

Site-specific Ancillary Facilities Management Plan: Burrows Rd South

Project Name: WestConnex New M5

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Document Approval

Rev.	Date	Prepared by	Reviewed by	Recommended by	Approved by	Remarks
00	14/02/18	CDS-JV	CDS-JV RMS SMC			
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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

Revision	Details
00	Prepared for ER and client review
01	SMC / RMS comments addressed. For DPE review and approval.
02	DPE comments addressed and update to site boundary and layout. For DPE Approval



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1. Introduction

1.1 Context

The New M5 Project is the Stage 2 component of the WestConnex scheme, a NSW Government initiative to connect Sydney's west and south-west with the Sydney Airport and the Port Botany precinct. It is being delivered by the Sydney Motorway Corporation (SMC), formerly the WestConnex Delivery Authority (WDA).

The CPB Contractors Dragados Samsung Joint Venture (CDS-JV) will deliver the design and construction of WestConnex Stage 2 referred to as the New M5 (the Project). 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 will deliver approximately nine kilometres of two-lane twin tunnels with capacity to operate three lanes in the future, motorway to motorway connections to the King Georges Road Interchange Upgrade at Beverly Hills, and a new interchange at St Peters. Infrastructure Approval was granted for the project on 20 April 2016. Major works commenced in mid 2016 and the New M5 tunnel is scheduled to open to traffic in early 2020.

The Construction Environmental Management Plan (CEMP) provides further background and a detailed description of the Project.

The Ancillary Facilities Management Plan describes the establishment and use of the approved ancillary facilities identified in the New M5 Environmental Impact Statement (EIS).

1.2 Purpose and scope

This Site-specific Ancillary Facilities Management Plan (SSAFMP) describes a proposed ancillary facility, additional to those approved under the EIS. The proposed facility is for the purpose of storing equipment and materials to support Local Roads Upgrades in St Peters, Alexandria and Mascot, as well as crushing and stockpiling tunnel spoil for capping the St Peters Interchange site. The site is located to the south of the St Peters Interchange Site in the General Industrial area of St Peters. The site is outside the approved project footprint. The site is within the Land defined in Schedule 1 of the New M5 Infrastructure Approval.

The site does not meet the locational criteria identified in condition of approval (CoA) D62 and does not meet the requirements of a minor ancillary facility (CoA D64) as it is located outside the approved project area. This SSAFMP has been prepared for the approval of the Secretary, Department of Planning and Environment (DP&E), to satisfy CoA D63.



2. Environmental Planning Requirements

2.1 Compliance with CoA D63

Section 4 and Appendix E of the approved Ancillary Facilities Management Plan (AFMP) describe the approval pathways for ancillary facilities associated with the project. For proposed ancillary facilities that are not included in the EIS and are not compliant with CoA D62 or D64, a Site-Specific Ancillary Facilities Management Plan (SSAFMP) is required to be approved by the Secretary, DP&E.

The proposed Burrows Rd South ancillary facility is not included in the EIS and is located outside of the project area and therefore outside an active construction zone. Approval of a SSAFMP, under CoA D63 is therefore required. Table 1 identifies the requirements of CoA D63 and where they are addressed in this SSAFMP.

Table 1: Compliance with requirements of CoA D63

CoA D63 Reference	Requirement	Where addressed
a)	a detailed description of the ancillary facility, including proposed use and access arrangements;	Section 3.1
b)	a review of the environmental and social impacts of the ancillary facility, including an analysis of compliance with the locational criteria specified in condition D62;	Section 3.2
c)	measures to avoid, mitigate and manage environmental and social impacts associated with the ancillary facility; and	Section 5
d)	demonstration that, with the measures proposed in accordance with (c), the impacts of the ancillary site are consistent with - <ul style="list-style-type: none"> i. the overall project impacts described in documents referred to in conditions A2(b) and A2(c), and ii. all relevant conditions of this approval. 	Section 6

3. Identify and Assess

3.1 Detailed description of the ancillary facility

3.1.1 Site description

The proposed ancillary facility comprises two non-contiguous sites located north of the Botany Goods Line (rail), east and south of Maritime Container Services Intermodal Terminal and west of Boral recycling facility. Both sites are serviced by Burrows Rd South. Figure 1 to Figure 3 show the location and access routes to the facilities.

The proposed sites were formerly used for plant and materials storage and materials handling. The surface is a mixture of concrete and soil hardstand.

The site is under the approach to Sydney Airport north-south runway.

3.1.2 Site activities

The proposed facility is for the purpose of storing equipment and materials to support Local Roads Upgrades in St Peters, Alexandria and Mascot, as well as crushing and stockpiling tunnel spoil for capping the St Peters Interchange site.

The site would contain shipping containers, site sheds and amenities to support Local Roads Upgrades. A telehandler, excavator, street sweeper and delivery vehicles would operate at the site. This facility would reduce dependence on currently approved compounds which are in close proximity to residents and will provide a facility to support nighttime roadworks which has no impact on local residents due to the absence of residential neighbours.

The site would also contain a stockpile of material classed under a NSW Resource Recovery Order as Westconnex New M5 Tunnel Spoil, a site shed and ablutions. A crusher, loader, excavator, water cart and truck and dogs would operate at the site. The site would receive deliveries of tunnel spoil from St Peters interchange and export crushed spoil for reuse at St Peters Interchange. This facility would enable reuse of material produced on the project and eliminates a significant number of truck and dogs from the broader road network, as the spoil will be retained near to the SPI site rather than being transported further afield. Material transport, associated with this facility, on the road network would be limited to Burrows Rd and Burrows Rd South. Approval under CoA D46 would be required for heavy vehicles to use Burrows Rd South.

Tunnel spoil has been crushed and screened at the St Peters Interchange for reuse at the St Peters Interchange site however as road construction at the site continues there will be no space for this activity to continue as the former landfill is transformed into a road interchange. To continue to realise the sustainability opportunity of reusing project waste the Burrows Rd South facility is required.

The site would be decommissioned and rehabilitated to its pre-construction condition or better, or as otherwise agreed by the landowner, in accordance with CoA D65, after the completion of New M5 construction works.

Refer to Table 4 for further details of the proposed activities at the site.

3.1.3 Hours of operation

The facility is proposed to be operated up to 24 hours a day for spoil, equipment and material deliveries. Crushing is not proposed for the night period, with any change subject to a construction noise and vibration impact assessment. Crushing is proposed between 7am and 10pm, with no crushing during the night period. An assessment of noise generated by activities at the facility is presented in Appendix C. Proposed works are less than 5dB(A) above background levels at the external façade of the nearest residential property.

Works would be carried out in accordance with the Infrastructure Approval, in particular CoA D15.

Operation of the Burrows Rd South Ancillary Facility would be in accordance with all requirements specified in the Ancillary Facilities Management Plan (AFMP), the Construction Environmental Management Plan (CEMP) and CEMP Sub-Plans.



3.1.4 Services and utilities

The site would utilise the existing water and sewerage connections. No other connections or modifications to services or utilities are required for the works. Connections will be made in accordance with the relevant regulatory process.

It is estimated the facility will use up to 15kL per day, predominantly for dust suppression, on hot windy days.

The compound is anticipated to connect to the electricity network. The compound is expected to utilise a small generator (<3kVA) to periodically power the site facilities.

The facility will have a containerised bund to store small quantities of fuel and oil.

3.1.5 Site access

Site access to both areas would be via Burrows Rd South (refer Figure 3). Secure gates to both sites will be in place.

3.1.6 Workforce and vehicle movements

The total number of light and heavy vehicle movements at the site each day is likely to vary depending on activities that the facility is supporting. Indicative average and maximum numbers for site-based personnel and vehicles accessing the site are provided in Table 2.

Table 2: Indicative maximum and average vehicle movements and personnel numbers per 24 hours

Burrows Rd South Facility	Light vehicle movements per 24 hours	Heavy vehicle movements per 24 hours	Personnel
Indicative peak	192	492	12
Indicative average	80	213	6

3.1.7 Plant, equipment and materials

Major equipment and vehicles to be used at the site would include:

- Excavator (12t and 35t)
- Front end loader
- Crushing and screening plant
- Telehandler
- Flatbed delivery trucks
- Truck and dogs
- Bogey tipper trucks
- Utility/light vehicles
- Containers for small tools

Materials to be stored at the site would include

- WestConnex tunnel spoil
- Road construction material
- Pipes
- Light poles
- General construction material

Site-specific AFMP: Burrows Rd South



Figure 1: Site location



Site-specific AFMP: Burrows Rd South



Figure 2: Site layout



Figure 2: Site Layout

Site-specific AFMP: Burrows Rd South



Figure 3: Site access route



Figure 3: Site Access

3.2 Construction aspects and environmental impacts

3.2.1 Locational criteria assessment

Table 3: Locational criteria for ancillary facilities (CoA D62)

CoA D62 Reference	Requirement	Compliant	Comments
a)	Be located more than 50 metres from a waterway;	✓	The site is more than 120m from Alexandra Canal. The site is separated from the Canal by Boral Recycling and batch plant.
b)	Be located within or adjacent to land where the SSI is being carried out;	✗	The site is 470m from the St Peters Interchange Site. Refer to Section 3.2.2.
c)	Have ready access to the road network;	✓	Refer to section 3.1.5 and Figure 2 and 3 for further information on site access.
d)	Be located to minimise the need for heavy vehicles to travel on local streets and/or through residential areas;	✓	Refer to section 3.1.5 and and Figure 2 and 3 for details on heavy vehicle access. Burrows Rd South is a local road (non-residential) and predominantly used by heavy vehicles.
e)	Be sited on relatively level land;	✓	The site is level.
f)	Be separated from nearest residences by at least 200 metres (or at least 300 metres for a temporary batching plant);	✓	The site is 285m from 4 houses on Bellevue St Tempe on the southern side of the Botany Goods Line. The site is separated from the residents by the rail line and Maritime Container Services Intermodal Terminal which includes partial screening by containers stacked 6 high and an industrial warehouse.
g)	Not require vegetation clearing beyond that already required by the SSI;	✓	The sites are not vegetated.
h)	Not impact on heritage items (including areas of archaeological sensitivity) beyond those already impacted by the SSI;	✓	No impact. Refer to Section 3.2.7.
i)	Not unreasonably affect the land use of adjacent properties;	✓	The use of the site is consistent with that at adjacent properties. The surrounding property land uses include a crushing and screening plant operation, batching plant operation, a rail freight line and container terminal and other general industrial use.

CoA D62 Reference	Requirement	Compliant	Comments
j)	Be above the 20 ARI flood level unless a contingency plan to manage flooding is prepared and implemented; and	✓	The site is above the 20 ARI flood level. See Appendix C
k)	Provide sufficient area for the storage of raw materials to minimise, to the greatest extent practical, the number of deliveries required outside standard construction hours.	✓	This ancillary facility has been identified with the primary purpose to store materials at a location away from residents. The facility will enable bulk deliveries which can then be broken down and transported in smaller vehicles suitable for local residential areas.

3.2.2 Traffic and transport

Site access to both compound areas would be via Burrows Rd South. Deliveries would use the existing approved routes along Canal Rd from Princes Hwy (refer to Figure 3). Transport between St Peters Interchange and the compound areas would use the approved route on Burrows Rd and then Burrows Rd South. Use of Burrows Rd South would require approval under CoA D46. Burrows Rd South services an industrial area and is utilised by heavy vehicles. This ancillary facility would reduce the number of Project related heavy vehicles on Canal Rd and Princes Hwy by enabling tunnel spoil to be used on the Project. The facility would reduce the number of project related heavy vehicles on Burrows Rd; as currently;

- Spoil haulage truck and dogs arrive to St Peters Tunnel Site empty, are loaded with tunnel spoil and leave site
- Quarry product truck and dogs deliver material to St Peters Interchange and leave the site empty

Under the proposed ancillary facility a proportion of;

- Spoil haulage truck and dogs would remove spoil from St Peters Tunnel Site to the ancillary facility
- The same trucks would be backloaded and deliver suitable capping material to St Peters Interchange

In addition to reducing the number of heavy vehicles on Canal Rd and Princes Hwy, utilising the same trucks to remove and deliver material will reduce the total number of heavy vehicles associated with the Project. It is projected, at peak production, this facility will remove 408 heavy vehicle movements per day from Canal Rd, Princes Hwy and adjoining routes. As detailed above, rather than removing spoil to non-project related facilities (using Canal Rd, Princes Hwy and adjoining routes), spoil will be taken to the Burrows Rd South Facility for crushing. The crushed material would be backloaded / returned to St Peters Interchange in trucks delivering spoil (ie trucks would be loaded in both directions of travel). The ability to use spoil from the project reduces the requirement to import quarry material to St Peters Interchange. The proposal will therefore reduce truck volumes associated with the project along Canal Rd, Princes Hwy and connecting routes.

3.2.3 Noise and vibration

A construction noise and vibration impact statement (CNVIS) has been prepared for the ancillary facility, see Appendix C. The site is within a precinct zoned general industrial (Marrickville Local Environment Plan 2011). Ambient noise at the site is influenced by proximity to Sydney Airport and surrounding industry and transport. The neighbour to the east operates a similar crushing facility to that proposed in this plan. Industrial activities occur in each other direction around the site. The nearest residential receivers are 285 m from the site.

The CNVIS has identified the proposed activities at the Burrows Rd South ancillary facility will be less than 5 decibels above background noise levels at any residence.

Section 5 of this SSAFMP identifies relevant noise mitigation and management measures.

3.2.4 Visual amenity

The facility is not directly visible from residential or recreational land and is situated in an industrial/commercial area. The site would have some lighting. Due to the surrounding land uses, the visual and light spill impacts associated with the use of the site would be negligible. The stockpile is designed to be less than 8m in height consistent with Sydney Airport airspace protection requirements. The site would be rehabilitated to its existing condition or upgraded to a state specified by the owner once use of the facility is complete. Management measures outlined in Table 5 would be implemented to minimise light spill impacts at the site.

3.2.5 Soil and water quality

The facility is on level land with partial concrete hardstand. No excavation at the site is proposed. Erosion from stockpiled materials will be controlled by a site specific erosion and sediment control plan and regular inspections.

With the implementation of mitigation measures outlined in Table 5, it is expected that potential soil and water quality impacts at the site would be negligible.

3.2.6 Flora and fauna

No trees or shrubs are proposed to be removed at the site. The site would be rehabilitated to its existing condition or upgraded to a state specified by the owner once use of the facility is complete. If any clearing is required it would be done in consultation with the owner and approved in accordance with Infrastructure Approval Condition B63.

With the implementation of mitigation measures outlined in Table 5, it is expected that potential impacts on flora and fauna at the site would be negligible.

3.2.7 Heritage

A search of the Marrickville Local Environment Plan, the State Heritage Register and other state registers has not identified known heritage at the facility. No excavation is planned for the site that might disturb the underlying material. The Unexpected Heritage Finds Procedure will be implemented in the event of a potential heritage find.

With the implementation of mitigation measures outlined in Table 5, it is expected that potential impacts on heritage would be unlikely.

3.2.8 Air quality

Air quality impacts associated with the works would be consistent with construction works across the project in general and would relate to the generation of dust and exhaust emissions from plant and vehicle use associated with the works. Plant used for crushing spoil will be fitted with dust mitigation that has proved successful for crushing elsewhere on the Project. Maintenance of the facility will include the use of a water cart and street sweeper.

With the implementation of measures outlined in Table 5 and the distance to sensitive receivers, any impacts to air quality are expected to be minor.

3.2.9 Waste and contamination

WestConnex New M5 Tunnel Spoil, per Resource Recovery Order, would be stockpiled at the site. The facility would operate under the WestConnex New M5 construction Environmental Protection Licence. General construction waste will be segregated and collected in adequately labelled skips and disposed at licensed waste collection facilities. Waste collection and transfer will be documented and tracked. No excavation is proposed for the facility, however any contamination would be dealt with as per the project Unexpected Contaminated Finds Procedure. With the implementation of the measures outlined in Table 5, impacts associated with waste are expected to be minor.

3.2.10 Socio-economic

Use of the facility has limited potential for negative impacts on the surrounding community. The facility would reduce the impact on residents close to New M5 Local Road Upgrades by reducing the Projects dependence on compounds adjacent and close to residents, particularly at night. In particular, by using the compound 24 hours a day to support local road upgrade night work, reliance on the current approved compounds in St Peters (which are adjacent to residential properties) will be significantly reduced. Noise modelling of the proposed activities and working hours has been undertaken and noise impacts are all <5dB(A) above background noise at the façade of the nearest residential property.

No property acquisition would be required for the site and sufficient parking exists within the site for project personnel. The affected stakeholders (surrounding industries) are being consulted in accordance with the Community Communication Strategy and communications will be maintained prior to and during the works.

This facility is expected to improve the socio-economic impacts / outcomes from construction of the Project on the community.

3.2.11 Rehabilitation

In accordance with CoA D65, ancillary facilities must be rehabilitated to at least their pre-construction condition or better, to the satisfaction of the Secretary, unless otherwise agreed by the landowner. A pre-tenancy condition survey will be used to benchmark restoration against the pre-construction condition. Restoration works will include cleanup, dismantling and removal of temporary sheds and all site facilities or as otherwise agreed with the landowner.

3.2.12 Cumulative impacts

The facility would be in addition to a number of other construction compounds/sites to the north of this facility. The Burrows Rd South facility would reduce dependence on other compounds and reduce impacts to neighbours of those compounds, particularly at night. Cumulative impacts would primarily relate to increased truck movements on Burrows Rd South with corresponding decreased truck movements on Canal Rd and Princess Hwy.

With the implementation of mitigation measures outlined in Table 5, it is considered that any potential cumulative impacts on the surrounding community would be minor and an improvement for the residential communities adjacent to existing compounds.

3.2.13 Activities and associated impacts summary

Key activities to be conducted at the Burrows Rd South facility are identified in Table 4 below, along with the associated impacts and corresponding environmental controls.

Site-specific AFMP: Burrows Rd South



Table 4: Key site activities proposed at Burrows Rd South Facility

Key work activities	Key environmental impacts	Key environmental controls
<ul style="list-style-type: none"> Site establishment activities including deliveries, installation of environmental controls, installation of site sheds and amenities (May – June 2018) Deliveries of materials (May 2018 – June 2020) Spoil movement (May 2018 – June 2020) Crushing and stockpiling of WestConnex Tunnel Spoil (May 2018 – December 2019) Demobilisation (Late 2019 – Mid 2020) 	<p>Noise impacts on nearby sensitive receivers including residential and commercial premises.</p> <p>Noise sources include: vehicle access/egress, crushing and stockpiling, vehicle loading.</p>	<p>Refer to the management measures in Section 5</p> <p>Also refer to the Construction Noise and Vibration Management Plan (M5N-ES-PLN-PWD-0003-14) and the AFMP</p>
	<p>Spills or leaks of fuels or other hazardous substances</p> <p>Erosion/sedimentation impacts from spoil stockpile.</p>	<p>Refer to the management measures in Section 5</p> <p>Also refer to the Construction Soil and Water Quality Sub-plan (M5N-ES-PLN-PWD-0005) and the AFMP</p>
	<p>Generation of waste, including wastewater and general construction and cribroom waste.</p>	<p>Refer to the management measures in Section 5</p> <p>Also refer to the Construction Waste and Resource Sub-plan (M5N-ES-PLN-PWD-0008) and the AFMP</p>
	<p>Traffic impacts on Burrows Rd South.</p>	<p>Refer to the management measures in Section 5.</p> <p>Also refer to the Construction Traffic and Access Sub-Plan (M5N-ES-PLN-PWD-0004).</p>
	<p>Visual amenity and light spill impacts on surrounding commercial properties.</p>	<p>Refer to the management measures in Section 5</p> <p>Also refer to the AFMP</p>
	<p>Dust and emissions/air quality impacts from spoil crushing and stockpiling of materials</p>	<p>Refer to the management measures in Section 5</p> <p>Also refer to the Construction Air Quality Sub-plan (M5N-ES-PLN-PWD-0002)</p>

4. Consultation

Consultation has been undertaken with commercial/industrial stakeholders surrounding the proposed site (refer to Appendix B). There are no residential properties in close proximity to the proposed site.

Consultation has been undertaken with the property owner. This plan, the New M5 CEMP and supporting sub-plans have been provided to the property owner.

Businesses on Burrows Rd South were receptive and accepting of the proposed facility. The following current issues (unrelated to WestConnex) were raised, with the businesses requesting that CDS-JV ensure they do not contribute to these practices;

- Trucks double parking to buy lunch
- Speeding
- Dust (uncovered loads and spilt material)

CDS-JV will incorporate these issues into site inductions and training.

Consultation with Inner West Council was undertaken on 8 March 2018. The proposal was presented to Council during the Council interface meeting. Council had no comments on the proposal. Council have since been requested to provide their response in writing. A brief has been issued to Council who have indicated they will provide a response in due course. A summary of consultation to date is provided in Appendix B.

Community notification will be provided to advise the surrounding community of the proposed site use in accordance with the Community Communication Strategy. The notification is provided in Appendix B and will be provided once this SSAFMP is approved and at least 5 days prior to establishing the site.



5. Implement Controls

The table below details mitigation and management measures to specifically address the identified potential environmental and social impacts resulting from the operation of the Burrows Road South site compound. These measures will be implemented in addition to any relevant CDS-JV environmental procedures and controls described in the AFMP and CEMP. Implementation of all control measures will:

- Minimise any potential adverse impacts arising from the use of the site compound, and
- Ensure compliance with environmental obligations and requirements.

Regular compliance activities, such as inspections, observations and monitoring will be undertaken throughout the operation of the compound, inclusive of any subcontractor activities. These compliance activities and any non-conformances will be undertaken in accordance with Element 3 of the CEMP.

Site-specific AFMP: Burrows Rd South



Table 5: Site-specific environmental safeguards

No.	Impact	Environmental safeguards	Responsibility	Timing
BRS1.	General	<ul style="list-style-type: none"> All relevant safeguards provided in the Ancillary Facilities Management Plan (M5N-ES-PLN-PWD-0026), the Construction Environmental Management Plan (M5N-ES-PLN-PWD-0001) and all sub-plans must be implemented. 	Project manager	Prior to and during site operation
BRS2.		<ul style="list-style-type: none"> All relevant environmental safeguards must be incorporated within the facility Work Pack (Including Site Environment Plan) 	Project manager	Prior to site operation
BRS3.		<ul style="list-style-type: none"> Training will be provided to all Project personnel, including relevant sub-contractors on site management requirements through inductions, toolboxes and targeted training where required. 	Project manager	Prior to and during site operation
BRS4.		<ul style="list-style-type: none"> The weekly environmental inspection checklist will be completed and will record ancillary facility management related issues. 	Environmental coordinator	Site operation
BRS5.	Community	<ul style="list-style-type: none"> CDS-JV will advise affected residents and property owners of the site use in accordance with the Community Communication Strategy. 	Community relations manager	Prior to and during site operation
BRS6.		<ul style="list-style-type: none"> Community complaints will be recorded and actioned in accordance with the Community Communication Strategy. 	Community relations manager	Site operation
BRS7.	Traffic and access	<ul style="list-style-type: none"> Where feasible and reasonable the compound is to be utilised for out of hours work in preference to compounds adjacent to residential properties. Project personnel to be made aware of appropriate access and parking requirements for the site during induction/toolbox talks. 	Site supervisor	Site operation

Site-specific AFMP: Burrows Rd South



No.	Impact	Environmental safeguards	Responsibility	Timing
BRS8.		<ul style="list-style-type: none"> Drivers induction to include requirement to not operate vehicles illegally, this includes; covering loads, not double parking and not speeding. 	Site supervisor	All times
BRS9.	Noise	<ul style="list-style-type: none"> Management and mitigation measures outlined in the CNVIS to be implemented, including programming of activities where reasonable and feasible and conducting noise monitoring to confirm predicted noise levels where required. 	Site supervisor	Site operation
BRS10.		<p>Appropriate behavioural practices to be reinforced at site inductions / toolboxes, including:</p> <ul style="list-style-type: none"> Relevant site approval conditions and site specific mitigation measures Location of nearest sensitive receivers No unnecessary loud swearing or unnecessary shouting, No loud stereos/radios on site, No dropping of materials from height where practicable or throwing of items, and <p>No slamming of doors.</p>	Site supervisor	Site operation
BRS11.		<p>Plant that is brought to site should meet the sound power limits identified in the CNVIS. Where plant exceeds limits then the plant may require installation of 'noise control kits' to comply with the noise limits set in the CNVIS. Such 'noise control kits' comprise:</p> <ul style="list-style-type: none"> high performance 'residential-grade' exhaust mufflers additional engine cowling / enclosure lined inside with sound absorbent industrial-grade foam, and air intake and discharge silencers / louvers. <p>The requirement of fitting 'noise control kits' onto the identified plant, shall be confirmed once each plant is tested prior to its regular use on site.</p>	Project Manager Site Supervisor	Site operation
BRS12.		<ul style="list-style-type: none"> Where feasible and reasonable the compound is to be utilised for out of hours work in preference to compounds adjacent to residential properties. 	Site supervisor	Site operation

Site-specific AFMP: Burrows Rd South



No.	Impact	Environmental safeguards	Responsibility	Timing
BRS13.		<ul style="list-style-type: none"> Non-tonal reversing beepers (or an equivalent mechanism) must be fitted & used on all vehicles regularly used on site. 	Project Manager Site supervisor	Site operation
BRS14.		<ul style="list-style-type: none"> Undertake consultation (at least 5 days prior to relevant works) with potentially-affected community, religious, educational institutions and vibration-sensitive business and critical working areas, to ensure, where feasible and reasonable, works that may impact on the above groups/businesses are not timetabled during sensitive periods. 	Community Relations Manager Project Manager Environmental advisor	Prior to and during site operation
BRS15.		<ul style="list-style-type: none"> During construction, proponents of other construction works in the vicinity of the SSI must be consulted and reasonable steps taken to coordinate works to minimise impacts on, and maximise respite for, affected sensitive receivers 	Community Relations Manager Project Manager Environmental advisor	Site operation
BRS16.		<ul style="list-style-type: none"> Plant and equipment would be switched off when not in operation for periods of greater than 15 minutes. Where reasonable and feasible, noisy equipment will be substituted for alternative low-emitting equipment particularly for activities or in locations that may impact on potential noise sensitive receivers. 	Site supervisor Environmental advisor	Site operation
BRS17.		<ul style="list-style-type: none"> Noisy equipment and equipment with directional noise emissions will be orientated away from neighbouring properties where practicable. The distance between plant and noise sensitive receivers will be maximised where practical. Avoid/ limit simultaneous operation of noisy plant and equipment within discernible range of a sensitive receiver 	Site supervisor Environmental advisor	Site operation
BRS18.		<ul style="list-style-type: none"> Community consultation protocols for sensitive receivers likely to be impacted by construction activities such as vibration and noise will be prepared and implemented, as required. 	Community Relations Manager Project Manager Environmental advisor	Site operation

Site-specific AFMP: Burrows Rd South



No.	Impact	Environmental safeguards	Responsibility	Timing
BRS19.	Flora and fauna	<ul style="list-style-type: none"> Site induction to include awareness of flora and fauna requirements on site, including No damage to any trees/shrubs on site. No clearing without a permit. Any unexpected species finds on site to be reported to the Environment advisor/Environment & Sustainability Manager. 	Project Manager Site supervisor Environmental advisor	Site operation
BRS20.		<ul style="list-style-type: none"> No-go zones to be implemented for all retained vegetation on site. No access to exclusion zones without a permit to enter no-go zones. No damage to occur to trees/shrubs on site. 	Site supervisor Environmental advisor	Site operation
BRS21.		<ul style="list-style-type: none"> Equipment storage and laydown areas to be located outside the drip line of trees 	Project manager Site supervisor	Site operation
BRS22.		<ul style="list-style-type: none"> Unexpected species finds to be managed in accordance with the Manage Flora and Fauna Procedure. 	Site supervisor Environmental advisor	Site operation
BRS23.		<ul style="list-style-type: none"> If a threat to an animal is evident onsite, the Site supervisor and/or Environmental advisor must be notified immediately. Works may need to cease if the animal is in danger or harmed until it has been relocated. The handling of injured fauna must be carried out by licensed fauna handler such as fauna ecologist or wildlife carer. 	Site supervisor Environmental advisor	Site operation
BRS24.		<ul style="list-style-type: none"> Weed and pathogen management and control will be undertaken in accordance with the project Construction Flora and Fauna Sub-Plan (M5N-ES-PLN-PWD-0007), including ensuring vehicles and machinery are clean prior to entering site, and active management of weeds 	Site supervisor Environmental advisor	Site operation

Site-specific AFMP: Burrows Rd South



No.	Impact	Environmental safeguards	Responsibility	Timing
BRS25.		<ul style="list-style-type: none"> Rehabilitation of site to occur at the completion of site operations to at least its pre-construction condition (refer Section 3.2.11), and in accordance with any relevant rehabilitation requirements specified in the Construction Flora and Fauna Sub-Plan (M5N-ES-PLN-PWD-0007) and the Ancillary Facilities Management Plan (M5N-ES-PLN-PWD-0026), or as otherwise agreed with the landowner. 	Project Manager	At the completion of site operation
BRS26.	Soil and Water	<ul style="list-style-type: none"> Erosion and sedimentation control plan to be developed for the site consistent with Managing Urban Stormwater – Soils and Construction Vols 1 and 2, 4th Edition (Landcom 2004). 	Environmental advisor	Prior to site operation
BRS27.		<ul style="list-style-type: none"> Spoil stockpile to have erosion and sediment controls to prevent run-off. 	Project Manager	Prior to site operation
BRS28.		<ul style="list-style-type: none"> Sediment controls to be inspected and maintained as necessary, including after rain 	Site supervisor Environmental advisor	Prior to site operation
BRS29.		<p>The following measures to be in place to avoid and manage spills:</p> <ul style="list-style-type: none"> Any temporary storage of fuels, chemicals and other hazardous materials to be in appropriately secure and bunded areas in accordance with EPA guidelines Spills or contaminated runoff would be captured and treated and / or disposed of at a licensed facility Any re-fuelling and wash down would be undertaken in bunded areas to mitigate risks in relation to spills or leaks of fuels / oils or other hazardous onsite construction material Any soil which has been contaminated with fuel, oils or other chemicals would be disposed as contaminated soil by a waste subcontractor. 	Project manager Site supervisor Environmental advisor	Site operation

Site-specific AFMP: Burrows Rd South



No.	Impact	Environmental safeguards	Responsibility	Timing
BRS30.		<ul style="list-style-type: none"> In the event of a spill the Spill Management Procedure will be implemented. Emergency spill kits will be kept onsite and Project personnel would be aware of the location of spill kits and trained in their use. 	Site supervisor Environmental advisor	Site operation
BRS31.	Visual amenity	<ul style="list-style-type: none"> All trees and shrubs at the site to be retained unless approved for removal in accordance with New M5 Infrastructure Approval Condition B63. Site fencing / hoarding / temporary noise barriers would be maintained during site operation 	Project Manager Site supervisor Environmental advisor	Site operation
BRS32.		<ul style="list-style-type: none"> Cut-off and/or directed lighting would be used at the site with lighting location and direction considered to ensure glare and light spill are minimised. Lighting to be generally consistent with the requirements of Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting. Any residual night lighting impacts to adjoining or adjacent properties to be managed in consultation with affected landowners. 	Project Manager	Site operation
BRS33.	Air quality	<ul style="list-style-type: none"> Dust suppression measures to be incorporated into the Erosion and Sedimentation Control Plan for the site. 	Environmental advisor	Prior to site operation
BRS34.		Control emissions on site, including: <ul style="list-style-type: none"> Ensure all construction vehicles comply with their relevant emission standards Ensure that, where practicable engine idling is minimised when vehicles are stationary Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable Promote and encourage sustainable travel (public transport, cycling, walking, and car-sharing) No bonfires and burning of any materials including waste. 	Project Manager Site supervisor	Site operation

Site-specific AFMP: Burrows Rd South



No.	Impact	Environmental safeguards	Responsibility	Timing
BRS35.		<ul style="list-style-type: none"> Spoil stockpile is to be protected before long shutdowns, using means such as soil binding polymer. 	Site supervisor	Site operation
BRS36.		<ul style="list-style-type: none"> Crusher is to be fitted with dust suppression such as misters. 	Site supervisor	Site operation
BRS37.		<ul style="list-style-type: none"> Drivers induction to include requirement to not operate vehicles illegally, this includes; covering loads, not double parking and not speeding. 	Site supervisor	All times
BRS38.	Waste	<ul style="list-style-type: none"> All liquid and/or non-liquid waste generated on the site must be assessed and classified in accordance with Waste Classification Guidelines (DECCW, 2009) or any superseding documents. 	Site supervisor Environmental advisor	Site operation
BRS39.		<ul style="list-style-type: none"> All waste materials removed from the site must only be directed to a waste management facility or premises lawfully permitted to accept the materials. 	Site supervisor Environmental advisor	Site operation
BRS40.		<ul style="list-style-type: none"> The facility must not receive any waste that cannot be lawfully transported or received at the site. 	Site supervisor Environmental advisor	Site operation



6. Consistency with existing project impacts and approvals

The use of the Burrows Rd South Facility will assist in achieving the environmental objectives for the New M5 project as identified in the EIS, the CEMP and associated Sub-plans. The proposed facility is for the purpose of supporting;

1. Landfill closure at St Peters Interchange by providing a location in an industrial zoned area to sustainably reuse WestConnex Tunnel Spoil for capping of the landfill. This will reduce off-site disposal of spoil and project demand for externally generated quarry product for capping material. As a consequence heavy vehicle movements beyond the project will be significantly reduced
2. Local road construction by providing a compound to store materials and plant away from residential areas. This will create an improvement on the current noise, vibration, light and air quality impacts at compounds adjacent to residential properties, particularly when supporting out of hours work.

The impacts associated with the site, identified in Section 3.2, are considered to be minor, and consistent with the impacts identified in the New M5 EIS and other project approval documentation. The net impact of the facility is positive due to improved sustainability outcomes, through reduced heavy haulage and materials demand, and reduced impact on residents. The identified impacts can be appropriately managed through implementation of the management measures identified in Section 5 of this SSAFMP as well as those identified in the AFMP, the CEMP and the relevant Sub-plans.



Appendix A: Ancillary Facility Application

Site-specific AFMP: Burrows Rd South



Step 1 – Ancillary facilities information			
Site location (attach map for reference): See Figure 1 of the Burrows Rd South AFMP		Burrows Rd South	
Date works to commence: 1 April 2018		Date works to finish: March 2020	
Proposed activities (select all that apply):			
Office and amenities	x	Construction compound	x
Laydown area	x	Parking	x
Batch Plant		Materials storage compound	x
Maintenance workshop		Material stockpile area	x
Other _____		Other _____	
Please provide details regarding the proposed ancillary facility.			
Is the proposed facility within the approved construction footprint?		No. The proposed facility is located outside the approved footprint. The facility is within the suburbs listed in Schedule 1 of the Project Infrastructure Approval.	
Distance to the nearest waterway?		The site is more than 120m from Alexandra Canal. The site is separated from the Canal by Boral Recycling and batch plant.	
Proposed access route?		Existing roads – Access/egress to site will be via Burrows Rd South	
Do heavy vehicles need to travel through residential areas?		No	
Is the proposed site on relatively level ground?		Yes	
Distance to nearest residential receiver?		The site is 285m from 4 houses on Bellevue St Tempe on the southern side of the Botany Goods Line. The site is separated from the residents by the rail line and Maritime Container Services Intermodal Terminal which includes partial screening by containers stacked 6 high and an industrial warehouse.	
Is vegetation clearance or trimming required? If so, what is the area in hectares?		No	
Will the facility impact heritage?		No	
Will the facility affect the land use of adjacent properties?		The use of the site is consistent with that at adjacent properties.	
Is the facility above the 20 ARI flood level?		Yes	
Will out of hours works be required to establish facility? During operation of the facility?		Out of hours will not be required to establish the facility. The site will operate 24 hours a day.	

Site-specific AFMP: Burrows Rd South

WestConnex New M5



Potential noise and vibration impacts?	All works are predicted to be less than 5 decibels above the background noise at the nearest residential receivers.
Potential dust or odour impacts?	Sprinklers, water carts and soil binding polymer will be used to mitigate all dust impacts.
Potential visual or light spill impacts?	Visual impact will be consistent with current and surrounding land use. Lighting will be adjusted to minimise impact.
Potential waste management impacts?	All general waste will be removed via a licenced contractor overseen by CDS-JV.
Potential soil and water impacts?	These potential impacts will be managed in accordance with the Construction Soil and Water Quality Sub-plan and an ESCP to be developed and implemented.

Step 2 – Environmental and Sustainability Manager Review

Is additional assessment required (e.g. noise, biodiversity, heritage)?	Yes. A construction noise and vibration impact statement has been prepared for the activities proposed at the site. The assessment indicates there will be minimal impact.
Is the proposed facility compliant with CoA D62 criteria?	No
Is the ancillary facility included in the EIS?	No
Does the ancillary facility have minimal amenity impacts to surrounding residences?	Yes
Does the ancillary facility have minimal environmental impact?	Yes
Can potential impacts be managed through existing controls identified in the CEMP?	Yes

Step 3 – Sign off

Surface Works / Tunnel / M&E D&C Director

Name: _____ Signature: _____ Date: _____

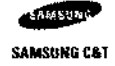
Community Relations Manager

Name: _____ Signature: _____ Date: _____

Environmental and Sustainability Manager

Name: _____ Signature: _____ Date: _____

Site-specific AFMP: Burrows Rd South



Step 4 – Environmental Representative sign off	
Is this a minor ancillary facility (CoA D64)?	No
Does this ancillary facility require DP&E approval?	Yes
Does the AFMP need to be updated?	Yes

//



Appendix B: Summary of consultation with neighbours

Burrows Road South Businesses Consultation – Door Knock

CDSJV Community engagement staff undertook a doorknock of nearby businesses to advise of the proposed use of Burrows Road South Ancillary Facility (two new compounds). Business owners/operators were advised CDS-JV would be using Burrows Road South as a haulage route for access to the site. Business owners/operators were advised of the extra trucks which would be using the road and the types of compounds being placed in Burrows Road South;

1. Storage of plant and materials to support local roads
2. Crushing and storing of tunnel spoil to use as capping on the former landfill.

Stakeholders Contacted 21 February 2018

[Redacted list of stakeholder names]

Site-specific AFMP: Burrows Rd South



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Some businesses were empty/vacant.

Comments from stakeholders

All stakeholders/businesses were fine with the two compounds. There was a couple of businesses that mentioned the trucks using the road now (not WestConnex trucks) and raised the concerns they had already.

Speeding, double parking (to get food) and dust.

Any follow up required – no follow up required

I advised the businesses I would email them to provide my contact details so if there was any issues they could contact me.

All businesses were followed up with an email with contact details for the project.



Appendix C: Construction Noise and Vibration Impact Statement

WESTCONNEX NEW M5

Construction Noise and Vibration Impact Statement: Burrows Road South Compound

8 March 2018

CPB Dragados Samsung Joint Venture

TH014-06 01F41 (r1) WXC_NM5 CNVIS SPI Burrows Rd Compound

Document details

Detail	Reference
Doc reference:	TH014-06 01F41 (r1) WXC_NM5 CNVIS SPI Burrows Rd Compound
Prepared for:	CPB Dragados Samsung Joint Venture
Address:	Level 6, Building B, 201 Coward Street, Mascot, NSW, 2020
Attention:	██████████

Document control

Date	Revision history	Non-issued revision	Issued revision	Prepared	Instructed	Authorised
08.03.2018	Draft	0	1	█	█	█

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.

This document is issued subject to review and authorisation by the Team Leader noted by the initials printed in the last column above. If no initials appear, this document shall be considered as preliminary or draft only and no reliance shall be placed upon it other than for information to be verified later.

This document is prepared for the particular requirements of our Client referred to above in the 'Document details' which are based on a specific brief with limitations as agreed to with the Client. It is not intended for and should not be relied upon by a third party and no responsibility is undertaken to any third party without prior consent provided by Renzo Tonin & Associates. The information herein should not be reproduced, presented or reviewed except in full. Prior to passing on to a third party, the Client is to fully inform the third party of the specific brief and limitations associated with the commission.

In preparing this report, we have relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, we have not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

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.

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1 Introduction

This Construction Noise and Vibration Impact Statement (CNVIS) has been prepared on behalf of CPB Contractors Dragados Samsung Joint Venture (CDS JV) prepared in accordance with the Construction Noise and Vibration Management Plan (CNVMP) [TH014-05 01F01 WCX_NM5 CNVMP] for the construction of the WestConnex New M5 Project (New M5 or Project).

1.1 Relevant requirements and purpose of this CNVIS

This CNVIS applies to the works associated with the Burrows Road South Compound, St Peters. The eastern site of the compound will be used as a storage yard and would also have site sheds and amenities. The western site will be used for crushing and screening of spoil materials. Activities in the Burrows Road South compound will occur 24 hours per day, however the crushing and screening activities will not occur during the night period.

This CNVIS may be submitted to the Department of Environment and Planning (DEP) upon request.

1.2 Structure of this CNVIS

This CNVIS is structured as follows:

- **Section 2** - Description of construction works and hours;
- **Section 3** - Nearest sensitive receivers;
- **Section 4** - Construction noise and vibration objectives; and
- **Section 5** - Construction noise assessment.

1.3 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 construction works and hours

2.1 Summary of works addressed in this CNVIS

This CNVIS provides an assessment of noise and vibration impacts from activities associated with the Burrows Road South Compound, St Peters. The works include:

- Eastern compound site: Storage yard, site sheds and amenities
- Western compound site: crushing and screening of spoil materials

A detailed summary of construction activities, plant and equipment, and timetable is provided in APPENDIX C Table C1.

2.2 Justification for out-of-hours work (OOHW)

The Burrows Road South Compound would contain shipping containers, site sheds and amenities to support Local Roads Upgrades. This facility would reduce dependence on currently approved compounds which are in close proximity to residents and will provide a facility to support night time roadworks which has no impact on local residents due to the absence of residential neighbours.

2.3 Construction hours

The construction hours for the Project are defined by Conditions of Approval D12, D13, D14, and D15. D15 applies to all construction works other than tunnelling (and tunnel support) work and outlines the out-of-hours work periods for site establishment works (as indicated in Table 1).

The out-of-hours work (OOHW) period is defined in Table 1 as OOHW Period 1 and 2. The standard construction hours of work are also summarised in the table below, as are the admissible hours for tunnelling (including tunnel support) and for activities resulting in impulsive or tonal noise emissions (e.g. rock hammering, sheet piling etc.).

Table 1: Construction hours

Reference	Construction Activity	Monday to Friday	Saturday	Sunday/ Public holiday
Recommended standard construction hours				
D12	Standard Construction	7am to 6pm	8am to 1pm	No work
D13	Tunnelling (and tunnel support)	24 hours	24 hours	24 hours
D14	Construction activities with impulsive or tonal noise emissions	8am to 6pm [^]	8am to 1pm [^]	No work
Outside recommended standard construction hours				
D15 and TfNSW CNS*	Out of Hours Work (OOHW) Period 1	6pm to 10pm	7am to 8am 1pm to 10pm	8am to 6pm
	Out of Hours Work (OOHW) Shoulder (applicable to ROL works only)	10pm to 12am	10pm to 12am	10pm to 12am

Reference	Construction Activity	Monday to Friday	Saturday	Sunday/ Public holiday
	Out of Hours Work (OOHW) Period 2	12am to 7am	12am to 7am	6pm to 8am

Notes: ^ In continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block in accordance with D14 (see CNVMP Section 3.2.3)

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

Not applicable to the site establishment out-of-hours construction works

2.4 Construction traffic

The site would be accessed via Burrows Road South. Burrows Road South is a local road which would require an assessment of traffic noise under Condition of Approval D46 of Project. However, all receivers along Burrows Road South have been identified as either commercial or industrial, which do not require an assessment of road traffic noise under the NSW Road Noise Policy (RNP).

Given that no residential or other sensitive receivers have been identified that would be potentially impacted by construction related road traffic noise arriving and departing the site, construction road traffic has not been assessed in this CNVIS.

3 Nearest sensitive receivers

3.1 Residential receivers

To assess and manage construction noise and vibration impact, 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 have been based on those established in the EIS for the New M5 project [3], with some modifications to allow for site specific characteristics.

All relevant residential sensitive receivers near the worksite are identified on aerial photographs located in APPENDIX B. At receivers more than approximately 500 metres from the construction area, potential construction noise and vibration levels are expected to be within the adopted noise and vibration management levels described in Section 4 of this CNVIS. Receivers beyond 500 metres are typically not included in this CNVIS assessment.

3.2 Other sensitive receivers

Additional to residential receivers, there are 'other' noise and vibration sensitive receivers (e.g. educational institutions, places of worship, recreational areas, etc.) surrounding the construction sites that have been identified and the nearest sensitive properties to the proposed works are shown in APPENDIX B.

4 Construction noise and vibration objectives

4.1 Noise management levels

Construction noise management levels have been determined using the NSW Interim Construction Noise Guideline (ICNG).

Table B1 in APPENDIX B identifies the adopted construction noise management levels (NML's) for the nearest noise sensitive receivers to the worksite. The NML's for residential receivers are based on long-term noise logging conducted by AECOM on behalf of Sydney Motorway Corporation (SMC) to quantify ambient noise levels for the Environmental Impact Statement (EIS).

The NML's for 'other' sensitive receivers are from the ICNG, as reported in Section 3.1.1 of the CNVMP.

Residential receivers are considered 'noise affected' where construction noise levels are greater than the noise management levels identified in APPENDIX B. The noise affected level represents the point above which there may be some community reaction to noise. Where predicted and/or measured construction noise levels exceed NML's, all feasible and reasonable work practices will be applied to meet the NML's.

In addition to the objectives identified in APPENDIX B, where construction activities are tonal or impulsive in nature and are described in the ICNG as being particularly annoying, a +5 dB(A) correction must be added to the activity noise. Activities that are defined in the ICNG as particularly annoying include the use of 'beeper' style reversing or movement alarms.

Any construction related activities that could exceed the NML's shall be identified and managed in accordance with this CNVIS and the CNVMP.

4.2 Vibration goals

As reported in Section 3.3 of the CNVMP, construction vibration goals have been determined in accordance with D16(b) and D16(c) as follows:

- **Human annoyance** - the acceptable vibration values set out in the NSW 'Environmental Noise Management Assessing Vibration: A Technical Guideline' (Department of Environment and Conservation, 2006) and
- **Structural damage** - the vibration limits set out in the German Standard DIN 4150: Part 3-1999.02 'Structural vibration in buildings - Effects of vibration on structures'.

4.2.1 Disturbance to building occupants (human annoyance)

For disturbance to human occupants of buildings, we refer to the NSW 'Assessing Vibration; a technical guideline', in accordance with D16(b). This document provides criteria which are based on the British Standard BS 6472-1992, 'Evaluation of human exposure to vibration in buildings (1-80Hz)'.

Intermittent vibration is assessed using vibration dose values (VDVs). For the assessment of potential vibration at the nearest vibration sensitive receivers preferred and maximum VDV goals for the day period (7am to 10pm) are presented in Table 2. Also included are indicative limits (for continuous vibration (not intermittent vibration) in terms of peak velocity units, in order to present human exposure limits in the same form as structural damage limits for comparison purposes. Note that the continuous vibration limits are conservative, but can be used as an initial screening criteria for human disturbance.

Table 2: Construction vibration disturbance goals

Location	Assessment period ¹	Vibration Dose Value (VDV), $m/s^{1.75}$		Continuous vibration velocity, PEAK, mm/s (>8Hz)
		Preferred	Maximum	
Critical areas ²	Day or Night	0.10	0.20	0.28
Residences	Day	0.20	0.40	0.56
	Night	0.13	0.26	0.40
Offices, schools, educational institutions and places of worship	Day or Night	0.40	0.80	1.10
Workshops	Day or Night	0.80	1.60	2.20

Notes: 1. Daytime is 7am to 10pm and night-time is 10pm to 7am

2. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. These criteria are only indicative, and there may be a need to assess intermittent values against the continuous or impulsive criteria for critical areas. Source: BS 6472-1992

4.2.2 Structural damage to buildings

Currently there exists no Australian Standard for assessment of structural building damage caused by vibrational energy. To satisfy Condition D16(c), reference is made to the German Standard below which is relevant to the assessment of structural damage.

The German Standard DIN 4150: Part 3-1999.02 'Structural vibration in buildings - Effects of vibration on structures', provides recommended maximum levels of vibration that reduce the likelihood of building damage caused by vibration. This standard too, presents recommended maximum limits over a range of frequencies measured in any direction at the foundation or in the plane of the uppermost floor of buildings.

The minimum 'safe limit' of vibration at low frequencies for commercial and industrial buildings is 20mm/s. For dwellings it is 5mm/s and for particularly sensitive structures (e.g. historical with preservation orders etc.) it is 3mm/s. These limits are generally recognised to be conservatively stringent and are presented in terms of velocity peak levels in Table 3 below.

Table 3: DIN 4150-3 structural damage criteria

Group	Type of structure	Vibration velocity, mm/s			
		At foundation at frequency of			Plane of floor Uppermost Storey
		1 to 10 Hz	10 to 50Hz	50 to 100Hz ¹	All frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Group 1 or 2 and have intrinsic value (e.g. buildings under a preservation order)	3	3 to 8	8 to 10	8

Note: 1. At frequencies above 100 Hz, the values given in this column may be used as minimum values

5 Construction noise assessment

5.1 Noise prediction methodology

Modelling and assessment of airborne noise impacts from activities associated with the construction works were determined by modelling the noise sources, receiver locations, topographical features, and possible noise mitigation measures using a Cadna-A computer noise model developed for this project. The model calculates the contribution of each noise source at identified sensitive receiver locations and allows for the prediction of the total noise from a site for the various stages of the construction works.

The noise prediction models take into account:

- Location of noise sources and sensitive receiver locations (see Figure B1 in APPENDIX B);
- Height of sources and receivers referenced to one metre digital ground contours for the site area and surrounding area;
- Sound Power Levels (L_w) of plant and equipment likely to be used during the construction activities (See Table C1, APPENDIX C, including the likely construction hours plant and equipment that will be in use and the number of nights works will be carried out over);
- Separation distances between sources and receivers;
- Ground type between sources and receivers; and
- Attenuation from barriers (natural and purpose built).

Key details regarding the construction work locations, the likely plant and equipment, and hours of operation were informed by the Design and Construction Teams. This information is presented in APPENDIX C and formed the basis for all modelling assumptions used in this assessment.

The key construction activities that have been modelled based on the information in APPENDIX C are detailed in Table 4 below.

Table 4: Key construction activities

Area	Description of works
Eastern site	Storage yard, site sheds and amenities
Western site	Crushing and screening of materials

5.2 Predicted noise levels

The predicted L_{Aeq} noise levels from the sites are presented in APPENDIX D for all receivers in each NCA. The predictions are representative of noise levels during the works. For the purpose of the assessment, it has been assumed that the noise sources for each of the eastern and western areas are located near the centre of the sites.

Table 5 summarises the predicted impacts for each construction stage in each NCA in terms of compliance with the NML's. The colours in the table indicate whether or not receivers in the NCA comply with the NML and, where exceedance of the NML occurs, the perceived impact of the exceedance.

The impacts presented are as follow for **Standard Hours**:

- ◆ Complies with NML
- ◆ < 10dB(A) above NML - construction noise clearly audible
- ◆ > 10dB(A) above NML - construction noise moderately intrusive
- ◆ > 75dB(A) - highly noise affected

The impacts presented are as follows for **OOHW Evening and Night**:

- ◆ Complies with NML
- ◆ < 5dB(A) above NML - construction noise noticeable
- ◆ 5 to 15dB(A) above NML - construction noise clearly audible
- ◆ > 15 to 25dB(A) above NML - construction noise moderately intrusive
- ◆ >25dB(A) above NML - construction noise highly intrusive

Table 5: Summary of construction noise impacts

NCA	Level of compliance with NML		
	Day	Evening	Night
NCA10	◆	◆	◆
OSR	◆	◆	◆

5.3 Discussion of results

5.3.1 Burrows Road South Compound (eastern and western sites)

Based upon the construction activities and construction plant and equipment presented in APPENDIX C, construction noise levels at all residential and other sensitive receivers are predicted to comply with their respective NML's during all time periods.

5.3.2 Sleep disturbance

The potential for maximum noise levels from sources such front end loader activities, truck airbrakes and banging from metal on metal contact (i.e. dropped chains and excavator usage) to exceed the sleep disturbance NML of 65 dB(A) L_{Amax} have been assessed. As the nearest affected residence is approximately 300 metres from the compound, maximum noise level events are not predicted to exceed the sleep disturbance NML of 65 dB(A) L_{Amax} .

5.4 Noise mitigation and management

5.4.1 Noise control measures

Whilst noise levels are predicted to comply with the NMLs for all assessed activities during all time periods, the following noise control measures are recommended to reduce noise emission from the site.

Table 6: Noise control measures

Control Type	Control Measure	Typical Use
At-Source Control Measures	Plant and equipment noise verification monitoring	Where practicable, plant and equipment to be used on site should have the sound power level verified as soon as practicable after equipment arriving on site for long term (more than two months) use to confirm actual plant sound power levels are within the limits prescribed in Table C1 (APPENDIX C).
	Noise control kits	Plant that is brought to site should meet the sound power limits identified in Table C1. Where plant exceeds limits then the plant may require installation of 'noise control kits' in order to comply with the noise limits set in Table C1. Such 'noise control kits' comprise: <ul style="list-style-type: none"> • high performance 'residential-grade' exhaust mufflers, • additional engine cowling / enclosure lined inside with sound absorbent industrial-grade foam, and • air intake and discharge silencers / louvres. The requirement of fitting 'noise control kits' onto the identified plant, shall be confirmed once each plant is tested prior to its regular use on site.
	Limit equipment in use	Only the equipment necessary during each stage of the OOHW will be used
	Limit activity duration	Any equipment not in use for extended periods shall be switched off. For example, heavy vehicles should switch engines off when not in use.

Control Type	Control Measure	Typical Use
	Use and siting of plant	Direct noise-emitting plant away from sensitive receivers where practicable. Locate fixed location plant items as far from sensitive receivers as practicable.
	Equipment selection	Use quieter and less noise/ vibration emitting construction methods where feasible and reasonable.
	Use of plant as a noise screen	Plant should be positioned, where practicable, to provide additional shielding to receivers.
	Non-tonal reversing alarms	Alternative reverse alarms, such as 'quackers' will be installed on all plant and equipment, where practicable.
	Site inductions & Toolbox Talks	All employees, contractors and subcontractors are to receive a Project induction. The environmental component may be covered in toolboxes and should include: <ul style="list-style-type: none"> • location of nearest sensitive receivers • relevant project specific and standard noise and vibration mitigation measures • permissible hours of work • OOHW Procedure and Form • construction employee parking areas.
Noise Management Measures	Community consultation	Inform community of construction activity and potential impacts.
	Behavioural practices	No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors.
Verification	Noise monitoring	Noise monitoring is to be carried out as detailed in Section 5.4.2.

5.4.2 Attended noise monitoring

Attended noise monitoring is to be undertaken to verify that noise levels resulting from construction works are in accordance with the levels predicted in this CNVIS, subject to obtaining the property owner/occupier's consent to access the property (where required).

Attended noise monitoring will be undertaken during works at one (1) representative residential receiver identified in the table below.

Table 7: Nominated verification monitoring locations

NCA	Nominated receiver address	Monitoring location	Construction activity
NCA10	4 Bellevue Street, Tempe	Front yard	Full site usage (with crushing and screening)

Noise monitoring should follow the procedures outlined in APPENDIX F of the CNVMP. Note that monitoring at properties listed above may be undertaken from the property boundary to limit any inconvenience to property owners.

5.4.3 Complaints handling

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

Sydney Motorway Corporation (SMC) operate a 24-hour construction complaints line (1800 660 248). Enquiries/ complaints may also be received through the New M5 project email (info@westconnex.com.au).

6 Construction vibration assessment

6.1 Minimum buffer distances for vibration intensive plant

From the plant and equipment listed in APPENDIX C, the dominant vibration generating plant and equipment include:

- Excavator travelling (35T)

Potential vibration generated to receivers is dependent on separation distances, the intervening soil and rock strata, dominant frequencies of vibration, and the receiver structure. The recommended minimum working distances for vibration intensive plant are presented in Table 8 and

Table 9. Site specific buffer distances for vibration significant plant items must be measured on site where plant and equipment are likely to operate close to or within the minimum working distances for cosmetic damage (Table 8).

Unlike noise, vibration cannot be readily predicted. There are many variables from site to site, for example soil type and conditions, sub surface rock, building types and foundations, and actual plant on site. The data relied upon in this assessment (tabulated above) is taken from a database of vibration levels measured at various sites or obtained from other sources (e.g. BS5228-2:2009). They are not specific to this project as final vibration levels are dependent on many factors including the actual plant used, its operation and the intervening geology between the activity and the receiver.

Table 8: Minimum working distances for cosmetic damage (continuous vibration)

Plant item	Minimum working distance (m)		
	Commercial and industrial buildings ¹	Dwellings and similar structures ¹	Sensitive structures (e.g. heritage) ¹
Excavator (35T)	5	10	10

Notes:

1. Criteria referenced from DIN 4150 Structural Damage - Safe Limits for Short-term Building Vibration.

Table 9: Minimum working distances for human annoyance (continuous vibration)

Plant item	Minimum working distances, m				
	Critical areas ^{1,4}	Residences		Offices ^{3,4}	Workshops ⁴
		Day ²	Night ²		
Excavator (35T)	80	50	65	30	20

Notes

1. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.
2. Daytime is 7am to 10pm; Night-time is 10pm to 7am.
3. Examples include offices, schools, educational institutions and place of worship.
4. Applicable when in use.

6.2 Vibration assessment

6.2.1 Cosmetic damage

The adjoining receivers to the Burrows Road South Compound are the Maritime Container Services and Boral Recycling, which are both industrial receivers.

For the eastern compound site, there are no buildings within the safe buffer distance for cosmetic damage. For the western compound site, there is one building across the western boundary which could potentially be within the safe working distance for cosmetic damage. A buffer distance of minimum 5 metres should be maintained from the western boundary of the site for vibration generating plant.

6.2.2 Human annoyance

Given that the sites are located within an industrial complex, from a review of the site and surrounds it is not likely that adverse reactions for human annoyance are likely. Human annoyance is not predicted to be an issue.

7 Conclusion

Construction works associated with the Burrows Road South compound for the Westconnex New M5 Project have been identified and described in this report. The potentially affected noise sensitive receivers and relevant construction noise and vibration objectives have been identified and discussed to allow the assessment of potential construction noise impacts.

The expected construction noise levels have been predicted and presented in Section 5.2 and APPENDIX D.

Noise mitigation and management measures have been presented in Section 5.4 to aid in providing additional noise reduction benefits where practical.

Construction vibration has been assessed in Section 6. Minimum buffer distances for structural damage and human comfort have been provided in Section 6.1.

References

1. Department of Environment and Climate Change 2009 NSW Interim Construction Noise Guideline (ICNG)
2. Environment Protection Authority 1999 NSW Environmental Criteria for Rd Traffic Noise
3. AECOM Australia Pty Ltd 2015 WestConnex The New M5 project - Technical Working Paper: Noise and Vibration Revision 8 – 20-Nov-2015
4. Australian Standard AS/NZS 2107:2000 *Acoustics - Recommended design sound levels and reverberation times for building interiors*
5. Roads and Maritime Services 2014 QA Specification G36 Environmental Protection Edition 4 / Revision 3
6. Transport for NSW Construction Noise Strategy (ref: 7TP-ST-157/2.0) 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 Leq 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 **Nearest sensitive receivers and noise management levels**




Table B1: Noise sensitive receivers and construction noise management levels

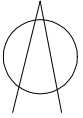
Burrows Road South Compound

NCA	Receiver Type	Reference RBL	Rating Background Levels (RBLs)			Residential Noise Management Levels (NMLs) $L_{Aeq(15\ min)}$			Sleep Dist. L_{Amax}		Comments
			Day	Evening	Night	Day	Evening	Night	Screening	Max	
NCA10	Residential Commercial/ Industrial	EIS L06	58	56	49	68	61	54	64	65	Based on NCAs and NMLs presented in the EIS.
ID	Other Sensitive Receivers										
OSR	Commercial Receivers/ Offices	ICNG	-	-	-	70	70	70	-	-	When premise is in use. External.
OSR	Industrial Receivers	ICNG	-	-	-	75	75	75	-	-	When premise is in use. External.



Legend:

-  Burrows Rd Sth Compound (Eastern)
-  Burrows Rd Sth Compound (Western)
-  Residential Receiver
-  Other Sensitive Receiver (OSR)



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Project:
WESTCONNEX STAGE 2 NEW M5

Noise levels are approximate due to interpolation of contours and should be used for reference only.
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Description:
BURROWS ROAD SOUTH COMPOUND ST PETERS

Project No.:	TH014-05	Created by:	rp
Fig Ref:	TH014-10.5.C8.9.01 (r0)		
Date:	2018.03.08	Scale:	1: 5000 A3

APPENDIX C Construction timetable/ activities/ management

Table C1: Construction Timetable/ Activities/ Equipment

Burrows Road South Compound

Activity/ Work Area	Aspect	Plant/ Equipment	Net Power kW	Operating Weight kg	Day	Evening	Night	Sound Power		Database Notes	
					7am - 6pm	6pm - 10pm	10pm - 7am	L _{Aeq}	L _{A1}		
Burrows Rd South Compound											
West	Crushing & Screening	Excavator		35T	2	1	1	103			
		Front end loader	130kW		2	1	1	110			
		Truck and dog				6p.h.	6p.h.	6p.h.	108		
		Crushing and screening plant				1	1	-	117		
East	Storage yard	Telehandler			1	1	1	98		4T lifting capacity. 10% utilisation	
		Bogey tipper				1p.h.	1p.h.	1p.h.	108		
		Flatbed truck				1p.h.	1p.h.	1p.h.	108		
		Excavator		12T	1	1	1	103		10% utilisation	
		Tip truck		8T			4p.h.	4p.h.	4p.h.	108	
		Light vehicles (Ute)					8p.h.	8p.h.	8p.h.	89	

APPENDIX D Detailed predicted noise levels

The impacts presented in the following table are identified by colour coding of the text.

For Standard Hours:

- XX Complies with NML
- **XX** < 10dB(A) above NML - construction noise clearly audible
- **XX** > 10dB(A) above NML - construction noise clearly moderately intrusive
- **XX** > 75dB(A) - highly noise affected For

For OOHW Evening and Night:

- XX Complies with NML
- **XX** < 5 dB(A) above NML - construction noise noticeable
- **XX** 5 to 15 dB(A) above NML - construction noise clearly audible
- **XX** > 15 to 25 dB(A) above NML - construction noise moderately intrusive
- **XX** > 25 dB(A) above NML - construction noise highly intrusive

Table D1 Predicted construction noise levels Burrows Road South Compound

Receiver		Predicted noise levels, dB(A)					
		Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	NML	V01	NML	V01	NML	V01
NCA10	1 BELLEVUE STREET TEMPE	68	50	61	49	54	43
NCA10	2 BELLEVUE STREET TEMPE	68	50	61	49	54	43
NCA10	3 BELLEVUE STREET TEMPE	68	50	61	50	54	43
NCA10	4 BELLEVUE STREET TEMPE	68	50	61	50	54	43
NCA10	1 FREDERICK STREET ST PETERS	68	51	61	51	54	45
NCA10	6 FREDERICK STREET SYDENHAM	68	45	61	44	54	38
NCA10	1 GEORGE STREET SYDENHAM	68	47	61	46	54	40
NCA10	3 GEORGE STREET SYDENHAM	68	46	61	45	54	39
NCA10	4 GEORGE STREET SYDENHAM	68	47	61	47	54	41
NCA10	6 GEORGE STREET SYDENHAM	68	35	61	35	54	34
NCA10	8 GEORGE STREET SYDENHAM	68	46	61	45	54	39
NCA10	10 GEORGE STREET SYDENHAM	68	36	61	36	54	34
NCA10	12 GEORGE STREET SYDENHAM	68	33	61	32	54	30
NCA10	14 GEORGE STREET SYDENHAM	68	38	61	37	54	32
NCA10	16 GEORGE STREET SYDENHAM	68	36	61	35	54	34
NCA10	18 GEORGE STREET SYDENHAM	68	36	61	36	54	34
NCA10	20 GEORGE STREET SYDENHAM	68	38	61	37	54	34
NCA10	22 GEORGE STREET SYDENHAM	68	33	61	32	54	29
NCA10	12 MARY STREET ST PETERS	68	38	61	37	54	33
NCA10	307-309 PRINCES HIGHWAY ST PETERS	68	47	61	46	54	41
NCA10	311 PRINCES HIGHWAY ST PETERS	68	43	61	42	54	37
NCA10	313 PRINCES HIGHWAY ST PETERS	68	43	61	42	54	37
NCA10	315 PRINCES HIGHWAY ST PETERS	68	43	61	43	54	38
NCA10	317 PRINCES HIGHWAY ST PETERS	68	43	61	43	54	37
NCA10	319 PRINCES HIGHWAY ST PETERS	68	43	61	43	54	37
NCA10	383 PRINCES HIGHWAY SYDENHAM	68	47	61	46	54	41
NCA10	385 PRINCES HIGHWAY SYDENHAM	68	47	61	46	54	40
NCA10	387 PRINCES HIGHWAY SYDENHAM	68	47	61	46	54	40
NCA10	389 PRINCES HIGHWAY SYDENHAM	68	47	61	46	54	41
NCA10	391 PRINCES HIGHWAY SYDENHAM	68	47	61	47	54	42
NCA10	393 PRINCES HIGHWAY SYDENHAM	68	47	61	47	54	42
NCA10	395 PRINCES HIGHWAY SYDENHAM	68	47	61	47	54	41
NCA10	397 PRINCES HIGHWAY SYDENHAM	68	47	61	46	54	41
NCA10	399 PRINCES HIGHWAY SYDENHAM	68	47	61	46	54	41
NCA10	401 PRINCES HIGHWAY SYDENHAM	68	47	61	47	54	41
NCA10	1 SUTHERLAND STREET ST PETERS	68	43	61	42	54	37
NCA10	2 SUTHERLAND STREET ST PETERS	68	44	61	44	54	38
NCA10	3 SUTHERLAND STREET ST PETERS	68	36	61	35	54	32
NCA10	2 YELVERTON STREET SYDENHAM	68	45	61	44	54	39
NCA10	4 YELVERTON STREET SYDENHAM	68	46	61	45	54	39
NCA10	5 YELVERTON STREET SYDENHAM	68	46	61	46	54	41
NCA10	7 YELVERTON STREET SYDENHAM	68	46	61	46	54	40
NCA10	9 YELVERTON STREET SYDENHAM	68	45	61	45	54	40
NCA10	11 YELVERTON STREET SYDENHAM	68	46	61	45	54	40
NCA10	11A YELVERTON STREET SYDENHAM	68	45	61	44	54	39
OSR	5 BELLEVUE STREET TEMPE	70	57	70	56	70	50
OSR	2 BERNE STREET ST PETERS	70	53	70	52	70	46
OSR	1 BURROWS ROAD SOUTH ST PETERS	70	44	70	43	70	39
OSR	2 BURROWS ROAD SOUTH ST PETERS	75	58	75	58	75	55
OSR	3 BURROWS ROAD SOUTH ST PETERS	75	41	75	40	75	37
OSR	4 BURROWS ROAD SOUTH ST PETERS	70	58	70	58	70	58
OSR	5 BURROWS ROAD SOUTH ST PETERS	75	45	75	45	75	40
OSR	6-10 BURROWS ROAD SOUTH ST PETERS	75	66	75	66	75	66
OSR	7 BURROWS ROAD SOUTH ST PETERS	75	46	75	45	75	41
OSR	9 BURROWS ROAD SOUTH ST PETERS	75	46	75	45	75	40
OSR	11 BURROWS ROAD SOUTH ST PETERS	75	47	75	46	75	42
OSR	13-15 BURROWS ROAD SOUTH ST PETERS	75	46	75	45	75	41
OSR	17 BURROWS ROAD SOUTH ST PETERS	70	51	70	50	70	47
OSR	19 BURROWS ROAD SOUTH ST PETERS	75	55	75	54	75	49
OSR	21 BURROWS ROAD SOUTH ST PETERS	70	56	70	55	70	52
OSR	4-6 CANAL ROAD ST PETERS	70	50	70	49	70	43
OSR	8 CANAL ROAD ST PETERS	70	50	70	49	70	43
OSR	1 HILTON AVENUE SYDENHAM	70	46	70	45	70	40
OSR	293 PRINCES HIGHWAY ST PETERS	70	44	70	43	70	38
OSR	295 PRINCES HIGHWAY ST PETERS	70	47	70	46	70	40
OSR	321-323 PRINCES HIGHWAY ST PETERS	70	43	70	43	70	37
OSR	327-337 PRINCES HIGHWAY ST PETERS	70	45	70	44	70	38
OSR	340 PRINCES HIGHWAY ST PETERS	60	49	60	48	60	42
OSR	344 PRINCES HIGHWAY ST PETERS	70	44	70	43	70	39
OSR	345 PRINCES HIGHWAY ST PETERS	70	45	70	45	70	39
OSR	347 PRINCES HIGHWAY ST PETERS	70	46	70	46	70	40
OSR	358 PRINCES HIGHWAY ST PETERS	70	45	70	44	70	40
OSR	364 PRINCES HIGHWAY ST PETERS	70	46	70	45	70	41
OSR	370 PRINCES HIGHWAY ST PETERS	70	45	70	45	70	39
OSR	372 PRINCES HIGHWAY ST PETERS	70	45	70	44	70	38
OSR	374 PRINCES HIGHWAY ST PETERS	70	45	70	44	70	39

Table D1 Predicted construction noise levels Burrows Road South Compound

Receiver		Predicted noise levels, dB(A)					
		Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	NML	V01	NML	V01	NML	V01
OSR	375-377 PRINCES HIGHWAY SYDENHAM	70	52	70	51	70	45
OSR	376 PRINCES HIGHWAY ST PETERS	70	45	70	45	70	39
OSR	378 PRINCES HIGHWAY ST PETERS	70	47	70	46	70	40
OSR	379 PRINCES HIGHWAY SYDENHAM	70	52	70	52	70	45
OSR	380 PRINCES HIGHWAY ST PETERS	70	52	70	51	70	45
OSR	396 PRINCES HIGHWAY ST PETERS	70	52	70	52	70	46
OSR	400 PRINCES HIGHWAY ST PETERS	70	51	70	50	70	44
OSR	405 PRINCES HIGHWAY SYDENHAM	70	48	70	47	70	41
OSR	407 PRINCES HIGHWAY SYDENHAM	70	49	70	48	70	44
OSR	409 PRINCES HIGHWAY SYDENHAM	70	39	70	39	70	33
OSR	411 PRINCES HIGHWAY SYDENHAM	70	50	70	50	70	42
OSR	455 PRINCES HIGHWAY SYDENHAM	70	45	70	45	70	42
OSR	475 PRINCES HIGHWAY SYDENHAM	70	42	70	41	70	37
OSR	483 PRINCES HIGHWAY SYDENHAM	70	42	70	41	70	37
OSR	485 PRINCES HIGHWAY SYDENHAM	70	42	70	41	70	36
OSR	487 PRINCES HIGHWAY SYDENHAM	70	46	70	44	70	40
OSR	489 PRINCES HIGHWAY SYDENHAM	70	52	70	51	70	47
OSR	493 PRINCES HIGHWAY SYDENHAM	70	49	70	48	70	42
OSR	500 PRINCES HIGHWAY ST PETERS	70	57	70	56	70	50
OSR	574 PRINCES HIGHWAY SYDENHAM	75	56	75	56	75	47
OSR	576 PRINCES HIGHWAY SYDENHAM	75	52	75	51	75	46
OSR	578 PRINCES HIGHWAY SYDENHAM	75	52	75	51	75	46
OSR	580-590 PRINCES HIGHWAY SYDENHAM	75	43	75	42	75	38
OSR	594 PRINCES HIGHWAY SYDENHAM	70	54	70	52	70	48
OSR	598 PRINCES HIGHWAY SYDENHAM	70	36	70	35	70	30
OSR	600 PRINCES HIGHWAY TEMPE	70	49	70	49	70	42
OSR	2 TALBOT STREET ST PETERS	75	55	75	54	75	49
OSR	4 TALBOT STREET ST PETERS	75	58	75	57	75	50
OSR	5 TALBOT STREET ST PETERS	75	53	75	52	75	47
OSR	20 CANAL ROAD ST PETERS	75	74	75	73	75	66
OSR	25 BURROWS ROAD SOUTH ST PETERS	75	63	75	63	75	62