



## Environmental Impact Statement - Volume 4

Technical working paper: Urban design

July 2014

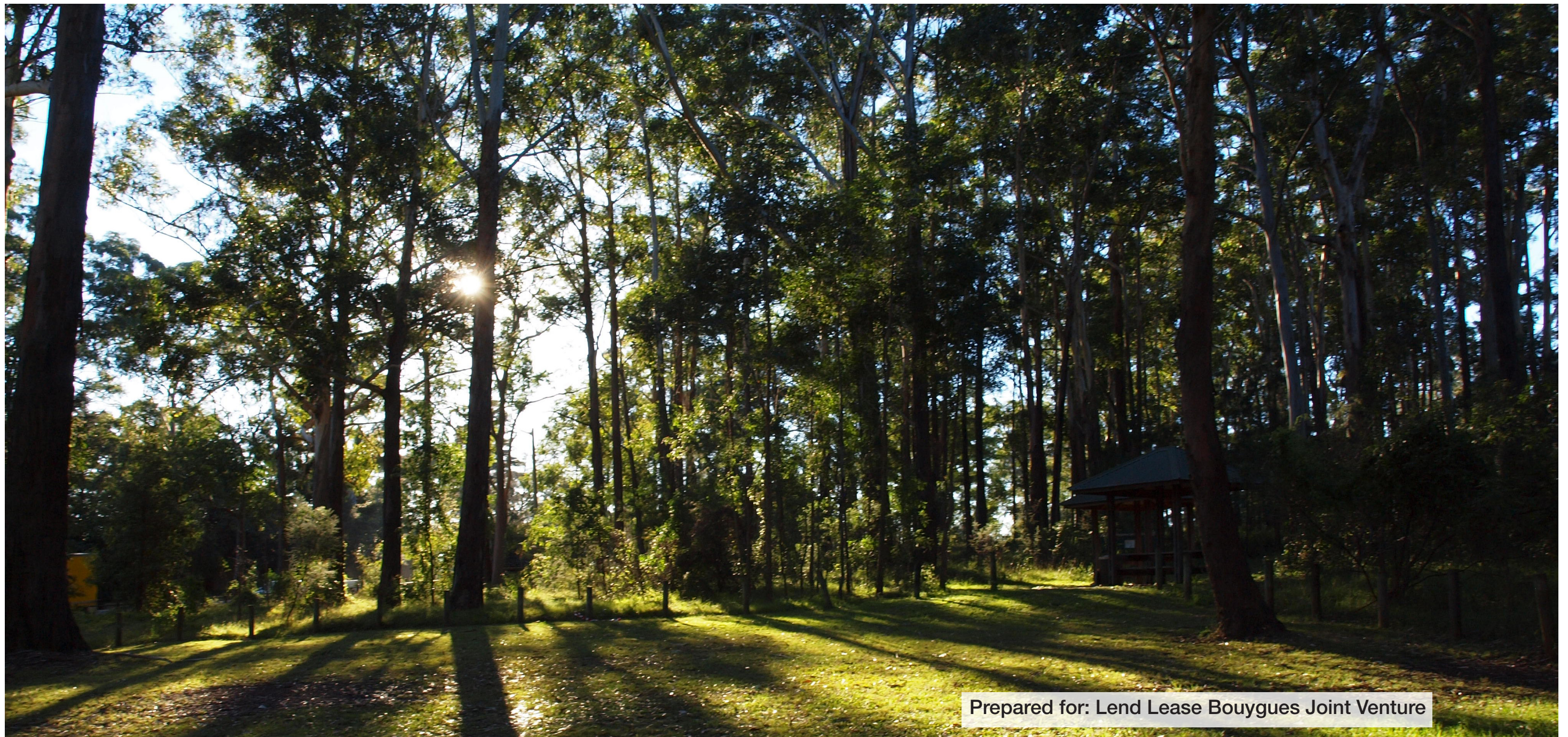


*In 2012, the NSW Government received an unsolicited proposal from Transurban and the Westlink M7 Shareholders (Sponsors) to design, construct, operate, maintain and finance a tolled motorway linking the M1 Pacific Highway at Wahroonga to the Hills M2 Motorway at the Pennant Hills Road interchange at West Pennant Hills, known as NorthConnex.*

*Roads and Maritime Services is the Proponent for the environmental impact statement and lodgement of an application for environmental and planning approval. Roads and Maritime is working with the Sponsors on the community consultation and public exhibition of this environmental impact statement.*



# NorthConnex



Prepared for: Lend Lease Bouygues Joint Venture





# NorthConnex

Revision	Date	Description	By	Chk	App
01	14 Nov 2013	Draft Report	RN/KR	KR	RN
02	26 Nov 2013	Final Report	RN/KR	KR	RN
03	28 Feb 2014	Post Tender Revision	RN/KR	KR	RN
04	12 Mar 2014	Post Tender Revision - Draft	RN/KR	KR	RN
05	18 Mar 2014	Post Tender Revision - Final	RN/KR	KR	RN
06	02 April 2014	Post Tender Revision - Transurban Comments - Final	RN/KR	KR	RN
07	30 April 2014	Post Tender Revision #225 Comments	RN/KR	KR	RN
08	23 May 2014	Transurban - Comments for EIS input	RN/KR	EL	RN

Prepared for: Lend Lease Bouygues Joint Venture

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*View looking west along Pennant Hills Road.*



# Executive Summary



View of motorway operations complex - motorway control centre pylon.

## The Project

The NorthConnex (the project) presents an important and challenging opportunity to deliver excellence in architecture, urban and landscape design for motorways and public infrastructure. The Design Proposal meets this challenge.

The design is the outcome of extensive collaboration between all the members of the Lend Lease Bouygues Joint Venture Team, including urban and landscape designers, engineers, environmentalists and estimators. The urban and landscape design process has drawn together all aspects of the project's development to produce an aesthetically cohesive whole. This integrated multidisciplinary approach is the foundation of the design, report and submission.

The principle feature of this project is the approximately 9 kilometre twin-tube NorthConnex Tunnel. This tunnel, like other tunnels in the Sydney motorway system would:

- Significantly improve private vehicle and public transport in Sydney's northern region, particularly in the greater northern metropolitan region;
- Complete a significant link in the motorway network;
- Greatly increase accessibility, reduce travel times, lower traffic volumes on existing roads and interconnect with Sydney's existing motorway network;

- Provide a motorway-standard tunnel connection between the Hills M2 Motorway and the M1 Pacific Motorway with the Central Coast;
- Significantly reduce north-south travel time between Sydney and Newcastle; and
- Have a positive impact on the currently congested Pennant Hills Road with a reduction and slowing of local road traffic.

## Project Narrative

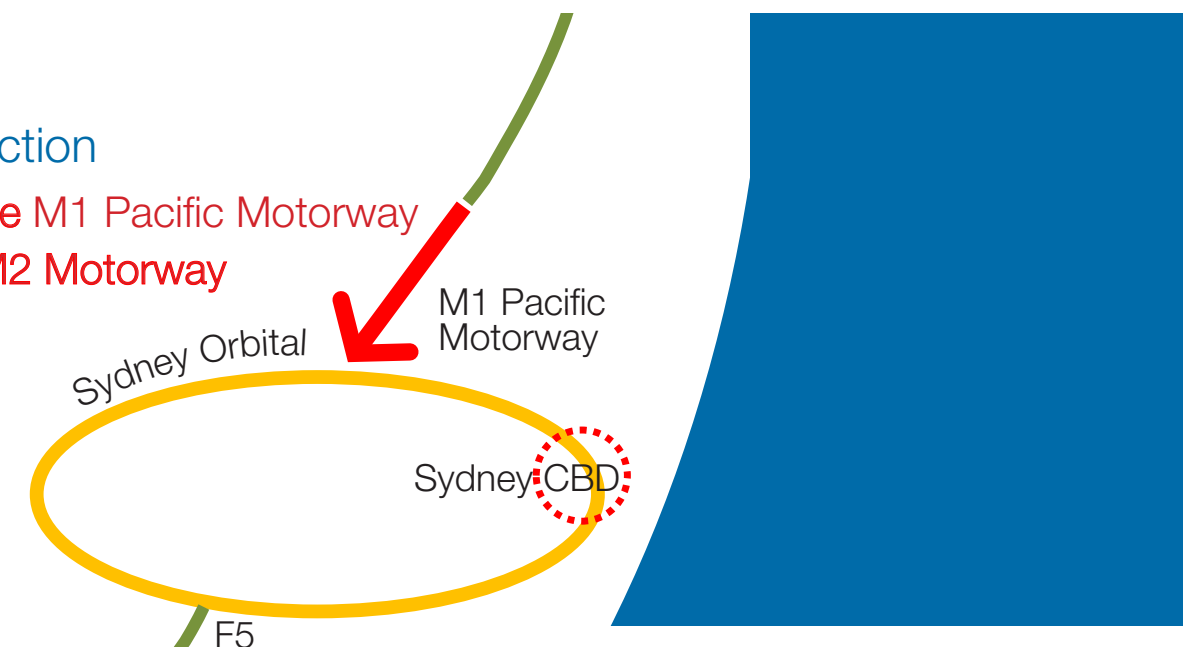
A primary consideration of the project is understanding the driver experience and how this experience can be enhanced through the design of urban form. The driver experience would form the public's perception of the project and in turn, its identity, legibility and acceptance as a vital piece of Sydney's infrastructure.

Key to understanding the driver experience is identifying major decision points, an awareness of the driver's constantly shifting visual field and a sense of what may catch the driver's attention at any given point in the journey. These attributes form a continuous experience over time as one travels along the motorway.

A complementary experience exists with the public's interaction of the motorway from surrounding areas. In the case of the project tunnel, this experience is limited to areas where portals and other surface features are located. This experience of the motorway is discontinuous, and occurs in broken segments of time.

## The Connection

Extending the M1 Pacific Motorway to the Hills M2 Motorway



The connection.

The urban design and architectural expression of the project has been developed around a narrative theme that provides a link between these two types of experience, supports a positive driver experience, and allows for a flexible yet complementary approach for surface features.

The project narrative has been built around the concept of the project as a transition element from the city to the northern coastal areas. This concept has been articulated in the urban design, architecture and landscape of the project through the development of a signature patterning system developed from the ecosystem of the site itself.

The design expression of the site narrative has been incorporated into both the linear identity of the project, the driver experience, and the lateral integration of the project; the integration of surface project elements with the surrounding areas.

## Linear Identity

Linear identity is the principle adopted in the establishment of a consistent and unique identity along the length of the route. Linear identity is created by deploying the same basic design for design groups throughout the project for:

- Signature design elements that support project branding and occur along the route;
- Landscape design;
- Noise barriers;
- Portals and drive structures;
- Cladding panels, retaining wall and tunnel linings;
- Road furniture and standard road elements; and
- Shared paths, bridges, ventilation outlets and lighting.

The linear identity is created by, amongst other things:

- Consistent use of architectural components and the adoption of standard steel structural sections;
- Vertical expression lines in project structures;
- Consistency in the palette of materials, colours and finishes for project components, and integration of utilities and services; and
- Signature design elements that support project branding and occur along the route.



# Executive Summary



Tunnel visual event pattern.

## Landmarks

Landmarks occupy a key role in furthering route diversity and in facilitating road user's orientation. Prominent items along the route at the surface or in the tunnel have been incorporated into the roadway narrative to enhance driver experience. These include:

- Special feature planting;
- Pedestrian bridges;
- Ventilation structures;
- Tunnel portals;
- Motorway Operations Complex; and
- In-tunnel features to increase driver safety and alertness.

Other key aspects of the integrated urban and landscape design proposals include:

- Equal attention to the design of all elements as seen from both the surface motorway elements and the adjoining neighbourhoods, in particular noisewalls and landscape;
- The full design integration of all project elements:
  - Appropriate siting and scale of all surface buildings and facilities; and
  - Appropriate design articulation to all surface facilities and buildings to mitigate impacts of large scaled facilities in their residential environment

- Careful placement and sizing of planting to maintain significant views of the road; and
- Feature lighting for specific locations.

## Lateral Integration

Lateral integration is the principle adopted to ensure the project responds to its immediate context. Lateral integration is achieved by developing designs which vary along the route for:

- Landscaping to ensure the corridor is environmentally integrated;
- Grade separation of roads with reduced traffic to assist in neighbourhood connectivity; and
- Grade separated connections, where required, to assist with safety and vehicular movement.



View of motorway operations complex - motorway control centre from Eaton Road.

## Interchanges

Interchanges are treated as singular events in a journey, each with a unique design, appropriate to their context:

### Northern Interchange – Green Gateway

The M1 Pacific Motorway interchange is the major connection from the tunnel to the M1 Pacific Motorway. It forms part of a seamless experience from the tunnel to the open motorway. A secondary series of ramps provide for connections to the Pacific Highway and Pennant Hills Road. The treatment of this interchange features enhanced planting, simple tunnel portals and a low scale group of facilities. The primary driver experience would be one of connectivity and continuity entering or leaving a green corridor.

### Southern Interchange - Urban Gateway

This interchange at the Hills M2 Motorway provides major connections to the Sydney orbital network and Pennant Hills Road. It is the primary decision point between the two motorways. The major facilities grouping is located here and consists of the motorway control centre (MCC), several service facilities and the southern ventilation facility. Both of these facilities are markers for the project, factor into the driver experience at this gateway, and have been designed to relate to both the motorway environment and the adjacent residential context. The site has been treated with a more formalised landscape to provide green continuity with the opposite Pennant Hills Golf Club.

The design for the project, as set out in this report sustains and builds upon the Roads and Maritime Services and Transurban's high level of design for contemporary road infrastructure, and establishes new benchmarks for the urban and landscape design of motorways. This design proposal is significant due to the following:

- A strong roadway narrative built around the driver experience and provides drivers with reference points, a sense of orientation and sets a new standard for the tunnel driving experience;
- A fully integrated multidisciplinary design team approach as embodied in this report, continuing through all phases of the project;
- Urban and landscape design playing a key role in project design development and implementation of infrastructure projects; and
- A subtle and contemporary design approach to the project, acknowledging and enhancing the fine qualities of existing roads and urban environments.



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