

Heavy Vehicle Movement Report: Use of local roads in Local Roads Works areas

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Signature:						

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Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this Plan is reviewed and approved. The Support Services Director (SSD) is responsible for updating this Plan to reflect changes to the Project, legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director before being distributed or implemented.

Revision Details

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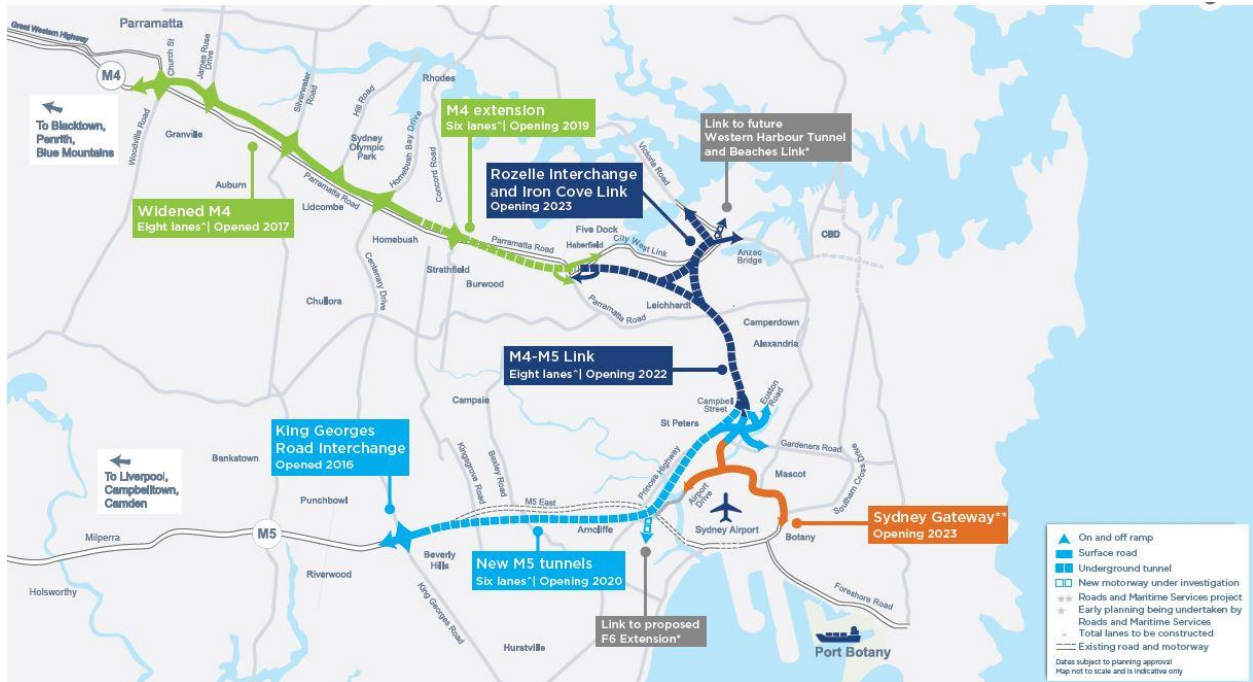
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1. Introduction

1.1 Project description

WestConnex is one of the NSW Government's key infrastructure projects which aims to ease congestion, create jobs and connect communities. It is the largest integrated transport and urban revitalisation project in Australia.

The 33 kilometre project was a key recommendation of the State Infrastructure Strategy released in October 2012. It brings together a number of important road projects which together form a vital link in Sydney's Orbital Network. They include a widening of the M4 east of Parramatta, a duplication of the M5 East and new sections of motorway to provide a connection between the two key corridors.



The New M5 Project (New M5, the project) is designated as State Significant Infrastructure (SSI 6788) and is the Stage 2 component of the WestConnex scheme. The proponent for the project is Roads and Maritime Services (RMS) and the project company (WCX M5 AT). WCX M5 AT has engaged the CPB Samsung Dragados Joint Venture (CDS-JV) to deliver the design and construction of the project. The project was approved by the Minister for Planning on 20 April 2016, subject to conditions.

The Project will run from the existing M5 East corridor at Beverly Hills via tunnel to St Peters, providing improved access to the airport, south Sydney and Port Botany precincts. The Project will substantially improve the east - west corridor access between the Sydney CBD, Port Botany and Sydney Airport precincts and the South West growth areas.

The project comprises the following key features:

- New twin tunnels which are higher, wider and flatter. These will more than double capacity along the M5 East corridor and provide motorway access to north of Sydney Airport
- A new interchange at an industrial site at St Peters, which reduces the impact on nearby, residential areas
- Connections from the interchange to key roads in the area, including Campbell Road/Street, Euston Road and across the canal to Bourke Road
- Widening of Campbell Road/Street and Euston Road through existing road widening reservations
- Western tunnel entry and exit points at Kingsgrove..

1.2 Purpose and scope of this report

The State Significant Infrastructure (SSI) Ministers Conditions of Approval (CoA) for the SSI 6788, Condition D46 states:

“Unless otherwise approved by the Secretary, heavy vehicle movements associated with the construction of the SSI are not permitted to use Wirega Avenue and Garema Circuit at Kingsgrove, or any other local road not identified for use in the documents referred to in conditions A2(b) and A2(c), unless approved by the Secretary. When seeking the Secretary’s approval for use of such local roads, justification must be provided as to why use of the local road(s) is the only feasible and reasonable route along with details on how impacts on surrounding sensitive receivers will be managed.”

CDS-JV has prepared this document to seek approval from the Secretary for the use of local roads for access to the Local Roads Works (LRW) and St Peters Interchange (SPI) construction sites to enable construction of the SSI. This document details the following:

- A review of the current approved access routes for the LRW and SPI construction sites;
- A construction traffic noise assessment for the proposed route, including potential impacts; and
- The mitigation measures that will be employed to manage heavy vehicle movements and traffic noise for sensitive receivers in this area.

1.3 Need for approval of the proposed route

The approved project considers the heavy vehicle routes required to access the SPI and Local Roads Works (LRW) construction compounds and sites. In addressing construction access to the SPI and LRW sites, Section 9.3.1 of the WestConnex New M5 Environmental Impact Statement (EIS) states:

Construction vehicles would use the existing arterial road network to access construction compounds as much as practically possible. At locations where direct access to and from construction compounds via arterial roads is not feasible, or these roads cannot be used as a standalone access point for a construction compound, construction vehicles would use local roads.

Whilst the need for the use of local roads in this area is addressed by the EIS, these routes are not specifically identified as required by CoA D46. The use of the local roads subject to this report are required to provide access and egress for deliveries and haulage to and from construction sites. Further details are provided for use of each local road below.

2. Heavy vehicle access routes

2.1 Approved heavy vehicle routes

The approved access routes for the SPI and LRW construction compounds (ie C8 – C14) are described in Chapter 9 of the WestConnex New M5 Environmental Impact Statement (EIS)¹ and in the approved Construction Traffic and Access Sub-plan and Spoil Management Plan. These routes are shown in Figure 1 below.



Figure 1: Heavy vehicles routes identified in the EIS for access to the St Peters Interchange and Local Roads Works construction areas

Construction heavy vehicle traffic volumes predicted for each of the approved access routes for the SPI and LRW construction compounds were provided in Chapter 9 of the EIS. A total of 2,218 heavy vehicle movements per day were predicted to occur across these approved routes.

Access to the LRW construction sites is not specifically identified in the figures provided in the EIS or Submissions and Preferred Infrastructure (SPIR) Report. Section 9.3.1 of the EIS, however, identifies that the use of local roads would be required where direct access via the arterial road network is not feasible.

2.2 Additional local roads proposed for heavy vehicle use

The additional local roads proposed to be used by heavy vehicles in the LRW construction areas are listed below:

- Burrows Road, Alexandria,
- Maddox Street, Alexandria, and
- Bourke Road, Alexandria.

¹ AECOM Australia Pty Ltd 2015 WestConnex The New M5 Project – Environmental Impact Statement

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These roads are shown in Figure 2. The vehicle numbers proposed on each local road and justification for use are identified in Table 1. The use of these roads are required for efficient access between LRW construction sites for deliveries of materials and equipment and haulage. Each route has been selected based on the most direct route available, minimising travel through residential areas and maintaining proximity to the project area. The duration for use of each alternate route is based on the anticipated duration of road closures for Campbell Street, Huntley Street and Euston Road.

Note that temporary use of Barwon Park Road by heavy vehicles has been approved by the Department for the installation of ITS infrastructure.

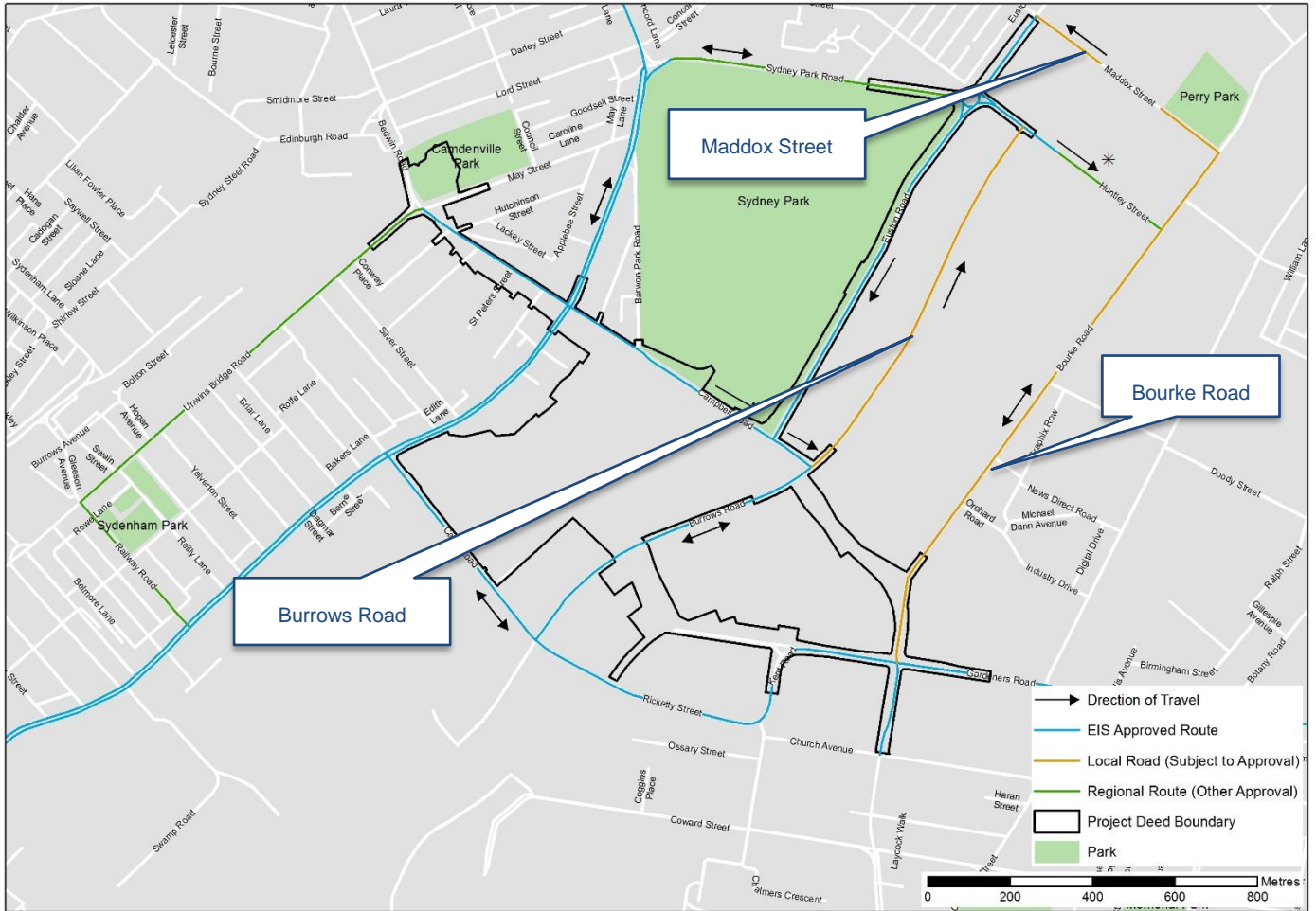
Table 1: Justification and indicative heavy vehicle numbers for proposed local road use

Local road	Justification for use	Duration	HV movements per hour (standard hours)	HV movements per hour (OOHW)	Maximum HV movements per day
Burrows Road (between Huntley St and Campbell Rd)	A long-term partial closure of Campbell Street (westbound) is currently in place for road upgrades. Vehicles accessing LRW construction sites from Campbell Road and construction compounds C9/C11 currently have to travel via Burrows/ Canal/ Princes Highway/ Sydney Park Road to access construction sites on Huntley and Euston Road. Use of Burrows Road would provide a direct travel route between these project sites, minimising the distance travelled and therefore improving efficiencies and minimising impacts of construction vehicles.	Until July 2019	3	3	45
Maddox Street and Bourke Road (between Huntley Street and Maddox Street)	A partial closure of Huntley Street (westbound) will be required during upgrade of the Euston Road / Sydney Park Road intersection between June 2018 and July 2019. Therefore construction vehicles accessing Huntley Street will need to continue eastbound in order to leave site. There are no approved routes from Huntley in the eastbound direction. Return access via Bourke Road and Maddox Street provides the most direct means back to the project area.	June 2018 – July 2019	3	3	45
Bourke Road (between Gardeners Road and Huntley/Maddox Street)	Due to space constraints on Euston Road an additional construction compound has been established within the project area at 81 Bourke Road for stockpiling of material and equipment. Due	Until January 2019	6	6	90

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Local road	Justification for use	Duration	HV movements per hour (standard hours)	HV movements per hour (OOHW)	Maximum HV movements per day
	to the current partial closure of Euston Road (northbound), vehicles cannot access Euston Road from the southbound direction. Currently vehicles are required to travel to Euston Road from Bourke Road via Gardeners/ Ricketty/ Canal/ Princes Hwy/ Sydney Park Road. Bourke Road therefore provides a more direct access route between the compound and the construction site.				



*Note: Huntley Street will be eastbound only during Euston Road/Sydney Park Road intersection upgrade works. Euston Road and Campbell Road are one way due to long term lane closures.

Figure 2: Proposed additional local roads for heavy vehicle access to SPI and LRW construction areas.

3. Traffic noise assessment

3.1 Identification of sensitive receivers

The project area has been divided into Noise Catchment Areas (NCAs), to represent areas of a similar acoustic environment. The project NCAs have been developed based on those identified in the EIS, with some modifications to allow for site-specific characteristics (refer to Section 3 of Appendix A). The approved Construction Noise and Vibration Management Plan (CNVMP) provides a detailed description of all project NCAs.

A representative list of the nearest potentially affected noise sensitive receivers to the proposed heavy vehicle routes are identified in the Construction Traffic Noise Assessment (Appendix A) and are listed in Table 2 below. All receivers on Maddox Street between Euston Road and Bourke Road are commercial/industrial and therefore no sensitive receivers are identified for this route. The residential apartments that occur on Euston Road/Maddox Street have already been assessed for noise impacts as part of the construction activities in this area.

The proposed roads are not located within any heritage conservation area or other amenity areas, such as sporting grounds, that would potentially be impacted by the heavy vehicle use.

Table 2: Nearest noise sensitive receivers

Assessment road	NCA ID	Receiver type	Nearest receiver address	Distance to road centre
Burrows Road	OSR_105	Childcare	95 Burrows Road, Alexandria	25 m
Maddox Street*	N/A	N/A	N/A	N/A
Bourke Road	OSR_326	Childcare	2/160 Bourke Road, Alexandria	145 m

* All receivers assessed along the Maddox Street proposed route are commercial or industrial.

3.2 Construction traffic noise assessment

A Construction Traffic Noise Assessment was carried out for the proposed use of these roads and is provided in Appendix A. It provides an assessment of the potential increase to traffic noise.

The predicted traffic noise levels were assessed for the daytime and night-time periods and are assessed against the relevant criteria of the NSW Road Noise Policy (refer Table 3).



Table 3: Predicted traffic noise levels (with and without construction traffic)

Assessment road	Receiver type	RNP noise goal		Existing noise level (assumed without construction traffic)		Noise level predicted with construction traffic		dB difference	
		Day	Night	Day	Night	Day	Night	Day	Night
		Burrows Road*	Childcare	55	-	55*	-	56	-
Bourke Road*	Childcare	55	-	55*	-	55	-	0.0	-

* No residential receivers are affected and therefore no night-time impacts are predicted.

The results indicate that there will be no notable increase in traffic noise (ie. less than a 2dB(A) increase) with construction traffic above the assumed existing levels during the day time period and the night time period where applicable. Notwithstanding these results, measures to mitigate/manage potential noise and traffic impacts are provided in Section 4 below.

The proposed routes are for the purposes of Local Roads Works activities and therefore would only be used during standard construction hours, except where works are required outside standard hours by a Road Occupancy Licence (ROL). The additional routes would only be used where required to support specific construction activities and are not intended to be used regularly throughout the timeframes identified in Table 1.

4. Management and mitigation measures

4.1 Consultation

Notifications for works associated with the use of these roads would be provided to the surrounding community in accordance with the Community Communication Strategy. Any complaints associated with the use of the proposed routes would be managed in accordance with the Community Communication Strategy and the Construction Complaints Management System.

RMS and City of Sydney Council are being consulted in regards to the use of these roads. RMS is the relevant road authority for Burrows Road and Bourke Road (between Huntley Street and Gardeners Road). City of Sydney is the relevant road authority for Maddox Street and Bourke Road (between Maddox and Huntley Streets).

4.2 Traffic and noise management and mitigation

Vehicles will be managed in accordance with the relevant sub-plans of the Construction Environment Management Plan (CEMP). In particular, the management measures outlined in the Construction Traffic and Access Sub-Plan and the Construction Noise and Vibration Management Plan (CNVMP) would apply.

Traffic management and mitigation measures described in the CPAS would also apply. This includes the management of staff parking and transport, staging of works and ongoing communication and engagement with stakeholders.

4.3 Road dilapidation reports

Road condition reports have been completed for the proposed local roads in accordance with Condition of Approval B59 and were submitted to the City of Sydney Council on 13/05/2016. Subsequent road dilapidation reports will be prepared at the completion of construction to assess any damage that may have occurred as a result of the project's use of these roads.

5. Conclusion

Use of the proposed routes for heavy vehicle access/egress to the Local Roads Works construction sites is considered justified for the following reasons:

- The EIS does not consider the effect of road closures/partial road closures on access arrangements for the Local Roads Works sites
- The proposed roads are required to provide safe and efficient access /egress for deliveries and haulage to and from a number of approved project sites during partial road closures of Campbell Street, Huntley Street and Euston Road.
- The proposed routes use the most direct means to and from the major arterial road network.
- There are minimal identified sensitive receivers on the proposed routes and traffic noise modelling identifies compliance with the relevant noise criteria

It is considered that the use of the proposed heavy vehicle routes, is the most feasible and reasonable option for access to the Local Roads Works construction sites. With the implementation of the mitigation and management measures provided in Section 4 and Appendix A, no major adverse impacts are anticipated to occur.

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Appendix A: Construction Traffic Noise Assessment

27 February 2018

TH014-10 10F01 (r5) M5N CNVIS SPI Alt truck

CPB Dragados Samsung Joint Venture

WESTCONNEX NEW M5 - Construction traffic noise assessment: Local Roads Works proposed heavy vehicle routes

1 Introduction

This Construction Traffic Noise Assessment has been prepared on behalf of CPB Contractors Dragados Samsung Joint Venture (CDS JV) to support the use of new heavy vehicle routes for the Local Roads Works construction at St Peters. The report presents a traffic noise assessment of the proposed heavy vehicle routes.

This report forms part of the Construction Noise and Vibration Management Plan (CNVMP) [TH014-05 01F01 WCX_NM5 CNVMP] [1] for the construction of the New M5 Project (New M5 or Project).

1.1 Relevant requirements and purpose of this report

This report assesses the proposed heavy vehicle routes for the Local Roads works. The proposed routes would use four local roads that were not assessed in the Environmental Impact Statement (EIS) for the Project. The need for these routes are primarily to provide access and egress for heavy vehicles associated with the SPI Local Roads construction works. Table 1 below identifies the roads that have been included in this assessment and details the associated local roads construction sites required for the heavy vehicle usage.

Table 1: Local road

Heavy vehicle road usage	Associated local roads construction areas
Bourke Road (between Gardeners Road and Maddox Street)	Local road construction works on Bourke Road
Burrows Road North (between Huntley Street and Campbell Road)	Local road construction works on Huntley Street and Sydney Park Road
Maddox Street (between Bourke Road and Euston Road)	Local road construction works on Bourke Road

1.2 Quality assurance

The work documented in this report was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001. Appendix A contains a glossary of acoustic terms used in this report.

2 Description of work, construction hours and traffic

2.1 Description of work

The Local Roads Works construction at St Peters would require heavy vehicle usage on the local road network to provide access and egress to the construction sites. The local road routes are identified on the figure in APPENDIX B. The roads on the proposed routes that require an assessment of construction traffic noise are detailed in Table 1. All other roads included along the routes identified in APPENDIX B are not classified as local roads and are therefore not included as part of this assessment under Condition of Approval D46.

On roads near a construction site, the community may connect heavy vehicle movements with the New M5 Project works. As the heavy vehicles move further from the construction site onto sub arterial or arterial roads, the noise may be perceived as being part of the general road traffic. The use of the local roads identified in Table 1 by in and outbound heavy construction vehicles from the Local Road Works construction sites have the potential to cause noise impact to noise sensitive receivers located along the route. The routes will be in use for the duration of the Local Road Works construction.

2.2 Construction hours

The construction hours for the Project are defined by the Conditions of Approval D12, D13 and D15. Condition D12 sets the standard construction hours of work.

Table 2 Construction hours

Reference	Construction Activity	Monday to Friday	Saturday	Sunday/ Public holiday
D12	Standard Construction	7 am to 6 pm	8 am to 1 pm	No work
D15 and CNS*	Out of Hours Work (OOHW) Period 1	6 pm to 10 pm	7 am to 8 am 1 pm to 10 pm	8 am to 6 pm
	Out of Hours Work (OOHW) Period 2	10 pm to 7 am	10 pm to 7 am	6 pm to 8 am

Notes: * Transport for NSW Construction Noise Strategy (ref: 7TP-ST-157/2.0) April 2012

2.3 Construction traffic

The table below summarises the heavy vehicle numbers anticipated to use the proposed route for the duration of the works during standard construction hours and outside standard hours (OOHW).

The estimated traffic volumes presented below show that the number of trucks likely to use the proposed routes per hour are low - between three and six heavy vehicles per hour during standard hours, depending on the route. All traffic volumes would be the same during the standard and OOHW periods.

Table 3: Estimated construction traffic volumes for proposed heavy vehicle routes

Road	Average hourly heavy vehicles	
	Day (7am to 10pm)	Night (10pm to 7am)
Bourke Road (between Gardeners Road and Maddox Street)	6	6
Burrows Road North (between Huntley Street and Campbell Road)	3	3
Maddox Street (between Bourke Road and Euston Road)	3	3

3 Nearest sensitive receivers

To assess and manage construction noise, the residential areas surrounding the Project have been divided into Noise Catchment Areas (NCAs) based on each area's similar acoustic environment prior to the commencement of construction works. The NCAs are based on those established in the EIS for the New M5 project, with some modifications to allow for site specific characteristics. The NCAs have been identified in the CNVMP.

A representative list of the nearest potentially affected noise sensitive receivers to the proposed heavy vehicle routes are summarised in Table 4 below.

Table 4: Nearest noise sensitive receivers

Assessment road	NCA ID	Receiver type	Nearest Receiver Address	Distance to road centre
Bourke Road	OSR_326	Childcare	2/160 Bourke Road, Alexandria	145m
Burrows Road	OSR_105	Childcare	95 Burrows Road, Alexandria	25m
Maddox Street	-	-	-	-

Notes:

* All receivers on Maddox Street along the proposed route are commercial or industrial. The NSW RNP does not require assessment for these receiver types

All relevant residential and other sensitive receivers are identified on aerial photographs located in APPENDIX B.

4 Road traffic noise assessment

4.1 Relevant conditions of approval

Condition D46 relates to transport and access for heavy vehicles movements. Condition D46 states that,

Unless otherwise approved by the Secretary, heavy vehicle movements associated with the construction of the SSI are not permitted to use Wirega Avenue and Garema Circuit at Kingsgrove, or any other local road not identified for use in the documents referred to in conditions A2(b) and A2(c), unless approved by the Secretary. When seeking the Secretary's approval for use of such local roads, justification must be provided as to why use of the local road(s) is the only feasible and reasonable route along with details on how impacts on surrounding sensitive receivers will be managed.

Condition D26 and D27 relate to construction traffic noise. Condition D26 requires that,

The Proponent is to ensure that construction vehicle contractors operate so as to minimise any sleep disturbance impacts. Measures that could be used include toolbox talks, contracts that include provisions to deal with unsatisfactory noise performance for the vehicle and/or the operator, and specifying non-tonal movement alarms in place of reversing beepers or alternatives such as reversing cameras and proximity alarms, or a combination of these, where tonal alarms are not mandated by legislation.

Condition D27 requires that,

Use of compression brakes must not be permitted for construction vehicles associated with the SSI during construction, unless in an emergency situation.

Condition D16 references the NSW Interim Construction Noise Guideline (ICNG, [3]) in relation to construction noise management levels. Noise from construction traffic on public roads is not assessed under this guideline, although the guideline does reference the Environmental Criteria for Road Traffic Noise (EPA 1999), which has been superseded by the NSW Road Noise Policy (RNP).

4.2 NSW Road Noise Policy

4.2.1 Traffic noise criteria

The criteria for residences are presented in Table 5 below. The criteria for other sensitive receivers are presented in Table 6.

Table 5: RNP assessment criteria - residential

Road category	Assessment criteria – dB(A)	
	Day (7am to 10pm)	Night (10pm to 7am)
Freeway/arterial/sub-arterial	L _{Aeq,15hour} 60 (external)	L _{Aeq,9hour} 55 (external)
Local road	L _{Aeq,1hour} 55 (external)	L _{Aeq,1hour} 50 (external)

Table 6: RNP assessment criteria – other sensitive land uses

Existing sensitive land use	Assessment criteria, dB(A)		Additional considerations
	Day (7am-10pm)	Night (10pm-7am)	
School classrooms	L _{Aeq,1hour} 40 (internal) when in use	–	In the case of buildings used for education or health care, noise level criteria for spaces other than classrooms and wards may be obtained by interpolation from the 'maximum' levels shown in Australian Standard 2107:2000 (Standards Australia 2000).
Hospital wards	L _{Aeq,1hour} 35 (internal)	L _{Aeq,1hour} 35 (internal)	
Places of worship	L _{Aeq,1hour} 40 (internal)	L _{Aeq,1hour} 40 (internal)	<p>The criteria are internal, i.e. the inside of a church. Areas outside the place of worship, such as a churchyard or cemetery, may also be a place of worship. Therefore, in determining appropriate criteria for such external areas, it should be established what in these areas may be affected by road traffic noise.</p> <p>For example, if there is a church car park between a church and the road, compliance with the internal criteria inside the church may be sufficient. If, however, there are areas between the church and the road where outdoor services may take place such as weddings and funerals, external criteria for these areas are appropriate. As issues such as speech intelligibility may be a consideration in these cases, the passive recreation criteria (see point 5) may be applied.</p>
Open space (active use)	L _{Aeq,15hour} 60 (external) when in use		<p>Active recreation is characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion.</p> <p>Passive recreation is characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, e.g. playing chess, reading.</p>
Open space (passive use)	L _{Aeq,15hour} 55 (external) when in use		In determining whether areas are used for active or passive recreation, the type of activity that occurs in that area and its sensitivity to noise intrusion should be established. For areas where there may be a mix of passive and active recreation, e.g. school playgrounds, the more stringent criteria apply. Open space may also be used as a buffer zone for more sensitive land uses.
Childcare facilities	Sleeping rooms L _{Aeq,1hour} 35 (internal) Indoor play areas L _{Aeq,1hour} 40 (internal) Outdoor play areas L _{Aeq,1hour} 55 (external)		<p>Multi-purpose spaces, e.g. shared indoor play/sleeping rooms should meet the lower of the respective criteria.</p> <p>Measurements for sleeping rooms should be taken during designated sleeping times for the facility, or if these are not known, during the highest hourly traffic noise level during the opening hours of the facility.</p>
Aged care facilities	–	–	Residential land use noise assessment criteria should be applied to these facilities

Notes: Land use developers must meet internal noise goals in the Infrastructure SEPP (Department of Planning NSW 2007) for sensitive developments near busy roads.

It is generally accepted that most buildings provide a noise reduction of at least 10dB(A) when windows are left 20% open. Therefore, where the noise goals are internal, a 10dB(A) reduction from external to internal noise levels has been adopted to allow an external assessment.

4.2.2 Process for applying the criteria

When assessing additional traffic on existing roads generated by land use developments such as construction sites, the RNP states the following:

"For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2dB above that of the corresponding 'no build option'.

For this assessment, the 'no build option' would be the existing traffic volumes without any construction traffic.

4.3 Noise assessment

Existing traffic data along the proposed construction routes are not currently available. Therefore to facilitate a worst case assessment it has been assumed that existing traffic noise levels are equal to the RNP assessment criteria levels. To comply with the requirements of the RNP, the increase in the total traffic noise level (existing + construction traffic) should be limited to no more than 2dB over the assumed existing level.

Road traffic noise is typically predicted using the United Kingdom Department of Environment entitled "Calculation of Road Traffic Noise (1988)" known as the CoRTN (1988) method. CoRTN predicts noise levels for steady flowing traffic. Given the low traffic volumes, and that construction traffic is not free flowing, CoRTN is not the preferred traffic noise prediction method.

Construction traffic noise has been predicted using the United States Department of Transportation Federal Highway Administration (FHWA) Traffic Noise Model (TNM). The TNM algorithms are contained within the 'CadnaA' noise modelling software which has been used to calculate traffic noise levels at receivers. As noted in Appendix B of the RNP, the calculation algorithms of TNM are generally considered to be mathematically more rigorous than those of the CoRTN method, leading to greater accuracy and a wider range of validity at low traffic flows.

Construction traffic noise has been assessed and is presented in Table 7 below. In accordance with the NSW RNP, all predicted results include a +2.5dB(A) facade correction.

Table 7: Construction traffic assessment

Assessment road	Receiver			Façade		RNP noise goal, dB(A)		Assumed existing traffic noise, dB(A)		Construction traffic noise, dB(A)		Total traffic noise, dB(A)		Increase due to construction vehicles, dB(A)	
	NCA ID	Receiver Address	Receiver Description	Floor	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Bourke Road	OSR_326	2/160 Bourke Road, Alexandria	Childcare	G	W	55	-	55 ¹	-	29	-	55	-	0.0	-
Burrows Road North	OSR_105	95 Burrows Road, Alexandria	Childcare	G	E	55	-	55 ¹	-	51	-	56	-	1.5	-

Notes:

1. RNP noise goal for childcare outdoor play

4.4 Discussion of results

The predicted road traffic noise levels indicate that construction related road traffic noise levels would comply with the requirements of the RNP.

Furthermore, if existing noise levels are currently greater than the RNP noise goals, the inclusion of heavy vehicle construction traffic would cause less impact, and would not cause a greater than 2dB(A) increase in traffic noise levels.

The alternate heavy vehicle routes would be in use for the duration of the local area roads construction. The number of heavy vehicles estimated to use the route per day is low, as shown in Table 3.

Measures for managing noise impact from use of the proposed heavy vehicle routes are provided in Section 5.

5 Noise management measures

5.1 Heavy vehicle code of conduct

To satisfy condition D26 and D27, CDS has developed a Heavy Vehicle Code of Conduct for the Project (see Construction Traffic Management Plan (M5N-TM-PLN-PWD-0001)). The Code includes measures to ensure that the noise impacts of heavy vehicle traffic on surrounding streets are minimised.

The Code requires drivers to drive within the speed limit always. This will ensure that noise impacts of heavy vehicle traffic on surrounding streets are minimised.

The Code states that compression brakes will not be permitted to be used whilst vehicles are associated with the construction site, unless in an emergency.

5.2 Community consultation

Prior to the commencement of use of the proposed heavy vehicle route, all sensitive receivers along the proposed routes will be notified to advise that trucks will temporarily be using this road during as a heavy vehicle route. The notifications will be provided in accordance with the Community Communication Strategy.

The notification will also advise of the appropriate enquiry contact details (see Section 5.3).

5.3 Complaints handling

Noise complaints received and responded to will be managed in accordance with the Construction Complaints Management System.

Sydney Motorway Corporation (SMC) formally WDA operate a 24-hour construction complaints line (1300 660 248). Enquiries/ complaints may also be received through the Project email (info@westconnex.com.au).

6 Conclusion

Heavy vehicle routes along local roads associated with the Local Roads Works construction works have been identified and described in this report. The potentially affected noise sensitive receivers and relevant road traffic noise objectives have been identified and discussed to allow the assessment of potential road traffic noise impacts.

Noise impact from the proposed truck routes have been checked in a conservative manner by predicting construction and potential worst case existing traffic noise levels and comparing to the noise goals of the NSW RNP.

The predicted road traffic noise levels indicate that construction traffic would comply with the requirements of the RNP. The inclusion of heavy vehicle construction traffic would not cause a greater than 2dB(A) increase in traffic noise levels.

Nonetheless, noise management measures have been presented in Section 5 to limit the potential for impacts during the use of the proposed route and to satisfy project conditions related to heavy vehicle traffic.

Document control

Date	Revision history	Non-issued revision	Issued revision	Prepared	Instructed	Authorised
21.12.2017	Issued to client	0-1	2	■	■	■
16.01.2018	Updated for client comments		3	■		■
17.01.2018	Updated for client comments		4	■		■
27.02.2018	Updated for removal of Church Ave and Bourke Street		5	■		■

Important Disclaimer:

The work presented in this document was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001.

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We have derived data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination and re-evaluation of the data, findings, observations and conclusions expressed in this report.

We have prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

The information contained herein is for the purpose of acoustics only. No claims are made and no liability is accepted in respect of design and construction issues falling outside of the specialist field of acoustics engineering including and not limited to structural integrity, fire rating, architectural buildability and fit-for-purpose, waterproofing and the like. Supplementary professional advice should be sought in respect of these issues.

References

1. WestConnex New M5 Construction Noise and Vibration Management Plan (TH014-05 01F01 WCX_NM5 CNVMP)
2. AECOM Australia Pty Ltd 2015 WestConnex The New M5 project - Technical Working Paper: Noise and Vibration Revision 8 – 20-Nov-2015
3. Department of Environment and Climate Change 2009 NSW Interim Construction Noise Guideline (ICNG),
4. NSW Department of Environment, Climate Change and Water 2011 Road Noise Policy (RNP)
5. Environment Protection Authority 1999 NSW Environmental Criteria for Rd Traffic Noise (ECRTN)
6. NSW Environment Protection Authority 2010 Industrial Noise Policy (INP)
7. AustRoads 2006 Automatic Vehicle Classification by Vehicle Length (publication no: AP-T60/06)
8. Transport for NSW Construction Noise Strategy (ref: 7TP-ST-157/.0) April 2012

APPENDIX A Glossary of terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

Adverse weather	Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Assessment period	The period in a day over which assessments are made.
Assessment point	A point at which noise measurements are taken or estimated. A point at which noise measurements are taken or estimated.
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L90 noise level (see below).
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall at lunch time 70dB The sound of a car passing on the street 80dB Loud music played at home 90dB The sound of a truck passing on the street 100dB The sound of a rock band 115dB Limit of sound permitted in industry 120dB Deafening
dB(A)	A-weighted decibels. The A-weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.

L _{Max}	The maximum sound pressure level measured over a given period.
L _{Min}	The minimum sound pressure level measured over a given period.
L ₁	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L ₁₀	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L ₉₀	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
L _{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Reflection	Sound wave changed in direction of propagation due to a solid object obscuring its path.
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain L _{eq} sound levels over any period of time and can be used for predicting noise at various locations.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
Tonal noise	Containing a prominent frequency and characterised by a definite pitch.

APPENDIX B **Proposed truck route and nearest sensitive receivers**



<p>Legend:</p> <p> NCA</p> <p> ALTERNATIVE HV ROUTE</p> 	<p>Consultant:</p> <p>RENZO TONIN & ASSOCIATES <i>inspired to achieve</i></p> <p>Acoustics, Vibration & Structural Dynamics Sydney Melbourne Brisbane Gold Coast Kuwait</p> <p>1/418A Elizabeth Street, SURRY HILLS NSW 2010 P: 02 8218 0500 F: 02 8218 0501</p>	<p>Client:</p> <p>WestConnex New M5</p> <p>CPB CONTRACTORS DRAGADOS SAMSUNG SAMSUNG C&T</p>	<p>Project:</p> <p>WESTCONNEX STAGE 2 NEW M5</p> <p>Noise levels are approximate due to interpolation of contours and should be used for reference only. For information only and not for construction. This information is protected by copyright.</p>	<p>Description:</p> <p>LOCAL ROADS WORKS PROPOSED HEAVY VEHICLE ROUTE ASSESSMENT</p> <table border="1"> <tr> <td>Project No.:</td> <td>TH014-10</td> <td>Created by:</td> <td>rp</td> </tr> <tr> <td>Fig Ref:</td> <td>TH014-10.5.10.01 (r2)</td> <td></td> <td></td> </tr> <tr> <td>Date:</td> <td>2018.02.27</td> <td>Scale:</td> <td>1: 10500 A3</td> </tr> </table>	Project No.:	TH014-10	Created by:	rp	Fig Ref:	TH014-10.5.10.01 (r2)			Date:	2018.02.27	Scale:	1: 10500 A3
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HV Movement Report: Local Roads Works

Appendix B: Evidence of consultation

