

2. Project Development – Requirements and Methodology

2.1 Project Details

Project:	Oxley Highway to Kempsey
RTA Region:	Pacific Highway Office, Motorways Directorate
Road Name:	Pacific Highway
Road Number:	State Highway No. 10
Project Location:	75.7 km to 114.5 km north of Taree
Project Length:	37.6 km
Council Areas:	Port Macquarie – Hastings and Kempsey

2.2 Project Objectives

The objectives of the Pacific Highway Upgrade Program are described in Section 1.1 of this report. The objectives of the Oxley Highway to Kempsey project, which are a subset of the program objectives, are to:

- ▶ Develop a dual carriageway road with potential to reduce crash rates to 15 crashes per 100 million vehicle kilometres (MVK) over the project length;
- ▶ Develop a refined design that meets or exceeds B-double requirements, including at intersections, where required;
- ▶ Maximise the use of the existing road reserve, where possible;
- ▶ Integrate input from local communities into the development of the project through the implementation of a comprehensive program of community consultation and participation;
- ▶ Satisfy the technical and procedural requirements of the RTA with respect to the design of the project;
- ▶ Provide for transport developments that are complementary with land use;
- ▶ Allow for all connections, modifications and improvements necessary to upgrade the existing highway where it is retained as part of the project;
- ▶ Consider delay management strategies to minimise disruption to local and through traffic and maintain access to affected properties and land during construction;
- ▶ Provide flood immunity on at least one carriageway:
 - Target a 1 in 100 year flood event (1% AEP); and
 - Minimum of at least a 1 in 20 year flood event (5% AEP);
- ▶ Provide intersections designed to achieve at least a level of service C 20 years after opening for the 100th highest hourly volume;
- ▶ Develop solutions that address community expectations for access to the new highway;

- ▶ Retain or replace existing rest areas within the study area;
- ▶ Develop a refined design generally meeting the criteria for a 110 km/h design speed for the vertical alignment and horizontal alignment;
- ▶ Ensure the project outcomes achieve value for money;
- ▶ Provide a strategy for future upgrades to be easily integrated into the project from both engineering and environmental perspectives; and
- ▶ Minimise the need to modify preferred route option and refined design during subsequent project phases.

2.3 Design Requirements

2.3.1 Design Standards

The standard for the design of this project is the RTA's *Upgrading the Pacific Highway, Upgrading Program beyond 2006: Design Standards March 2005*. In addition to these standards, the RTA's *Road Design Guide* and Austroad's *Guide to Traffic Engineering Practice* will also be used.

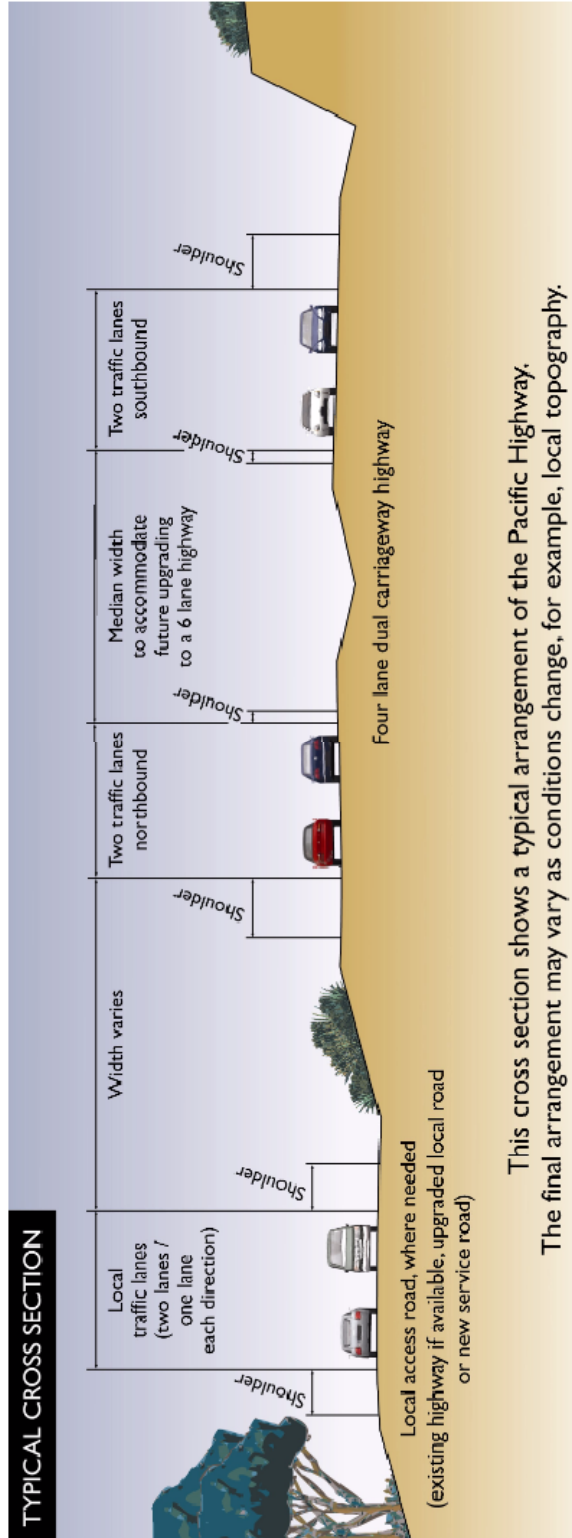
General Design and Performance Requirements

Road geometry:

- ▶ Minimum horizontal design speed – 110 km/h; and
- ▶ Desirable vertical design speed – 110 km/h.

Carriageway Configuration

Table 2.1 summarises the minimum criteria for each carriageway as defined by the RTA's *Upgrading the Pacific Highway, Upgrading Program beyond 2006: Design Standards March 2005*. Figure 2.1 shows the typical cross section to be used in design of a Class M or motorway standard highway.



This cross section shows a typical arrangement of the Pacific Highway.
The final arrangement may vary as conditions change, for example, local topography.

Typical Cross Section

Figure 2.1

Table 2.1 Minimum Carriageway Configuration

Design Criteria	Value
Number of lanes per direction	2 ⁽¹⁾
Lane width	3.5 metres
Outside shoulder width	2.5 metres – with no barrier 3.0 metres – with barrier
Inside shoulder width	0.5 metres
Median width	12.0 metres (desirable)
Normal crossfall	-3.0% (-4.0% for straight lengths >500 metres)
Superelevation	+3.0% (maximum)

Note: (1) Consideration for future six-lane widening to three lanes per carriageway is also required.

Other Design Requirements

- ▶ Traffic Volume Projections – 20 years from anticipated date of opening. 2016 has been adopted as the date for opening of the project. This date is for planning purposes only.

Upgrade Strategies

- ▶ Class A or Arterial standard – two lanes in each direction, 100 km/h posted speed, limited access condition roadway with at-grade intersections; and
- ▶ Class M or Motorway standard – two or three lanes in each direction, 110 km/h posted speed, controlled access condition roadway with grade separated interchange access.

Further information relating to the upgrade scenarios is contained in Section 4.4.

Interchange locations would depend on the location of the preferred route and integration with the existing interchange with Oxley Highway to the south and the proposed Kempsey to Eungai project interchange to the north.

2.3.2 Urban Design Principles

The extent of the Pacific Highway Upgrade Program being undertaken by the RTA has resulted in the need for urban and regional design to be consistently and efficiently integrated into the highway planning and design process. The RTA's urban design philosophy and policies are established by its *Beyond the Pavement* series of publications.

The RTA's *Pacific Highway Urban Design Framework* provides the urban design vision, objectives and guidelines for upgrade projects. The objectives are to:

- ▶ Provide a flowing road alignment that is responsive and integrated with the natural landscape;
- ▶ Provide a well vegetated, natural road reserve;
- ▶ Provide an enjoyable, interesting highway with varied views and vistas of the landscape and pleasant restful places to stop;
- ▶ Respect the communities and towns along the road;
- ▶ Provide consistency-with-variety in road elements; and
- ▶ Provide a simplified and unobtrusive road design.