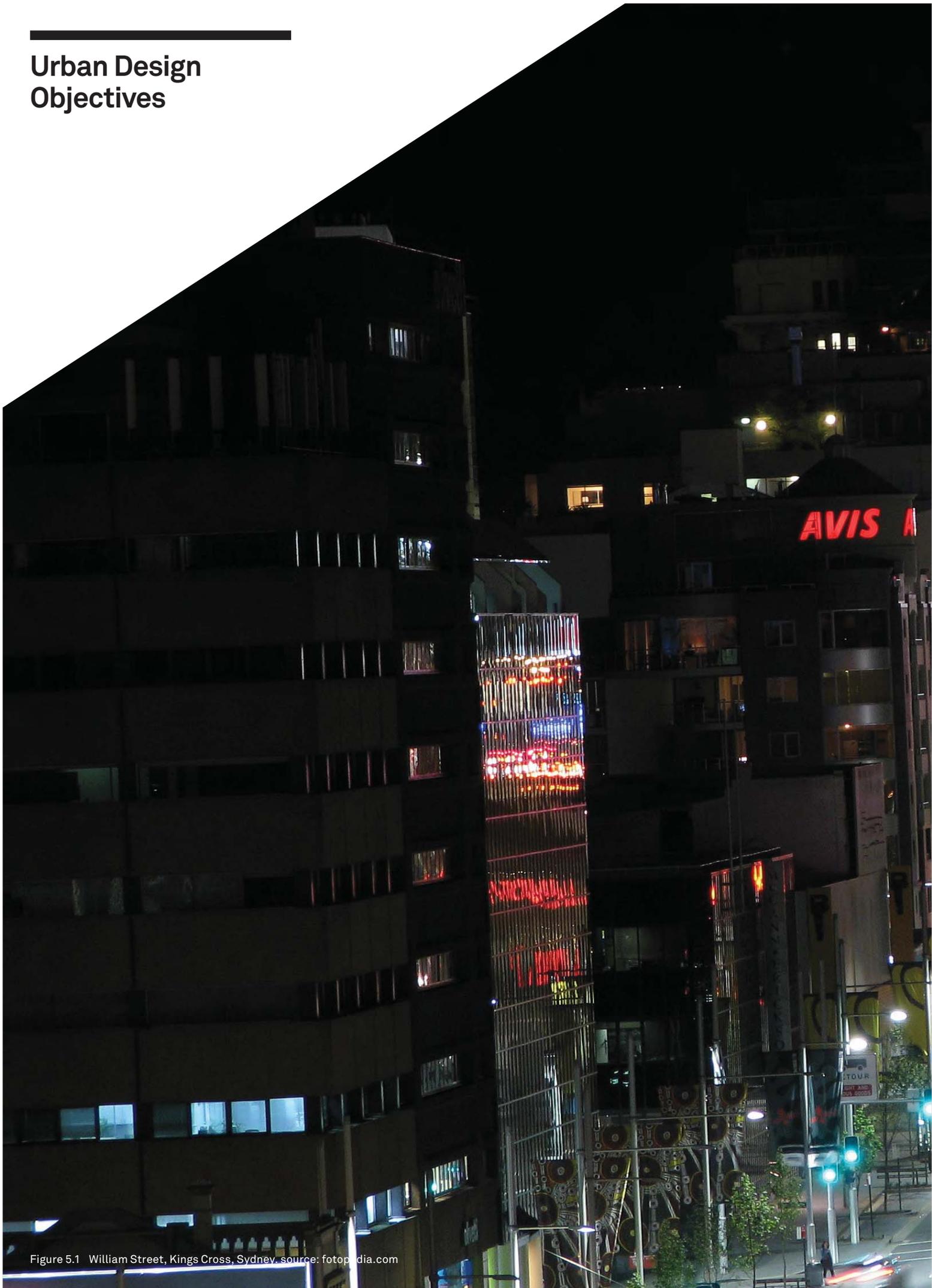
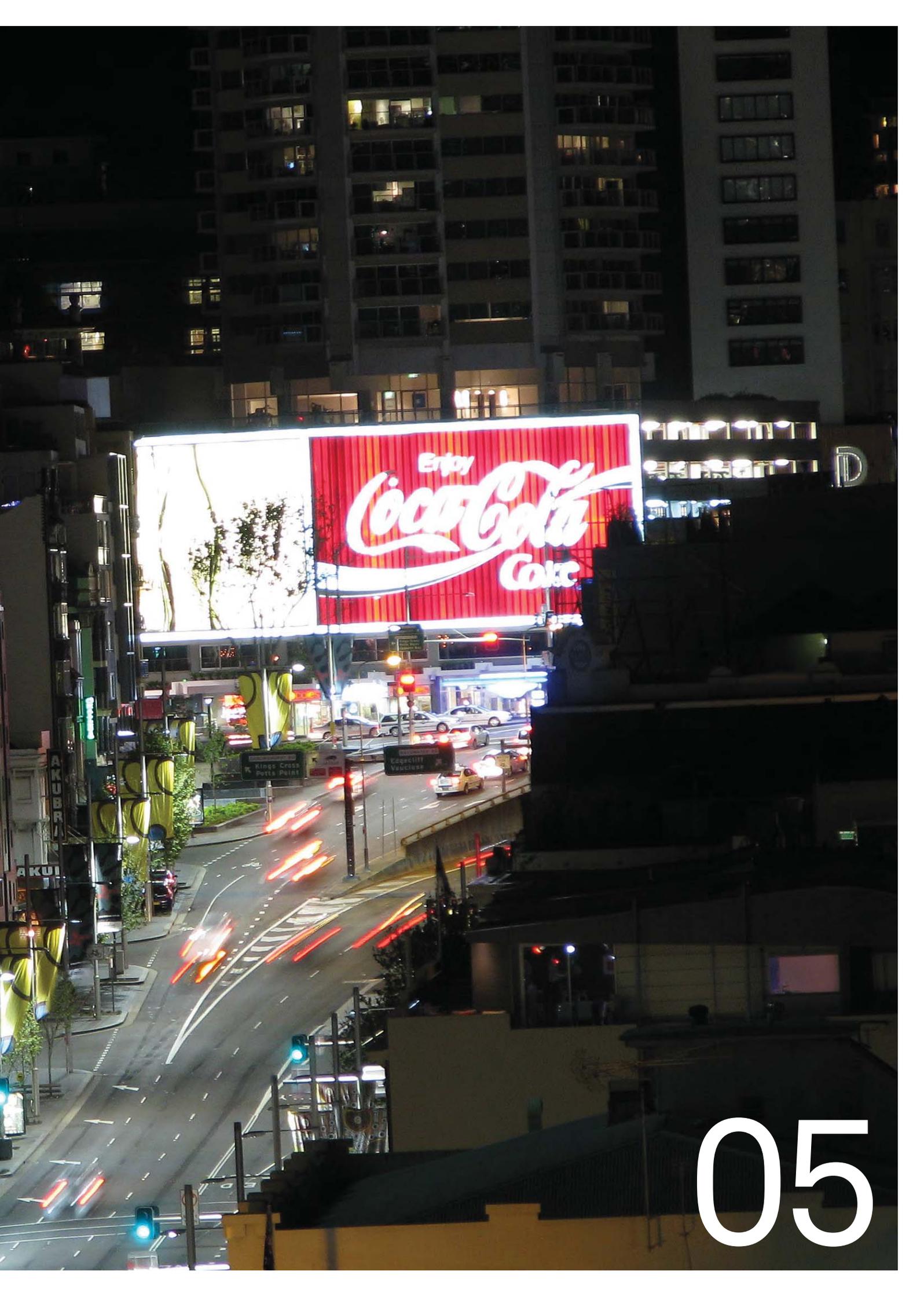


Figure 5.1 William Street, Kings Cross, Sydney. source: fotopedia.com



Enjoy  
*Coca-Cola*  
Coke

05

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## 05 Urban Design Objectives

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### 5.1 Urban Design Objectives

Six objectives provide the framework for achieving the WestConnex urban design vision. They are:

- Leading edge environmental responsiveness;
- Connectivity and legibility;
- Place making;
- Urban renewal and livability;
- Memorable identity and a safe, enjoyable experience; and
- A new quality benchmark.

These urban design objectives build upon the objectives set out in the NSW Long Term Transport Masterplan 2012. The strategic directions established in this important document provide a renewed focus for transport infrastructure design and delivery in NSW with a profound commitment to livability, amenity, sustainability and most importantly to **people; the customers of the transport product.**

The scale of the WestConnex project requires staged delivery by a variety of planning, design and construction teams over many years. This document will help ensure that a consistent, high quality level of urban design thinking is applied across all teams and project stages.

These urban design objectives shall therefore form the basis of design and evaluation at each phase of project implementation ie from business planning to concept design, design development, documentation, construction and maintenance. They shall be considered in addition to the economic, safety, engineering and environmental objectives for the project and contribute to the delivery of a truly civic program of public works.

### Objective 1



Planning, design, construction and long term management shall be based upon a **natural systems approach** which is responsive to the environment and promotes the highest levels of sustainability.

### Objective 2



Build **connectivity** across the city, beyond the boundaries of the motorway corridor and promote increased **legibility of places, buildings, streets and landmarks.**

### Objective 3



Create beautiful places, streets, structures and landscapes that draw their form, character and materiality from local **context, the intrinsic natural and cultural qualities of each locale.**

### Objective 4



Enable opportunities for urban renewal and provide high levels of urban amenity and livability.

### Objective 5



Provide a memorable project identity and experiences for road users and adjacent stakeholders which are safe, convenient and enjoyable.

### Objective 6



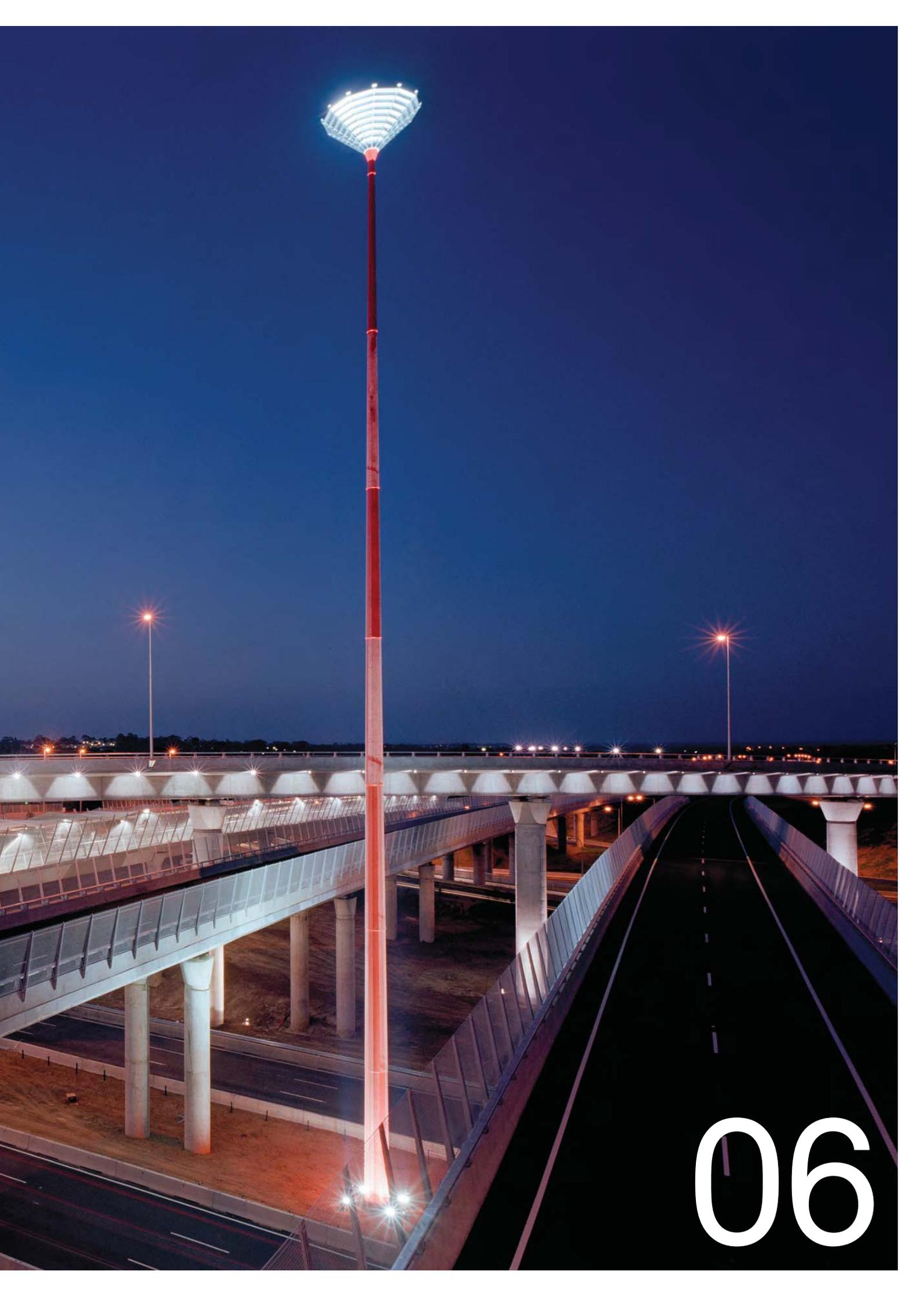
Provide design and construction quality of **world class standard.** WestConnex shall establish a new benchmark for integrated sustainability, engineering, art, architecture and urban design.

---

# Urban Design Principles



Figure 6.1 M7 motorway. Image provided by RMS



06

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## 06 Urban Design Principles

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### 6.1 Urban Design Principles

The success of WestConnex will be determined by its ability to provide an efficient, high capacity transport system which also enhances the sustainability, livability and enjoyment of Sydney and which promotes and safeguards high quality urban renewal. The motorway urban design principles provide further definition to the project urban design objectives in realising the WestConnex Motorway project vision.

They principles are not exhaustive and should be supplemented by the guidelines established in *Beyond the Pavement*.

Urban Design  
Vision

Urban Design  
Objectives

Urban Design  
Principles

Urban Design  
Elements

WestConnex -  
A 'World Class' Product  
A 'City Shaping' Infrastructure

**‘We shape our public spaces, thereafter our public spaces shape us’**

Winston Churchill



Figure 6.2 Homebush Olympic Park. source unknown

# Objective 1:

## Leading edge environmental responsiveness

*Planning, design, construction and long term management shall be based upon a natural systems approach which is responsive to the environment and promotes the highest levels of sustainability.*

Such an approach will protect and preserve existing creeks and wetland areas, promote infiltration, collect, cleanse and reuse storm water runoff, ameliorate wind and establish local micro-climates, reinforce and extend wildlife habitats, recycle materials, minimise waste, generate energy and reduce recurrent costs. Wherever possible the endemic vegetation communities of Sydney should be reinstated which will encourage the return of local wildlife building resilient new habitat .

### Urban Design Principles

1. Consider the concept of 'green infrastructure' and its possible application to the WestConnex motorway.
2. Where possible, restore or re-establish fragmented vegetation and ecologically endangered plant communities. Where possible create additional public open space and enhance existing open space in and around the motorway corridor communities (i.e. Cumberland Plain Woodland), which will maximise opportunities for carbon sequestration.
3. Protect and enhance waterways, re-establishing green corridors along existing creek lines where possible.
4. Balance the composition of built form and landscape to maximize planting opportunities by ensuring appropriate slope gradients (1H:3V maximum) that allow successful plant establishment and ability to access and maintain long term.
5. Integrate (embed) sustainability principles and technologies into design thinking, detailing and delivery to help offset environmental footprint of the motorway. Explore the potential to incorporate the latest advances in material sciences, solar energy and water sensitive urban design initiatives (WSUD).
6. Ensure a robust, durable, long life, low cost, minimal maintenance outcome that deters vandalism.
7. Where possible, preserve wide margins and space along the road corridor to safely create an 'Urban Forest' along the motorway. This will improve the environmental performance and physical aesthetic of the motorway by controlling micro-climate, creating habitat and biodiversity, allowing for water infiltration to recharge aquifers and reducing the heat island affect.



Figure 6.3 Image reference to the 'Urban Forest' Concept: Porto Alegre, Brazil  
Source: boredpanda.com

# Objective 2: Connectivity & legibility

*Build connectivity across the city, within and beyond the boundaries of the motorway corridor, and promote increased legibility of places, buildings, streets and landmarks.*

Enhanced connectivity and legibility will provide motorists and residents with a “Mental Mind Map” of the city to aid orientation and place awareness.

The city's east west connectivity, to and from the airport and Port Botany, should be extended by ensuring frequent cross corridor connections. These important lateral connections between local communities can be created along arterial roads and local streets, along creek lines and open space corridors. These connections should, wherever possible, be at ground level and seek to integrate with other transport modes such as cycling, bus, rail and light rail. With enhanced connectivity the legibility of the city buildings, streets and public places will be increased.

## Urban Design Principles

1. Provide visual stimuli within the road corridor appropriate to the posted speed that creates a progressive sequence of visual events, within and without the corridor, and an enhanced view of and from the road.
2. Provide architectural articulation to the horizontal and vertical surfaces, materials and the lighting of motorway tunnels to visually and psychologically break up the extent of tunnel lengths.
3. Provide visual cues for drivers to understanding their vertical and horizontal location in relation to the urban setting through the form, materials, finishes, lighting of the motorway.
4. Clearly articulate motorway transition zones (eg above / below ground, on / off ramps, intersections) and the early warning of decision making points.
5. Where possible, promote opportunities to ‘read the landscape’ by providing visual access to / over water bodies and broader views.
6. Reinforce road user safety by designing for movement within the corridor through landscape and built form to promote appropriate driver behaviour (i.e. to travel at appropriate speeds, slow down or merge).
7. Provide a simple and effective wayfinding and signage strategy that is appropriately located and designed in unison with all regulatory and operational signage requirements.



Figure 6.4 Iron Cove Bridge, Sydney. Image provided by RMS

## Objective 3: Placemaking

*Create beautiful places, streets, structures and landscapes that draw their form, colour, character and materiality from local context and the intrinsic natural and cultural qualities of each locale.*

The intersection of the motorway with existing infrastructure and fabric of the city will provide significant opportunities to make beautiful, new places for the people of Sydney. These new places will build the civic character and quality of the city and will serve as accents and highlights along the journey. These new urban interventions can occur at tunnel portals, bridges, viaducts, intersections and surplus sites and include new buildings, promenades, streets, boulevards, squares, parks and gardens.

### Urban Design Principles

1. Ensure public places are beautiful, high quality, engaging and functional.
2. Respond to the intrinsic natural and cultural qualities of each locale through form, colour, character and materiality.
3. Retain and protect valuable natural and cultural features and views.
4. Optimise access to sunlight, daylight, breezes and views.
5. Help activate the edges of public spaces through their design and by considering and enabling complementary activities and land uses.
6. Integrate the interfaces ( eg. levels, utilities, servicing, entry and access points) with adjacent urban renewal opportunities to benefit the community.
7. Engage with communities, artists and local precinct groups in the design of the motorway, its places and precincts.
8. Investigate opportunities for the redevelopment and renewal of surplus land holdings along the corridor.



Figure 6.3 The Diagonal is a major boulevard in Barcelona. It is well integrated into the city grid that links public buildings, spaces and amenities  
Source: skyscrapercity.com

# Objective 4

## Urban Renewal & Liveability

*Enable opportunities for urban renewal and provide high levels of urban amenity and livability.*

The amenity and enjoyment of existing and future local residents, workers, children, aged and community groups shall be enhanced by the WestConnex motorway.

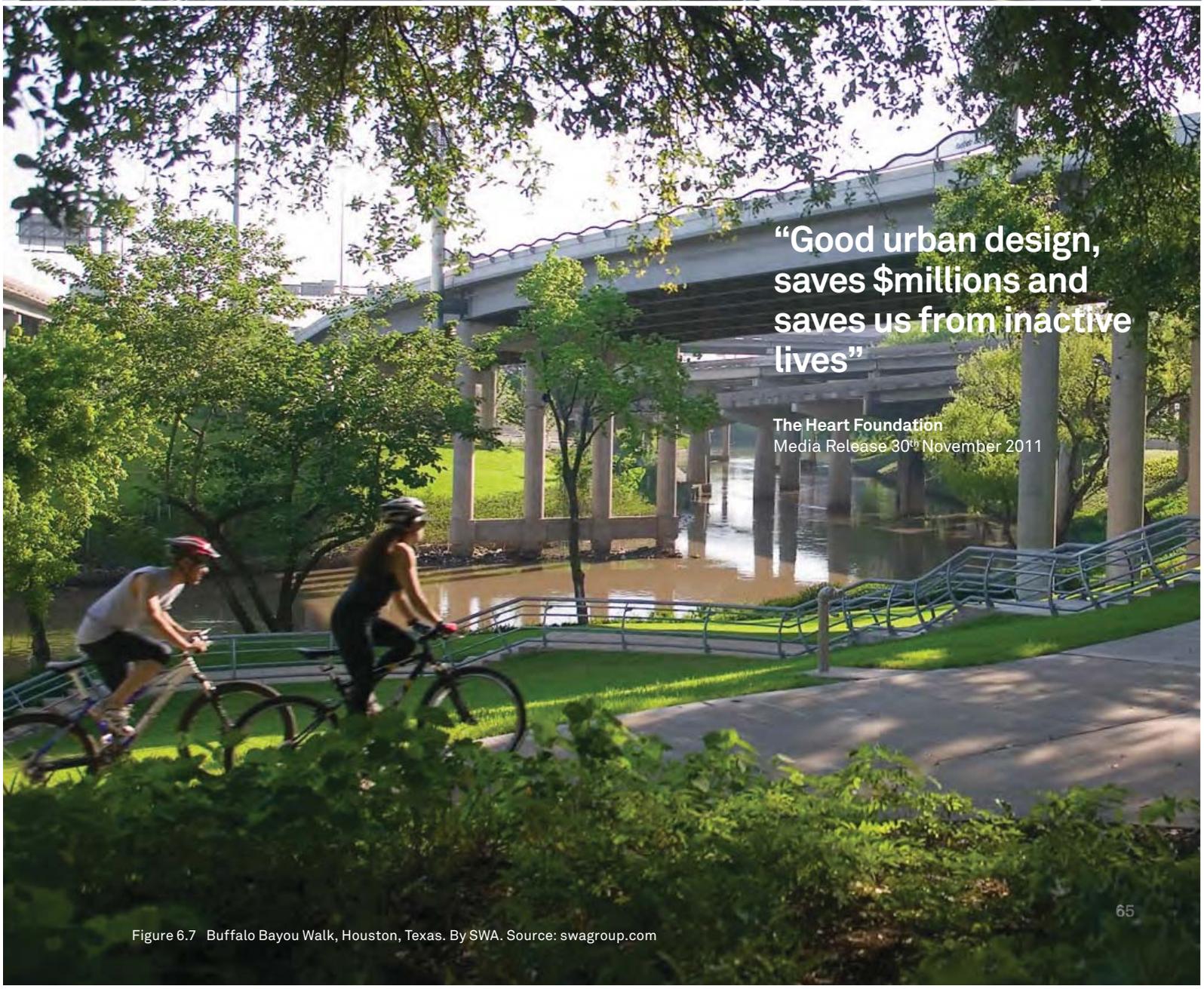
The influence of WestConnex will extend well beyond the motorway boundary and local street improvements and the project shall seek to integrate with the local movement networks, places and land uses.

### Urban Design Principles

1. Explore strategies to achieve long term improvement in air quality and noise on surface roads and streets which support pedestrian activity.
2. Develop strategies to eliminate visual clutter and encourage the removal of extraneous and unnecessary signage and advertising from local buildings, streets and places.
3. Wherever possible undertake footpath widening and the installation of a high quality suite of urban elements (eg street furniture, lighting, signage and pavements).
4. Encourage the development of active land uses (commercial, community, retail and recreational) at ground level and the passive surveillance of public spaces.
5. Provide extensive tree planting of endemic species to achieve continuous tree canopy cover for shade, shelter and habitat creation.
6. Consider the provision of sufficient space at intersections (on/off ramps) and overpasses to promote connectivity between modes and to improve the amenity and livability of adjacent communities.
7. Consider the needs of aging populations, young families and the physically impaired to ensure equitable access and easy movement for all.
8. Where possible create additional public open space and enhance existing open space in and around the motorway corridor.
9. Consider the impact of the motorway on urban renewal opportunities by ensuring no dead zones are created or the sterilization of development opportunities.
10. Investigate urban renewal on surplus lands and the selective initiation of land development on identified catalyst sites.



Figure 6.6 Plaza España, by Herzog de Meuron. Source: landezine.com



**“Good urban design,  
saves \$millions and  
saves us from inactive  
lives”**

The Heart Foundation  
Media Release 30<sup>th</sup> November 2011

Figure 6.7 Buffalo Bayou Walk, Houston, Texas. By SWA. Source: swagroup.com

# Objective 5: Memorable Identity & a Safe, Enjoyable Experience

*Provide a memorable project identity and experiences for road users and adjacent stakeholders which are safe, convenient and enjoyable.*

The distinct landscape and urban character of Sydney along the route should be manifest in the project design by framing views over existing waterways and parkland, and by accenting vistas of landmarks such as major civic buildings and sports stadia.

Balance consistency and diversity. The consistency in form and detailing of road elements (eg bridges, parapets, retaining walls, barriers and furniture ) will unify the long, linear project. Overlays of diverse local vegetation types and the expression of site specific geology, soils and topography through colour and texture selections will create a memorable corridor and local identity and enrich the travel experience.

## Urban Design Principles

1. Ensure a unified approach to the project design philosophy and response that will deliver a consistent product using a unified approach to the form, detailing, fabrication and construction of all motorway and urban design elements but which also affords opportunities for local modulation to reflect the particular character of each locale.
2. Ensure that all design solutions safeguard the safety and convenience of the road users and adjacent stakeholders.
3. Create distinctive portal access points that reinforce the character of the local area.
4. Explore the differentiation of character zones within the tunnel zone between portals to vary driver experience and heighten awareness of geographical location.
5. Use landscape to define different character zones (i.e. airport and Sydney Olympic Park).
6. Maximise opportunities to provide a well vegetated 'green' corridor by providing substantial accessible space, protecting existing vegetation and avoiding small unmaintainable spaces.



Figure 6.8 Champs Elysees, France. source gazprom.com



Figure 6.10 The Metro's original art nouveau entrances are iconic symbols of Paris. Each entrance is a unique piece that belongs to a 'family of entrances' that were designed to be visible and recognisable. Source: Yanidel.com

# Objective 6:

## A new quality benchmark

*Provide design and construction quality of world class standard. WestConnex shall establish a new benchmark for integrated sustainability, engineering, art, architecture and urban design.*

The project shall enhance Sydney's public realm by providing a balanced composition of beautiful landscape and built elements that are of the highest design quality, robust and durable.

Engineering, architecture, landscape architecture, environmental design and art should be seamlessly integrated in cohesive cost effective and minimal maintenance solutions designed through collaboration.

### Urban Design Principles

1. WestConnex shall establish a new benchmark in urban transport and renewal in Australia and embrace worlds best engineering, architecture and urban design practice.
2. Provide a simple and elegant design beautifully integrating with built and landscape elements which clearly express materials, refined simplicity of form and function.
3. Use robust, high quality and durable materials appropriate to the urban setting and avoid opportunities for vandalism.
4. All visible motorway operation fittings, fixtures and equipment shall be considered as a complete set of integrated urban design elements.
5. Adopt an integrated approach to art that is contextually relevant, resists and ad-hoc, fussy, plastering approach and contributes to the form, function and safety of the motorway.
6. Adopt a design verification procedure using a Design Review Panel to ensure design quality throughout each stage of works , from briefing to handover - described in further detail in chapter 8.

The quality of our neighbourhoods, towns and cities has a significant impact on our daily lives. Quality urban design makes a valuable contribution to our economy, our natural and built environments, and the liveability of our cities. It helps local businesses thrive. It attracts people to visit, live and work in a location. It considers the landscape, encourages biodiversity and incorporates natural ecosystems. It has an important influence on our physical and mental health and wellbeing. It provides opportunities for healthy lifestyles and community interaction.

Creating Places for People  
An Urban Design Protocol for Australian Cities

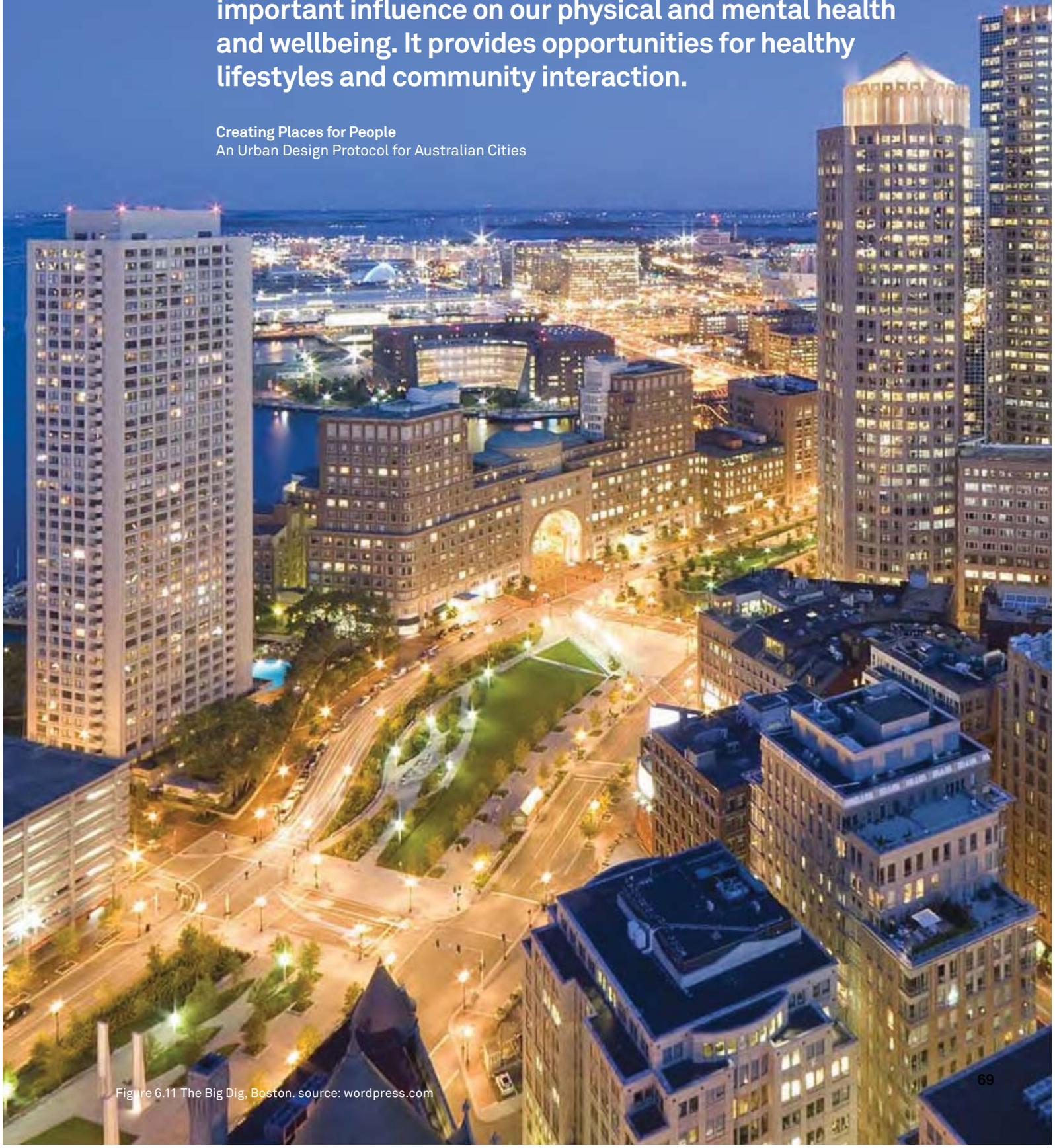


Figure 6.11 The Big Dig, Boston.. source: wordpress.com

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# Urban Design Elements



Figure 7.1 Olympic Park Station, Homebush. Photography by Patrick Bingham Hall



07

# 07 Urban Design Elements

## Implementing the Principles

### 7.1 Design Quality

The WestConnex Motorway traverses the heart of Sydney, a 'global city' on the world stage. In this context, the level of design thinking and commitment to design quality shall set a new benchmark for urban road infrastructure in Australia. The WestConnex project is to be considered a 'Class 1' project that is a beautiful piece of urban infrastructure, unique to Sydney and enriches the existing urban fabric. For the customer of the transport product it shall be both a place and a journey.

The urban design elements represent a fusion of engineering, architecture, art and landscape. While some elements will have greater priority, the level of design thinking and detailing is to be consistently high across the entire project. The overall composition of the individual urban design elements are critical to the success of the project in terms of its quality, integration and experience.

The motorway is essential infrastructure that interfaces with various communities and unlocks urban renewal potential beyond the road corridor.

### 7.2 Implementing the Principles

The intent of this section is to provide design direction for the key urban design elements specific to the WestConnex Motorway project. Urban design elements refer to both the built and landscape works associated with road infrastructure and their composition as a whole. They embody the project vision, objectives and principles in a built outcome.

This design framework builds on the existing suite of RMS urban design guidelines and policies and shall be read in conjunction with these technical design documents:

\_ **Bridge Aesthetics:** Design guidelines to improve the appearance of bridges in NSW, Transport RMS, Centre for Urban Design, July 2012.

\_ **Shotcrete Design Guidelines:** Design guidelines to avoid, minimise and improve the appearance of shotcrete, RTA, February 2007

\_ **Noise wall design guideline:** Design guidelines to improve the appearance of noise walls in NSW, RTA, February 2007.

\_ **Landscape guideline:** Landscape design and maintenance guidelines to improve the quality, safety and cost effectiveness of road corridor planting and seeding, RTA, June 2008.

\_ **Biodiversity Guideline:** Protecting and managing biodiversity on RTA projects

**WestConnex will 'raise the bar' for the design quality of infrastructure projects in NSW**



Figure 7.2 Copenhagen Metro. Image source unknown

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### 7.3 Urban Design Elements

The key urban elements have been categorised as follows:

- \_Bridges, Viaducts & Underpasses
- \_Tunnel Portals, Vent Stacks & Control Centres
- \_Tunnel Interiors
- \_Landscape
- \_Walls
- \_Road Furniture
- \_Lighting
- \_Art Installations

For each category, an urban design approach is defined and precedent images provide a flavour and benchmark for design quality that achieve the vision and objectives.

The urban design elements physically embody the urban design objectives. It is the responsibility of the project design teams to further develop and refine the urban design elements within the context of this framework and specifics of each place. This is a starting point for design thinking not a prescriptive design outcome.

**‘Good design has the ability to positively transform how people feel and behave...it increases the patronage by providing places which feel safe and comfortable, are accessible and easy to use, connected to other community facilities and are great places to be. Well designed [elements] also lend to be better respected and cared for, with lower incidences of vandalism and graffiti.’**

**Good Design & Transport**  
The Office of the Victorian Government Architect



# Bridges, Viaducts & Underpasses

Bridges, viaducts and underpasses will form a significant physical and visual element along the WestConnex journey. Each should enhance the urban design quality of the motorway and adjacent setting.

Bridges will include:

- \_ Road
- \_ Rail
- \_ Pedestrian

The WestConnex motorway will be highly visible combining new and existing bridges that should be thought of as a suite or 'family of bridges' to enrich the city fabric.

The M4 is predominantly an elevated viaduct creating a continuous ribbon running through a number of settings and varying interfaces. As an element, it should be considered as a design whole yet respond to the context and varying character zones.

How viaducts transition back to grade needs to be considered from above and below the deck. Spaces beneath viaducts have the potential to become undesirable places if poorly designed, unprogrammed and unmaintained.

## Urban Design Approach

1. Each bridge should be an exemplary work that enriches the city fabric of Australia's international city.
2. Structures should be simple, refined and elegant with minimal piers and abutments to maximise usability, permeability and visual transparency beneath.
3. Accentuate horizontal forms to complement the urban landscape / context and enliven the journey.
4. Good proportions between deck overhang and girder.
5. Bridge widening - Remain sensitive to the existing character where appropriate.
6. Consider the vertical alignment of the viaduct and how it will be viewed in relation to adjacent built form and landscape.
7. Consider the experience from underneath by considering the opportunity for well-scaled, useable, appealing and safe spaces beneath structures.
8. Unified and integrated design.
9. Maximise opportunities along viaducts for greater appreciation of context.
10. Pedestrian underpasses to be generous in scale, well lit, provide clear sight lines and feel safe. Portal and underpass interiors to be welcoming and have architectural merit, appropriate to the context and setting.

## Applied Objectives

- ✓ **Objective 1**  
*Leading Edge Environmental Performance*
- ✓ **Objective 2**  
*Connectivity & Legibility*
- ✓ **Objective 3**  
*Place Making*
- ✓ **Objective 4**  
*Urban Renewal & Liveability*
- ✓ **Objective 5**  
*Memorable Identity & Enjoyable Experience*
- ✓ **Objective 6**  
*A New Quality Benchmark*





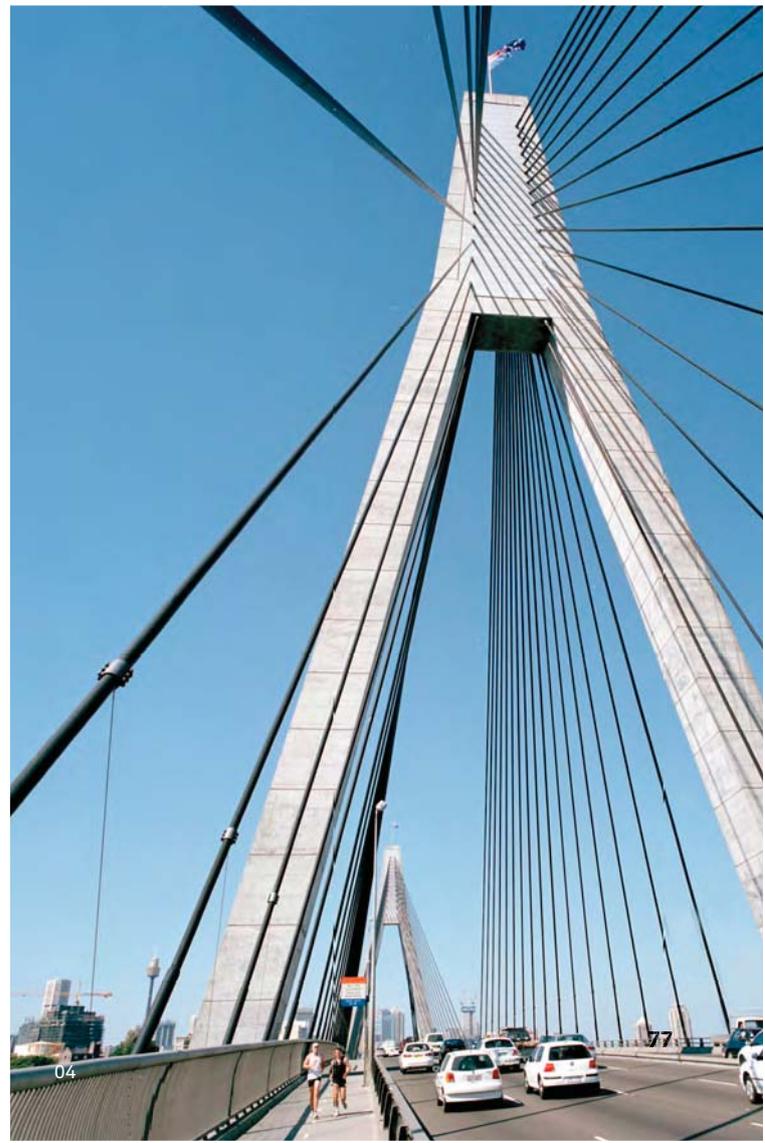
02

01 M7 motorway bridge. Image provide by RMS

02 Commercial opportunities can activate what is normally sterilised space. Source: architonic.com

03 City West Link - a well considered bridge soffit that allows comfortable and safe pedestrian movements below. Image provided by RMS.

04 Shared cycle paths along Anzac Bridge. Image provided by RMS



04



03

# Tunnel Portals, Vent Stacks & Control Centres

Vent stacks along the WestConnex motorway are to be integrated into the urban fabric.

Public perception is often negative about these infrastructure elements, thought of as visual blight smoke stacks emanating carcinogenic and unpleasant air pollution.

Strict criteria should stipulate vent height requirements however the form, proportions and material selection should be integral to the design process to achieve a quality urban design outcome that respects the character of the surrounding context.

Toll Plazas and Control Centres form part of the broader family of the essential operational 'road furniture' that will exist along the WestConnex motorway, shaping its identity and character.

As the first point of contact, toll plazas will be located at all on/off ramps acting as important visual gateways to the motorway.

A series of control centres will be constructed along each stage of the project. It is essential that a holistic strategy be set up to maintain consistency in quality and expression over the course of construction and life of the motorway

## Urban Design Approach

1. Design as an unobtrusive architectural element that is refined and elegant.
2. Sensitively integrate with surrounding context and character.
3. Consider the vent stack ground interface and its vertical integration both directly adjacent to existing built form and landscape and from a distance.
4. Explore a unified design expression for vent stacks located near tunnel portals.
5. Provide architectural variation to vertical surfaces of motorway tunnels to visually and psychologically break up the extent of tunnel lengths.
6. Tunnel design should attempt to respond to biophysical factors and reflect local context.
7. Consider the integration of lighting, signage and art to enhance travel experience

## Applied Objectives

- ✓ **Objective 1**  
*Leading Edge Environmental Performance*
- ✓ **Objective 2**  
*Connectivity & Legibility*
- ✓ **Objective 3**  
*Place Making*
- ✓ **Objective 4**  
*Urban Renewal & Liveability*
- ✓ **Objective 5**  
*Memorable Identity & Enjoyable Experience*
- ✓ **Objective 6**  
*A New Quality Benchmark*





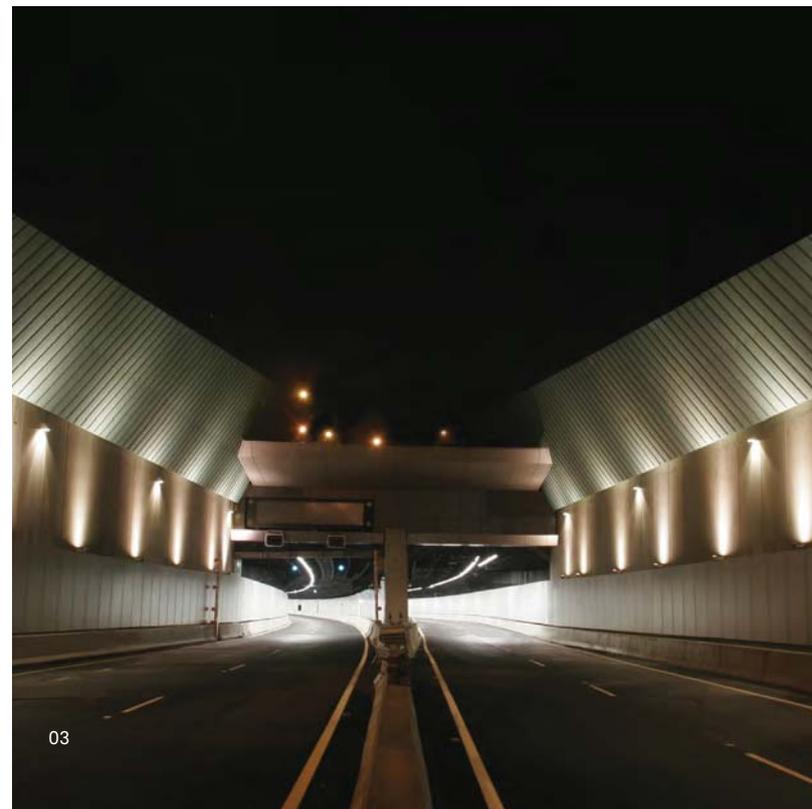
02

01 Portals can be iconic, placemaking devices such as the Olympic Park Station, Homebush. Photography by Patrick Bingham Hall

02 Cross City Tunnel portal. Photography by Rowan Turner

03 Tunnel Portal. Image provided by RMS

04 An elegant and simple vent stack solution that blends into the city fabric - Cross City Tunnel. Photography by Rowan Turner



03



04

# Tunnel Interiors

A large portion of the WestConnex Motorway will be in tunnel. WestConnex will be Sydney's longest tunnel. This will totally reshape the way we move through and experience the city.

Traditionally, tunnels can be uninspiring and homogenous, unreflective of place and disconnected from time.

WestConnex has the potential to set a new benchmark in improving the travel experiences for commuters across Sydney.

## Urban Design Approach

1. Consider architectural variation to vertical surfaces of tunnels to add visual interest and improve the user experience.
2. Interiors should respond to geographical location and assist in way finding and speed monitoring.
3. Consider the integration of lighting and art to enhance the travel experience, improve patronage and make the tunnels more comfortable to use.
4. Ensure neat, well aligned panelling and barriers and a good integration with portals.
5. Consider visually identifying safety zones, lane and tunnel merges and approaching portals.

## Applied Objectives

### Objective 1

*Leading Edge Environmental Performance*

### Objective 2

*Connectivity & Legibility*

### Objective 3

*Place Making*

### Objective 4

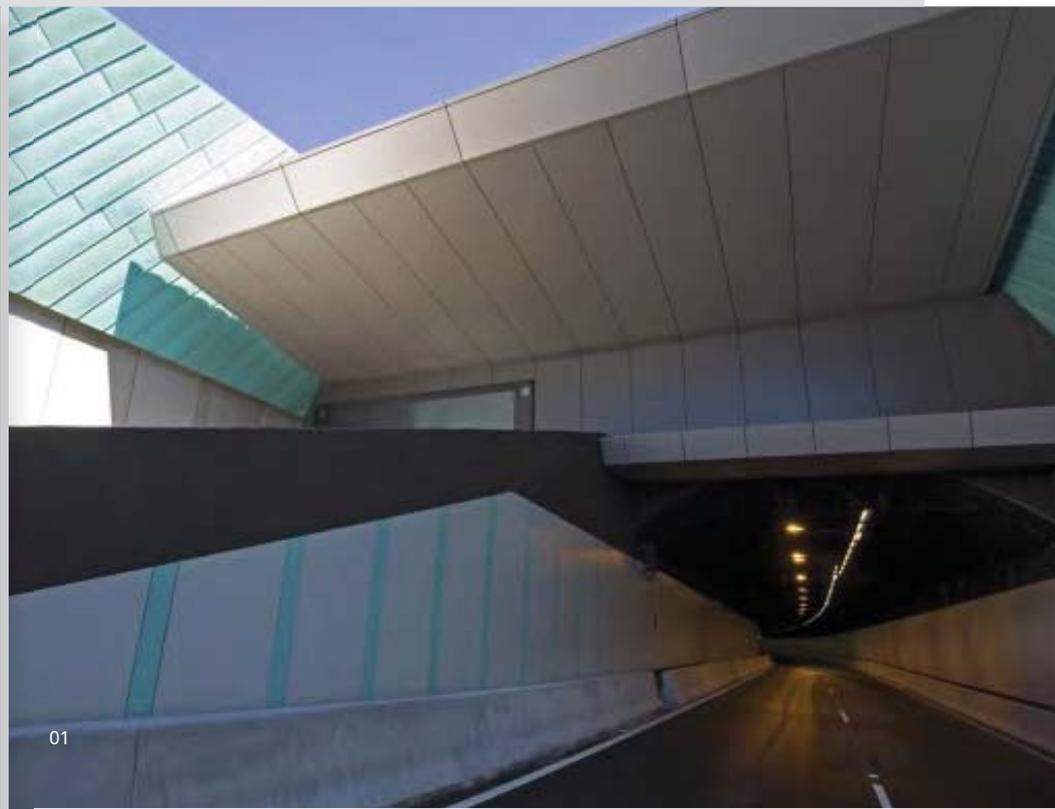
*Urban Renewal & Liveability*

### Objective 5

*Memorable Identity & Enjoyable Experience*

### Objective 6

*A New Quality Benchmark*





02

01 Cross City Tunnel. image source unknown.  
 02 The Moscow Underground is an elaborate of a tunnel that provides an enriched journey through diversity and attention to detail. source: wordpress.com

03 An illustration of design potential integrating signage and wayfinding as part of the road user experience. HASSELL image



03

# Landscape, Landform & Water Sensitive Urban Design (WSUD)

The land between and adjacent to major road infrastructure offers opportunities for positive and functional public open space including cycling and pedestrian pathways, while serving as important acoustic barriers. There is also the opportunity to improve environmental conditions and provide critical connections to Sydney's natural systems

The WestConnex Motorway should espouse public benefits by integrating transport specific requirements with broader objectives, such as strengthening Sydney's cultural diversity and restoring its environmental integrity.

Refer also to RMS Landscape guideline: Landscape design and maintenance guidelines to improve the quality, safety and cost effectiveness of road corridor planting and seeding, RTA, June 2008.

## Urban Design Approach

1. Reflect and respond to diverse community values and encourage positive interaction and engagement.
2. Respond to specific local landscape topography and hydrology.
3. Reinststate local vegetation communities along riparian zones and green corridors.
4. Utilise green corridor opportunities for habitat creation and acoustic buffer zones.
5. Respond to history, memory and understanding of and continuity with the past.
6. Implement best-practice Water Sensitive Urban Design (WSUD) measures to increase the environmental performance of the WestConnex project.
7. Plants should be substantial in size and planted in dense arrangements.
8. Use Indigenous species wherever they can perform the requirements of the design: consider the use of cultural plantings where there is no viable indigenous species to achieve the performance requirement.

## Applied Objectives

- ✓ **Objective 1**  
*Leading Edge Environmental Performance*
- ✓ **Objective 2**  
*Connectivity & Legibility*
- ✓ **Objective 3**  
*Place Making*
- ✓ **Objective 4**  
*Urban Renewal & Liveability*
- ✓ **Objective 5**  
*Memorable Identity & Enjoyable Experience*
- ✓ **Objective 6**  
*A New Quality Benchmark*





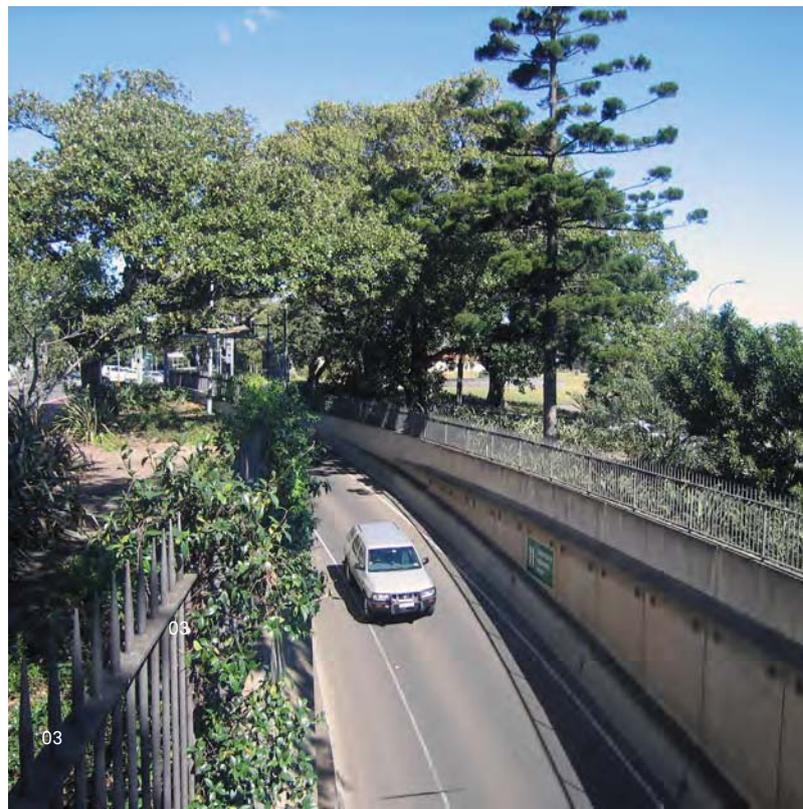
02

01 WSUD planting in median at Gallipoli Underpass, Adelaide.

02 Utilising waterways and open space around road infrastructure - Buffalo Bayou Walk, Houston, Texas.  
Source: SWAgroup.com

03 Landscape buffer around on-ramp to the ED reduces the blight of road infrastructure. Image provided by RMS

04 Re-energizing open space corridors around motorways. Malov, Denmark. Image source: landezine.com



03

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83

# Walls

The WestConnex Motorway will be inserted into a confined urban setting requiring walls to mediate grades and buffer sound from adjacent residential areas. The walls will form a dominant visual element along the road corridor and present the opportunity create a unique and memorable identity to the motorway.

A number of different wall styles of varying architectural merit currently exist along the M4 and M5. Ideally, these are to be replaced over time to raise the design quality and overall unity of the WestConnex motorway of which the M4 and M5 are part.

The primary wall types include:  
\_ Noise walls  
\_ Retaining walls

Refer also to RMS Noise wall design guideline: Design guidelines to improve the appearance of noise walls in NSW, RTA, February 2007.

## Urban Design Approach

1. Design all wall types as a family of elements to reinforce motorway identity.
2. Design high quality, robust walls of architectural merit and detail (use Class 2 concrete as a minimum) .
3. Balance wall heights with planting opportunities.
4. Consider vandalism when designing walls and its long term management strategy.
5. Integrate acrylic, transparent noise walls where there are opportunities to view the broader landscape or where solar access is important.
6. Consider the visual appearance of noise walls from either side.
7. Consider the design of handrails, balustrades and jointing patterns in unison with the design of walls.
8. Do not use shotcrete that is visible to road users or residents, cover with panelling or avoid the need for it.
9. Refer to RMS Noise Wall Guidelines: Design guidelines to avoid, minimise and improve the appearance of noise walls in NSW, 2007

## Applied Objectives

- ✓ **Objective 1**  
*Leading Edge Environmental Performance*
- ✓ **Objective 2**  
*Connectivity & Legibility*
- ✓ **Objective 3**  
*Place Making*
- ✓ **Objective 4**  
*Urban Renewal & Liveability*
- ✓ **Objective 5**  
*Memorable Identity & Enjoyable Experience*
- ✓ **Objective 6**  
*A New Quality Benchmark*





02

01 Noise walls along the M7 are simple, well-considered elements that are consistent throughout the motorway

02 Variation in wall treatment enhances the road user experience. Gallipoli Underpass, Adelaide. Photography by HASSELL

03 A combination of materials, tones and textures. City East Link, Melbourne. Photography by HASSELL

04 Planting and glazing allows the road to feel connected to the broader landscape. City East Link, Melbourne. Photography by HASSELL



03

04

25

# Road Furniture

Road furniture refers to all the physical elements beyond the road pavement that are required for motorway operations. These include; signage (regulatory, directional), gantries, security cameras, lighting, crash barriers, fencing, emergency phones, reflective bollards, telecom towers, hydrants, services boxes and advertising etc.

Design involvement is critical to ensure an holistic coherent response and the prevention of road furniture becoming uncoordinated visual blight littered along the motorway.

## Urban Design Approach

1. Road furniture to be designed as a suite of architectural elements reinforcing the motorway identity.
2. Ensure a coordinated approach to the location of the various elements in the context of the overall road experience.
3. Ensure advertising and signage generally is considered as part of the urban design outcome.
4. Ensure road furniture is elegant, modern, simplified and low maintenance.

### Applied Objectives

- ✓ **Objective 1**  
*Leading Edge Environmental Performance*
- ✓ **Objective 2**  
*Connectivity & Legibility*
- ✓ **Objective 3**  
*Place Making*
- ✓ **Objective 4**  
*Urban Renewal & Liveability*
- ✓ **Objective 5**  
*Memorable Identity & Enjoyable Experience*
- ✓ **Objective 6**  
*A New Quality Benchmark*





02

01 Road furniture will be the most common visible element along any motorway. It is important that they are well-considered and simple elements. M1 motorway, UK. source: nce.co.uk

02 A European Toll Plaza. Source: autobrennero.it

03 A European toll gantry image source: unknown

04 New gantry design along the M5, Sydney. Photography by HASSELL



**‘The fewest possible signs of the smallest adequate size in the clearest simplest form’**

Dame Sylvia Crowe  
referenced in Beyond the Pavement

87

04



03

# Feature Lighting

WestConnex motorway is to be a visually interesting and dynamic urban corridor day and night.

Feature lighting will enliven the night time travel experience over and above lighting for road safety. There is value in highlighting key urban elements to provide visual stimuli, assist with wayfinding and help to define a night time identity for the motorway and place.

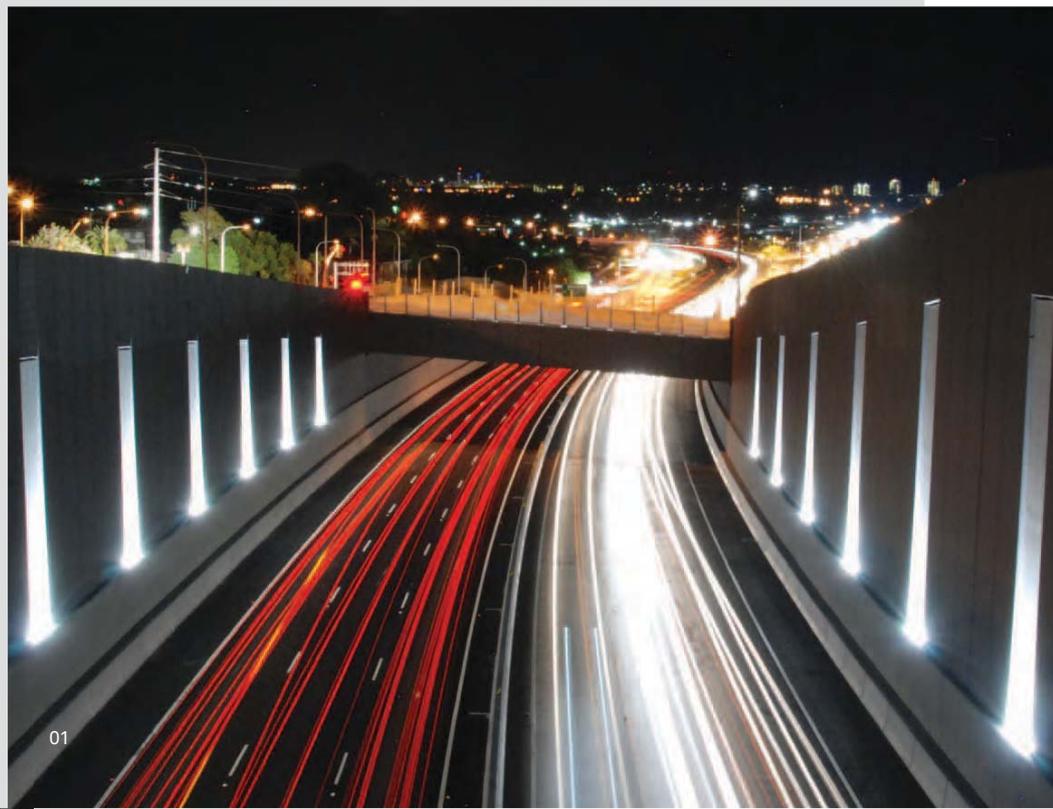
It is recommended that a Feature Lighting Strategy for the entire WestConnex motorway be prepared so that there is an over arching document to guide the various stages of delivery. The Strategy should define a clear vision and set of controls for a Feature Lighting response that is contextually relevant and ensures road safety.

## Urban Design Approach

1. Dynamic and creative feature lighting should also be energy efficient, avoid light spill and be easy to maintain.
2. Feature lighting to create an artistic effect, articulate urban forms of walls and bridges and amplify the night time experience.
3. Feature lighting to be located in select locations in line with the strategy so as not to dilute the power of each intervention.
4. Balance feature lighting with the constraints of cost, safety, context and environment.

## Applied Objectives

- ✓ **Objective 1**  
*Leading Edge Environmental Performance*
- ✓ **Objective 2**  
*Connectivity & Legibility*
- ✓ **Objective 3**  
*Place Making*
- ✓ **Objective 4**  
*Urban Renewal & Liveability*
- ✓ **Objective 5**  
*Memorable Identity & Enjoyable Experience*
- ✓ **Objective 6**  
*A New Quality Benchmark*





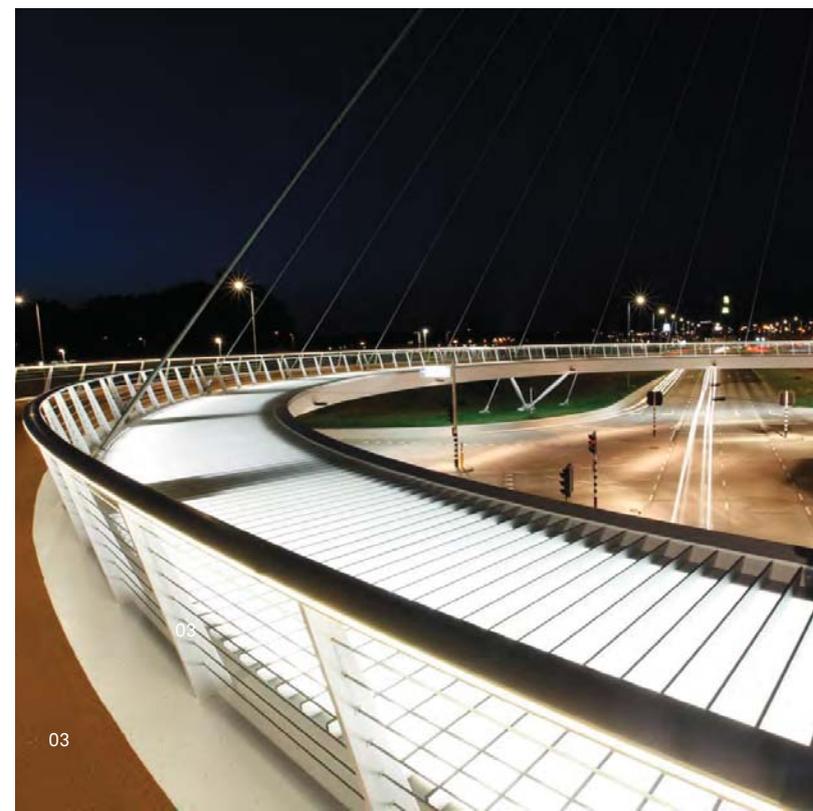
02

01 Feature lighting integrated into wall design. Banora Point, NSW  
Image provide by RMS

02 A landmark lighting beacon. M7 interchange, Sydney Australia.  
Image provided by RMS

03 Lighting as art integrated into pedestrian bridges. Hovenring, Eindhoven  
Source: [landscapeinstitute.org](http://landscapeinstitute.org)

04 Feature lighting integrated into bridge design. Kings Avenue Overpass, Canberra.  
Image source: unkown



03

03



04

89

# Art Installation

Art installations refer to the smaller scale artistic elements that reflect and express the values of adjacent communities and places. These elements become points of interest and add vibrancy along the motorway journey either adjacent to or below. They are to be used sparingly.

The design and implementation of art installations creates the opportunity to engage with local communities and councils promoting a sense of authorship and ownership.

'Art Installations' are elements in their own right which differs to 'Integrated Art' which is intrinsic to the WestConnex vision and design of motorway elements.

It is recommended that an Art Installation Strategy be prepared at each delivery stage of the project . The Strategy should define a clear vision and set of controls for the location of art installations so they are contextually relevant, resist an ad-hoc, fussy, plastering approach and ensures road safety.

## Urban Design Approach

1. Art installations to be playful, robust, safe and contextually responsive.
2. Artistic overlays are to be located in select locations in line with a strategy so as to not dilute the power of each intervention.
3. Artful expressions should be the result of engagement with local communities and the fusion of engineering and design processes.
4. Art installations should contribute to the form, function and safety of the motorway and public spaces.

## Applied Objectives

- ✓ **Objective 1**  
*Leading Edge Environmental Performance*
- ✓ **Objective 2**  
*Connectivity & Legibility*
- ✓ **Objective 3**  
*Place Making*
- ✓ **Objective 4**  
*Urban Renewal & Liveability*
- ✓ **Objective 5**  
*Memorable Identity & Enjoyable Experience*
- ✓ **Objective 6**  
*A New Quality Benchmark*





02

01 Seattle Olympic Sculpture Park, Seattle, USA.  
 02 Cap-Rouge Memory Wall, Canada - A memorial as part of the drivers journey.

03 The light horse interchange sculpture is in the median. M7 motorway, Sydney  
 Image source: unknown  
 04 Lighting sculpture activates the underpass of an existing bridge. Garscube Landscape Link, Glasgow.



04



03

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## How to use this Framework

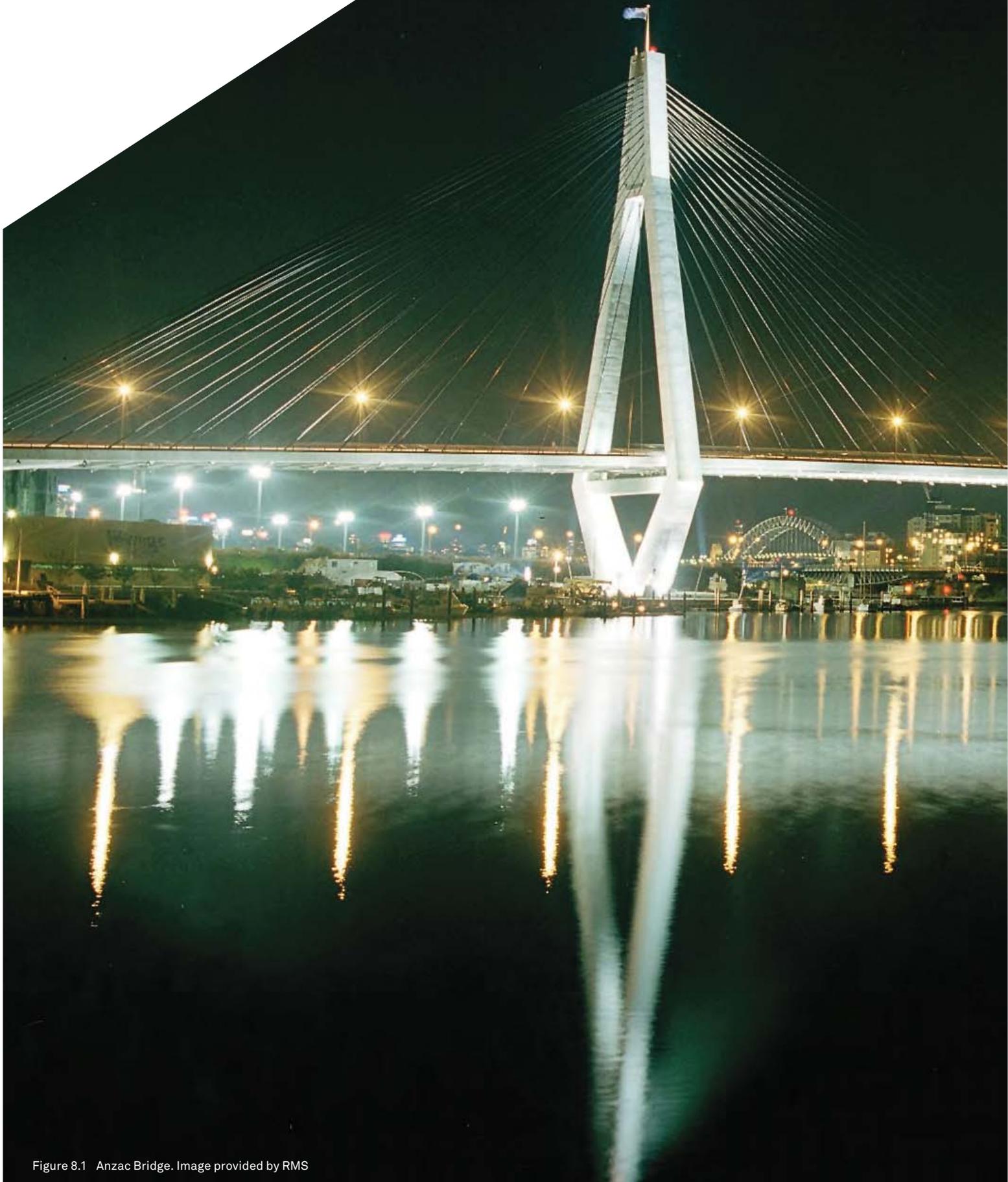


Figure 8.1 Anzac Bridge. Image provided by RMS



08

## 08 How to Use the Framework

### 8.1 The Use of this Urban Design Framework

The urban design framework shall be adopted on all stages of development and delivery of the WestConnex motorway program and for all methods of procurement.

The following table describes the minimum level of urban design involvement and the application of the framework for the different stages of the project.

Stage of Works	Urban Design Involvement	Action	Use of Framework
<b>01</b> Preliminary investigation of options and route selection	_ Centre for Urban Design	Assist in identifying best options	Framework character analysis and objectives inform option selection.
<b>02</b> Environmental Assessment & Concept (Reference) Design	_ Centre for Urban Design _ Urban Design Consultant _ Independent Design Review Panel	Urban design established as a key issue  Prepare urban design, landscape character and visual impact assessment report	Framework vision, objectives and design principles guide development of urban design concept.  Framework broad analysis of the city informs landscape character assessment.
<b>03</b> Design Development & Contract Documentation	_ Centre for Urban Design _ Urban Design Consultant _ Independent Design Review Panel	Prepare urban design scope of works.  Develop integrated engineering & urban design outcome as part of contract documentation.  Prepare samples of materials for testing and review	Framework referenced in scope of works.  Framework design principles guide design development.  Tenders assessed against framework vision and objectives.
<b>05</b> Construction	_ Centre for Urban Design _ Urban Design Consultant _ Independent Design Review Panel	Urban design established as key result area  Monitoring of implementation  Construct prototypes of motorway elements to ensure quality and consistency	Success of key result area measured against framework objectives and principles.
<b>05</b> Establishment and ongoing motorway management	_ Centre for Urban Design	Review of landscape establishment  Monitoring of management	Annual review of maintenance against framework objectives.

Well-designed urban places can only be achieved by adopting an integrated design approach where multi-disciplinary teams work collaboratively at all stages of a project, from design through to procurement, implementation, operation and maintenance. Good model processes prioritise design excellence through leadership, teamwork and integrated processes.

Creating Places for People  
An Urban Design Protocol for Australian Cities



Figure 8.2 Brunswick Boardwalk. Image provided by RMS.

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# Appendix

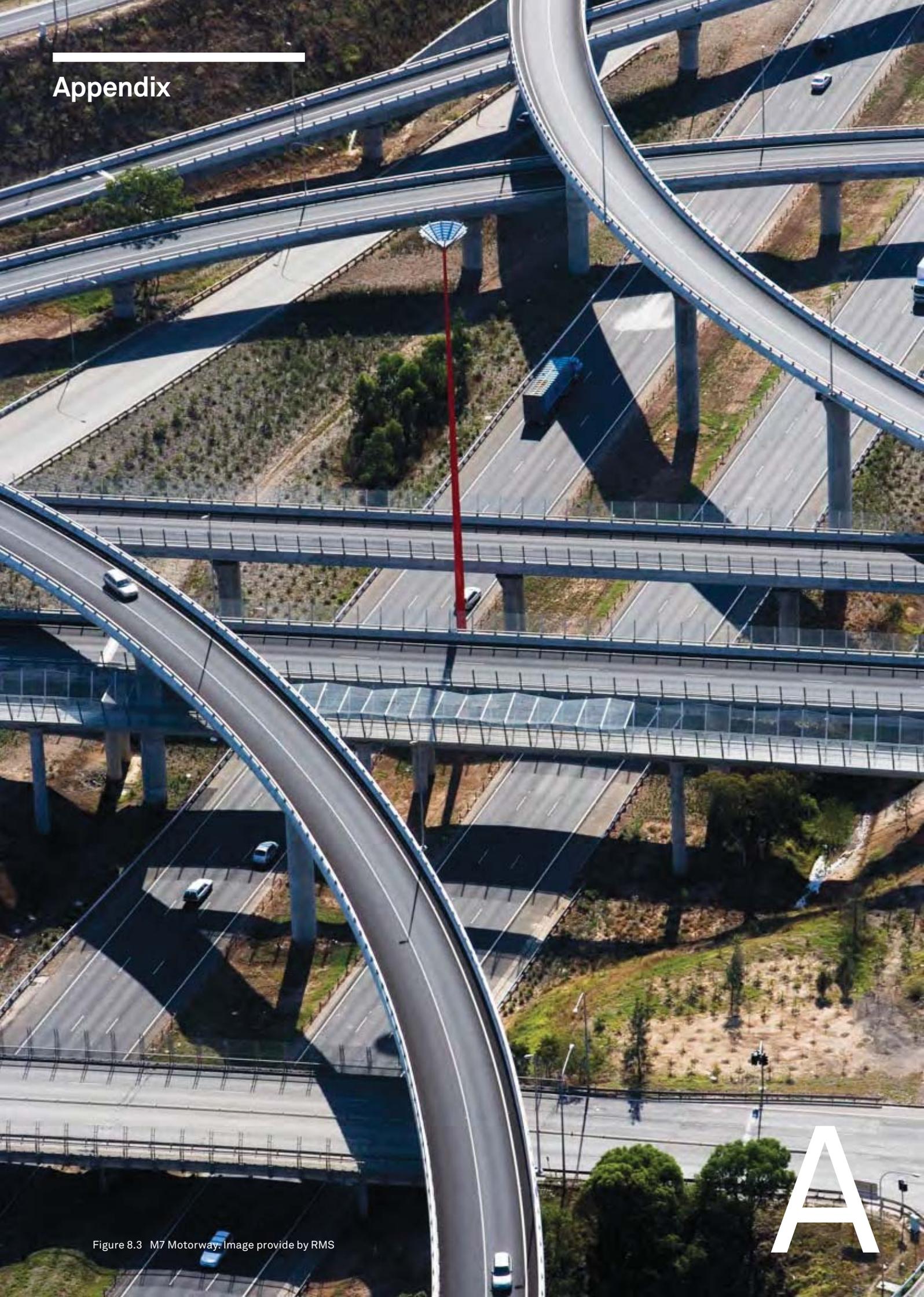


Figure 8.3 M7 Motorway. Image provide by RMS

# A

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## Acknowledgments

The framework has been prepared by the urban design team at Hassell in collaboration with RMS Centre for Urban Design, comprising of:

Ross de la Motte	Project Director, Principal Architect, HASSELL
Mal Graham	Principal Landscape Architect, HASSELL
Sophie Spinks	Team Leader, Senior Landscape Architect, HASSELL
Anthony Papas	Project Landscape Architect, HASSELL
Anthony Charlseworth	Senior Landscape Architect, HASSELL
Gareth Collins	Principal Manager, Centre for Urban Design, RMS
Valdimir Shopov	Senior Project Manager, RMS

We also acknowledge the inputs of WestConnex Delivery Authority.

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IF VARIABLE  
SPEED LIMIT  
SIGN IS  
BLACKED OUT

