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WestConnex

New M5 King Georges Road Interchange Upgrade Submissions Report

January 2015



WestConnex Delivery Authority

WestConnex – New M5 King Georges Road Interchange Upgrade

Submissions Report

January 2015

Prepared for
WestConnex Delivery Authority

Prepared by:
Jacobs Group (Australia) Pty Limited

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Submissions Report

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Accepted on behalf of WDA by:	 Christopher Swann Project Director WestConnex New M5 WestConnex Delivery Authority
Date:	29/01/15

Executive Summary

Background

The New M5 King Georges Road Interchange Upgrade (the project) is a component of the WestConnex program of works which is the largest integrated transport and urban renewal project in Australia. The project predominantly involves work to the M5 Motorway carriageways and includes improvements to all on-ramps and off-ramps at the interchange of the M5 with King Georges Road, Beverly Hills

The project would provide immediate operational benefits in relieving congestion on the M5 Motorway (between west of Penshurst Road and east of Cooalongatta Road) and King Georges Road (between Canterbury Road and Stoney Creek Road). The project would also facilitate future construction of WestConnex New M5 by allowing construction flexibility and enabling an efficient construction methodology and shorter construction periods at the western extent of the WestConnex New M5 project. The project is declared State significant infrastructure and therefore requires the preparation and public display of an environmental impact statement (EIS) and then approval from the (NSW) Minister for Planning under Part 5.1 of the (NSW) *Environmental Planning and Assessment Act 1979* (EP&A Act).

The New M5 King Georges Road Interchange Upgrade EIS was completed in October 2014 and was then publicly displayed for information and comment between 22 October and 21 November 2014.

Purpose of this submissions report

In accordance with section 115Z(6) of the EP&A Act, the WestConnex Delivery Authority (WDA), on behalf of (NSW) Roads and Maritime Services as the proponent of the project, has prepared this Submissions Report in order to respond to the issues raised by submissions received during the EIS exhibition. It also describes any modifications to the project's design and outlines revised mitigation measures identified in response to any changes and the submissions received.

Key issues raised by submissions on the EIS

A total of 39 submissions were received in response to the exhibition of the EIS. There were five from government agencies (or advisory bodies), two local Government organisations and 32 from members of the community, including special interest groups.

Most of the issues raised by the community had been addressed, at least in part, in the EIS. As such, the structure of this chapter generally mirrors the EIS structure, referring to EIS Chapters where relevant and providing additional information to respond to issues raised.

The most common issues raised by the community related to:

- Preferences for alternatives to the project and the WestConnex program of works, primarily investment in public transport
- Alternate design suggestions for the project particularly regarding shared-path and pedestrian facilities and ramp/lane configurations
- Concerns about the amount of consultation undertaken prior to and during preparation of the EIS

- Concerns that the project would not alleviate traffic congestion, or may worsen the existing traffic situation on King Georges Road
- Suggestions for noise mitigation options including recommendation for the location and heights of noise walls along the motorway
- Other issues related to assessments presented in the EIS including impacts to biodiversity, air quality, landscaped areas and cumulative impacts.

The EPA primarily raised issues associated with emissions such as diesel and dust emissions during construction and noise emissions during construction and operation of the project.

The Office of Water provided recommendations for the preparation of recommends that the Soil and Water Management Plan and requirements for rehabilitation of any drainage lines disturbed during construction.

Office of Environment and Heritage (OEH) supported the further investigation of alternate mitigation measures to protect Downy Wattle and suggested further investigation of offset options.

Sydney Water requested to further be involved in the planning of mitigations aimed at minimising impact on their assets, namely Wolli Creek.

The City of Canterbury raised issues regarding potential impacts of the project on the local road network, the drop-off/pick-up of children at Beverly Hills North Public School and confirmed the need for a Construction Traffic Management Plan. City of Canterbury also raised issues related to the Grey-headed flying fox and information provided in the Flooding and Drainage working paper.

Hurstville City Council commented on the need for ongoing consultation with local residents with regard to noise and vibration and loss of amenity and also expressed some concern about the project's impact on local roads.

Additional investigation and assessment

No additional investigations or assessment have been carried out during the EIS display period or in response to any submissions received from Government agencies and the community.

Section 5.1 of this report provides a clarification to the EIS.

Revised safeguards and management measures

The EIS identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the project have been revised. The adjustments to the measures were made to:

- Make additional commitments based on the response to submissions within this report
- Modify the wording so that the outcome of the commitment is clearer to implement.

These environmental management measures, detailed in Chapter 7 of this Submissions Report, will guide subsequent project development phases of the project.

Next steps

The (NSW) Department of Planning and Environment will consider the responses to submissions raised in this Submissions Report during its assessment of the project. The (NSW) Minister for

Planning will then decide whether or not to approve the project and identify any conditions of approval that would apply. If approved, WDA will continue to consult with community members, government agencies and other stakeholders during the detailed design and construction phases of the project.

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Glossary of terms and abbreviations

Term	Meaning
ABS	Australian Bureau of Statistics
Acute noise levels	Road traffic noise levels received at private dwellings that are predicted to be greater than 65dB(A)Leq(15hr) (day) and 60dB(A)Leq(9hr) (night), as presented in Practice Note IV, Step 3, Part (2) of the Roads and Maritime Environmental Noise Management Manual.
Alignment	The general route (eg of a roadway) in plan and elevation.
AM peak period	6.00–10.00am weekdays.
Asphalt or asphaltic concrete	A dense, continuously graded mixture of coarse and fine aggregates, mineral filler and bitumen usually produced hot in a mixing plant.
Background noise level	The underlying level of noise present in the ambient noise when extraneous noise is removed and excluding the noise source under consideration. This is described using the LA90 descriptor.
BCR	Benefit-cost ratio
Benefit–cost ratio	The ratio of the present value of benefits to the present value of costs of a project.
BTS	Bureau of Transport Statistics
Carriageway	The portion of a roadway devoted to vehicular traffic generally delineated by kerbs, a verge or a median.
Catchment	The area drained by a stream or body of water, or the area of land from which water is collected
CBD	Central business district
CEMP	Construction Environmental Management Plan A site specific plan developed for the construction phase of a project to ensure that all contractors and sub-contractors comply with the environmental conditions of approval for the project and that environmental risks are properly managed
Clearing	The removal of vegetation or other obstacles at or above ground level
CNVMP	Construction Noise and Vibration Management Plan
CO	Carbon monoxide
CO _{2-e}	A metric measurement used to compare the emissions from various greenhouse gases based upon their global warming potential.
Concentration (air quality)	Pollutants emitted to the air from various sources are transported and diluted resulting in a volume of pollutant per volume of ambient air. Ambient air quality goals are expressed in terms of concentrations, which are measured in parts per million or micrograms per cubic metre.
Concept design	Initial functional layout of a road/road system or other infrastructure. Used to facilitate understanding of a project, establish feasibility, and provide a basis for estimating and to determine further investigations needed for detailed design.
CNVMP	Construction Noise and Vibration Management Plan
dBA	Used as a measure of A–frequency weighted sound levels. The A-frequency weighting is an adjustment made to sound level measurement, by means of an electronic filter, in line with international standards. This approximates the response of the human ear at lower sound pressure levels.
Decibel	A scale unit used in the comparison of powers and levels of sound energy.
Design speed	A nominal speed used for the design of geometric features of the road, such as curves.

Term	Meaning
SEARs	Secretary's Environmental Assessment Requirements - Requirements and specification for the environmental assessment prepared by the Secretary of the (NSW) Department of Planning and Environment under the (NSW) <i>Environmental Planning and Assessment Act 1979</i> .
DP&E	(NSW) Department of Planning and Environment
DPI	Department of Primary Industries
EIS	Environmental impact statement
ESD	Ecologically sustainable development.
Ecology	The relationship between living things and the environment.
Ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.
EEC	Endangered ecological community. An ecological community identified by relevant legislation as having endangered status.
EMP	Environmental management plan
ENMM	Environmental Noise Management Manual
Environment	A term for all the conditions (physical, chemical, biological and social) in which an organism or group of organisms, including humans, exists.
Environmental impact statement (EIS)	An environmental impact statement is a focussed analysis undertaken for the purposes of Part 5.1 of the (NSW) <i>Environmental Planning and Assessment Act 1979</i> , written generally to comply with the requirements issued by the Director-General of the (NSW) Department of Planning and Environment.
EP&A Act	(NSW) <i>Environmental Planning and Assessment Act 1979</i> (NSW).
EPA	(NSW) Environment Protection Authority.
EPBC Act	(Commonwealth) <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
GHG	Greenhouse gases.
Grade separation	The separation of road, rail or other traffic so that crossing movements, that would otherwise conflict, is at different levels.
Groundwater	Water contained within rocks and sediments below the ground's surface in the saturated zone.
Hydrocarbon	Any organic compound – gaseous, liquid or solid – consisting only of carbon and hydrogen.
Hydrology	The study of rainfall and surface water runoff processes
Interchange	A grade separation of two or more roads with one or more interconnecting carriageways
ISCA	Infrastructure Sustainability Council of Australia
LA10	The noise level that is exceeded for 10% of the sample period. During the sample period, the noise level is below the LA10 level for 90 per cent of the time. The LA10 is a common noise descriptor for environmental noise and road traffic noise.
LA90	The noise level that is exceeded for 90 per cent of the sample period. During the sample period, the noise level is below the LA90 level for 10 per cent of the time. This measure is commonly referred to as the background noise level.
LAeq	The equivalent continuous sound level. This is the energy average of the varying noise over the sample period and is equivalent to the level of constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.
LALC	Local Aboriginal Land Council.
Local road	A road or street used primarily for access to abutting properties.

Term	Meaning
LoS	Level of Service. A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers.
LGA	Local Government Area
LTTMP	NSW Long Term Transport Master Plan
NCA	Noise catchment area
NML	Noise management level.
NOW	(NSW) Office of Water.
NOx	Oxides of nitrogen.
OEH	(NSW) Office of Environment and Heritage.
PM ₁₀	Particulate matter less than 10 microns in diameter
POEO Act	(NSW) <i>Protection of the Environment Operations Act 1997</i> .
Proponent	The person or organisation that proposes carrying out a project or activity.
RBL	Rating background level. This is the median noise value of the assessment background levels values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night-time.
Receptor/receiver	An environmental modelling term used to describe a map reference point where the impact is predicted. A sensitive receptor is a home, workplace, school or other place where people spend some time. An elevated receptor is a point above ground level.
RNP	NSW Road Noise Policy
Roads and Maritime	(NSW) Roads and Maritime Services.
Shared path	An area open to the public that is designated for, or has as one of its main uses, use by both the riders of bicycles and pedestrians.
Spoil	Surplus excavated material.
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2011
STM	Sydney Strategic Transport Model operated by the Bureau of Transport Statistics (BTS) and used for projecting travel patterns in Sydney, Newcastle and Wollongong under different land use, transport and pricing scenarios.
Stockpile	Temporarily stored materials such as soil, sand, gravel and spoil/waste.
Threatened	As defined under the (NSW) <i>Threatened Species Conservation Act 1995</i> , a species, population or ecological community is threatened when it is likely to become extinct or is in immediate danger of extinction.
TMC	Transport Management Centre
TRAQ	Roads and Maritime Tool for Roadside Air Quality model. The model has been specifically developed for roadside air quality impact assessments and uses a conservative approach to estimate the concentrations of air pollutants near to roadways.
TSC Act	The (NSW) <i>Threatened Species Conservation Act 1995</i> is an Act to conserve threatened species, populations and ecological communities of animals and plants.
TSP	Total suspended particulates.
Urban design	The process and product of designing human settlements, and their supporting infrastructure, in urban and rural environments
WDA	WestConnex Delivery Authority.
WRTM	WestConnex Road Traffic Model which was developed to forecast road traffic impacts for WestConnex including project

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1 Introduction and background

1.1 Overview of WestConnex project

The New M5 - King Georges Road Interchange Upgrade (the project) is a component of the WestConnex program of works which is the largest integrated transport and urban revitalisation project in Australia. WestConnex will link the M4 at Parramatta to the CBD, Sydney Airport and Port Botany precincts and the M5 in south west Sydney. As shown in Figure 1-1, the 33 kilometre WestConnex is being delivered through a series of projects in three stages over 10 years:

- Stage 1: M4 Widening - Parramatta to Homebush, due for completion in early 2017
- Stage 1: M4 East - Homebush to Haberfield, due for completion in 2019
- Stage 2: New M5 - St Peters to Beverly Hills, due for completion in 2019
- Stage 2: New M5 King Georges Road Interchange Upgrade, due for completion in 2017
- Stage 3: M4-M5 Link - Haberfield to St Peters, due for completion in 2023

WestConnex is a key recommendation of the *State Infrastructure Strategy 2012-2032* (Infrastructure NSW, 2012) (State Infrastructure Strategy) and was the subject of a Business Case approved by the NSW Government in September 2013. WestConnex is also identified as a key element of Sydney's road future in the *NSW Long Term Transport Master Plan* (Transport for NSW, 2012a) (LTTMP).

The New M5 King Georges Road Interchange Upgrade project would support the freight transport task by improving access to, and reliability of, the motorway network and King Georges Road itself.

WestConnex Delivery Authority (WDA) was established by the NSW Government to deliver the WestConnex program of work on behalf of (NSW) Roads and Maritime Services (Roads and Maritime). WDA is a public subsidiary corporation of the Roads and Maritime. Its role and functions are set out in Part 4A of the (NSW) Transport Administration (General) Regulation 2013. Roads and Maritime is the proponent for the project.



Figure 1-1 The project in a regional context with the WestConnex series of projects

 Project area

1.2 King Georges Road Interchange Upgrade

The project is located within the Canterbury and Hurstville local government areas (LGAs) and traverses the suburbs of Narwee and Beverly Hills, about 17 km south-west of Sydney's central business district.

The project would involve:

- Tying into the recently completed M5 South West Motorway Widening project west of Penshurst Road, Narwee (the western end of the project)
- Tying into the existing M5 East Freeway, near Kooemba Road, Beverly Hills (the eastern end of the project)
- Upgrading part of the M5 dual carriageways, within the project area, to retain two through lanes in each direction and accommodate the possible future construction of WestConnex New M5
- To the west of King Georges Road, the eastbound off-ramp and westbound on-ramp would be adjusted to provide for the possible construction of the WestConnex New M5 project and to tie into the completed M5 South West Motorway widening project, respectively
- To the east of King Georges Road, the eastbound on-ramp would be extended by about 160 m to the east and a new bridge span would be built to the north of the Cooloongatta Road overbridge. Similarly, the westbound off-ramp would begin about 190 m further east and a new bridge span would be built to the south of the Cooloongatta Road overbridge. Both ramps would be extended to increase vehicle capacity
- Noise barriers would be constructed either via adjustment of existing noise walls or they would be removed and rebuilt
- Some adjustments and additions to motorway cross drainage and water quality control measures would be required to accommodate the project
- Removal of cyclists from the M5 corridor between King Georges Road and Bexley Road. Cyclists would be diverted onto the shared paths on either side of the motorway along this section of the corridor
- Upgrading of the existing operational management control system (OMCS) including installation of signage gantries to maintain continuity for motorway users and make provision for any future WestConnex New M5 configuration.

Figure 1-2 and **Figure 1-3** show the project location and key features.

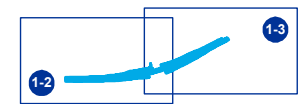
Future projects of the WestConnex program of works would be subject to separate environmental assessment processes and separate planning approval. This Submissions Report is part of the assessment process for the New M5 King Georges Road Interchange Upgrade only.

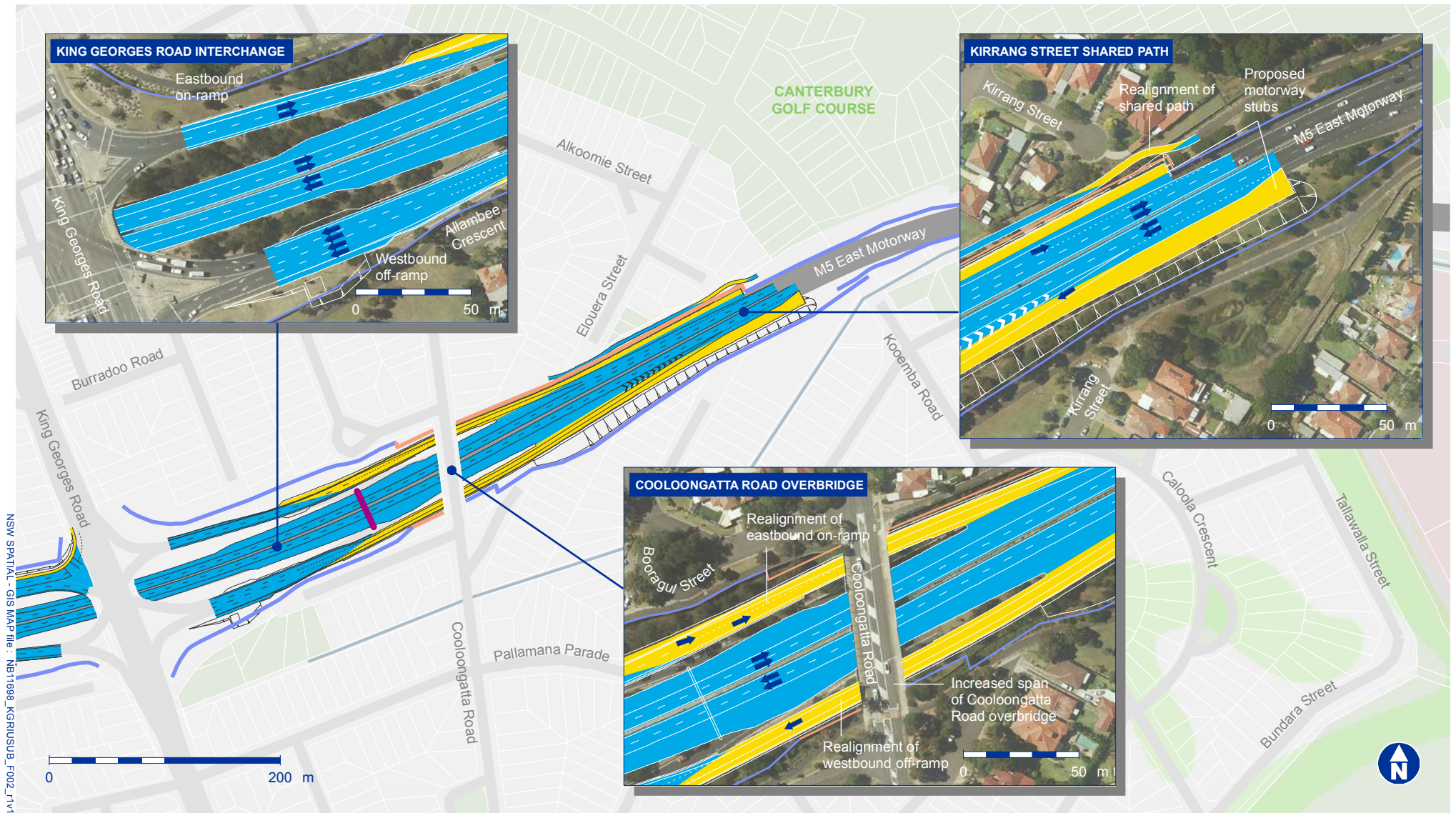


Figure 1-2 Project elements - West of King Georges Road

Information on noise walls, retaining walls, drainage features and temporary construction facilities is subject to detailed design

- New infrastructure
- New noise walls
- Motorway gantry
- Recreation areas
- Drainage channels
- Upgraded infrastructure (including resurfacing and line marking)
- Existing noise walls
- Lane direction



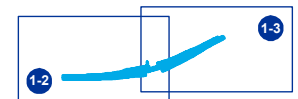


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Figure 1-3 Project elements - East of King Georges Road

Information on noise walls, retaining walls, drainage features and temporary construction facilities is subject to detailed design

- | | | | | |
|--|--|---|--|---|
|  New infrastructure |  New noise walls |  Motorway gantry |  Industrial areas |  Drainage channels |
|  Upgraded infrastructure (including resurfacing and line marking) |  Existing noise walls |  Lane direction |  Recreation areas | |



1.3 Need for the King Georges Road Interchange Upgrade and WestConnex

The King Georges Road M5 Motorway interchange is a well-known pinch point for motorists entering and exiting the M5 motorway.

The M5 East Freeway and M5 South West Motorway (the M5 Motorway) form part of the Sydney Orbital Network and comprise the east-west route between Prestons and Mascot.

It is also the main road freight, commercial and passenger route between Sydney Airport, Port Botany, the St George area, south-western Sydney and beyond to the Southern Highlands.

It is currently congested for up to 13 hours per day.

To help ease this congestion, the M5 South West Motorway has recently been upgraded and expanded from two to three lanes in each direction along most of its length, providing greater capacity for commuters, trucks, delivery vans and other vehicles along this critical artery in the city's road network.

King Georges Road forms part of the A3, which is an arterial north-south route through Sydney from the A1 in Blakehurst to the A8 in Mona Vale, crossing the M5 Motorway, M4 Motorway, M2 Motorway and the A1 (Pacific Highway). It is the main north-south freight route east of Parramatta, and connects southern Sydney to Sydney Olympic Park, Macquarie Park, the North Shore and Northern Beaches.

Congestion occurs mainly during the morning and evening peaks when many people are commuting to and from work. However, it is not only commuter traffic creating congestion on the M5 Motorway and A3 arterial route, with freight vehicles, tradespeople and others making multiple daily trips which also significantly contributes to this congestion.

The WestConnex New M5 project would primarily deliver these benefits within the M5 corridor, however the New M5 King Georges Road Interchange Upgrade contributes to the realisation of these benefits by facilitating the possible future delivery of WestConnex New M5 and, in its own right, by improving the performance of the M5 Motorway, M5 Motorway on-ramps and off-ramps, and King Georges Road.

The project facilitates future construction of WestConnex New M5 by:

- Providing a road footprint that maximises the separation distance between motorway through traffic and future worksites, thereby maximising safety benefits and minimising travel time impacts on through traffic during construction
- Providing a road footprint that improves access to future worksites for construction traffic thereby improving construction efficiency
- Providing alignments for the eastbound on-ramp and westbound off-ramp (and associated merge and diverge points) suitable for future WestConnex New M5 requirements
- Maximising construction flexibility at the western extent of the WestConnex New M5 project, resulting in greater efficiencies, multiple construction staging options and shorter construction periods.

In addition, the New M5 King Georges Road Interchange Upgrade reduces the delivery-related risks for WestConnex New M5. By commencing and delivering work that will provide efficiencies

for construction of WestConnex New M5, the project supports Government's commitment for completion of WestConnex New M5 by late 2019 and the full WestConnex project by mid-2023.

1.4 Assessment and approval process

Roads and Maritime is the project proponent and formed the view that the project, specifically its impact on noise and vibration and traffic and transport is likely to significantly affect the environment and required the preparation of an environmental impact statement (EIS) under Part 5.1 of the (NSW) Environmental Planning and Assessment Act 1979 (EP&A Act). The project therefore falls within Clause 1 of Schedule 3 of the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) and is declared by Clause 14 of the SRD SEPP as State significant infrastructure.

It is proposed that the project will be declared as State Significant Infrastructure (SSI) under section 115U(4) of the EP&A Act. The project is also being considered for a critical SSI declaration under section 115V of the EP&A Act.

On 25 June 2014, requirements for the EIS (Secretary's Environmental Assessment Requirements (SEARs)) were issued by the Secretary of the (NSW) Department of Planning and Environment (DP&E). The EIS was prepared in accordance with those requirements and relevant provisions of the (NSW) Environmental Planning and Assessment Regulation 2000 before being placed on public display (refer to Section 1.4). **Figure 1-4** illustrates the approval process under Part 5.1 of the EP&A Act.

PART 5.1 ENVIRONMENTAL ASSESSMENT AND APPROVAL PROCESS

ENVIRONMENTAL ASSESSMENT

Roads and Maritime forms the opinion that the activity would require an EIS to be obtained under Part 5 of the EP&A Act and therefore the project is SSI

Roads and Maritime prepares an SSI application to the Secretary of the Department of Planning and Environment, accompanied by an SSI application report, seeking approval from the Minister for Planning for the activity

Secretary of DP&E prepares environmental assessment requirements in consultation with relevant public authorities

Secretary of DP&E issues environmental assessment requirements to Roads and Maritime

Roads and Maritime prepares EIS

Roads and Maritime submits EIS to the Secretary of DP&E for approval by Minister for Planning
Referred to Commonwealth Minister for the Environment (if required)

EXHIBITION AND CONSULTATION

EIS on public exhibition (minimum 30 days)

At the completion of exhibition period, the Secretary of DP&E provides Roads and Maritime with a copy of submissions or summary of issues raised

**WE ARE
HERE**

Roads and Maritime prepares a submissions report
(and preferred infrastructure report, if required by the Secretary of DP&E)

ASSESSMENT AND APPROVAL

Assessment report prepared by the Secretary of DP&E

Preferred infrastructure report (if required) may be made available to the public if the Secretary of DP&E considers that significant changes to the nature of the infrastructure are proposed

Minister for Planning decides whether or not to approve the project, any modifications that must be made to the infrastructure and the conditions to be attached to any approval

Figure 1-4 State significant infrastructure assessment and approval process

1.5 Key findings of the EIS

1.5.1 Benefits of the project

While the King Georges Road interchange upgrade would deliver standalone benefits, its full benefits would be realised when the WestConnex project is fully completed.

As part of WestConnex, the New M5 King Georges Road Interchange Upgrade would contribute to delivering long-term economic benefits outweighing the initial upfront construction cost and ongoing operational cost, and creating the potential for realisation of wider economic benefits.

An economic appraisal was undertaken for the fully completed WestConnex as reported in the *WestConnex Business Case Executive Summary (SMPO 2013)*. The economic appraisal identified a benefit-cost ratio (BCR) of 2.55:1, including wider economic impacts reflecting the benefits of WestConnex across the Sydney road network. Based on the concept design, the New M5 King Georges Road Interchange Upgrade project would support about 100 construction jobs.

The main traffic benefits of the project are the operational improvements associated with reduced congestion along the M5 Motorway (between west of Penshurst Road and east of Cooloongatta Road) and King Georges Road (between Canterbury Road and Stoney Creek Road), which has flow-on benefits expressed through reduced travel times and road safety improvements. The project would also facilitate efficient future construction of WestConnex New M5.

Typical morning and afternoon peak travel time improvements for the M5 Motorway and King Georges Road when WestConnex is completed are shown in Table 1-1.

Table 1-1 Travel times for 2027 ‘do minimum’ and 2027 ‘with project’ (full WestConnex)

Route	Distance (km)	Travel time (minutes) 2027 ‘do minimum’		Travel time (minutes) 2027 ‘with project’ (full WestConnex)		Travel time improvements (minutes and per cent)	
		AM	PM	AM	PM	AM	PM
King Georges Road northbound (between Stoney Creek Road and Canterbury Road)	2.8	13:13	13:20	10:53	10:14	2:20 (18%)	3:06 (23%)
King Georges Road southbound (between Canterbury Road and Stoney Creek Road)	2.8	19:39	16:49	15:34	12:13	4:05 (21%)	4:36 (27%)
M5 Motorway Eastbound (between west of Penshurst Road and east of Cooloongatta Road)	0.9	06:39	02:52	03:24	02:08	3:15 (49%)	0:44 (26%)
M5 Motorway Westbound (between east of Cooloongatta Road and west of Penshurst Road)	0.9	02:48	03:04	02:07	01:50	0:41 (24%)	1:14 (40%)

1.5.2 Impacts of the project

During construction of the New M5 King Georges Road Interchange Upgrade, adverse impacts would include:

- Noise and vibration, including potential night time disturbance associated with out-of-hours work
- Dust and construction vehicle emissions
- Traffic and access impacts
- Changes to existing cycle routes
- Removal of some Downy Wattle.

Construction impacts would be minimised through further design refinements and construction planning, application of appropriate management and mitigation measures as described in the EIS and refined as necessary in this report, and consultation with affected residents. It is expected that construction would take in the order of 18 months.

During operation, adverse impacts would include:

- Traffic noise requiring a combination of new noise barriers, adjustments to the height of an existing noise barrier, and six residential property treatments
- Visual impacts associated with new bridge structures and retaining walls
- Changes to existing cycle routes.

1.6 Purpose and structure of this report

This document comprises the Submissions Report for the New M5 King Georges Road Interchange Upgrade project, which has been prepared in accordance with the requirements for State significant infrastructure under Part 5.1 and section 115Z(6) of the EP&A Act. Section 115Z(6) provides that:

The Director-General may require the proponent to submit to the Director-General:

- a) a response to the issues raised in those submissions, and*
- b) a preferred infrastructure report that outlines any proposed changes to the State significant infrastructure to minimise its environmental impact or to deal with any other issue raised during the assessment of the application concerned.*

In accordance with section 115Z(6) of the EP&A Act, WDA, on behalf of Roads and Maritime as the proponent of the project, has prepared this Submissions Report in response to the issues raised by submissions received during the EIS exhibition.

The Submissions Report has the following structure:

- Chapter 1 – Provides an overview to WestConnex and the New M5 King Georges Road Interchange Upgrade, reiterates why the project is needed, explains the approval process, reviews the key findings of the EIS and outlines the purpose of the Submissions Report
- Chapter 2 – outlines the consultation activities undertaken prior to, and during, the public exhibition of the EIS, as well as ongoing consultation proposed during the pre-construction, construction and commissioning phases

- Chapter 3 – sets out the issues raised in community submissions on the EIS and presents responses to those issues
- Chapter 4 - sets out the issues raised in agency submissions on the EIS and presents responses to those issues
- Chapter 5 – presents the findings of additional assessment that has occurred since the exhibition of the EIS
- Chapter 6 –describes and assesses the alternative project design options considered since EIS exhibition
- Chapter 7 – presents the safeguards and mitigation measures for the project, revised to address issues raised during public exhibition of the EIS or as a result of additional assessment.

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2 Consultation

2.1 Consultation overview

Prior to, and during, preparation of the EIS, WDA undertook consultation with the community, state and local government agencies, special interest groups and relevant industry stakeholders that have a specific interest in the project and broader WestConnex project. Details of these consultation activities are documented in Chapter 7 of the EIS.

2.2 EIS exhibition

The EIS was publicly exhibited by DP&E between 22 October and 21 November 2014. The EIS was made available for information and comment on the DP&E website and at 7 public locations as listed in Table 2-1.

Table 2-1 EIS public display locations

Location	Address
DP&E	23–33 Bridge Street, Sydney
City of Canterbury Administration Centre	137 Beamish Street, Campsie
Campsie Library	14-28 Amy Street, Campsie
Hurstville City Council Civic Centre	MacMahon Street (corner of Dora Street), Hurstville
Hurstville Library	Corner Queens Road and Dora Street, Hurstville
Penshurst Branch Library	630 Forest Road, Penshurst
Nature Conservation Council	Level 2, 5 Wilson Street, Newtown
Roads and Maritime	Level 9, 101 Miller Street, North Sydney

The public display of the EIS and the community information sessions were advertised in the following local and community language newspapers:

- Fairfield Advance (22/10/14)
- Liverpool Leader (22/10/14)
- St George and Sutherland Shire Leader (23/10/14)
- Canterbury Bankstown Express (28/10/14)
- Macarthur Chronicle (28/10/14)
- La Fiamma (23/10/14)
- El Telegraph (23/10/14)
- Australian Chinese Daily (23/10/14)
- Chieu Duong Sunrise Daily (23/10/14)
- The Greek Herald (23/10/14)

Information about the New M5, including the public display of the EIS for King Georges Road Interchange upgrade was advertised in the following metropolitan, local and community language newspapers:

- The Daily Telegraph (07/11/14)
- Sydney Morning Herald (07/11/14)
- St George and Sutherland Shire Leader (11/11/14)
- Bankstown-Canterbury Torch (12/11/14)
- Campbelltown/Macarthur Advertiser (12/11/14)
- Liverpool City Champion (12/11/14)
- El Telegraph (14/11/14)
- Australian Chinese Daily (14/11/14)
- Chieu Duong Sunrise Daily (14/11/14)
- The Greek Herald (14/11/14)

In addition to statutory requirements, the public display of the EIS was promoted on the WestConnex website and an announcement email was sent to about 2,200 subscribers providing details of the EIS exhibition and information on how to make a formal submission.

A Project Overview document for the New M5, which included information on the King Georges Road Interchange Upgrade was developed to provide information in an accessible form and was made available on the WestConnex website and at the second community information session.

A community update was distributed to about 5,300 homes and businesses in the project area on 24 October 2014 and was made available on the WestConnex website. The community update provided information about the project and how to make a formal submission, the public display of the EIS, WestConnex contact details and language translation services.

Project information was provided to Beverly Hills North Public School, Regina Coeli School and Beverly Hills Girls High School to place in their school newsletters and circulated to their school community.

Two community information sessions were held as outlined in Table 2-2.

Table 2-2 Community information sessions

Venue	Address	Date and time
Regina Coeli Church Hall	70 Ponyara Road, Beverly Hills	Saturday 1 November, 9am to 12pm
Beverly Hills North Public School	1-3 Shorter Avenue, Beverly Hills	Monday 10 November, 3pm to 7pm

Briefings on the EIS were provided to Canterbury and Hurstville council staff.

2.2.1 Future consultation

During construction, the project team would continue to work with the community to ensure they are informed about the project and have opportunities to provide feedback to the project team.

Key involvement activities and tools would include:

- Development and implementation of a detailed construction communications plan
- Notification of works (including targeted letterbox drops)
- 24-hour project information phone line
- Transport Management Centre (TMC) communication channels; radio crosses and interviews, Variable Message Signs throughout the metropolitan network
- Live Traffic and Transport for NSW Info websites and TMC 24-hour Traffic Information Line (132 701)
- Complaints management process
- Regular updates to the WestConnex website
- Newsletters, information brochures and fact sheets
- Clear signage at construction sites
- Media releases and project advertisements in local and metropolitan papers
- Construction updates (including for councils, emergency services and bus operators).

A more detailed description of the consultation activities and other consultation processes (such as complaints management) that would be undertaken during construction can be found in the Draft Community Consultation Framework in Appendix D of the EIS.

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3 Response to Community submissions

3.1 Respondents and submissions handling process

A total of 32 community submissions were received for the project by the Department of Planning and Environment (DP&E).

Of these submissions:

- Five submissions were from community special interest groups
- 27 submissions were from community members.

Each submission has been examined individually to understand the issues being raised.

The content of each community submission was reviewed and categorised according to the key issues (eg traffic and transport) and sub-issues (eg operational traffic congestion) raised. The issues raised in each submission have been extracted and collated and have been presented as a summary of the specific issues raised by individual community submissions. This means that while the exact wording of a particular submission may not be presented in the summary of the issue, the intent of each individual issue raised has been captured and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The community issues raised and WDA's response to these issues forms the basis of this chapter.

Each community submission was assigned an individual number by DP&E. These numbers are referred to throughout this chapter of the Submissions Report.

A further five submissions were received from government agencies and local councils. Responses to government agency and local council submissions are provided separately in Chapter 4.

A table outlining all submissions and their corresponding number is provided in **Appendix A** for reference.

3.2 Overview of community issues raised

Most of the issues raised by the community had been addressed, at least in part, in the EIS. As such, the structure of this chapter generally mirrors the EIS structure, referring to EIS Chapters where relevant and providing additional information to respond to issues raised.

The most common issues raised by the community related to:

- Preferences for alternatives to the project and the WestConnex program of works, primarily investment in public transport
- Alternate design suggestions for the project particularly regarding shared-path and pedestrian facilities and ramp/lane configurations
- Concerns about the amount of consultation undertaken prior to and during preparation of the EIS
- Concerns that the project would not alleviate traffic congestion, or may worsen the existing traffic situation on King Georges Road

- Suggestions for noise mitigation options including recommendation for the location and heights of noise walls along the motorway
- Other issues related to assessments presented in the EIS including impacts to biodiversity, air quality, landscaped areas and cumulative impacts.

The following sections of this chapter summarise and respond to the issues raised by the community. As discussed above, responses to agency comments are provided in Chapter 4.

3.3 Planning and statutory requirements

3.3.1 Planning approval process

Submission number(s)

2, 5, 28, 30

Issue description

In summary, the respondents raised the following issues:

- The project is only one segment of the much larger WestConnex project. Given the fact of its integral relationship to the other phases of WestConnex, it would be wrong to approve the project. Such approval would prejudice judgement on its later phases.
- There is inconsistency within the EIS regarding references to the project as a standalone project in some sections and in other sections of the EIS it is referred to as part of WestConnex.

Response

The assessment and approval process for the project is explained in Chapter 2 of the EIS.

WestConnex is a key recommendation of the *State Infrastructure Strategy* and was the subject of a Business Case approved by the NSW Government in September 2013. WestConnex is also identified as a key element of Sydney's road future in the *NSW Long Term Transport Master Plan* (Transport for NSW, 2012a) (LTTMP).

The project is an initial project of the WestConnex New M5 project. The LTTMP identifies the need to progressively deliver WestConnex, and recognises the upgrade of the M5 corridor as a key component of WestConnex, as it would increase the motorway's capacity to accommodate commercial and freight vehicle demands.

In the context of the broader WestConnex program of works, the New M5 King Georges Road Interchange Upgrade would support NSW's key economic generators and provide a strategic response to the currently inadequate and highly congested, road network. Therefore, there is benefit as a stand-alone project whether or not WestConnex proceeds.

The project would help to deliver these benefits by improving the performance of the M5 Motorway and King Georges Road. Further detail on the need for the project is provided in section 3.3 and section 3.6 of the EIS.

The project facilitates future construction of WestConnex New M5 by:

- Providing a road footprint that maximises the separation distance between motorway through traffic and future worksites, thereby maximising safety benefits and minimising travel time impacts on through traffic during construction

- Providing a road footprint that improves access to future worksites for construction traffic thereby improving construction efficiency
- Providing alignments for the eastbound on-ramp and westbound off-ramp (and associated merge and diverge points)
- Maximising construction flexibility at the western extent of the proposed WestConnex New M5 project, resulting in greater efficiencies, multiple construction staging options and shorter construction periods.

Additionally, the project would also reduce the delivery-related risks for the proposed WestConnex New M5. By starting and delivering work that would provide efficiencies for construction of WestConnex New M5, the project would support the NSW Government's commitment for completion of WestConnex New M5 by mid-2020 and the full WestConnex project by mid-2023. These benefits have been realised on other major projects in Sydney where 'early work' activities have allowed major construction work to begin on time and avoid delays associated with construction sequencing requirements that also sometimes require re-construction work.

WestConnex Delivery Authority (WDA) has lodged a planning application for WestConnex New M5 seeking State Significant Infrastructure Status under the EP&A Act. This means the approval process is overseen by the Minister for Planning. The Department of Planning and Environment (DP&E) will consult with relevant public authorities, including local councils, to provide requirements for issues to be addressed in the Environmental Impact Statement (EIS).

The WestConnex New M5 EIS will be exhibited for community and stakeholder comment in late-2015 prior to a planning assessment decision being made by the Minister for Planning.

3.4 Strategic justification and project Need

3.4.1 General support for the project

Submission number(s)

6, 7

Issue description

Express support for the King Georges Road Interchange Upgrade and/or WestConnex.

Response

Support noted.

3.4.2 Economic appraisal

Submission number(s)

4, 5, 30

Issue description

In summary, the respondents raised the following issues:

- No information is provided on the WestConnex Business Case and the BCR outlined in the EIS appears unrealistic. The BCR should be reviewed to include an economic assessment of rail alternatives
- The economic analysis in section 3.4 of the EIS states that the benefits would outweigh initial upfront construction costs and ongoing operational costs but does not provide detail on this. How much has it been assessed as outweighing it by?

Response

While the King Georges Road interchange upgrade would deliver standalone benefits, its full benefits would be realised when the WestConnex project is fully completed.

As part of WestConnex, the King Georges Road Interchange Upgrade project would contribute to delivering long-term economic benefits outweighing the initial upfront construction cost and ongoing operational cost, and creating the potential for realisation of wider economic benefits.

An economic appraisal was undertaken for WestConnex as reported in the *WestConnex Business Case Executive Summary* and section 3.4 of the EIS. The economic appraisal identified a BCR of 2.55:1, including wider economic impacts reflecting the benefits of WestConnex across the Sydney road network.

The economic appraisal for WestConnex has been undertaken in accordance with the *Transport for NSW Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives* (also known as 'Economic Evaluation Manual' and released in March 2013) and the *Austrroads Guide to Project Evaluation 1*. In addition to these two technical guidelines, the economic appraisal is also consistent with *the NSW Treasury Guidelines for Economic Appraisal* and the Australian Transport Council (ATC) *National Guidelines for Transport System Management in Australia*.

The approach requires appraisal of projects on an incremental basis, which compares the economic benefits with and without the project by considering the following parameters:

- The direct costs of a project to the community
- The direct benefits of a project
- The indirect benefits of a project to the community.

The economic analysis found that WestConnex would create benefits, realised by the general community, which would outweigh the initial upfront construction cost and ongoing operational costs. Based on the concept design, the New M5 King Georges Road Interchange Upgrade project would also support about 100 construction jobs.

3.4.3 Access to the CBD and Sydney Airport

Submission number(s)

4

Issue description

In summary, the respondent raised the following issue:

- In common with the EIS for Stage 1 of the proposed WestConnex project for the widening of the M4 Motorway, this EIS for the massive road project does not seem to address the primary issue of passenger movement to the CBD and the Airport along the east west corridor.

Response

WestConnex is the largest integrated transport and urban revitalisation project in Australia, linking Parramatta to the central business district (CBD), Sydney Airport and the Port Botany precinct and the M5 in south-west Sydney via a 33 km tolled motorway completely free of traffic signals.

WestConnex is identified in the State Infrastructure Strategy 2012-2032 as a critical program of work with a range of benefits including reducing congestion, providing improved access to the major international gateways of Sydney Airport and Port Botany and improving industrial access and business efficiency, including along the M5 corridor.

Planned commercial and industrial growth at Port Botany the CBD and Sydney Airport, as well as planned population growth and employment growth along the M5 and M7 corridors is expected to add further pressure to the interchange and the M5 corridor.

The project, while not directly joining to the CBD or airport, contributes to the realisation of these benefits by facilitating the possible future delivery of WestConnex New M5.

3.5 Project development and alternatives

3.5.1 Freight movement alternatives

Submission number(s)

4

Issue description

In summary, the respondents raised the following issues:

- The EIS presents only road based alternatives whereas other options should be considered. This especially applies to freight movement out of Port Botany to Intermodal terminals at Moorebank and other western Sydney locations.

Response

Section 3.3.3 of the EIS addressed the issue of freight services forming part of the strategic need for the project.

The *Trade and Logistics Report 2011-12* (Sydney Ports Corporation 2012) indicates that some 98 per cent of imported containers through Port Botany and more than 60 per cent of exported containers have their origin and destination within Greater Sydney.

Freight volumes through Sydney Airport and Port Botany are forecast to increase. Light vehicle traffic is also forecast to increase as a result of changing land use patterns, including development of the north and south west growth centres. Proposed intermodal terminals at Moorebank and in greater western Sydney near the Western Sydney Employment Area would also increase traffic volumes using the road network in the vicinity of the project. As such, the reliance on a well-connected motorway network that facilitates the major east-west movements of the Global Economic Corridor would increase as the freight task increases.

WestConnex is also a key component of the *NSW Freights and Ports Strategy* (Transport for NSW, 2013) to connect and complete Sydney's motorway network in order to realise benefits for freight movement, particularly around major freight activity centres including Sydney's international gateways, Port Botany and Sydney Airport.

The LTTMP identifies a number of current and future freight-related projects that complement the existing freight network. These include:

- An intermodal terminal at Enfield (under construction)
- An intermodal terminal at Moorebank
- The Southern Sydney Freight Line (now complete)
- Stage one of the Northern Sydney Freight Corridor Program (under construction)
- A Western Sydney Freight Line (future proposal)
- A Western Sydney Intermodal Terminal (future proposal).

There are opportunities to shift more freight onto rail and this remains a priority for the NSW Government. However, assuming the target of doubling the share of container freight moved by rail is achieved by 2020, more than 70 per cent of Port Botany's projected trade would still be moved by road, requiring investment in an efficient road network to support the port and airport precincts.

3.5.2 Public transport alternatives

Submission number(s)

2, 4, 5, 8, 26, 28, 30, 31

Issue description

In summary, the respondents raised the following issues:

- The EIS completely fails to address the potential solutions provided by public transport to the real problems facing Sydney's transport systems. Appetite and demand for public transport in Sydney is increasing. The respondent also referred the NSW 2012/12 Household Travel Survey.
- The EIS presents only road-based alternatives whereas a range of other options, including rail, should be considered to accommodate the massive forecast increase in commuters to the CBD and airport.
- The alternatives given in the EIS only focus on 'do nothing' or 'defer delivery as part of WestConnex' and does not provide alternatives to WestConnex itself through other means than widening of the existing road.
- The development of a busway along the M5 is not explored as an opportunity to reduce the numbers of commuter cars on the road and therefore free up space for freight vehicles. There is also no discussion about opportunities for moving passengers in commuter cars onto rail services to allow more freight vehicles to use the existing road.
- As public transport alternatives are already over capacity, these needs prioritising over the M5.
- The Government's priority is to ensure that public transport forms the basis for the transport policy for the region. Public transport alternatives, which are a mode of transport available to all, are already over capacity, and so these need to be prioritized over expansion of the M5
- The EIS has not properly or fully considered the alternatives to expanding the road. We need more public transport alternatives and more money should be allocated for this.

Response

Chapter 4 of the EIS describes the alternatives to the project that were considered as part of the project development process and explains how and why the project was selected as the preferred option.

WestConnex has been developed as a key transport component of the LTTMP, integrated with the strategic land use outcomes as identified in the *Draft Metropolitan Strategy for Sydney to 2031* (Draft Metropolitan Strategy).

As an integrated transport solution, WestConnex brings together planning for freight and passenger movements, as well as all modes of transport including road, rail, bus, ferries, light rail and active transport options (cycling and walking). Public transport options would be a potentially feasible alternative if the project, as part of WestConnex, was primarily concerned with transporting people to and from centres. There is, however, recognition that Sydney's freight, commercial and services tasks require distribution of goods and services across the Sydney Basin, which relies on more diverse and dispersed point-to-point transport connections that can only be provided by the road network.

Public transport would only partially address these customer demands. There are no feasible strategic transport alternatives such as heavy or light rail options or bus corridor enhancements that would meet the diverse range of customer needs for travel in this corridor and address the core project objectives as effectively as the project and WestConnex more broadly. More specifically, an expansion of heavy commuter rail capacity between the Sydney CBD and the project area could potentially complement WestConnex but would not address the diverse range of customer needs for travel in this corridor.

3.6 Project Description

3.6.1 Lane width

Submission number(s)

1

Issue description

General concern about the proposed width of lanes being 3.2 m

Response

The project has been designed generally in accordance with Australian Standards, Austroads design standards, guides and codes and Roads and Maritime supplements.

Lane widths would be generally 3.5 m, but reduce to 3.2 m in some locations where constraints (such as the King Georges Road overbridge) exist

Reconstruction of the King Georges Road bridge to accommodate 3.5 m traffic lanes would be a major undertaking and would expose both motorway and King Georges Road users to significant inconvenience over an extended period of time.

From a safety perspective, the speed limit below the King Georges Road overbridge is proportionate to the lane width.

3.6.2 Shared path design

Submission number(s)

10, 14-24, 27, 29, 32

Issue description

In summary, the respondents raised the following issues:

- A request that all new paved surfaces are level so to prevent an accident from occurring
- A request for a proper pedestrian crossing on Cooloongatta Road overbridge to improve safety for children, and all other pedestrians
- The upgrade of the shared-path should be from Peshurst Road to Bexley Road and include:
 - Ensuring consistent and adequate width of the path from end to end
 - Resurfacing to provide a smooth stable surface where the surface is currently unstable
 - Construction of overpass bridges like the one over Bexley Rd to exist also over Kingsgrove Rd and Cooloongatta Road
 - Bicycle exit from M5 east bound just after Peshurst Rd to allow loop around under M5 on to southern pathway
 - Bicycle entry to M5 west bound just before Peshurst Rd to allow re-entry from M5 southern pathway.
- Suggestions for alternate shared-path alignments and designs including:
 - Cyclists could be brought off the M5 east bound through the sound barrier level with Welfare Ave. 'On road' bike logos could be placed on the road here and into Shorter Ave. Cyclists could then cross the lights at Shorter Avenue across King Georges Road and join the north side east bound linear pathway
 - A shared path on the footpath from the King Georges Road off ramp from the M5 to Shorter Ave. Install a signalised bike crossing on the southern side of this intersection (Shorter Avenue and King Georges Road) and then a shared path on the footpath back to the north side linear pathway heading east.

Response

All new shared path surfaces would be constructed to current Roads and Maritime standards.

WDA is carrying out a safety audit to identify potential improvements to the existing shared path between King Georges Road and the project's eastern limit of works near Kooemba Street, Beverly Hills. This is being carried out as part of mitigating the removal of cyclists from the motorway and would include possible provision of a permanent pedestrian crossing at Cooloongatta Road to improve safety for pedestrians and cyclists.

The shared path between King Georges Road and the western extent of the project is not expected to be impacted and motorway access for cyclists would be reinstated west of King Georges Road once project construction is completed.

Kingsgrove Road is beyond the scope of the project works. As such, development options for the shared path in this area have not been considered within the King Georges Road Interchange Upgrade EIS. WDA has lodged a planning application for WestConnex New M5 seeking State Significant Infrastructure Status under the EP&A Act. The New M5 EIS would be exhibited for

community and stakeholder comment in late-2015 prior to a planning assessment decision being made by the Minister for Planning. Any proposed modifications or upgrades to the shared path at Kingsgrove Road would be assessed as part of that EIS.

An eastbound exit from the motorway to loop around under the motorway at Penshurst Road is not considered practical due to the impact on the adjacent parkland areas and that the King Georges Road pedestrian crossing on the south side of the motorway has no advantage over the proposed King Georges Road pedestrian crossing on the north side of the motorway and this movement would potentially place cyclists on the opposite side of the motorway to which they wish to be on. If eastbound cyclists wish to be on the opposite side of the motorway, a crossing is available at Cooloongatta Road.

For reasons of public safety, motorway access points cannot be provided other than at motorway entry ramps. There is an existing gate in the motorway noise wall at Bexley Road, however this gate is exit only to restrict cyclists entering the wrong side of the motorway. Westbound cyclists can safely enter the motorway via M5 westbound entry ramp at King Georges Road.

Table 4-2 of the EIS identifies a number of alternative designs for the shared path that were considered during project development. The option of removing cyclists from the motorway and directing them to Welfare Avenue and then Shorter Avenue was considered (option 3). This option is not the preferred option based on the moderate cyclist benefit relative to cost (longer route, more cyclist infrastructure and an alignment partially along relatively busy roads). This option also has possible safety considerations associated with travel past a school zone (vehicle/cyclist conflict at peak school times). Additionally, this option would not provide any travel time savings over the preferred option as it would still require multiple signalised crossings of King Georges Road.

WDA and Roads and Maritime consider that re-phasing of the traffic signals at the eastbound off ramp and King Georges Road intersection would provide eastbound cyclists with a simpler, safer and more time-efficient route for crossing King Georges Road and accessing the shared path on the eastern side of the interchange.

3.6.3 King Georges Road crossings

Submission number(s)

29, 32

Issue description

In summary, the respondents raised the following issues:

- At King Georges Road the proposed method of having to make three consecutive crossings, each time having to wait for lights to change, is unacceptable for commuter cyclists
- Concern that the current option for crossing King Georges Road would cause friction with motorists and put cyclists at risk
- A recommendation that a bridge be built between the concrete island of the westbound exit and the concrete island of the westbound entry. Shorter bridges would then just need to cross the westbound exit/entry lanes themselves. Please see "Bridge route for King Georges Rd crossing.pdf" attached

Response

Section 4.3.2 of the EIS identified and considered options for alternate shared path alignments including crossings of King Georges Road.

Multiple alternatives to an "at grade" crossing of King Georges Road have been evaluated including options for bridges and tunnels across King Georges Road. Based on the numbers gained from the cycling surveys carried out for the EIS (none of the surveyed sites along the motorway registered more than 10 cyclists on an average weekday), it is not deemed practical or reasonable to provide bridges or tunnels across King Georges Road.

Furthermore, due to the width of King Georges Road (> 10 lanes), the lack of a median, current traffic volumes and road geometry it is not possible to provide a single movement pedestrian crossing. WDA is currently assessing the possibility of providing a new pedestrian crossing on the northern side of the King Georges Road interchange.

Any new crossing point would be built to current Roads and Maritime standards thereby keeping cyclists separated from motorists and providing a safe crossing point for cyclists.

3.6.4 Construction Impacts

Submission number(s)

10, 13, 25, 27

Issue description

In summary, the respondents raised the following issues

- Suggestion that construction should only take place within the motorway side of the noise walls
- Concern that there is not enough consideration of impact on residents and too much emphasis on construction accessibility
- Request that timetables of the proposed activities are made public so that residents may prepare themselves in advance
- Request that all workers vacate the area after their shifts and that the construction compounds are alcohol free. Residents would need a 24-hour complaint line if there are breaches.

Response

Chapter 6 of the EIS describes the proposed approach to construction of the project including indicative or likely staging, early works, construction methods, earthworks, material, equipment, working hours and temporary construction facilities. Detailed construction planning would occur prior to construction commencing and details of construction would be finalised at that time. The assessment was prepared to address the requirements of the Secretary of the DP&E.

The construction strategy outlined in the EIS focuses on allowing construction to occur in a safe and efficient manner while managing constructability constraints and minimising impacts, including to existing motorway users. Detailed construction planning would be undertaken by the successful construction contractor. General construction principles would be as follows:

- Achieve safe and convenient access for construction vehicles, plant and equipment along the length of the project and to and from public roads while at the same time minimising impacts.

Considerations include the impacts to road users, the effect on urban amenity and the suitability of local road pavements

- Manage risks to existing infrastructure including roads, railways, utilities and services
- Recognise that modifications to existing infrastructure come with increased risk to road user and construction personnel safety and result in more constraints to construction productivity including the need to undertake work at night and to implement traffic switches
- Manage community impacts and environmental issues including noise, access, amenity and general disruption.

To minimise construction duration and overall disruption, the construction strategy would rely on switching existing traffic to alternate sides of the same motorway carriageway to allow safe construction. It is expected that work in the central median and on the shoulders and verges would be undertaken in separate traffic management phases, although some early work on the median may be undertaken at night with the implementation of lane closures. Where possible, construction would be staged from inside the motorway noise walls, however this is not always possible, particularly with demolition and reconstruction of existing noise walls, shared path realignment and some works associated with the widening of Cooloongatta Road overbridge and Peshurst Road.

The construction program would rely upon key traffic staging, such as using the existing road shoulders and/or new road surface on the outside of the eastbound and westbound carriageways to allow median works to be completed. WDA and the construction contractor would continue to consult with affected local residents regarding the timing of specific packages of work and upcoming activities once construction commences.

A Construction Environmental Management Plan (CEMP) would be prepared for the project before work commences. The CEMP would include detailed measures to address impact on nearby residents, including disturbance created by construction personnel. The construction contractor would be responsible management of construction personnel and ensuring construction sites are cleaned up to an appropriate standard on a regular basis and this would be identified in the CEMP as part of management of site traffic and transport arrangements.

3.7 Consultation

Submission number(s)

10, 12, 27

Issue description

In summary, the respondents raised the following issues:

- Not a single resident in Elouera St (south) has been contacted or consulted or received any notification of impacts related to construction compound sites and haulage routes.
- The Beverly Hills North community requires a greater degree of real information and authentic consultation with the affected residents adjacent to the M5 and the construction sites. Full disclosure of genuine and honest plans for the M5 upgrade, and the effects on the residential community, is required.
- Nothing is stated about any consultation processes or future plans to keep the residential community informed. The Beverly Hills North residential community asks for a more genuine

process of information dissemination and authentic consultation to occur in all future proposed developments.

- A resident was concerned that they were not invited to the community information sessions.
- Concern that residents in Elouera St (south) and Aflame Street were not consulted adequately (door knocked) regarding construction site compounds. Allambee Street did not receive the mail drop of the community meetings. Accordingly, residents would appreciate from WestConnex full and timely consultation before activities commence.

Response

As identified in Chapter 7 of the EIS, consultation for WestConnex began in September 2012. Prior to and during preparation of the EIS, WDA, on behalf of Roads and Maritime, undertook consultation with the community, state and local government agencies, special interest groups and relevant industry stakeholders that have a specific interest in the project and the broader WestConnex. Further details of these consultation activities are documented in Chapter 7 of the EIS including a summary of issues raised by the community and government stakeholders.

The statutory minimum exhibition period for a State Significant Infrastructure EIS under the EP&A Act is 30 days. The EIS was publicly exhibited by DP&E between 22 October and 21 November 2014. The EIS was made available for information and comment on the DP&E website and at seven public locations as listed in Table 2-1.

During preparation of the EIS, WDA door-knocked 92 residences in the immediate vicinity of each proposed construction compound site (including Elouera Street north and Allambee Crescent) on 14 August 2014. Calling cards were left at any residences where there was no answer. This door-knocking did not include all residences along each of the proposed haulage routes. About 6,000 residences were letterbox dropped community updates in July 2014 and October 2014. The community updates invited residents to contact the project team should they have any questions and an invitation to attend the community information sessions during the EIS display (see Table 2-2).

Community information sessions were also advertised in a range of local and community language newspapers (see section 2.2). Furthermore, an additional 2,200 contacts on the WDA database were sent an invitation to the community information sessions.

Local libraries and Council chambers were provided with hard copies of the community update and the local schools were provided with information for their newsletters regarding the community information sessions. Finally, the WDA WestConnex website was also updated for the EIS exhibition period to provide links to both the EIS (on DP&E's website) and information on the community information sessions.

The community information sessions gave community members the opportunity to view detailed maps and construction information, and to talk about project details with WDA project staff including technical specialists.

WDA has and would continue to consult with a range of special interest groups and with relevant industry stakeholders that have a specific interest in the project and WestConnex more broadly. Throughout the design and approval process for the WestConnex New M5 there would be opportunities to provide formal feedback during consultation period. These consultations would be advertised online, in local newspapers, and on the WestConnex website.

Section 2.2.1 of this report outlines key involvement activities planned during future consultation. Furthermore, Section 7.5.3 of the EIS and Appendix D, the Draft Community Consultation Framework provide information about community involvement during construction.

3.8 Traffic and Transport

3.8.1 Traffic modelling and assessment

Submission number(s)

4, 5, 28, 30

Issue description

In summary, the respondents raised the following issues:

- How does the Sydney Strategic Transport Model referred to in section 8.1.1 of the EIS account for changes in travel patterns over time i.e. less reliance on cars due to increased public transport, increased cost of fuel, consideration of environmental impacts by drivers?
- The assessment methodology in section 8.1.1 of the EIS only considers predictions with the proposed project or without the proposed project and does not include other alternatives. This significantly limits the methodology
- Comparative figures indicate an increase in travel times across all travel scenarios, which directly contradict WestConnex Public Liaison Spokesperson claiming that 'congestion on King Georges Rd will be improved by the Interchange Upgrade.' This statement was based upon the increase in the capacity of the M5 eastern 'on ramp' to hold more traffic and therefore reduce the number of vehicles congested on King Georges Road.

Response

The assessment methodology used for construction and operational traffic assessment is outlined in Appendix E – Traffic and Transport working paper and summarised in section 8.1.1 of the EIS. The assessment was prepared to address the requirements of the Secretary of the DP&E.

Section 8.1.1 of the EIS explains that the operational traffic and transport impacts were evaluated using traffic demand data from the WestConnex Road Traffic Model (WRTM). This is a project specific model developed to forecast road traffic demands for the WestConnex projects including the King Georges Road Interchange Upgrade. The WRTM uses the Sydney Strategic Transport Model (STM) for base demand and includes the capability to address changes in land use, trip distribution and mode choice as well as producing vehicle traffic demand during peak and off peak periods. The WRTM also models the range of anticipated driver behaviour to toll strategies and forecasts traffic choice between toll and non-toll routes during peak and inter-peak periods.

The WRTM model was developed and calibrated to current observed travel behaviour (including route choice and traffic counts collected in 2013), then validated against 2012 Sydney-wide travel behaviour. It was then adjusted to reflect driver behaviour on toll roads observed in Value of Travel Time Surveys (VTTS). Future demand was forecast by applying the model with future year traffic growth assumptions from the STM.

The STM is a world class tool, operated by the Bureau of Transport Statistics (BTS), for projecting travel patterns in Sydney, Newcastle and Wollongong under different land use, transport and pricing scenarios. It can be used to test alternative settlement, employment and transport policies,

to identify likely future capacity constraints, or to determine potential usage levels of proposed new transport infrastructure or services.

The STM, built largely in the Emme transport modelling software, is a series of models and processes that attempt to replicate, in a simplified manner, people's travel choices and behaviour under a given scenario. The STM combines our understanding of travel behaviour with likely population and employment size and distribution, and likely road and public transport networks and services to estimate future travel under different strategic land use and transport scenarios

The STM's basic geography is the travel zone. All demographic input data, mostly sourced from the BTS, is at travel zone level. There are 2,690 travel zones (2011) in the current STM, which produces estimates of travel to and from each travel zone from and to every other travel zone, as well as travel within zones. This travel is then assigned within the model to the transport network.

The STM uses detailed current demographics to synthesise households of different types. This allows for very powerful forecasting of the travel behaviour of different market segments. The BTS uses its population projections to grow these different household types across the GMA.

Current year employment is known from the Journey to Work (JTW) census data. Workplaces are one of the key travel destinations. It is therefore important to know where workplaces are likely to be located in the future, and how their distribution may change. BTS's Employment Projections are used in the STM to identify the location of future employment, and are an important component of the commute travel model.

The Household Travel Survey, running continuously since 1997, collects comprehensive information on the daily travel patterns of residents of the Greater Metropolitan Area (GMA). Data from the HTS forms the basis of most of the behavioural models and other factors in the STM:

- Estimation of the travel behaviour characteristics of the population in terms of amount of trip making, travel mode choice (eg. car, train, bus, walk) and where they travel to (destination choice), which can then be used to predict future travel patterns
- Estimation of license holding and car ownership models as these are important factors of the mode choice behaviour
- Estimation of trip purpose factors (work, education, shopping, etc.), trip length distributions and the like
- Estimation of time of day trip factors for modelling peak/off-peak period travel.

A state of the art travel model such as the STM would not be possible without a rich, high quality data source such as the Household Travel Survey.

The five-yearly Census provides the STM with origin and destination by mode for base year travel to work patterns. This data set thus provides the starting point (currently in 2011) for the work travel matrix. The JTW data is also used to validate the work model parameters, estimated using Household Travel Survey data only.

Freight Movement Model (FMM) covers freight movements by professional drivers that are not in the scope of the HTS. Freight movements are not modelled in the STM, but input as a fixed OD matrix. Once the freight matrix is added to the passenger matrix, they are jointly assigned to the road network. The additional freight traffic affects travel times, which are then fed back into the next iteration of the model, affecting trip generation, mode, destination and route choice for non-freight movements.

Additional information regarding the assessment of public transport alternatives is provided in section 3.5.2 of this report.

Section 4.3 of the Traffic and transport working paper outlines the results from travel time surveys carried out along King Georges Road between Canterbury Road in the north and Stoney Creek Road in the south. Table 7.6 in the Traffic and transport working paper then compares predicted travel times for the 2017 'do minimum' and 2017 with project scenarios. The comparison of travel times shows that:

- Travel times along King Georges Road are expected to increase between 2014 and 2017 under a "do minimum" scenario
- Travel times for both AM and PM peaks along King Georges Road show a significant improvement with the project compared to the do minimum scenario

Furthermore, travel time results for the fully completed WestConnex in 2027 show significant improvement compared to the Future 'do minimum' scenario. King Georges Road northbound travel times decrease by approximately three minutes in both the AM and PM peak periods.

3.8.2 Western Sydney Airport (Badgerys Creek)

Submission number(s)

4, 5, 28, 30

Issue description

In summary, the respondents raised the following issues:

- The EIS has not taken into account current or proposed developments nor the future Airport at Badgerys Creek, which could significantly reduce travel from Western Sydney to the CBD and Sydney Airport.
- There is no mention of the proposed second airport and what this might do to alleviate traffic predictions into/out of the existing airport and port.

Response

As described in section 3.9, operational traffic and transport impacts were evaluated using traffic demand data from the WestConnex Road Traffic Model (WRTM).

The WRTM model was developed and calibrated to current observed travel behaviour (including route choice and traffic counts collected in 2013), then validated against 2012 Sydney-wide travel behaviour. It was then adjusted to reflect driver behaviour on toll roads observed in Value of Travel Time Surveys (VTTS). Future demand was forecast by applying the model with future year traffic growth assumptions from the STM.

An integral part of the modelling process was the involvement of independent expert peer reviewers to examine model development, methodologies for the production of traffic forecasts and the traffic forecasts. The independent review committee included an independent expert Denis Johnston and Professor David Hensher of Sydney University Institute of Transport and Logistics Studies. These committee members are recognised experts in the field of toll road patronage forecasting and transport behavioural choice modelling.

Traffic modelling for the King Georges Road Interchange Upgrade has relied on population and employment data from the Bureau of Transport Statistics (BTS), which is the best information currently available but which does not currently include the some urban revitalisation / activation initiatives or the proposed airport at Badgerys Creek. Development of detail for these land use changes is progressing but is not yet available. Preliminary assessments for both have been carried out subsequent to the EIS modelling and neither has materially changed the need, function or performance of the proposed WestConnex project.

3.8.3 Proportion of freight versus car traffic

Submission number(s)

5, 28, 30

Issue description

Section 8.1.3 doesn't detail the proportion of freight vs car traffic, making it hard to determine the impacts of each type of traffic within the scope of the EIS.

Response

The proportion of Heavy Goods Vehicles (HGVs) using King Georges Road is forecast to increase in future years if WestConnex were not constructed. This is due to the fact that the A3, of which King Georges Road forms part, is the principle route used by vehicles traversing from the M4 Motorway corridor to the M5 Motorway corridor and vice versa.

A reduction in the proportion of HGVs using King Georges Road is anticipated to occur following the completion of WestConnex as shown in Table 3-1 below. The additional connectivity that WestConnex provides between the M4 Motorway and M5 Motorway corridors results in an overall reduction in traffic volumes and also a reduction in the proportion of HGVs using King Georges Road and the A3 overall.

Table 3-1 Percentage of HGVs during peak periods

Peak period	% Heavy Goods Vehicles (HGVs)				
	Do minimum			2017 with project	2027 full WestConnex
	2014	2017	2027		
AM Peak (average of 2 hrs)	5.7%	6.5%	7.4%	6.5%	6.5%
PM Peak (average of 2 hrs)	4.0%	4.9%	5.1%	4.9%	4.2%

3.8.4 Travel time savings

Submission number(s)

4

Issue description

The quoted travel time saving is unduly generous as they assume free flowing traffic at either end of the project which would not occur until the entire project is completed.

Response

With the project, average speeds on the network are maintained at a higher level. The travel time results for 2017, outlined in Section 8.1.6 of the EIS show improvement for all routes with the project compared to the 'do minimum' scenario. Eastbound M5 Motorway travel times in the AM

peak show the most improvement, demonstrating decreased congestion for this route with the project implemented.

Furthermore, the performance of the network in 2027 with the fully completed WestConnex is better than it would be if the project were not constructed despite the increased traffic demand expected over the preceding 10 year period.

King Georges Road northbound travel times decrease by approximately three minutes in both the AM and PM peak periods once the full WestConnex scheme is completed.

The new WestConnex New M5 tunnel would not connect to General Holmes Drive rather it follows a route to the north of Sydney Airport. With WestConnex, traffic using the existing M5 East tunnel would have the opportunity to use the new tunnel as an alternate route thereby diminishing the volume of traffic that emerges from the M5 East onto General Holmes Drive.

3.8.5 Impacts to King Georges Road

Submission number(s)

4, 9, 10, 20

Issue description

In summary, the respondents raised the following issues:

- The proposal does not provide for any upgrade of King Georges Road , especially at current pinch point. King Georges Road pinch points should be fixed before upgrading the Interchange.
- There are no proposals in the EIS to suggest there are any changes to the performance of King Georges Road, other than delivering more traffic. With the 3 lanes being reduced to 2 lanes by parking zones at both Beverly Hills and Wiley Park shopping area, the proposal appears to move the congestion from the MS, onto King Georges Road, that is, localizing the traffic congestion.
- Concern that the project does not fix traffic issues on King Georges Road. This community calls for a long-term plan of widespread traffic measures to address the present and future traffic congestion problems in the New M5 King Georges Road precinct, prior to the commencement of any construction work on the Interchange Upgrade project
- Publicised forecast of “reduce travel time at the intersection from as much as six and a half minutes, a 49 percent ravel time saving, at the intersection. This is moving the same congestion onto King Georges Road and local residential roads. Without any changes to the operation of King Georges Road, this flow--on effect will produce greater local traffic congestion. This issue has not been addressed.
- Concern that there will be an increase in the volume of traffic from the M5 onto KGR that will impact local roads as more cars will take short-cuts and gridlock the suburbs during peak hours, in turn affecting the safety of local residents Also concerned that the final solution of WestConnex will not be delivered until 2027.

Response

The description of the project is provided in Chapter 5 of the EIS. The project does not include any direct work on King Georges Road.

The King Georges Road Interchange Upgrade project provides additional vehicle queuing capacity by extending all entry and exit ramps as well as the M5 Motorway carriageway itself.

These improvements to ramp configuration would reduce queuing of traffic entering the motorway and remove the impediment to through traffic on King Georges Road, improving its operational performance.

Roads and Maritime Services have completed a package of work aimed at improving pinch points along King Georges Road between Forest Road and Punchbowl Road. The *Pinch Point Program* targets peak hour traffic hotspots and investigates ways to relieve traffic congestion. The Roads and Maritime website provides further information and an interactive map at:

<http://www.rms.nsw.gov.au/projects/key-build-program/pinch-point-program/index.html>

Overall demand on the road network would continue to grow strongly. It also shows that without the project, network performance would continue to decrease with average speeds in 2027 falling to approximately 10km/h in both the AM and PM do minimum scenarios.

With the King Georges Road Interchange Upgrade, average speeds on the network are maintained at a higher level. Furthermore, the performance of the network in 2027 with the fully completed WestConnex is better than in 2017 without the project despite the increased traffic demand expected over the preceding 10 year period.

As outlined in Section 8.1.6 of the EIS, the travel time results for 2017 show improvement for all routes with the Project compared to the situation without the project. Eastbound M5 Motorway travel times in the AM peak show the most improvement, demonstrating decreased congestion for this route with the project implemented.

The travel time results for the fully completed WestConnex in 2027 also show significant improvement compared to the case without the project. King Georges Road northbound travel times decrease by approximately three minutes in both the AM and PM peak periods. With the project and WestConnex implemented, King Georges Road southbound traffic would experience travel time savings of approximately four minutes in the AM and five minutes in the PM peak period.

The operational performance of intersections along King Georges Road is generally improved with the fully completed WestConnex in 2027 compared to the case if WestConnex were not built. These improvements occur despite the increased traffic demand that would arise under the Full WestConnex scenario.

The above findings demonstrate that the project as a component of WestConnex would not move congestion onto King Georges Road, rather the opposite is true.

3.8.6 Tolling

Submission number(s)

4, 6, 270

Issue description

In summary, the respondents raised the following issues:

- The tolling charges shown in the EIS for WestConnex are high with trucks paying three times what a car will pay. This could lead to user resistance which we have seen with the Lane Cove Tunnel.
- Unfair way in which roads are tolled in Sydney - some are free while some are expensive.

- Requests that WestConnex support use of public transport via significant hike in tolls during peak hour, scrapping the M5 cash-back scheme and tax deduction for tradesmen where public transport is not an option.

Response

As outlined in section 6.3.11 of the EIS, the project allows for provision for tolling infrastructure for WestConnex New M5 (ie footings and base plates), however the installation of toll gantries or collection of tolls from road users does not form part of this project.

WestConnex is being delivered using a mix of public and private financing.

The NSW Government has established the Sydney Motorway Corporation to manage the State's investments in tolled motorways including WestConnex. Private debt and equity capital is being raised over time, secured against the future toll revenues from WestConnex.

In developing the WestConnex Business Case in 2013, a reference tolling strategy was adopted by the NSW Government. This was used to support traffic modelling and financial modelling for WestConnex. The three key principles underpinning the reference tolling strategy are set out in Table 3.2 below. WDA is currently undertaking more detailed work to maximize benefits for customers while ensuring that the financing structure remains sustainable.

The Government has confirmed that tolls would not be charged on the existing M5 East before 2019.

Table 3-2 Tolling principles for WestConnex

Principle	Rationale
Minimum and maximum tolling	Tolling on WestConnex will be capped to ensure equity for people travelling longer distances each day and will include a minimum toll.
Distance based	Distance-based approach already operates on the M7 Longer trips provide greater benefits
Cars pay less than trucks	Cars will pay one third of the truck toll, reflecting the greater wear and tear trucks have on the motorway This is consistent with the M2 and M5 West

3.9 Noise and Vibration

3.9.1 Noise and vibration assessment methodology

Submission number(s)

5, 28, 30

Issue description

In section 8.2.3 of the EIS the project is defined as redevelopment of an existing road for the purpose of the EIS, but is clearly referred to as part of WestConnex in other areas of the EIS. This is an inconsistent approach to assessment.

Response

The methodology used to assess operational noise and vibration is outlined section 8.2.3 of the EIS and Appendix F - Noise and vibration working paper. The assessment was prepared to address the requirements of the Secretary of the DP&E.

The project area has been defined as 'redeveloped' as per *Practice Note (i)* of the *Environmental Noise Management Manual* (ENMM). Within the ENMM, "new" roads are defined in as roads on new road corridors — or corridors not previously used for the same category of road, such as an arterial road being built on the corridor of what was previously a local road — and existing roads that are being "substantially" realigned.

"Redevelopments" are defined as works "where it is proposed to increase traffic-carrying capacity, change the traffic mix or change the road alignment through design or engineering changes", but expressly do not include "minor road works designed to improve safety, such as straightening curves, installing traffic control devices or making minor road [re]alignments".

As per these definitions, the widening works and changes to the on and off ramps at the King Georges interchange are classified as redeveloped.

3.9.2 Complaints about noise from the motorway

Submission number(s)

9, 11, 14-24, 25

Issue description

In summary, the respondents raised the following issues:

- General concern about noise on the motorway
- Concern about noise coming from the motorway corridor and a request that noise walls are made taller and that pneumatic braking by trucks is banned and policed.

Response

The NSW Government shares the community's concerns about truck noise and its effect on the community.

In response to community concerns, the NSW Government is working on a range of education and enforcement measures to reduce noise from freight vehicles. It is estimated that less than two per cent of the heavy vehicle fleet have engine brakes that emit excessive noise, but it is very intrusive and creates a significant impact to affected communities.

Unfortunately, noise walls are not effective at reducing the characteristic low frequency bark from excessively noisy heavy vehicle engine brakes. Roads and Maritime Services have developed noise camera technology to detect vehicles that emit excessive engine exhaust brake noise. This technology has been trialled at Mt Ousley and Woolgoolga on the north coast. A relocatable noise camera system has also been developed and trialled.

Transport for NSW and Roads and Maritime are also working closely with other states and territories and the National Transport Commission to implement a national standard for engine brakes. This standard was approved by the Australian Transport Council in 2007 and reviewed by the National Transport Commission in May 2013.

Roads and Maritime Services is hopeful that the National Transport Commission would prepare amendments to the National Heavy Vehicle Legislation to provide for regulation of engine brake noise. The NSW Government is following this process closely. A State-wide rollout of the noise

camera system would be considered to assist in enforcing the new standard when legislation enabling its regulation is in place.

3.9.3 Noise wall heights and noise wall optimisation

Submission number(s)

10, 14, 25, 27

Issue description

In summary, the respondents raised the following issues:

- The Beverly Hills North Progress Association calls for a review of the proposed noise mitigation plans to better accommodate the needs of the community. Retention of the current noise mounds accommodate the needs of the community. Retention of the current noise mounds and a full 5 metre noise wall no closer to residents' homes is required
- The proposed height of the noise barrier adjacent to Elouera Street S is to increase by only 0.5 m. This is far lower than the walls on the other side of the M5 which are approx. 5 m. By increasing these noise barriers to a greater height the noise of the M5 will be more significantly deflected away from residential areas
- The diagram of the planned noise walls, east of Cooloongatta Road, opposite Elouera Street South, indicates the noise wall has a 'kink in it and is moved closer to resident's homes, than the existing noise wall. There is concern that this is a cost saving measure and there is no need to move the noise wall closer to residents. All measures must be taken to preserve the native planting area closer to residents' homes and retain the current location of all noise walls.
- A request that noise barriers are not moved closer to residences, noise barriers are significantly higher than current and that noise barriers are a combination of mound and wall and that new noise walls are constructed at the end of Tallawalla Street near the factory sites as this is also a current source of noise.

Response

This project has been assessed using the *NSW Road Noise Policy* and the ENMM. The mitigation measures have been determined in accordance with these frameworks. Table 8-18 of the EIS outlines the noise barrier design for the project based on a noise wall optimisation methodology carried out in accordance with the guidelines in the ENMM to determine feasible and reasonable modifications to the noise walls. A more descriptive outline of the noise wall optimisation process and the requirements of Practice Note IV of the ENMM is outlined in section 9.2 of Appendix F – Noise and vibration working paper of the EIS.

The project would introduce low noise pavements through-out the project area and it would retain all existing noise walls at their current heights. One new noise wall on top of an existing mound would be installed where previously no noise wall existed.

The relative heights of residential receivers and road pavements are different on either side of the motorway, so the heights of noise barriers vary either side of the motorway. The majority of residential receivers eligible for noise treatment (at project opening in 2017) are located in NCA08 (south of the motorway to the east of Cooloongatta Road). The existing noise barrier adjacent to these houses was considered in order to provide additional noise mitigation. The optimised height of the barrier was determined to be three metres and was found to provide reasonable noise benefit.

The noise wall kink is located to transition between a standard noise walls arrangements to a noise wall located on a piled retaining wall. WDA consider the proposed wall location allows adequate landscaping opportunity with native vegetation species to minimise visual impacts at this location. However, the exact details of the location, height and construction of the noise barrier would be determined during detailed design (refer environmental management measure REF# NV-1 in section 8.2.6).

No reasonable or feasible benefit was identified by increasing the height of noise walls. All existing noise walls would be retained at the existing height. Further discussion regarding residential receivers near Cooloongatta Road overbridge is provided in section 3.9.5 of this document.

A new three metre high noise wall would connect to the existing noise wall adjacent to Elouera Street.

The industrial complex at the eastern end of Tallawalla Street is beyond the scope of the project. As shown on Figure 8-2 of the EIS, the noise catchment areas identified for the project do not extend as far as the factory complex at the end of Tallawalla Street.

WDA has recently lodged a planning application for WestConnex New M5 seeking State Significant Infrastructure Status under the EP & A Act. The study area for the New M5 EIS is likely to include residential areas to the east of the King Georges Road Interchange Upgrade project area, including the eastern end of Tallawalla Street.

3.9.4 Architectural treatments

Submission number(s)

10, 13, 25

Issue description

In summary, the respondents raised the following issues:

- For the majority of these residents the proposal of 'additional noise mitigation', meaning adjustments to windows and doors of their actual residents in not an acceptable compensation for the increase in noise levels being created by the M5- King Georges Road upgrade. The noise mitigation must be deployed further away from the resident's homes and properties and be incorporated into the whole construction plan, (i.e. a more effective noise mitigation system), as identified above.
- Number 4 Elouera Street South is not currently entitled to noise mitigation measures although neighbours will receive this. However Number 4 is closer to the bridge opening and the same distance to the road once extended. States that No 4 should be more thoroughly assessed to receive these noise mitigation measures.

Response

Section 8.2.5 of the EIS outlines a number of noise mitigation options available for the project. As outlined in the Road Noise Policy (RNP), feasible and reasonable mitigation measures in the following order of priority should be considered:

- Road design and traffic management
- Quieter pavement surfaces
- In-corridor noise barriers/mounds
- At-property treatments or localised barriers/mounds.

Each of these possible mitigations is outlined for the project. The ENMM notes that the most effective way of minimising noise from vehicles and traffic is to control vehicle noise at the source (mufflers etc). Where source measures are not practical, or do not provide sufficient noise reductions, additional methods are required to reduce noise levels and may include the use of noise barriers and/or acoustic treatment of residences.

The road surface material is subject to further investigation and detailed design, but is likely to be open-grade asphalt on the motorway carriageways, which results in a quieter pavement surface.

Noise barrier location is constrained on either side of the motorway by existing land uses and the requirements of widening the motorway. The location of re-built and new noise walls has considered these factors, Walls are located to minimise encroachment on residences while allowing for construction access and widening of the motorway.

The acoustic treatments provided by Roads and Maritime (and therefore WDA) typically include upgrading of windows, glazing and solid core doors on the exposed facades and upgrading window or door seals and appropriately treating sub-floor ventilation.

Based on the assessment provided in the EIS, no properties along Elouera Street (south) require at house property treatments. If engineering constraints or changes to the final project design affect noise wall locations or extents then the noise impacts and requirements for noise mitigation would be re-assessed during detailed design.

During the detail design a further feasible and reasonable review of architectural treatments would be completed. Each barrier design is subject to further considerations during detailed design such as landscaping, overshadowing, structural footings and community views.

3.9.5 Noise walls on Cooloongatta Road overbridge

Submission number(s)

13, 14, 25

Issue description

In summary, the respondents raised the following issues:

- Resident wants a perspex noise screen along the entire length of Cooloongatta Rd
- Concern about the impact of the works on Cooloongatta Rd overbridge would have with regard to increased noise from the motorway and requests a noise screen to be extended across the whole bridge
- The Beverly Hills North residential community requires a five metre high noise wall to be constructed on top of the existing 1.5 metre noise mound as a minimum consideration of the impact that the increase in traffic noise will have on the residents.

Response

Priority noise mitigation measures (road design/traffic management and quieter pavement surfaces) have been considered for all sensitive receivers where predicted noise levels in the Build scenarios are above the RNP noise goals. The use of a low noise pavement on the M5 Motorway and majority of the access ramps throughout the KGRIU project area are proposed as part of the design of the project in order to mitigate road traffic noise at source and therefore benefit receivers adjacent to the motorway.

Additional feasible and reasonable noise mitigation measures, including noise barriers and property treatments, have been considered for receivers which qualify on the basis of predicted residual noise levels and/or project related increases in noise.

The majority of the eligible receivers (21 of the total 24 receivers) in the 2017 scenario are located in NCA08 (south of the motorway to the east of Cooloongatta Road). A noise barrier adjacent to these receivers has been considered in order to provide additional noise mitigation. The optimised height of this barrier was determined to be three metres, and was found to provide a reasonable noise benefit.

Further to the inclusion of the optimised project noise barrier a total of six residential receivers are predicted to be eligible for property treatment as part of the project. This number comprises:

- Three residential receivers in NCA03 (north of the motorway to the west of King Georges Road)
- Three residential receivers in NCA08 (south of the motorway to the east of Cooloongatta Road).

On the basis of the RNP noise goals and ENMM noise mitigation guidelines additional noise walls were not found to be feasible or reasonable along the Cooloongatta Road overbridge.

3.9.6 Construction noise and vibration impacts

Submission number(s)

13, 14-24,

Issue description

In summary, the respondents raised the following issues:

- Concern that vibrations caused by heavy machinery would destabilise the foundations of nearby structures
- Concerned about noise walls being removed during construction period
- Requests for compensation and further information regarding compensation for residents impacted by noise during construction.

Response

Section 8.2.4 of the EIS explains that the separation distance(s) between the construction activities and the nearest receivers would generally be sufficient so that nearby buildings are unlikely to suffer 'Cosmetic Damage' for most of the proposed construction equipment. However, some items of construction equipment may be operated within the recommended safe working distances. As documented in Table 35 of Appendix F - Noise and Vibration Working Paper, vibratory piling work during construction of new piers and abutments for Cooloongatta Bridge may be within the nominated cosmetic damage safe working distances of receivers in NCA 07.

Attended vibration monitoring or vibration trials would be undertaken when proposed works are within safe working distances to ensure that the vibration levels remain below the criterion. Building condition surveys would also be completed both before and after construction at any potentially affected properties to identify existing damage and any damage that could be attributed to the project.

Additionally construction noise mitigation and management measures would be implemented to minimise the extent of exceedances identified above and would be included in the Construction Noise and Vibration Management Plan (CNVMP).

Section 8.2.6 of the EIS outlines a number of project-specific management and mitigation measures that have been developed with the aim of minimising or mitigating, as far as practical, the noise and vibration impacts during construction. Additional construction mitigations have been added to mitigate construction noise and are outlined in Chapter 7 of this report.

In developing the CNVMP, the construction contractor must identify measures to minimise noise impacts associated with removing existing noise walls. Measures may include use of temporary noise barriers where feasible.

All work would be undertaken in accordance with Practice Note VII of the ENMM – *Roadworks outside normal working hours*. Practice Note VII outlines a series of construction programming requirements to assist mitigating noise impacts to nearby receivers. These include:

- Works to be programmed in a manner that would not affect any single dwelling or group of dwellings, flats, units and other places of residence on more than two consecutive nights, or on more than a total of six nights over a period of one calendar month
- When night work is programmed in stages to comply with this requirement, the periods of work should be separated by not less than one week.

Circumstances may arise during construction where works outside of standard construction hours are essential and sensitive receivers are assessed to be highly noise affected. Should this be the case, opportunities to minimise impacts on highly noise affected receivers would be considered which may include provision of alternative accommodation.

3.10 Biodiversity

3.10.1 Impacts to Downy Wattle

Submission number

2, 26

Issue description

In summary, the respondent raised the following issues:

- Concern that the EIS misrepresents the projects impact to Downy Wattle (*Acacia pubescens*) as this species is extremely rare
- *Acacia pubescens* is stated as 'known to be planted within the community' The source of this information is not indicated after this statement
- During the initial construction of the M5, *Acacia pubescens* naturally occurred both within and outside the then construction footprint, and some plants that were under direct threat were translocated to adjacent or nearby 'safe' areas. In the absence of DNA testing of a number of the *Acacia pubescens* plants, it must be regarded as likely that some of what are declared to be "known to be planted" are in fact not planted but remnant plants

Response

A Biodiversity Assessment was undertaken for the EIS (Appendix G). The assessment was prepared to address the requirements of the Secretary of the DP&E and prepared in accordance with the *Draft Guidelines for Threatened Species Assessment* (Department of Environment and Conservation/Department of Primary Industries 2005) and *Threatened Biodiversity Survey and*

Assessment: Guidelines for Developments and Activities (Department of Environment and Conservation 2004).

Ecological reports and government-maintained databases were reviewed as the first stage of the biodiversity assessment. The review focused on identifying and listing the threatened flora and fauna species, populations and ecological communities previously recorded within a 10 km radius of the project. In particular, the biodiversity assessment carried out for the recently completed M5 West Widening Project (Eco Logical, 2010) was reviewed due to the overlap between the study areas of that project and the King Georges Road Interchange Upgrade. That assessment identified that Downy Wattle in the study area was most likely planted as part of a compensatory habitat package from the original M5 West Motorway construction. The correct reference for that assessment is provided in the Reference list for the report.

The project's biodiversity assessment identified that nine Downy Wattle individuals are present within the proposed construction footprint or adjacent areas potentially impacted by the project. Impacts to this species are likely to occur due to the construction of noise walls west of Penshurst Road. All Downy Wattle individuals identified within the study area are planted individuals, planted as part of landscaping works for the M5 Motorway.

A loss of nine individual plants as part of the project is not expected to lead to a long term decline of the population or reduce the area of occupancy of the population. The study area is already highly modified, does not constitute natural habitat for this species and is not defined as habitat critical for the survival of this species.

WDA (on behalf of Roads and Maritime) would commit to preparation of a Downy Wattle Management Package to address all of the requirements as set out in the OEH submission (see Chapter 4).

3.10.2 Impacts to vegetation communities

Submission number

2, 10, 14, 26, 31

Issue description

In summary, the respondent raised the following issues:

- The EIS states that woodlands habitat in the project areas is degraded but this is only due to the existing motorway. As such, the existing woodland habitat should be restored.
- Comment that remnants of the Cooks River /Castlereagh Ironbark Forest community are generally disturbed due to past land management practices and the poor condition of this community should not be used as a justification for further impact
- Condition assessments need to also be made with reference to concepts of ecosystem resilience, especially in the case of shale-based plant communities which have a documented ability- via their resilience to frequently persist and regenerate with suitable management (such as instigating triggers), even after periods of grazing, mowing, adjustment,
- General concern regarding the removal of bush land/mature vegetation in the study area
- No mention is made in the documents about the contribution to the "heat island effect" that the removal of this type of vegetation (in addition to the 0.01 hectares of EEC vegetation) will have in this locality. The current 'M5 Linear parkland/way' will be diminished, and along with this, this resultant localized heat island effect will deter many from using what remains of the linear parkland/way.

Response

The ecological surveys identified in Table 9-1 of the EIS were conducted as part of the biodiversity assessment. Survey locations and a summary of the survey effort undertaken within the study area are outlined in Chapter 2 of the Biodiversity Working Paper (Appendix G of the EIS). Ecological surveys included:

- Stratified sampling techniques to classify and map vegetation communities, threatened species habitat and develop an inventory of flora species specific to each vegetation association
- Vegetation association classification and mapping which included transect sampling to identify vegetation community types and boundaries
- Threatened Ecological Community assessment
- Vegetation and habitat condition assessments.

Assessments of significance for threatened flora and fauna, and ecological communities are also presented in Appendix G. These were prepared as per the requirements of the *Draft Guidelines for Threatened Species Assessment* (Department of Environment and Conservation/Department of Primary Industries 2005), and *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (Department of Environment and Conservation 2004).

The assessment of vegetation communities identified that much of the existing remnant vegetation has experienced a high level of disturbance from urban development which has altered the species composition and vegetation structure of any remnant vegetation in the study area. About 0.01 ha of low condition Cooks River/Castlereagh Ironbark Forest would be impacted from construction activities.

A range of mitigation and avoidance measures have also been provided. In managing biodiversity, the project aims to:

- Avoid and minimise impacts first.
- Mitigate impacts where avoidance is not possible.

Specific avoidance and minimisation measures associated with the design of the project generally comprise avoidance of vegetation clearance during construction. The proposed design of the works in several locations would avoid the need to remove planted vegetation in a number of locations. Further placement of proposed construction compounds has been selected to avoid impacts to native vegetation.

Furthermore, WDA (on behalf of Roads and Maritime) would commit to preparation of a Downy Wattle Management Package to address all of the requirements as set out in the OEH submission (see Chapter 4).

The assessment was prepared to address the requirements of the Secretary of the DP&E. The Secretary's requirements did not require an assessment of potential heat island effects. The project is an upgrade of existing infrastructure requiring minimal additional footprint. Furthermore the project is responsible for approximately 3.23 hectares of vegetation. As such, it is considered unlikely that there would be a noticeable impact on heat island effects in the study area.

3.10.3 Impact to Grey Headed Flying Fox

Submission number

26

Issue description

Comment that trees in the corridor are used by Grey Headed Flying foxes from the Turella flying fox camp, approximately five kilometres to the east. Removal of vegetation in the study area would have an effect on the availability of food resources, especially that provided by the native trees, possibly leading to conflict with local residents

Response

A significance assessment was carried out for the Grey-headed Flying fox (see appendix G of the EIS) which identified that there would not be a significant impact to this species. The biodiversity assessment identified that likely that the Grey-headed Flying-fox would utilise available feeding resources throughout the study area however the removal of about 3.23 hectares of vegetation of low to very low condition would not impact on the viability of this species.

Furthermore, mortality due to vehicle strike during operation of the upgraded intersection is considered to be rare considering the low abundance of fauna species. Impacts to mobile species such as Grey-headed Flying-fox are not considered to substantially increase from the existing levels associated with the M5 Motorway and adjoining road network.

3.11 Socio-economic

3.11.1 Construction and operational assessment

Submission number

5, 30

Issue description

In summary, the respondent raised the following issues:

- The assessment of socio-economic impacts in section 9.2 is patchy. The business and employment portion references WestConnex, whereas other areas of this assessment only focus on the project itself.
- All socio-economic environmental management measures in section 9.2.4 are related to construction and none provided for operation.

Response

The Socio-economic Assessment Working Paper (Appendix H of the EIS) was prepared following the Roads and Maritime Services *Environmental Assessment Practice Note – Socio-economic assessment (EIA-N05)*. The study area for the socio-economic assessment was defined based on those communities that have potential to experience changes to socio-economic conditions due to the location of project work, construction activities, or changes to local movement patterns for residents, workers and visitors.

The assessment was prepared to address the requirements of the Secretary of the DP&E.

As outlined in section 9.2.3 of the EIS, there are no businesses or industrial sites located near construction compounds and laydown areas. Additionally, no businesses would be directly impacted from the construction works.

Local businesses may be affected by changes to traffic conditions associated with construction works. In particular, periodic lane closures, reduced speed limits and general local area disruption could discourage customers from using local businesses near the project. The majority of construction work would be within the motorway corridor and impacts to local businesses would be limited to local area disruption associated with construction vehicles accessing the construction sites (ie there is no work planned directly adjacent to businesses on King Georges Road and access to those businesses would not be restricted by the project).

As such, the assessment of impacts on businesses tended to focus more on potential impacts, including benefits to local and regional businesses as a result of the full WestConnex project.

Construction of the project (and WestConnex) may have a positive effect for some local businesses through increased demand for local goods and services. Furthermore, the project would provide employment benefits directly through the creation of construction-related roles on the project and indirectly through the generation of employment opportunities in businesses that support construction work. It is anticipated that the project would employ about 100 construction workers and would generally comprise labourers, plant operators, tradesmen, technicians and supervisors.

Other issues addressed in the socio-economic assessment, such as local amenity and access and connectivity are generally referenced as being assessed in detail in other chapters of the EIS – such as traffic and transport and noise and vibration. These assessments generally relate to more localised issues and as such are primarily assessed at the local level.

The EIS did not identify any ongoing impact to social infrastructure or community values as a result of operation of the project operational impacts. As such, there were no mitigation measures provided.

Dust from construction activities for residents located near to construction compounds and construction works has been identified as a potential impact. The magnitude of dust impacts would depend on the amount of earthwork involved at a particular location, the duration of activities, and the local meteorology at the time, particularly wind speed and direction. However, the impacts of construction would be temporary.

A range of mitigation measures for managing dust are outlined in section 9.6 of the EIS. The mitigations outlined are considered sufficient to manage dust during construction.

3.12 Visual amenity, built form and urban design

3.12.1 Existing landscaped gardens

Submission number(s)

10, 25, 27

Issue description

In summary, the respondents raised the following issues:

- Concern about damage and impact to mature gardens near Cooloongatta Bridge (Elouera Street South) and would appreciate precise details on what plantings are to be removed, that

care be taken to minimise destruction, and a guarantee that the garden be reinstated to its pristine condition as soon as possible and watered during the establishment period.

- Request that mature trees remain in place as they add value to local amenity
- Photos provided in EIS Volume 1 Section 9.3.5, Fig 9-8 comparing existing and indicative impressions at Observer Location 2 (Kirrang St), are incorrect and misleading. They indicate a full retention of the existing noise mound with the addition of a substantial noise wall on top. This impression is not representative of the Plan Sheet 6 in Appendix C. This needs to be reviewed in the context of the visual impact on residents and the community.

Response

As shown in Figure 6-2 of the EIS the proposed footprint of construction activities associated with Cooloongatta Bridge widening would extend to both sides of the bridge, including areas near the gardens referred to at Elouera Street (south). Although this area is not identified as a construction compound site, access to the widening works at this site may result in damage to the local gardens. Section 6.3.7 of the EIS outlines the potential construction activities planned for Cooloongatta Road overbridge.

The biodiversity assessment undertaken for the project identifies that about 2.75 ha of mixed plantings, generally consisting of planted garden areas. As shown on Figure 9.1 of the EIS, this includes areas adjacent to planned works near Cooloongatta Road overbridge.

The existing noise mound south of the motorway between Kooemba Road and Cooloongatta Road requires removal to allow for the construction of the westbound off ramp. The EIS has identified that a noise barrier would be required to replace the mound. The concept design (shown in typical cross section sheet 3 in Appendix C), shows a proposed noise wall to replace the existing mound. However, at this stage of the project design, it has not yet been determined whether the existing mound would be replaced with a noise wall or a combined noise mound/noise wall. The indicative illustrations shown in Figure 9.8 are an impression of the general appearance of the noise barrier and should only be used for the purpose of gaining a visual representation of the likely appearance of the noise barrier. The exact details of the location, height and construction of the noise barrier would be determined during detailed design (refer environmental management measure REF# NV-1 in section 8.2.6).

A Construction Environmental Management Plan (CEMP) would be prepared for the project before work commences. The CEMP would include detailed measures to address impact on nearby residents, including disturbance created by construction personnel. The construction contractor would be responsible management of construction personnel and ensuring construction sites are cleaned up to an appropriate standard on a regular basis.

A detailed landscape plan would be prepared for the project. The landscape plan would build on the findings of the Urban Design, Landscape Character and Visual Working Paper (Appendix I of the EIS) and the RMS Landscape Guidelines. The landscape plan would include detailed species and planting guides and consideration of refurbishment of existing landscaped areas in the project area.

WDA has committed to continuing to consult with the community during construction of the project, should it be approved. The aims of ongoing communications and consultation are to provide the community with:

- Accurate and accessible information regarding the processes and activities associated with the project

- Information in a timely manner
- Appropriate avenues for providing comment or raising concerns, and to ensure they are aware of the avenues
- A high level of responsiveness to their issues and concerns throughout development and delivery of the project.

Residents adjacent to construction areas, including those near Elouera Street south would be consulted throughout the construction and rehabilitation stages.

3.13 Air Quality

3.13.1 Air quality assessment methodology

Submission number(s)

5, 28, 30

Issue description

In summary, the respondents raised the following issues:

- Page 22 of the EIS references community concerns about air quality for the existing M5 tunnel and that a filtration trial has been carried out, however the assessment of air quality in section 9.6 does not refer to this at all or provide any analysis.
- Section 9.6 of the EIS uses information from all OEH stations to make a general statement about air quality in NSW and Sydney- there is no local baseline assessment provided despite a comparison being made between predicted impacts and the current situation. Information from local OEH stations, project specific air quality monitoring plus concerns about the air quality for the existing M5 tunnel should be used as a minimum starting point to develop a baseline to compare predicted impacts against.

Response

Section 4.1 of the EIS refers to the M5 East filtration trials in the context of explaining the number of studies and investigations that have been carried out as part of the development and evaluation of potential options to enhance the operational capacity of the M5 corridor, including the option of duplicating the existing M5 East tunnels. Further information regarding filtration trials carried out for the M5 East can be found at <http://www.m5east.com.au/about-m5-east/air-quality/>.

Further analysis of these trials have not been carried out for the King Georges Road Interchange Upgrade as they are not considered relevant to the local air quality issues associated with construction and operation of the project.

The air quality assessment presented in section 9.6 of the EIS was carried out in accordance with the SEARs for the project. The assessment identified potential air quality impacts at the regional and local levels as a result of the project. Emissions of CO, NO_x, PM₁₀ and PM_{2.5} due to traffic in each scenario were calculated using the TRAQ model. Background air quality monitoring was not required given the relatively small geographical scale of the project and due to the influence of major roads and other transport infrastructure, including the M5 Motorway, King Georges Road, Canterbury Road and the East Hills Rail Line. As such, it is not possible to characterise the existing environment accurately.

The air quality assessment found that potential operational impacts to regional and local air quality would be negligible. Emissions of CO, NO_x, PM₁₀ and PM_{2.5} by scenario, as calculated using TRAQ, are given in Table 9-9 of the EIS. When compared with the current (2014) situation, traffic-related emissions in both 2017 and 2027 (with the project and with full WestConnex) result in relatively small changes in emissions (between -3 and +1 per cent, depending on the pollutant). The full WestConnex would result in further reductions for the project in NO_x (13 per cent) and PM (11–12 per cent) in 2027.

3.13.2 Management of dust

Submission number(s)

14-24, 27

Issue description

In summary, the respondents raised the following issues:

- Concern that dust levels would increase to the detriment of residents health
- Concern over dust and dirt from construction affecting homes and requested professional home cleaning post construction

Response

The main air quality issue associated with construction is the generation of dust/particulate matter. Section 9.6.3 of the EIS presents a qualitative air quality assessment of the potential impacts on air quality as a result of construction works. The assessment considered the proposed construction activities, the construction staging, and the scope of activities at construction compound sites. The magnitude of dust impacts would depend on the amount of earthwork involved at a particular location, the duration of activities, and the local meteorology at the time, particularly wind speed and direction. However, the impacts of construction would be temporary.

A range of mitigation measures for managing dust are outlined in section 9.6 of the EIS. The mitigations outlined are considered sufficient to manage dust during construction.

3.14 Hydrology and flooding

3.14.1 Impact from flooding

Submission number(s)

14-24,

Issue description

Concern that the proposed will add to any existing flood hazard that may affect local properties.

Response

An assessment of the potential impacts on hydrology and flooding and recommends mitigation measures to reduce these impacts is presented in Chapter 9.7 of the EIS and Appendix L- Flooding and drainage working paper. The assessment found that during construction there is a potential for existing drainage infrastructure to be partially blocked or temporarily diverted due to earthwork and other construction activities. Blocking or diverting local drainage lines may result in local flooding upstream of the construction areas. Diverting drainage lines may also create local

areas of flooding and scour these temporary impacts are expected to be minor and would be managed through the implementation of standard construction techniques.

During operation, flood modelling shows that there would be a minor reduction in peak flows near Cooloongatta Road overbridge due to planned improvements in the drainage system.

In general, project works would occur outside the extent of the PMF event. As a result, any changes to finished surface levels associated with the road works would not impact flooding patterns on Wolli Creek.

As such, there is not expected to be an increased risk of flooding for nearby residences as a result of the project.

3.15 Sustainability

Submission number(s)

5, 30

Issue description

In summary, the respondents raised the following issues:

- Table 10-1 of the EIS doesn't provide any measures to reduce greenhouse gases, does not mention potential air pollution and only mentions potential impact of sea level rise on the project area, no discussion of whether increasing road transport is appropriate
- ESD considerations in section 10.3 of the EIS only mention project, not other portions or the full WestConnex
- Table 10-2 of the EIS does not cover economic benefits to future generations in the discussion on intergenerational equity and states that potential impacts to air quality would generally be restricted to construction. This is incorrect as a road has significant potential operational impacts to air quality not just at the time of opening but for future generations.

Response

Chapter 10 of the EIS explains how sustainability aims and principles relate to the design, construction, and operation of the King Georges Road Interchange Upgrade project. The principles of ecologically sustainable development would be discussed and assessed for other future components of WestConnex in the relevant EISs for those projects.

The assessment was prepared to address the requirements of the Secretary of the DP&E, and consistent with *Transport Environment and Sustainability Policy Framework* (TfNSW 2013a), which presents a collective and coordinated approach to deliver the NSW Government's environmental and sustainability agenda across transport agencies.

A sustainability strategy has been developed for the full WestConnex scheme as a whole which includes sustainability objectives, targets and indicators to integrate sustainability into the project.

In addition, WDA has committed to registering the whole WestConnex project with ISCA and achieving a minimum rating of 'Excellent' for the design and as-built phases. A sustainability strategy is being prepared to guide the implementation of sustainability across the entire WestConnex project and facilitate the ISCA process. The strategy is supported by the WestConnex Environmental and Sustainability Policy, which includes a commitment to enhancing the project's environmental and social outcomes and proactively managing impacts.

The strategy would include clear commitments, objectives and targets across a range of sustainability issues such as sustainable procurement, climate change adaptation, energy use, greenhouse gas emissions, water, waste, materials use, land management, ecology, community health, urban and landscape design and innovation. The strategy would align with the Sustainability Framework (TfNSW 2013), the ISCA process and the WestConnex Urban Design Framework objectives.

3.16 Cumulative impacts

Submission number(s)

5, 30

Issue description

In summary, the respondents raised the following issues:

- Comment that the cumulative impact assessment does not assess the entire WestConnex scheme, only the future M5 project. The recently released scope of the New M5 project should be assessed in the cumulative impact section of the EIS
- Table 9-15 only compares the project's lower impact on air quality with the higher impact of WestConnex M5 portion, rather than a cumulative assessment of the full WestConnex against existing conditions.
- The environmental management measures for cumulative impacts only relate to consultation with the community and other proponents, and does not include any more scientific measures such as objective assessment of potential cumulative impacts.

Response

This assessment of cumulative impact is provided in section 9.11 of the EIS. The assessment focused on the key environmental issues that are assessed in detail in Chapter 8 of the EIS, traffic and transport and noise and vibration.

Potential construction and operational phase interfaces with other significant projects were also reviewed. The identification of projects for consideration was based on the following criteria:

- Project size – given the extent of development within Sydney, only major projects (as determined by the Department of Planning and Environment (DPE)) were considered
- Project boundary – only projects located within suburbs intersected by or adjacent to the project areas (Canterbury and Hurstville LGAs) were considered
- Project timeframe – only projects likely to be undertaken at some point during the construction period of the project were considered
- The M5 West Widening Project and Future WestConnex M5 projects were also considered.

A search of the DPE major projects register did not identify any major projects that are currently under construction or seeking approval within the Canterbury or Hurstville LGAs.

The future WestConnex M5 project was also considered as it would tie into the eastern extent of the project and construction timeframes have the potential to overlap.

The EIS also discusses the cumulative benefits of the full WestConnex project, specifically with regard to the overall benefits the project would offer in terms of easing congestion across the entire traffic network. WestConnex would also deliver substantial amenity benefits, including

helping Sydney cope with expected growth, improving traffic flow along key corridors and providing an important catalyst for urban renewal in areas of Sydney that currently experience poor amenity due to excessive traffic on local and arterial roads.

The EIS also states that the prediction of cumulative noise levels from the construction of multiple projects close to each other is a complex matter given the number of sources and possible locations of a particular combination of construction work. Cumulative impacts associated with noise are only relevant to adjacent project as noise would not carry across the entire WestConnex program during construction.

Some other environmental issues (such as biodiversity and heritage) are difficult to assess at the WestConnex scale as it is still unknown how much impact to these issues is likely from future WestConnex project. The project may contribute to a number of other cumulative interactions. Table 9-15 of the EIS provides a strategic assessment of the likely cumulative impact of the project in the context of potential interactions with adjacent motorway projects, including the WestConnex New M5.

Most cumulative impact (particularly impact related to local amenity such as noise and dust) would be mitigated and managed by the measures outlined in Chapter 8 and Chapter 9 of the EIS. Additional mitigation measures related to ongoing community consultation is outlined in section 9.11.5 of the EIS.

Future sections of WestConnex would be the subject of separate environmental assessment processes that would comprehensively consider justification for each stage, project alternatives, concept design, landscape design and the full range of potential environmental and social impacts. These assessments would be publicly exhibited for comment as required under the EP&A Act. It should also be noted that to promote consistency in assessment and management of environmental issues for the full WestConnex project, regardless of the final design and delivery staging options selected, the *WestConnex Strategic Environmental Review* (Sydney Motorway Project Office, 2013b) was prepared in consultation with representatives from key regulatory agencies. This document is available at <http://www.westconnex.com.au/documents/westconnex-strategic-environmental-review-2013.pdf>

3.17 Issues outside the project scope

Submission number(s)

2, 6, 7, 31

Issue description

In summary, the respondents raised the following issues:

- Concern that later stages of WestConnex would impact on rare segments of remaining native environments such as the Wolli Creek Bushland Western Gateway.
- Concerned about the current crossing of Kingsgrove Road and provided a suggestion of a bridge across Kingsgrove Road for cyclists.
- There are no 'park and ride' areas at railway stations, so people can't drive to stations get out of their cars and travel by train. Kingsgrove really should have a park railway stations, so people can't drive to stations get out of their cars and travel by train. If Kingsgrove did, then many cars would be taken off the road, making the "New M5' unnecessary.

- The WestConnex tunnel would add to Sydney wide and local pollution. Recent scientific evidence says there is no safe level of exposure to Ultra Fine Particulate Matter, especially from diesel exhaust. It is dangerous to all, but particularly the young aged or those with pre-existing health conditions

Response

Wolli Creek bushland

The western extent of the project is the tie in point with the M5 East Freeway near Kooemba Road, Beverly Hills. The nearest bushland remnants associated with Wolli Creek are located between Bexley Road and Illoura Reserve Earlwood. Bexley Road is approximately three kilometre from the eastern extent of the project and there would not be any direct or indirect impacts on native vegetation or ecological communities as a result of construction or operation of the project.

Other stages of WestConnex, namely the New M5 project are subject to a separate approvals process. WDA has recently lodged a planning application for WestConnex New M5 seeking State Significant Infrastructure Status under the EP&A Act. The Department of Planning and Environment (DP&E) would consult with relevant public authorities, including local councils, to provide requirements for issues to be addressed in the Environmental Impact Statement (EIS). The New M5 EIS would be exhibited for community and stakeholder comment in late-2015 prior to a planning assessment decision being made by the Minister for Planning.

Any potential impacts to vegetation within Wolli Creek Reserve, would be assessed within the EIS for that project.

Kingsgrove Road shared path

Section 5.3.7 of the EIS outlines the proposed changes to shared path alignments within the project area. Any changes to the shared path at Kingsgrove Road is beyond the scope of this EIS. Any changes to the existing shared path alignment as part of later WestConnex projects would be assessed as such.

Park and ride options

As outlined in section 3.4.2 of this report, WestConnex has been developed as a key transport component of the LTTMP, integrated with the strategic land use outcomes as identified in the *Draft Metropolitan Strategy for Sydney to 2031* (Draft Metropolitan Strategy).

As an integrated transport solution, WestConnex brings together planning for freight and passenger movements, as well as all modes of transport including road, rail, bus, ferries, light rail and active transport options (cycling and walking). Public transport options would be a potentially feasible alternative if the project, as part of WestConnex, was primarily concerned with transporting people to and from centres.

New M5 Tunnels

Chapter 9.6 of the EIS assesses air quality impacts associated with the project.

Further assessment of local and regional air quality issues related to the WestConnex New M5 tunnels would be assessed as part of the EIS for that project.

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4 Response to agency submissions

4.1 Respondents

In addition to the community submissions addressed in Chapter 3, five government agencies (or advisory bodies) and two local Councils made submissions on the EIS, some of which included recommendations for Conditions of Approval. Submissions were received from the following agencies and Councils (together with their corresponding item number for Table 4-1):

- EPA (Item 1)
- NSW Health (Item 2)
- DPI (Office of Water) (Item 3)
- OEH (Item 4)
- Sydney Water (Item 5)
- City of Canterbury (Item 6)
- Hurstville City Council (Item 7).

4.2 Overview of agency issues raised

Responses to government agencies and local councils have been provided in tabular format addressing comments raised by each.

The EPA primarily raised issues associated with emissions such as diesel and dust emissions during construction and noise emissions during construction and operation of the project.

The NSW Office of Water provided recommendations for the preparation of recommends that the Soil and Water Management Plan and requirements for rehabilitation of any drainage lines disturbed during construction.

OEH supported the further investigation of alternate mitigation measures to protect Downy Wattle and suggested further investigation of offset options.

Sydney Water requested to further be involved in the planning of mitigations aimed at minimising impact on their assets, namely Wolli Creek.

The City of Canterbury raised issues regarding potential impacts of the project on the local road network, the drop-off/pick-up of children at Beverly Hills North Public School and confirmed the need for a Construction Traffic Management Plan. City of Canterbury also raised issues related to the Grey-headed flying fox and information provided in the Flooding and Drainage working paper.

Hurstville City Council commented on the need for ongoing consultation with local residents with regard to noise and vibration and loss of amenity and also expressed some concern about the project's impact on local roads.

Table 4-1 presents the issues raised by government agencies and provides a response to each. As discussed above, responses to community comments can be found in Chapter 3.

Table 4-1 Government agency issues and responses

1. NSW EPA	
Off-road diesel emissions	WDA Response
<p>1(a) The EPA recommends that the following information is sought through the conditions of approval.</p> <p>The EPA recommends that the proponent assess the environmental impacts associated with heavy vehicles including off road diesel equipment and plant used in the construction of the project. This should include but is not limited to:</p> <ul style="list-style-type: none"> • Compliance with relevant and current emission standards as prescribed in Australian design rules for heavy duty engines and vehicles. • Strategies for minimising air emissions from off road diesel equipment including but not limited to graders, bulldozers, loaders etc. • Confirmation that all off road diesel equipment will meet best available diesel emissions standards or be fitted with an appropriate diesel exhaust treatment device where possible. 	<p>Section 9.6.3 of the EIS explains that emissions of pollutants associated with the operation of diesel powered machinery and plant equipment are generally considered to be too small, too infrequent or too widely distributed to generate any significant off-site pollutant concentrations.</p> <p>A number of specific environmental mitigation and management measures were identified in Section 8.9.4 of the EIS to minimise air quality impacts associated with emissions from general construction activities. These include:</p> <ul style="list-style-type: none"> • Engines of on-site vehicles and plant would be switched off when not in use. • Where practicable, vehicles would be fitted with pollution reduction devices. • Vehicles would be maintained and serviced according to manufacturer's specifications. <p>A CEMP and sustainability strategy would be implemented for the project which would include a number of targets (including for air quality) which would address air emissions including diesel vehicles both on and off road. Additionally, the contractor will be required to produce an air quality management plan which would need to outline the measures to be taken to ensure management of plant and equipment.</p>
Dust emissions	WDA Response
<p>1(b) The proponent must ensure that construction work is carried on by such practicable means as may be necessary to minimise dust emissions on the premises, and prevent dust emissions from the premises.</p>	<p>All feasible and reasonable measures to minimise dust would be implemented. Section 9.6.4 of the EIS commits to implementing a range of control measures to manage dust.</p>

Noise and vibration		WDA Response
1 (c)	<p>Architectural treatment has been considered in the Construction and Operations Road Traffic Noise and Vibration Assessment (CORTNVIA, SLR October 2014) only at the ground floor and first floor levels of residential buildings. This suggests that higher floors will not receive the same architectural treatment afforded to lower levels, even if they are more affected by road traffic noise. As per advice provided by the EPA in correspondence dated 25 September 2014, the EPA recommends that DP&E requires the proponent to consider architectural treatment of all floors of a residential building, including multi-unit buildings, once the need for architectural treatment of that building has been established from modelling the road traffic noise impact on the most affected floors.</p> <p>The proponent must consider architectural treatment for all floors of a residential building, including multi-unit buildings, once the need for treatment of that building has been established from modelling the road traffic noise impact on the most affected floor.</p>	None of the properties identified as being eligible for treatment have more than 2 stories.

2. NSW Health

EIS adequacy		WDA Response
2(a)	The sections of the EIS that are of relevance to the Public Health Unit, SESLHD have been reviewed and all matters relating to public health issues have been identified and have been addressed.	Noted.

3. Department of Primary Industries (Office of Water)

Aquatic habitat		WDA Response
3(a)	The EIS indicates aquatic habitat impacts would be limited to direct impacts on the existing water quality pond (Section 9.1.3, page 134). Appendix G of the EIS proposes to revegetate the artificial pond post construction to reinstate the habitat value (Section 5.2.7, page 53) but the EIS does not incorporate this mitigation management measure (see Section 9.1.5, pages 136-138).	Noted. This mitigation measure has been added to the mitigations and safeguards outlined in Table 7-1 of this report.

<p>3(b) The Office of Water previously sought clarification as to which drainage lines in the study area were constructed as part of the original M5 motorway. The EIS confirms the vegetated drainage line located in Windara Reserve on the southern side of the motorway was constructed as part of the original motorway (see Figure 9.11 and page 184). Appendix G indicates this drainage line may potentially be at risk from associated construction works (Section 4.1.1, page 41) and it indicates the aquatic habitat of the drainage lines may be at risk from increased sediment laden runoff during construction (page 48). It is recommended:</p> <ul style="list-style-type: none"> • The Soil and Water Management Plan that is to be prepared for the project provides details on the sediment erosion controls to be implemented to prevent sediment runoff entering the drainage lines • Any disturbance to the vegetated drainage line in Windara Reserve caused by construction, or to the native vegetation along the drainage line is rehabilitated post construction. 	<p>As outlined in section 9.8.5 of the EIS, a Soil and Water Management Plan (SWMP) would be prepared to identify all risks relating to soil erosion, and pollution caused by sediments and other materials, and describe how these risks would be addressed during construction. The SWMP would be guided by:</p> <ul style="list-style-type: none"> • Roads and Maritime Code of Practice for Water Management, the Roads and Maritime Erosion and Sedimentation Procedure • The NSW Soils and Construction – Managing Urban Stormwater Volume 1 “the Blue Book” (Landcom, 2004) and Volume 2 (DECC, 2008). • Roads and Maritime Technical Guideline: Temporary Stormwater Drainage for Road Construction, 2011. • Roads and Maritime Technical Guideline: Environmental Management of Construction Site Dewatering, 2011. <p>The SWMP would include details on the sediment erosion controls to be implemented to prevent sediment runoff entering the drainage lines. A specific mitigation measure aimed at rehabilitation of the drainage line in Windara reserve has been added to Table 7-1.</p>
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Groundwater	WDA Response
<p>3(c) Section 9.8.3 of the EIS indicates that construction activities would not interfere with any aquifers and no dewatering would be required for piling activities (page 185). The Office of Water notes the inclusion of environmental management measure (GSW-5) should groundwater be encountered and needs to be dewatered and disposed of (page 237). By virtue of Section 18 and clause 2 of Schedule 5 of the Water Management (General) Regulation 2011, roads authorities are currently exempt from the requirement to hold a water access licence to account for water taken for road construction and maintenance. It is requested the proponent liaises with the Office of Water should groundwater be encountered and dewatering is required during construction.</p>	<p>Noted.</p> <p>Consultation would be carried out with the Office of Water should groundwater be encountered and dewatering is required during construction.</p>

4. OEH	
Biodiversity	WDA Response
<p>4(a) OEH supports the proposal in the EIS (page 137) that "Alternate mitigation measures to protect Downy Wattle plants, such as contributions to the improvement of local populations would be investigated." OEH also proposes:</p> <p>Prior to clearing the <i>Acacia pubescence</i> (Downy Wattle), the Proponent shall submit an Offset Package for the approval of the Secretary. The Package shall detail how the lost Downy Wattle will be offset. The Package shall (unless otherwise agreed by the Secretary) include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> • The identification of the extent and condition of habitat for the Downy Wattle that shall be lost or degraded as a result of the SSI, including the consideration of indirect impacts including weed invasion and potential edge effects • The objectives and outcomes to be achieved and making reference to the management actions and locations identified for this species in the Bankstown-Liverpool Management Site in the Saving our Species project (http://www.environment.nsw.gov.au/savingourspeciesapp/ManagementSite.aspx?SiteID=2) • The final suit of measures selected and secured; • The management and monitoring requirements for the measures proposed to ensure outcomes of the package are achieved • Timing and responsibilities for the implementation of the Package. Any land proposed as an offset shall be enduring and be secured by a conservation mechanism which protects and manages the land in perpetuity. <p>Any land proposed as an offset shall be enduring and be secured by a conservation mechanism which protects and manages the land in perpetuity</p>	<p>The biodiversity assessment carried out for the project identified the following with regards to Downy Wattle (<i>Acacia pubescens</i>):</p> <p>Nine Downy Wattle individuals are present within the proposed construction footprint or adjacent areas potentially impacted by the project. Impacts to this species are likely to occur due to the construction of noise walls west of Penshurst Road. All Downy Wattle individuals identified within the study area are planted individuals, planted as part of landscaping works for the M5 Motorway.</p> <p>WDA (on behalf of Roads and Maritime would commit to preparation of a Downy Wattle Management Package to address all of the requirements as set out in the OEH submission.</p>

	weeks prior to the closures. This will allow Council to report the proposed road closure to the Traffic Committee and process approval.	timeframes for submission of the Traffic Management Plan to Council would be discussed during ongoing consultation. Further details on the Traffic Management Plan are provided in Table 7-1.
6(b)	The following local roads should be included as significant local roads: <ul style="list-style-type: none"> • Shorter Avenue • Cooloongatta Road • Broadarrow Road • Penshurst Road 	Section 3.3.4 of the Traffic and Transport working paper and Chapter 8.1 of the EIS include these roads as significant local roads.
6(c)	The signalised intersection of Shorter Avenue and King Georges Road is a critical intersection in terms of access to a local road. The report does not provide operational performance for this intersection.	The Traffic and Transport working paper includes this intersection's operational performance for all operating scenarios. Table 8.2 in the EIS also includes information on the operational performance of the intersection.
6(d)	The draft report indicates that the anticipated total on site staff and workforce of approximately 100 people. Council is not supportive of construction staff parking in Shorter Avenue or Welfare Avenue over the duration of the construction period. We need to ensure that this does not impact on the drop-off/pick-up of children at Beverly Hills North Public School.	The Traffic and Transport working paper and the EIS outline mitigation measures for construction staff parking (ie designated shuttle points in section 8.5.3). Additionally, section 9.2.4 of the EIS outlines that where feasible and reasonable, construction parking would be limited to facility sites to minimise the impact on public parking. Where this is not feasible and reasonable, measures would be implemented to support construction worker access to the site while retaining local parking facilities for local residents and businesses.
6(e)	The potential haulage and delivery routes as provided indicate use of Shorter Avenue. This proposal is not supported due to the safety issues that this could create for the primary school located in the street.	The Traffic Management Plan would be developed with particular consideration to school pick-up and drop-off times.
6(f)	It is recommended that the applicant liaise with Punchbowl Bus Company regarding any proposed road closures for Penshurst Road. This road is a major route for the bus company.	Consultation has been carried out with Punchbowl Bus Company as outlined in section 7.4.1 of the EIS regarding temporary closures of Penshurst Road. WDA would continue to consult with Punchbowl Bus Company throughout construction.
Biodiversity		WDA Response
6(g)	The draft report states that no permanent Grey-headed Flying-fox camps are located within the project area. This is true; however, the closest GIIF camp is within Wollie Regional Park, which is located 5km from the study area. The GHFF camp near Turrella Reserve in Wollie is	These two Grey-headed Flying-fox camps are included in the biodiversity working paper. The assessment of significance undertaken for Grey-Headed Flying-fox (section 6.2.1) has considered that this species may use the M5 corridor for foraging and these camps have

a permanent camp which has approximately 3,000 — 5,000 bats during the winter bats and swells to 20,000 in summer. This should be taken into consideration in the impact assessment as bats use the M5 green corridor to forage.

not resulted in any change to the assessment of significance.

Drainage and flooding

WDA Response

6(h)

The extent of ponding on the northern side of the M5 around Allambee Crescent must be considered. It has been noted that the works do not improve the situation, it only maintains the existing depth. There is a concern that this ponding area is accessible to the public and this could be a hazard.

The drainage report's consideration of effects of climate change, does not extend to the performance of the drainage outside the M5 corridor. Confirmation is required that the existing stormwater infrastructure under the M5 has the capacity to receive the expected Climate change flows from upstream catchments. Given it is noted in the report that the M5 performs acceptably for its projected life in terms of climate change but the same consideration has not been given to the drainage outside the corridor. It is noted that the traffic lanes pass the aquaplane criteria for the expected flow rate generated by climate change events.

The hydrology and drainage chapter of the EIS (Chapter 9.7) states that additional inlet capacity would be provided at this site to reduce ponding impacts. Additional inlet capacity has been provided on the northern side of the motorway between King Georges Road and Allambee Crescent sufficient that the existing ponding area would not be surcharged for events up to 100 year ARI.

The assessment of possible effects of future climate change on flooding behaviour presented in the Flooding and Drainage Working Paper (Appendix L of the EIS) takes into consideration an increase in rainfall intensities and peak discharges in the catchments that lie both internal and external to the project corridor. The findings of the assessment state that the analyses undertaken as part of the present investigation showed that both the KGRIU and WestConnex M5 projects would not be affected by a PMF event, then by inspection, potential increases in peak 100 year ARI flows (and hence peak 100 year ARI flood levels) in the range 10 to 30 per cent would not cause flooding of the upgraded section of motorway.

7. Hurstville City Council

Noise and vibration

WDA Response

7(a)

Residents of Hurstville City Council that will be affected by the project will need to be informed of any impacts in terms of noise and loss of amenity that may result at any stage of the project's duration.

During construction and operation, the project team would continue to work with the community to ensure they are informed about the project and have opportunities to provide feedback to the project team. Key consultation activities and consultation tools proposed for ongoing consultation are outlined in Chapter 7 of the EIS and section 2.2.1 of this report.

Additionally, consultation during construction would be carried out in accordance with the Draft Community Consultation Framework (refer Appendix D of the EIS).

Traffic and transport	WDA Response
<p>7(b) Hurstville City Council will need to be notified of any road closures that will impact traffic as early as possible.</p>	<p>WDA would consult with Hurstville City Council regarding any proposed road closures during construction of the project.</p> <p>A traffic and transport liaison group will be established prior to commencement of construction. The traffic and transport liaison group would be consulted during preparation of the construction Traffic Management Plan to ensure impacts are minimised. Appropriate timeframes for submission of the Traffic Management Plan to Council would be discussed during ongoing consultation. Further details on the Traffic Management Plan are provided in Table 7-1.</p>
<p>7(c) Hurstville City Council has concerns that the project will attract more traffic entering the motorway, while not increasing the capacity of the existing M5 East tunnel and this may cause further delays and affect the local road network Level of Service.</p>	<p>Section 8.1.1 of the EIS explains that the operational traffic and transport impacts were evaluated using traffic demand data from the WestConnex Road Traffic Model (WRTM). This is a project specific model developed to forecast road traffic demands for the WestConnex projects, including the King Georges Road Interchange Upgrade. The WRTM shows that the project does not induce any additional traffic as a result of the increased capacity of the motorway.</p> <p>Further discussion regarding the potential impact of the project on the local road network is presented in section 3.8.5 of this report.</p>

5 Additional assessment

No additional investigations or assessment have been carried out during the EIS display period or in response to any submissions received from Government agencies and the community.

Section 5.1 of this report provides a clarification to the EIS.

5.1 Clarifications to the EIS

Since exhibition of the EIS, WDA has identified a number of clarifications required to sections of the EIS. Where relevant, the text provide can be considered to replace the text from the EIS.

Ecologically sustainable development

Section 10.3 of the EIS discusses the four principles of Ecological Sustainable Development (ESD) (as defined in the EP&A regulation). Section 10.3.4 discusses how the project responds to the principle of improved valuation and pricing and incentive mechanisms. The response should read as follows.

Environmental factors should be included in the valuation of assets and services, such as:

- *Polluter pays (that is, those who generate pollution or waste should bear the cost of containment, avoidance or abatement)*
- *The users of goods and services should pay prices based on the full life cycle of costs providing the goods.*
- *Environmental goals, having been established, should be pursued in the most cost effective ways*

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6 Project changes

6.1 Overview

This chapter has been prepared to outline and assess the impact of project design changes that have been identified since the exhibition of the EIS.

As outlined in section 5.1 of the EIS, the project description presented in the EIS is based on the WDA concept design. However, the design could change as a result of refinements during detailed design, submissions received following exhibition of the EIS, and/or the need to minimise environmental impact. Notwithstanding, any changes would be detailed and communicated through subsequent reports and/or community updates.

6.2 Description of project design changes

Since public exhibition of the EIS, WDA has identified a number of minor design refinements needed to assist in constructability of the project or as a result of further engineering assessment.

Table 6-1 outlines these design refinements including the justification for each refinement. All of the design refinements are located wholly within the construction footprint assessed in the EIS.

Table 6-1 Design refinements developed since EIS exhibition

Item	Design refinement	Location	Justification for refinement
1	Cut retaining walls moved away from carriageways by 500 mm	Both sides of motorway between Penshurst Road and Cooalongatta Road	Additional space required for street lightings
2	Street lighting provided to cover full extent of west facing ramps	Both sides of motorway , west of Penshurst Road	Street lighting provided in response to RMS' clarification of design requirements
3	Size of cast-in-place piles revised	Bridge over Penshurst Road	Foundation requirement revised upon detailed loading analysis
4	Increased nearside shoulder width (from 2.5m to 2.8m)	Westbound adjacent to Penshurst Road bridge	Additional shoulder width provided to accommodate structural width required for the widening of bridge over Penshurst Road
5	Eastbound on ramp	Soil nail wall changed to bore pile wall	The required soil nail length was found to extend beyond the property boundary at this location and an alternate construction method (bore nail wall) has been applied.

Item	Design refinement	Location	Justification for refinement
6	East facing ramps	Shoulder crossfall increased from 3% to 6%	Change of shoulder crossfall from 3% to 6% to increase gutter capacity and thereby reduce number of inlet pits required to meet flow width requirements.
7	Introduction of a modular trench drainage system (ACO Power Drain or equivalent) in several locations.	Median drain immediately west of King Georges Road, carriageway and ramps under Cooloongatta Road Bridge	Reduces the number of inlet pits required; and address capacity constraints in the median drainage line.
8	Additional breakdown bay provided and retaining wall extended accordingly	Westbound off ramp near Cooloongatta Road	Breakdown bay is provided closer to nose to prevent vehicles exiting the breakdown bay from going back into the main carriageway
9	Westbound ramp separated from main carriageway by a painted median	Westbound on ramp	Provision to limit the nearside shoulder width to three metres in order to avoid the use of temporary concrete barrier in the 100 km/h zone

6.3 Assessment of potential impacts

Each of the design refinements outlined in Table 6-1 have been assessed for consistency against the outcomes of the assessments provided in the EIS.

As the proposed works do not greatly differ from that outlined in the EIS and all remain within the motorway corridor (including within the assessed construction footprint), it is considered that the proposed refinements are consistent with the findings of the EIS. Consideration of these changes against key issues assessed in the EIS is provided below.

Traffic and transport

None of the design refinements would result in additional construction or operational impacts to traffic and transport. Item 2 (increased street lighting) and Item 8 (additional breakdown bay) have been added to the project to increase motorist safety through increased lighting on the west facing ramps and providing a safer breakdown bay re-entry to the motorway.

Noise and vibration

The noise and vibration working paper (appendix f of the EIS) considered bore piling within the construction assessment for each of the NCAs. As such, the results for worst case construction noise and vibration would not alter as a result of Item 5 (bore nail wall). It is also noted that bored piling is predicted to be less noisy than vibratory piling and would result in reduced noise impacts for these works.

None of the other design refinements presented in Table 6-1 would result in an increase to noise and vibration impacts identified for the project.

Biodiversity

No further impacts identified.

Socio-economic

No further impacts identified.

Visual amenity, built form and urban design

Lighting is currently installed on the interchange ramps. It would be reinstated on the ramps and designed in accordance with design standards. The additional lighting is therefore not expected to impact on the visual amenity of the surrounding area.

Aboriginal and Non-Aboriginal heritage

No further impacts identified.

Air Quality

No further impacts identified.

Hydrology and flooding

Item 7 (Introduction of a modular trench drainage system) has been introduced to reduce the number of inlet pits required; and address capacity constraints in the median drainage line. In turn, this would provide a better drainage solution for the project resulting in lesser capacity for overflow from the drainage system.

None of the other design refinements presented in Table 6-1 would result in an increase to noise hydrology and flooding impacts identified for the project.

Geology soils and water

No further impacts identified.

Contamination, waste and resource use

No further impacts identified.

Greenhouse gas

No further impacts identified.

6.3.1 Environmental management measures

No new or changed environmental management and mitigation measures have been identified from the assessment of the alternative design option. The measures identified in the EIS would continue to apply where relevant.

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7 Revised safeguards and management measures

The environment impact statement for the project identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the project (refer to Chapter 12 of the EIS) have been revised.

The adjustments to the measures were made to:

- Make additional commitments based on the response to submissions within this report
- Make additional commitments based on the findings of the studies within this report
- Modify the wording so that the outcome of the commitment is clearer to implement.

Where new commitments have been added or new text has been added an existing measure it has been italicised and in blue text. Where a commitment has been deleted or text from the commitment deleted it appears as strikethrough text. Should the project be approved, the environmental management measures in Table 7-1 will guide the subsequent project development phases (design and construction) of the project.

Definitions

The following definitions apply in relation to the revised environmental management measures:

Pre-construction

Work in respect of the project that includes:

- a. Undertaking design, survey, acquisitions, utility investigations, fencing, investigative drilling or excavation, archaeological salvage or investigative work, environmental investigations, building/road dilapidation surveys.
- b. Establishing ancillary facilities/construction work sites (in locations meeting the criteria identified in the Conditions of Approval or fully assessed in the EIS and/or the Submissions Report, and with proposed and adequate mitigation).
- c. Minor clearing or translocation of native vegetation associated with b) above.
- d. Installation of environmental impact measures, fencing, enabling works.
- e. Early works that do not require clearing of native vegetation (eg cycle route detours, precast batching plant establishment).
- f. Other activities determined by the Environmental Representative to have minimal environmental impact (eg adjustments to services/utilities). Note – work where heritage, threatened species, populations or endangered ecological communities would be affected by that work, is classified as construction, unless otherwise approved by the Secretary in consultation with the Office of Environment and Heritage.

Construction

All work in respect of the project other than that defined as a preconstruction activity/work.

Operation

The operation of the project, but not including commissioning trials of equipment, or temporary use of parts of the project during construction.

Table 7-1 Revised safeguards and management measures

Impact	REF#	Environmental management measures	Responsibility	Timing
Construction traffic and road safety impacts	TT-1	A traffic and transport liaison group would be established prior to commencement of construction. The traffic and transport liaison group would be consulted during preparation of the construction traffic management plan to ensure impacts are minimised.	WDA Contractor	Pre-construction
Construction traffic and road safety impacts	TT-2	<p>A construction traffic management plan would be developed, approved, implemented and monitored as part of the project. The construction traffic management plan would focus on maintaining general traffic flow and specifying appropriate site accesses and construction traffic routes. It would include:</p> <ul style="list-style-type: none"> • Traffic Control Plans showing the access arrangements and the detail of required signs and devices • Traffic Control Plans showing the access arrangements and the detail of required signs and devices • Vehicle Management Plans showing access to work sites and direction of travel • Pedestrian and Cyclist Management Plans • Management strategy for other road users • Management strategy for access to adjacent properties • Hours of operation, including prohibitions on queuing outside sites prior to commencement of working hours • Road safety audit requirements • Any localised improvements/ adjustments to existing traffic management arrangements. 	Contractor	Pre-construction
Construction impacts on motorway traffic and local roads	TT-3	Construction staging and temporary works would be developed and implemented to minimise conflicts with the existing road network and to maximise the separation between work areas and travel lanes.	Contractor	Construction

Impact	REF#	Environmental management measures	Responsibility	Timing
Construction impacts on motorway traffic and local roads	TT-4	Lane occupancies would be planned with the aim of minimising the actual work area, limiting obstructions and restrictions, maximising road capacity and avoiding peak traffic periods.	Contractor	Construction
Construction impacts on motorway traffic	TT-5	Existing motorway capacity would be maintained during the morning peak and evening peak periods by maintaining the number of through lanes.	Contractor	Construction
Construction impacts on motorway traffic	TT-6	Monitoring of the motorway and work sites would be undertaken using CCTV and mobile patrols where required to assist management of incidents.	Contractor	Construction
Construction impacts on pedestrians and cyclists	TT-7	A Pedestrian and Cyclist Management Plan would be prepared as part of the Traffic Management Plan. Alternate routes would be communicated to pedestrians and cyclists.	Contractor	Construction
Construction impacts on pedestrians and cyclists	TT-8	Access to existing shared paths would be maintained subject to the need for temporary diversions.	Contractor	Construction
Operational Road traffic noise	NV-1	Implementation of new noise barrier and increased height of existing noise barrier as identified in Table 5.4 and shown on Figure 5.1 to Figure 5.3, and subject to refinement during detailed design.	WDA	Pre-construction
Operational Road traffic noise	NV-2	<p>Within 12 months of the commencement of operation of the project an operational noise review would be undertaken. This would include:</p> <ul style="list-style-type: none"> Monitoring to compare actual noise performance of the project against predicted noise performance. An assessment of the performance and effectiveness of applied noise mitigation measures together with a review and if necessary, reassessment of all feasible and reasonable mitigation measures. Identification of any additional feasible and reasonable measures that would be implemented with the objective of meeting the criteria in the NSW Road Noise Policy (EPA 2011), when these measures would be implemented and how their effectiveness would be measured and reported. 	WDA	Operation

Impact	REF#	Environmental management measures	Responsibility	Timing
Construction noise and vibration	NV-3	<p>A Construction Noise and Vibration Management Plan (CNVMP) would be prepared for the project. The CNVMP would:</p> <ul style="list-style-type: none"> • Assist in ensuring that the noise during construction complies where possible with the construction noise management levels set for the project. • Determine noise and vibration monitoring, reporting and response procedures. • Describe specific mitigation treatments, management methods and procedures to be implemented to control noise and vibration during construction such as those identified in this EIS. • Describe construction timetabling to minimise noise impacts including time and duration restrictions, respite periods and frequency. • Describe procedures for notifying residents of construction activities likely to affect their amenity through noise and vibration. • Define contingency procedures to be implemented in the event of non-compliances and/or noise complaints. <p><i>In developing the CNVMP, the construction contractor must identify measures to minimise noise impacts associated with removing existing noise walls. Measures may include use of temporary noise barriers where feasible.</i></p>	Contractor	Pre-Construction
Construction vibration	NV-4	<p>The following vibration mitigation measures would be specifically considered during the preparation of the CNVMP:</p> <ul style="list-style-type: none"> • Relocate vibration generating plant and equipment to areas within the site in order to lower the vibration impacts. • Investigate the feasibility of rescheduling the hours of operation of major vibration generating plant and equipment. • Use lower vibration generating items of excavation plant and equipment eg smaller capacity rock breaker hammers. • Minimise consecutive works in the same locality (if applicable). 	Contractor	Construction

Impact	REF#	Environmental management measures	Responsibility	Timing
		<ul style="list-style-type: none"> Use dampened rock breakers and/or 'city' rock breakers to minimise the impacts associated with rock breaking works. If vibration intensive works are required within the safe working distances, conduct vibration monitoring or attended vibration trials to ensure that levels remain below the cosmetic damage criterion. Conduct building condition surveys both before and after the works to identify existing damage and any damage due to the works. 		
<i>Construction noise</i>	<i>NV-5</i>	<i>All work would be undertaken in accordance with RMS Practice Note VII of the ENMM – Roadworks outside normal working hours. Practice Note VII outlines a series of construction programming requirements to assist mitigating noise impacts to nearby receivers.</i>	<i>Contractor</i>	<i>Construction</i>
Impact to vegetation communities	FF-1	Existing cleared areas would be used for laydown and stockpile sites and existing access roads and tracks would be utilised for site access where possible.	Contractor	Construction
Impact to vegetation communities	FF-2	There would be no vegetation removal to accommodate the Penshurst Road construction site (Windara Reserve) and no compound or laydown facilities under the drip-line of trees.	Contractor	Construction
Impact to vegetation communities	FF-3	A Flora and Fauna Management Plan would be developed for the project. The plan would include procedures for pre-clearance surveys that are consistent with the Roads and Maritime Biodiversity Guidelines (RTA 2011).	Contractor	Pre-Construction
Impact to fauna habitat	FF-4	A detailed landscape plan would be prepared for the project. The landscape plan would build on the findings of the Urban Design, Landscape Character and Visual Working Paper (Appendix I) and would include detailed species and planting guides.	WDA	Pre-Construction
Impact to fauna habitat	FF-5	Pre-clearing surveys would be undertaken by an experienced ecologist to identify any nesting/roosting animals present in the project area.	Contractor	Pre-Construction
Impact to threatened flora species	FF-6	The construction footprint would be identified and marked before construction and exclusion zones established in retained areas of	Contractor	Construction

Impact	REF#	Environmental management measures	Responsibility	Timing
		habitat particularly in remnant vegetation and Downy Wattle locations.		
Impact to threatened flora species	FF-7	An unexpected threatened species finds procedure would be developed consistent with the Roads and Maritime Biodiversity Guidelines and incorporated into project environmental management documentation.	WDA <i>Contractor</i>	Pre-Construction
Impact to threatened flora species	FF-8	Alternate mitigation measures to protect Downy Wattle plants, such as contributions to the improvement of local populations would be investigated.	Contractor <i>WDA</i>	Construction
Impact to fauna	FF-9	In circumstances where the handling of fauna is completely unavoidable, best practice methods need to be followed as outlined in the Roads and Maritime Biodiversity Guidelines – Guide 9 Fauna Handling (RTA 2011).	Contractor	Pre-Construction
Weeds, pests and pathogens	FF-10	A weed management plan consistent with the Roads and Maritime Biodiversity Guidelines (RTA 2011) would be developed as part of the construction environmental management plan. The weed management plan would include descriptions and mapping of major weed infestations and appropriate management actions to be undertaken in relation to each infestation.	Contractor	Construction
Weeds, pests and pathogens	FF-11	Measures to prevent the spread of pathogens would be detailed in the construction environmental management plan. Measures would be consistent with Roads and Maritime Biodiversity Guidelines – Guide 7 Pathogen Management (RTA 2011).	Contractor	Construction
<i>Water quality pond habitat</i>	<i>FF-12</i>	<i>Upgrading the water quality pond (near Kirrang Street) would include revegetation post-construction to reinstate the habitat value at the site</i>	<i>Contractor</i>	<i>Construction</i>
Employment and business impact	SE-1	Undertake on-going consultation, in accordance with the Draft Community Consultation Framework (refer Appendix D), with local business owners about the timing, duration and likely impact of construction activities and to identify appropriate measures to manage potential impacts.	WDA <i>Contractor</i>	Construction
Community values and social infrastructure	SE-2	Any community areas that are impacted during construction would be restored to their original condition and use after construction. Develop and implement traffic management plans with particular consideration to school pick-up and drop-off times. The design and layout of the compound sites would seek to minimise potential impacts on public reserve areas.	Contractor	Construction

Impact	REF#	Environmental management measures	Responsibility	Timing
Access and connectivity	SE-3	Where feasible and reasonable construction parking would be limited to facility sites to minimise the impact on public parking. Where this is not feasible and reasonable, measures would be implemented to support construction worker access to the site while retaining local parking facilities for local residents and businesses. Construction worker parking would be restricted on Shorter Avenue. Access to properties near the project during construction would be maintained at all times. Where temporary changes to property access are required, alternate access would be determined in consultation with affected property owners and tenants.	Contractor	Construction
Cycle and pedestrian facilities	SE-4	Where access cannot be maintained along existing pedestrian and cycle paths during construction, users would be consulted regarding alternate routes, timing for their implementation and the alternate routes would be clearly sign-posted.	Contractor	Construction
Urban Design	V-1	Design of project elements would be consistent with the urban design vision, objectives and principles for the project and the <i>WestConnex Draft Urban Design Framework</i> (RMS 2013).	WDA / Contractor	Pre-construction and Construction
Landscape design	V-2	The landscape design for the project would consider the M5 South.	WDA / Contractor	Pre-construction
Landscape design	V-3	Incorporate landscape maintenance and management requirements into the existing landscape maintenance plans for the M5 Motorway.	WDA / Contractor	Pre-construction
Visual impact	V-4	A detailed landscape plan would be prepared for the project. The landscape plan would build on the findings of the Urban Design, Landscape Character and Visual Working Paper (Appendix I) and the RMS Landscape Guidelines. The landscape plan would include detailed species and planting guides and consideration of refurbishment of existing landscaped areas in the project area.	WDA / Contractor	Pre-construction
Noise walls	V-5	Noise walls would be designed and constructed consistent with the RMS Noise Wall Guidelines (RMS 2007). Where an existing noise wall requires removal prior to the introduction of a new noise wall, the new walls would be introduced as soon as practicable following removal of existing noise walls to ensure minimal impact on residents	Contractor	Construction
Structures	V-6	Consideration would be given to reducing the gradient of existing steep batter slopes to facilitate an increased planting response and greater accessibility for maintenance.	WDA / Contractor	Pre- construction

Impact	REF#	Environmental management measures	Responsibility	Timing
Structures	V-7	The widening of bridges at Penshurst Road and Cooloongatta Road would be consistent with RMS <i>Bridge Aesthetics Design Guideline (RMS 2012b)</i>	WDA / Contractor	Pre-construction
Structures	V-8	Design for the Penshurst Road and Cooloongatta Road bridges would incorporate CPTED principles	WDA / Contractor	Pre-construction
Shared path	V-9	Design of pedestrian and bicycle ways would incorporate CPTED principles.	WDA / Contractor	Pre-construction
Construction compound	V-10	Provide tree protection to significant trees and vegetation to protect trees from damage during construction and retain trees and vegetation to minimise visual impacts.	Contractor	Construction
Construction compound	V-11	All vegetation between construction sites and adjacent residential areas would be retained where practicable to screen views.	Contractor	Construction
Construction compound	V-12	Landscaping and restoration would occur at each site upon completion of construction activities.	Contractor	Construction
Unexpected identification of Aboriginal objects	AH-1	Before the start of construction, all personnel working on site would be trained regarding the procedure for unexpected finds of Aboriginal objects and about their responsibilities in accordance with the <i>National Parks and Wildlife Act 1974</i> .	Contractor	Pre-construction and Construction
Unexpected identification of Aboriginal objects	AH-2	Should Aboriginal cultural heritage items be uncovered during construction, the RMS Unexpected Archaeological Finds Procedure (RMS 2012) would be followed. All work in the vicinity of the find would cease and the RMS Aboriginal Cultural Heritage Advisor would be contacted immediately. Works in the vicinity of the find would not recommence until clearance is received.	Contractor	Construction
Unexpected identification of skeletal remains	AH-3	Project environmental management plans would identify procedures for management of any possible human skeletal remains. In the event that possible human skeletal remains are revealed, work would cease in the affected area and the reported to the NSW Police, the Office of Environment and Heritage and Aboriginal stakeholders.	Contractor	Construction
Unexpected impacts on heritage values	HH-1	Before the start of construction, all personnel working on site would be trained regarding the procedure for unexpected finds of archaeological objects and about their responsibilities in accordance	Contractor	Pre-construction and Construction

Impact	REF#	Environmental management measures	Responsibility	Timing
		with the <i>Heritage Act 1977</i> .		
Unexpected impacts on heritage values	HH-2	If any unanticipated archaeological deposits are identified within the study area during construction, works should cease in the immediate area and the Roads and <i>Maritime Unexpected Archaeological Finds Procedure 2012</i> should be followed.	Contractor	Construction
Emissions from general construction activities	AQ-1	<ul style="list-style-type: none"> Emissions from construction activities would be managed by: Engines of on-site vehicles and plant would be switched off when not in use. Where practicable, vehicles would be fitted with pollution reduction devices. Vehicles would be maintained and serviced according to manufacturer's specifications. <i>All off road diesel equipment will meet best available diesel emissions standards or be fitted with an appropriate diesel exhaust treatment device where possible.</i> Where possible lower vibration generating items of excavation plant and equipment would be used (eg smaller capacity rockbreaker hammers). 	Contractor	Construction
Dust from construction activities	AQ-2	<p>Dust from construction activities would be managed by:</p> <ul style="list-style-type: none"> Area of exposed surfaces would be minimised during construction Measures (including watering or covering exposed areas) would be used to minimise or prevent dust. Stockpiles or areas that may generate dust are to be managed to suppress dust emissions in accordance with the Roads and Maritime Stockpile Site Management Guideline (2011). Communications material such as the project website and community notification would include a contact person and phone number to enable complaints to be received and 	Contractor	Construction

Impact	REF#	Environmental management measures	Responsibility	Timing
		<p>responded to.</p> <ul style="list-style-type: none"> Rehabilitation of completed sections would be undertaken as soon as practicable. 		
Dust emissions from hauling activities	AQ-3	<p>Dust from construction haulage activities would be managed by:</p> <ul style="list-style-type: none"> Vehicle traffic would be restricted to designated routes which can be managed by regular watering or street cleaning and with appropriate speed limits. Wheel wash or grids would be located near exit points to minimise mud/ dirt track out. Street cleaning would be undertaken to remove dirt tracked onto sealed roads. Vehicle loads would be covered when transporting material off site. 	Contractor	Construction
Impacts to flooding and drainage during construction	HF1	<p>Drainage structures would be designed to convey flows with consideration of appropriate blockage factors and overflow/diversion routes.</p> <p>Appropriate scour protection measures would be implemented along any temporary drainage lines within the project construction area.</p>	WDA / Contractor	Detailed design and construction
Impacts from flooding and drainage during operation	HF-2	<p>The key recommendations of the pavement drainage strategy would be considered throughout detailed design and construction to minimise impacts to infrastructure and receivers located near the project.</p>	WDA / Contractor	Detailed design and construction
<i>Impacts to flooding and drainage during construction</i>	<i>HF-3</i>	<i>Any disturbance to the vegetated drainage line in Windara Reserve would be rehabilitated post construction.</i>	<i>Contractor</i>	<i>Construction</i>
Soil erosion and water quality	GSW-1	<p>A Soil and Water Management Plan (SWMP) would be prepared to identify all risks relating to soil erosion, and pollution caused by sediments and other materials, and describe how these risks would be addressed during construction. The SWMP would be guided by:</p> <ul style="list-style-type: none"> Roads and Maritime Code of Practice for Water Management, 	Contractor	Pre-construction and construction

Impact	REF#	Environmental management measures	Responsibility	Timing
		<p>the Roads and Maritime Erosion and Sedimentation Procedure</p> <ul style="list-style-type: none"> • The NSW Soils and Construction – Managing Urban Stormwater Volume 1 “the Blue Book” (Landcom, 2004) and Volume 2 (DECC, 2008). • Roads and Maritime Technical Guideline: Temporary Stormwater Drainage for Road Construction, 2011. • Roads and Maritime Technical Guideline: Environmental Management of Construction Site Dewatering, 2011. 		
Soil erosion and water quality	GSW-3	Construction activities would be staged in a manner that would minimise areas of soil exposed during construction wherever practicable	Contractor	Construction
Soil erosion and water quality	GSW-3	All stockpiles would be designed, established, operated and decommissioned in accordance with <i>the Roads and Maritime Draft Stockpile Management Procedures, 2011</i> .	Contractor	Pre-construction and construction
Soil erosion and water quality	GSW-4	Emergency wet and dry spill kits would be kept on site at all times and all staff would be made aware of the location of the spill kit and trained in its use.	Contractor	Construction
Groundwater	GSW-5	Should any groundwater be encountered and need to be disposed during construction, disposal would be undertaken in accordance with Technical Guideline – Environmental management of construction site dewatering (EMS-TG-011) (RMS 2011)	Contractor	Construction
Disturbance of contaminated land	CWR-1	<p>Excavated material (contaminated or potentially contaminated) that is not suitable for on-site reuse or that cannot be retained/managed on site would be transported to a site that can legally accept that material for disposal.</p> <p>Soils/construction materials leaving the site would be waste classified and/or assessed so that correct resource recovery and or off-site disposal occur.</p>	Contractor	Construction
Waste management	CWR-2	The waste minimisation hierarchy principles of avoid/reduce/re-use/recycle/dispose would be used	Contractor	Construction
Waste management	CWR-3	A project-specific <i>Construction Waste and Energy Management sub-</i>	Contractor	Pre-construction and

Impact	REF#	Environmental management measures	Responsibility	Timing
		<i>plan (RWMP) would be prepared before construction.</i>		construction
Waste management	CWR-4	All wastes, including contaminated wastes, would be identified and classified in accordance with <i>Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes</i> .	Contractor	Construction
Waste management	CWR-5	Trees and plant material would be mulched or chipped on-site and used in landscaping where practicable to stabilise disturbed soils where possible.	Contractor	Construction
Waste management	CWR-6	A dedicated washout facility that is impervious would be provided during construction so that runoff from the washing of concrete machinery, equipment and concrete trucks can be collected and disposed of at an appropriate waste facility.	Contractor	Construction
Waste management	CWR-7	All wastes would be managed in accordance with the <i>Protection of the Environment Operations Act 1997</i> .	Contractor	Construction
Waste management	CWR-8	Types of waste collected, amounts, date/time and details of disposal are to be recorded in a waste register.	Contractor	Construction
Waste management	CWR-9	Workspaces would be maintained, kept free of rubbish and cleaned up at the end of each working day.	Contractor	Construction
Resource use	CWR-10	Wherever feasible and reasonable, construction material would be sourced from within the Sydney region.	Contractor	Pre-construction and construction
Resource use	CWR-11	Recovery of resources for reuse. Waste materials generated by the project would be re-used either on-site or off-site where possible, including the re-use of top soil in landscape works, and the use of mulch for erosion and sediment controls. Where applicable, wastes would be re-used in accordance with the conditions attached to relevant Resource Recovery Exemptions issued by the EPA.	Contractor	Construction
Construction emissions and energy use	GHG-1	The construction contractor would identify recycled materials (such as recycled aggregates in road pavement and surfacing; steel with recycled content) for use in construction or operation of the project where they are cost, quality and performance competitive (refer CWR-4 in section 9.11).	Contractor	Pre-construction
Construction	GHG-2	The procurement process would consider the fuel efficiency of	Contractor	Pre-Construction

Impact	REF#	Environmental management measures	Responsibility	Timing
emissions and energy use		construction plant, equipment and vehicles in selecting a preferred supplier. Where the most fuel efficient item is not selected, justification must be documented and approved as part of the procurement process prior to purchase.		
Construction emissions and energy use	GHG-3	The feasibility of using biofuels (biodiesel, ethanol, or blends such as E10 or B80) would be investigated by the contractor, taking into consideration the capacity of plant and equipment to use these fuels, ongoing maintenance requirements, and local sources of biofuel.	Contractor	Construction
Construction emissions and energy use	GHG-4	A Resource and Waste Management Plan (RWMP) would be prepared to maximise re-use and recycling of construction and demolition waste. Re-use of excavated road materials would be maximised as far as possible where it is cost, quality and performance competitive to reduce material use (and embedded energy).	Contractor	Pre-construction
Construction emissions and energy use	GHG-5	Locally produced goods and services would be procured where feasible and cost effective to reduce transport fuel use.	Contractor	Construction
Operation	GHG-6	Assess opportunities to use renewable energy sources to power control systems, lighting and signage.	WDA	Operation

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- SLR Consulting, 2014 *WestConnex King Georges Road Interchange Upgrade Construction and Operational Road Traffic Noise and Vibration Impact Assessment* October 2014 Revision 1
- Sydney Motorways Project Office, 2013 - *WestConnex Business Case Executive Summary*.
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A large, stylized letter 'A' graphic composed of three overlapping triangles in shades of blue, positioned on the right side of the page. The background is a solid blue color. The text 'Appendix A' is centered horizontally and partially overlaps the 'A' graphic.

Appendix A

Appendix A List of Submissions

Sub #	Name	Organisation	Suburb
1	Confidential		Granville
2	Peter Wilson		Earlwood
3	Graeme Harris		Kogarah
4	Desmond Dent	10,000 Friends of Greater Sydney	Northbridge
5	Jonathan Nicholas		Tempe
6	Ian Bailey		Liverpool
7	Stephen Strachan		Kingsgrove
8	Cassi Plate		Leichhardt
9	David Leung		Beverly Hills
10	John English	Beverly Hills North Progress Society	Beverly Hills
11	Confidential		
12	Confidential		
13	James O'Donoghue		Beverly Hills
14	Confidential		
15	Confidential		
16	Confidential		
17	Confidential		
18	William Samphier		Beverly Hills
19	Confidential		
20	David O'Connell		Beverly Hills
21	Confidential		
22	Confidential		
23	Confidential		
24	Confidential		
25	Jim Plater		Beverly Hills
26		Wolli Creek Preservation Society	Earlwood
27	Kathryn Calman		Beverly Hills
28		WestConnex Action Group Company	St Peters
29	Warren Artlett	Bike South West Inc	Panania
30	Confidential		
31	Confidential		
32	Andre Bacon		Panania

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