Detailed Noise and Vibration Impact Statement

Sydney Metro - Western Sydney Airport | St Marys Enabling Works

Prepared for: Transport for Tomorrow

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ADE CONSULTING GROUP

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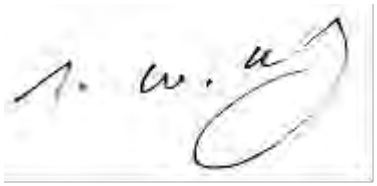
For and on behalf of

ADE Consulting Group Pty Ltd

Prepared by:	Reviewed by:	Issued by:
		
David S O'Brien	Stephen Bowley	David S O'Brien
Noise and Vibration Consultant	Principal Environmental Consultant	Noise and Vibration Consultant

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Definitions

Some common terms are provided in the table below.

An **Acoustic Glossary** is provided in **Appendix I**.

Term / Abbreviation	Summary
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.
Background Noise	The underlying level of noise present in the ambient noise, excluding the noise source which is under investigation, when extraneous noise is removed.
Attenuation	The reduction in the level of sound or vibration
CEMF	Construction Environmental Management Framework
CEMP	Construction Environmental Management Plan
CNVIA	Construction Noise and Vibration Impact Assessment
CNVMP	Construction Noise and Vibration Management Plan
CNVS	Construction Noise and Vibration Strategy (TfNSW 2018)
CoA	Minister's Conditions of Approval
Construction	Includes all work required to construct the CSSI, includes commissioning trials of equipment and temporary use of any part of the CSSI, but excludes Low Impact Work
Construction Boundary	The area physically affected by work as described in the documents listed in Condition A1 in the CSSI Approval 10051
CSSI	Critical State Significant Infrastructure
dBA	Decibels using the A-weighted scale measured according to the frequency of the human ear
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DPIE	Department of Planning, Industry and Environment
DVML	Vibration management level for cosmetic damage to buildings or structures
DNVIS	Detailed Noise and Vibration Impact Statement
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EM	Environmental Manager
REMM	Revised Environmental Mitigation Measures
EMS	Environmental management system
Environmental aspect	Defined by AS/NZS ISO 14001:2015 as an element of an organisation's activities, products or services that can interact with the environment
Environmental impact	Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects
Environmental objective	Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve
Environmental target	Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives
EPA	NSW Environment Protection Authority

Term / Abbreviation	Summary
EP&A Act	Environmental Planning and Assessment Act 1979
ER	Environmental Representative
EPL	Environment Protection Licences under the POEO Act
Heritage Council	Heritage Council of NSW
Heritage Item	A place, building, work, relic, archaeological site, tree, movable object or precinct of heritage significance, that is listed under one or more of the following registers: the State Heritage Register under the Heritage Act 1977 (NSW), a state agency heritage and conservation register under section 170 of the Heritage Act 1977 (NSW), a Local Environmental Plan under the EP&A Act, the World, National or Commonwealth Heritage lists under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth), and an "Aboriginal object" or "Aboriginal place" as defined in section 5 of the National Parks and Wildlife Act 1974 (NSW)
Highly Noise Affected	As defined in the ICNG
Highly noise intensive works	Works which are defined as annoying under the ICNG, including: a) use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work; b) grinding metal, concrete or masonry; c) rock drilling; d) line drilling; e) vibratory rolling; f) bitumen milling or profiling; g) jackhammering, rock hammering or rock breaking; h) rail tamping and regulating; and i) impact piling.
Feasible and reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
ICNG	Interim Construction Noise Guideline (DECC, 2009)
LGA	Local Government Area

Term / Abbreviation	Summary
Low Impact Work	Includes: j) survey work including carrying out general alignment survey, installing survey controls (including installation of global positioning systems (GPS)), installing repeater stations, carrying out surveys of existing and future utilities and building and road dilapidation surveys; k) investigations including investigative drilling, contamination investigations and excavation; l) site establishment work approved under a Site Establishment Management Plan; m) operation of ancillary facilities if the ER has determined the operational activities will have minimal impact on the environment and community; n) minor clearing and relocation of native vegetation, as identified in the documents listed in Condition A1 of Schedule 3; o) installation of mitigation measures including erosion and sediment controls, temporary exclusion fencing for sensitive areas and acoustic treatments; p) property acquisition adjustment work including installation of property fencing, and relocation and adjustments of utilities to property including water supply and electricity; q) relocation and connection of utilities where the relocation or connection has a minor impact to the environment as determined by the ER; r) archaeological testing under the Code of practice for archaeological investigation of Aboriginal objects in NSW (DECCW, 2010) or archaeological monitoring undertaken in association with (a)-(h) above to ensure that there is no impact on Heritage items; s) archaeological testing for historical archaeological resources to identify and seek to reduce impact on state significant archaeology where it is proposed, ahead of construction or in association with (a)-(h) above; t) maintenance of existing buildings and structures required to facilitate the carrying out of the CSSI; and u) other activities determined by the ER to have minimal environmental impact which may include but not limited to construction of minor access roads, temporary relocation of pedestrian and cycle paths and the provision of property access. However, where Heritage items on the State heritage register, areas of known or expected archaeological potential, or threatened species or threatened ecological communities (within the meaning of the BC Act) are affected by any Low Impact Work, that work is construction, unless otherwise determined by the Planning Secretary in consultation with Heritage NSW, DPIE EES or DPI Fisheries (in the case of impact upon fish, aquatic invertebrates or marine vegetation). The low impact work described in this definition becomes Construction with the approval or endorsement of a CEMP. Where Low Impact Work has already commenced, this is considered to remain as Low Impact Work and is managed in accordance with the framework under which it commenced
$L_{Aeq,15min}$	The A-weighted equivalent continuous (energy average) sound pressure level of the construction works under consideration over a 15-minute period and excludes other noise sources such as from industry, road, rail and the community. Sometimes tabulated as L_{eq} or dBA L_{eq}
Night-time	The hours of 10:00 pm to 7:00 am weekday nights, 10:00 pm to 8:00 am Saturday nights, and 6:00 pm to 7:00 am Sunday nights and Public Holiday nights
NPfI	Noise Policy for Industry (EPA, 2017)
NML	Noise Management Level, as defined in the ICNG
POEO Act	Protection of the Environment Operations Act 1997 (NSW)
Planning Secretary	Planning Secretary of the Department (or nominee, whether nominated before or after the date on which this approval was granted)
RBL	The Rating Background Level for each period is the medium value of the ABL (Assessment Background Level) values for the period over all of the days measured. There is therefore an RBL value for each period (day, evening and night)
Relevant Council(s)	Liverpool City Council, and/or Penrith Council

Term / Abbreviation	Summary
Sensitive Land Uses	Includes residences, educational institutions (including preschools, schools, universities, TAFE colleges), health care facilities (including nursing homes, hospitals), religious facilities (including churches), child care centres and passive recreation areas (including outdoor grounds used for teaching). Receivers that may be considered to be sensitive include commercial premises (including film and television studios, research facilities, entertainment spaces, temporary accommodation such as caravan parks and camping grounds, restaurants, office premises, and retail spaces), and industrial premises as identified by the Planning Secretary Note: For the purpose of determining appropriate mitigation, a multi-storey residential flat building must not be counted as a single sensitive receiver.
SHR	State Heritage Register
Sleep Disturbance Event	Where the subject development / premises night-time noise levels at a residential location exceed: a) $L_{Aeq,15min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and / or b) L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater.
SPL SWL	Sound Pressure Level Sound Power Level
SM WSA	Sydney Metro - Western Sydney Airport
SM WSA CNVS	Sydney Metro - Western Sydney Airport Construction Noise and Vibration Standard (v4.3, 2020)
TfNSW	Transport for NSW
TfT	Transport for Tomorrow
VML	Vibration management level
Works	Any physical work to construct or facilitate the construction of the CSSI, including Low Impact Work, environmental management measures and utility work. However, does not include activities that informs or enables detailed design of the CSSI or generates noise that is not more than 5 dB(A) above the RBL at any sensitive land user(s)

1 Introduction

1.1 Background

Sydney Metro - Western Sydney Airport (the project) involves the construction of a Metro line between St Marys and Bringelly. The new line will connect the future Western Sydney Airport (Nancy-Bird Walton Airport) at Badgerys Creek with the Main Western Line at the St Marys terminus. The project is declared as Critical State Significant Infrastructure (CSSI) and the Conditions of Approval were issued by the Minister on 23 July 2021.

ADE Consulting Group Pty Ltd (ADE) was commissioned by Transport for Tomorrow (TfT, the 'Client') to undertake a Detailed Noise and Vibration Impact Statement (DNVIS) for proposed Enabling Works at St Mary's Train Station located in Sydney's Western Suburbs within the Penrith Council LGA.

These works include:

- Geotechnical investigations:
  - Survey work including carrying out general alignment survey, installing survey controls (including installation of global positioning system (GPS)), installing repeater stations, carrying out surveys of existing and future utilities and building and road dilapidation surveys
  - Investigations including investigative drilling, contamination investigations and excavation
  - Installation of mitigation measures including erosion and sediment controls, temporary exclusion fencing for sensitive areas and acoustic treatments
- Investigation and survey of existing Lift shaft and Staircase
- Demolition, removal, level ground of the existing lift and existing staircase
- Construction and commissioning of new lift shaft and staircase. New or modified facilities shall be made compliant with Disability Standards for Accessible Public Transport (DSAPT)
- Relocation, and or installation of new safety and security systems, Access Paths, and fixed furniture.
- Relocation and/or protection of existing drainage
- Design and connection of services including but not limited to lighting, fire and life safety, communications, power and water.

The DNVIS aims to achieve the following:

- Summarize the proposed works to be undertaken at St Marys Train Station as part of the Enabling Works for the Sydney Metro - Western Sydney Airport project
- Fulfil the requirements of the relevant Conditions of Approval (SSI 10051 CoA **E47**, **E48** and **E49**)
- Identify all surrounding noise and vibration sensitive receivers and structures
- Assign appropriate noise and vibration criteria or guideline values to those receivers (CoA **E43**)
- Establish relevant and accurate construction scenarios and equipment source noise levels
- Establish relevant and accurate vibration levels for each vibration intensive plant equipment
  - Assess and predict noise and vibration impacts to all relevant sensitive receivers
  - Analyze and assess the model output for formulation of appropriate noise and vibration mitigation measures, as necessary or required

- Present specific mitigation measures as defined in the Sydney Metro Construction Noise and Vibration Standard (CoA **E44**)

1.2 Project description

Sydney Metro - Western Sydney Airport (the project) involves the construction of a Metro line between St Marys and Bringelly. The new line will connect the future Western Sydney Airport (Nancy-Bird Walton Airport) at Badgerys Creek with the Main Western Line at the St Marys terminus.

The project was declared as State Significant Infrastructure (SSI) under Section 5.25 of the Environmental Planning & Assessment Act 1979 on 23 July 2021and the Minister's Conditions of Approval (CoA) was issued by the Minister for Planning.

As part of the project enabling works, Transport for Tomorrow, on behalf of Sydney Metro, are proposing to conduct enabling works at St Marys Station.

The works would occur within the heritage curtilage of St Mary Railway Station Group, listed on the State Heritage Register (SHR) as an item of State significance (SHR# 01249).

The proposed construction works in which this DNVIS covers would involve the dismantling of the existing infrastructure at St Marys train station, and construction of new lifts and staircases to allow for the future capacity anticipated to utilize the WSA metro lines.

The proposed enabling works include:

- Geotechnical Investigations (completed in early 2022)
- Investigation and survey of existing Lift shaft and Staircase to confirm detailed design
- Demolition, removal, level ground of the existing lift and existing staircase
  - A staged approach is required to facilitate the installation of the new stairs and lift shaft with new structures to be installed prior to the removal of the existing structures
- Construction and commissioning of new lift shaft and staircase. New or modified facilities shall be made compliant with Disability Standards for Accessible Public Transport (DSAPT).
- Relocation, and or installation of new safety and security systems, Access Paths, and fixed furniture.
  - Current street furniture including bike lockers and park benches are to be relocated to facilitate the construction of the new structures.
- Relocation and/or protection of existing drainage.
- Stormwater drainage within the construction footprint of the new stairs is to be encased in concrete to protect the pipes from any potential damage.
- Design and connection of services including, but not limited to, lighting, fire and life safety, communications, power and water.

1.2.1 Staging

The various work activities involved in the SM-WSA St Marys Lift shaft Relocation work is given below in **Table 1**.

Table 1 Proposed staging of enabling works, St Marys

Work activities	Description	Duration
Site Establishment	Hoarding installation, tree trimming and removal, temporary relocation of street furniture	March – April 2022
Installation of new stairs	Piling for new stair footings, installation of precast stairs and canopy for new stairs.	April – June 2022
Demolition of current stairs	Demolition of current stairs and canopy	June – July 2022
Installation of new Lift Shaft	Excavation for new lift shaft foundation, installation of precast lift structure, lift electronics, commissioning of new lift	July – October 2022
Demolition of current lift	Removal of current lift shaft structure, removed to ground level,	October 2022
Demobilisation and close out	Removal of hoarding, reinstate street furniture,	October – January 2023

1.2.2 Site location

The site is located external to the rail corridor at St Marys train station at chainage 47.420 km.

St Marys is located approximately 47 km west of the Sydney Central Business District (CBD) and is governed by the City of Penrith Local Government Area (LGA) and forms part of the Greater Western Sydney region.

Figure 1 which follows illustrates the location of the site at St Marys.

Figure 1 Overview of St Marys site location. Source: Nearmaps

2 Environmental Requirements

2.1 Licensing and approvals

The Sydney Metro - Western Sydney Airport Conditions of Approval was granted on the 23rd day of July 2021, in the State Significant Infrastructure Application ID SSI 10051, and approved by the Minister for Planning and Public Spaces, under Section 5.19 of the Environment Planning and Assessments Act 1979.

The associated Conditions of Approval (CoA) pertaining to the SSI 10051 is reproduced and outlined below in **Table 2**.

Table 2 Conditions of Approval during the construction phase

Condition of Approval	Requirement	Where addressed
E37	A detailed land use survey must be undertaken to confirm sensitive receivers (including critical working areas such as operating theatres and precision laboratories) potentially exposed to construction noise and vibration and construction ground-borne noise. The survey may be undertaken on a progressive basis but must be undertaken in any one area before the commencement of work which generates construction noise, vibration or ground-borne noise in that area. The results of the survey must be included in the Detailed Noise and Vibration Impact Statement(s) required under Condition **E47** of this schedule.	**Section 3**
E38	Work must only be undertaken during the following hours: (a) 7:00am to 6:00pm Mondays to Fridays, inclusive; (b) 8:00am to 1:00pm Saturdays; and (c) at no time on Sundays or public holidays	**Section 2.1.1**
E39	Except as permitted by an EPL or approved in accordance with the Out-of-Hours Works Protocol required by Condition **E42**, highly noise intensive work that result in an exceedance of the applicable NML at the same receiver must only be undertaken: (a) between the hours of 8:00 am to 6:00 pm Monday to Friday; (b) between the hours of 8:00 am to 1:00 pm Saturday; and (c) if continuously, then not exceeding three (3) hours, with a minimum cessation of work of not less than one (1) hour. For the purposes of this condition, 'continuously' includes any period during which there is less than one (1) hour between ceasing and recommencing any of the work.	**Section 2.1.1.1**
E40	This approval does not permit blasting.	**Section 2.1.1**

E41	Notwithstanding Conditions **E38** and **E39** of this schedule work may be undertaken outside the hours specified in the following circumstances: a) Safety and Emergencies, including: i) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or ii) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm. b) Low impact, including: i) construction that causes $L_{Aeq(15\ minute)}$ noise levels: ♦ no more than 5 dB(A) above the rating background level at any residence in accordance with the ICNG, and ♦ no more than the 'Noise affected' NMLs specified in Table 3 of the ICNG at other sensitive land user(s); and ii) construction that causes $L_{AFmax(15\ minute)}$ noise levels no more than 15 dB(A) above the rating background level at any residence; or iii) construction that causes: ♦ continuous or impulsive vibration values, measured at the most affected residence are no more than the preferred values for human exposure to vibration, specified in Table 2.2 of Assessing Vibration: a technical guideline (DEC, 2006), or ♦ intermittent vibration values measured at the most affected residence are no more than the preferred values for human exposure to vibration, specified in Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006) c) By Approval, including: i) where different construction hours are permitted or required under an EPL in force in respect of the CSSI; or ii) works which are not subject to an EPL that are approved under an Out-of-Hours Work Protocol as required by Condition **E42** of this schedule; or iii) negotiated agreements with directly affected residents and sensitive land user(s). d) By Prescribed Activity, including: i) tunnelling and ancillary support activities (excluding cut and cover tunnelling and surface works not directly supporting tunnelling) are permitted 24 hours a day, seven days a week; or ii) grout batching at the Orchard Hills construction site is permitted 24 hours a day, seven days a week; or iii) delivery of material that is required to be delivered outside of standard construction hours in Condition **E38** of this schedule to directly support tunnelling activities, except between the hours 10:00 pm and 7:00 am to / from the Orchard Hills ancillary facility; or iv) haulage of spoil generated through tunnelling is permitted 24 hours per day, seven days per week except between the hours of 10:00 pm and 7:00 am to / from the Orchard Hills construction site; or v) works within an acoustic enclosure are permitted 24 hours a day, seven days a week where there is no exceedance of noise levels or intermittent vibration levels under Low impact circumstances identified in Condition **E41(b)**, unless otherwise agreed with the Planning Secretary; or vi) tunnel and underground station box fit out works are permitted 24 hours per day, seven days per week. On becoming aware of the need for emergency work in accordance with **(a)(ii)** above, the ER, the Planning Secretary and the EPA must be notified of the reasons for such work. The Proponent must use best endeavours to notify as soon as practicable all noise and/or vibration affected sensitive land user(s) of the likely impact and duration of those work. Notes: 1. Tunnelling does not include station box excavation. 2. Tunnelling ancillary support activities includes logistics support and material handling and delivery	**Section 5.1**

Condition of Approval	Requirement	Where addressed
E42	An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of work (not subject to an EPL) that is outside the hours defined in Conditions **E38** and **E39**. The Protocol must be approved by the Planning Secretary before commencement of the out-of-hours work. The Protocol must be prepared in consultation with the ER. The Protocol must provide: a) Justification for why out-of-hours work need to occur; b) identification of low and high-risk activities and an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where: i) the ER reviews all proposed out-of-hours activities and confirm their risk levels; ii) low risk activities can be approved by the ER; and iii) high risk activities that are approved by the Planning Secretary; c) a process for the consideration of out-of-hours work against the relevant NML and vibration criteria; d) a process for selecting and implementing mitigation measures for residual impacts in consultation with the community at each affected location, including respite periods consistent with the requirements of Condition **E56** of this schedule. The measures must take into account the predicted noise levels and the likely frequency and duration of the out-of-hours works that sensitive land user(s) would be exposed to, including the number of noise awakening events; e) procedures to facilitate the coordination of out-of-hours work including those approved by an EPL or undertaken by a third party, to ensure appropriate respite is provided; and f) notification arrangements for affected receivers for all approved out-of-hours works and notification to the Planning Secretary of approved low risk out-of-hours works. This condition does not apply if the requirements of Condition **E41** of this schedule are met. Note: Out-of-hours work is any work that occurs outside the construction hours identified in Condition **E38** and **E39** of this schedule.	**Section 2.1.1, 5.2.4**

Condition of Approval	Requirement	Where addressed
E43	All reasonable and feasible mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration criteria: a) construction 'Noise affected' noise management levels established using the Interim Construction Noise Guideline (DECC, 2009); b) preferred vibration criteria established using the Assessing vibration: a technical guideline (DEC, 2006) (for human exposure); c) Australian Standard AS 2187.2 - 2006 "Explosives - Storage and Use - Use of Explosives" (for human exposure); d) BS 7385 Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2" as they are "applicable to Australian conditions"; and e) the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures (for structural damage for structurally unsound heritage items). Any work identified as exceeding the noise management levels and / or vibration criteria must be managed in accordance with the Noise and Vibration CEMP Sub-plan. Note: The ICNG identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction Noise Management Level	**Section 6.3, 6.4**
E44	All reasonable and feasible mitigation measures must be applied when the following residential ground-borne noise levels are exceeded: a) evening (6:00 pm to 10:00 pm) — internal $L_{Aeq(15\ minute)}$: 40 dB(A); and b) night (10:00 pm to 7:00 am) — internal $L_{Aeq(15\ minute)}$: 35 dB(A). The mitigation measures must be outlined in the Noise and Vibration CEMP Sub-plan, including in any Out-of-Hours Work Protocol, required by Condition **E42** of this schedule	**Section 6.3, 6.4, 6.4.3**
E46	Industry best practice construction methods must be implemented where reasonably practicable to ensure that noise and vibration levels are minimised around sensitive land use(s). Practices may include, but are not limited to: a) use of regularly serviced low sound power equipment; b) at source control, temporary noise barriers (including the arrangement of plant and equipment) around noisy equipment and activities such as rock hammering and concrete cutting; c) use of non-tonal reversing alarms; and d) use of alternative construction and demolition techniques.	**Section 6.3, 6.4**

Condition of Approval	Requirement	Where addressed
E47	Detailed Noise and Vibration Impact Statements (DNVIS) must be prepared for any work that may exceed the NMLs, vibration criteria and / or ground-borne noise levels specified in Conditions **E43** and **E44** at any residence outside construction hours identified in Condition **E38**, or where receivers will be highly noise affected or subject to vibration levels above those otherwise determined as appropriate by a suitably qualified structural engineer under Condition **E87**. The DNVIS must include specific mitigation measures identified through consultation with affected sensitive land user(s) and the mitigation measures must be implemented for the duration of the works. A copy of the DNVIS must be provided to the ER before the commencement of the associated works. The Planning Secretary and the EPA may request a copy (ies) of the DNVIS.	**Section 5**
E48	Owners and occupiers of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before works that generate vibration commences in the vicinity of those properties. If the potential exceedances is to occur more than once or extend over a period of 24 hours, owners and occupiers are to be provided a schedule of potential exceedances on a monthly basis for the duration of the potential exceedances, unless otherwise agreed by the owner or occupier. These properties must be identified and considered in the Noise and Vibration CEMP Sub-plan.	**Section 5.3**
E49	Where sensitive land use(s) are identified in Appendix B [of SSI 10051] as exceeding the highly noise affected criteria during typical case construction, mitigation measures must be implemented with the objective of reducing typical case construction noise below the highly noise affected criteria at each relevant sensitive landuse(s). Activities that would exceed highly noise affected criteria during typical case construction must not commerce until the measures identified in this condition have been implemented, unless otherwise agreed with the Planning Secretary. Note: Mitigation measures may include path barrier controls such as acoustic sheds and/or noise walls, at-property treatment, or a combination of path and at-property treatment.	**Section 3.1, 5.2.4.2**
E50	For all construction sites where acoustic sheds are installed, the sheds must be designed, constructed and operated to minimise noise emissions. This would include the following considerations: a) all significant noise producing equipment that would be used during the night-time would be inside the sheds, where feasible and reasonable; b) noise generating ventilation systems such as compressors, scrubbers, etc, would be located inside the sheds and external air intake/discharge ports would be appropriately acoustically treated; and c) the doors of acoustic sheds would be kept closed during the night-time period. Where night-time vehicle access is required at sites with nearby residences, the shed entrances would be designed and constructed to minimise noise breakout.	**n/a**
E51	Where Condition **E49** determines that at-property treatment (temporary or permanent) is the appropriate measure to reduce noise impacts, this at-property treatment must be offered to landowners of residential properties for habitable living spaces, unless other mitigation or management measures are agreed to by the landowner. Landowners must be advised of the range of options that can be installed at or in their property and given a choice as to which of these they agree to have installed. A copy of all guidelines and procedures that will be used to determine at-property treatment at their residence must be provided to the landowner.	**n/a**
E52	Any offer for at-property treatment or the application of other noise mitigation measures in accordance with Condition **E51**, does not expire until the noise impacts specified in Condition **E49**, affecting that property are completed, even if the landowner initially refuses the offer. Note: If an offer has been made but is not accepted, this does not preclude the commencement of construction under Condition **E49**.	**n/a**

Condition of Approval	Requirement	Where addressed
E53	The implementation of at-property treatment does not preclude the application of other noise and vibration mitigation and management measures including temporary and long term accommodation.	**n/a**
E54	Vibration testing must be conducted during vibration generating activities that have the potential to impact on Heritage items to verify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and attended monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures. Such measures must include, but not be limited to, review or modification of excavation techniques.	**Section 5.3**
E55	The Proponent must seek the advice of a heritage specialist on methods and locations for installing equipment used for vibration, movement and noise monitoring at Heritage items.	**Section 5.3** **Appendix II**
E56	All work undertaken for the delivery of the CSSI, including those undertaken by third parties (such as utility relocations), must be coordinated to ensure respite periods are provided. The Proponent must: a) reschedule any work to provide respite to impacted noise sensitive land use(s) so that the respite is achieved in accordance with Condition **E57**; or b) consider the provision of alternative respite or mitigation to impacted noise sensitive land use(s); and c) provide documentary evidence to the ER in support of any decision made by the Proponent in relation to respite or mitigation.	**Section 6.4.1**
E57	In order to undertake out-of-hours work outside the work hours specified under Condition **E38**, appropriate respite periods for the out-of-hours work must be identified in consultation with the community at each affected location on a regular basis. This consultation must include (but not be limited to) providing the community with: a) a progressive schedule for periods no less than three (3) months, of likely out-of-hours work; b) a description of the potential work, location and duration of the out-of-hours work; c) the noise characteristics and likely noise levels of the work; and likely mitigation and management measures which aim to achieve the relevant NMLs under Condition **E43** (including the circumstances of when respite or relocation offers will be available and details about how the affected community can access these offers). The outcomes of the community consultation, the identified respite periods and the scheduling of the likely out-of-hour work must be provided to the ER, EPA and the Planning Secretary prior to the out-of-hours work commencing. Note: Respite periods can be any combination of days or hours where out-of-hours work would not be more than 5 dB(A) above the RBL at any residence.	**Section 6.4.5**

2.1.1 Approved construction hours

CoA **E38** outlines the works in which the works must only be undertaken within. These hours as defined as *Standard Hours*, and are as follows:

- Monday to Friday: 07:00 hrs to 18:00 hrs
- Saturday 08:00 hrs to 13:00 hrs
- Sundays and Public Holidays: No works permitted.

Blasting is not permitted.

2.1.1.1 Out-of-Hours Work Protocol

Per CoA **E41**, works for the project may be undertaken outside of the house specified in **Section 2.1.1**, where:

- Safety and emergencies:
  - Delivery of materials required by the NSW Police Force or other authority for safety reasons
  - In the event of an emergency, or required to avoid injury or the loss of life
- Low impact works
- Under approval:
  - Works not subject to an EPL that are approved under an Out-of-Hours Work Protocol required under CoA **E42**
  - Per CoA **E39**, where highly noise intensive works result in an exceedance of applicable NML must only be undertaken in standard hours (refer to **Section 2.1.1)**
    - Highly noise intensive works must not exceed 3 hours in duration with a minimum of one (1) hour cessation
- By Prescribed Activity.

In accordance with CoA **E42**, an approved Out-of-Hours Work Protocol outlines hours in which construction works not subject to an EPL are approved for operation, these are as follows:

- Weekday non-Possession periods (ie evening and night-time Monday to Friday 18:00 hrs to 07:00 hrs)
- Saturday evening and night-time works (13:00 – 18:00 hrs, 18:00 hrs to 08:00 hrs)
- Sunday and Public Holidays evening (08:00 hrs to 18:00 hrs).

2.2 Legislation

Key legislation relevant to this DNVIS includes:

- Heritage Act 1977
- Protection of the Environment Operations Act 1997 (POEO Act)
- Environment Planning and Assessment Act 1979 (EPA Act).

2.3 Guidelines and standards

Relevant documents pertaining to the measurement, assessment, and management of noise and vibration in Australia are provided below in **Table 3**.

Table 3 Summary of relevant documents

Guideline / Standard	Published by	Relevance
AS 105:2018 Acoustics – Description and measurement of environmental noise	Australian Standards	Measurement of noise
AS 2659.1-1998 Guide to the use of sound measuring equipment – Portable sound level meters	Australian Standards	Measurement of noise
AS 2436:2010 Guide to Noise Control on Construction, Maintenance and Demolition Sites	Australian Standards	Management of Noise and Vibration on Construction Sites
AS/NZS 2107-2016: Acoustics - Recommended design sound levels and reverberation times for building interiors	Australian Standards	Internal sound level design for Management of Noise
Interim Construction Noise Guideline	Department of Climate Change, 2009	Management of Noise on Construction Sites
Noise Policy for Industry	Environment Protection Authority, 2017	Management of Industry Noise, measurement of noise
Transport for New South Wales Construction Noise and Vibration Strategy	Transport for New South Wales (TfNSW), 2018	Management of Noise and Vibration on Construction Sites
Sydney Metro Construction Noise and Vibration Standard, v4.3	Sydney Metro	Management of Noise and Vibration on Sydney Metro Construction Sites
Accessing Vibration: A Technical Guideline	Department of Conservation, 2006	Management of Vibration
BS 7385: Part 2-1993 Evaluation and measurement of vibration in buildings	British Standards	Management of Vibration
DIN4150-2018: Structural vibration Part 3: Effects of Vibration on Structures	German Standards	Management of Vibration

3 Existing Environment

This section describes the existing environment at St Marys Station, with reference to the Sydney Metro - Western Sydney Airport Environmental Impact Statement (EIS) Chapter 10.

3.1 Land Use Survey

Per CoA **E37** , a detailed land use survey was undertaken to confirm sensitive land use(s) surrounding the project site. **Figure 2** below provided a copy of the land use survey included in the CSSI Approval 10051.

CoA **E49** outlines that where any of these premises' exceed the highly noise affected criteria during typical case construction, mitigation measures are to be implemented with the objective of reducing those noise levels below the highly noise affected level at each of the relevant sensitive land use(s).

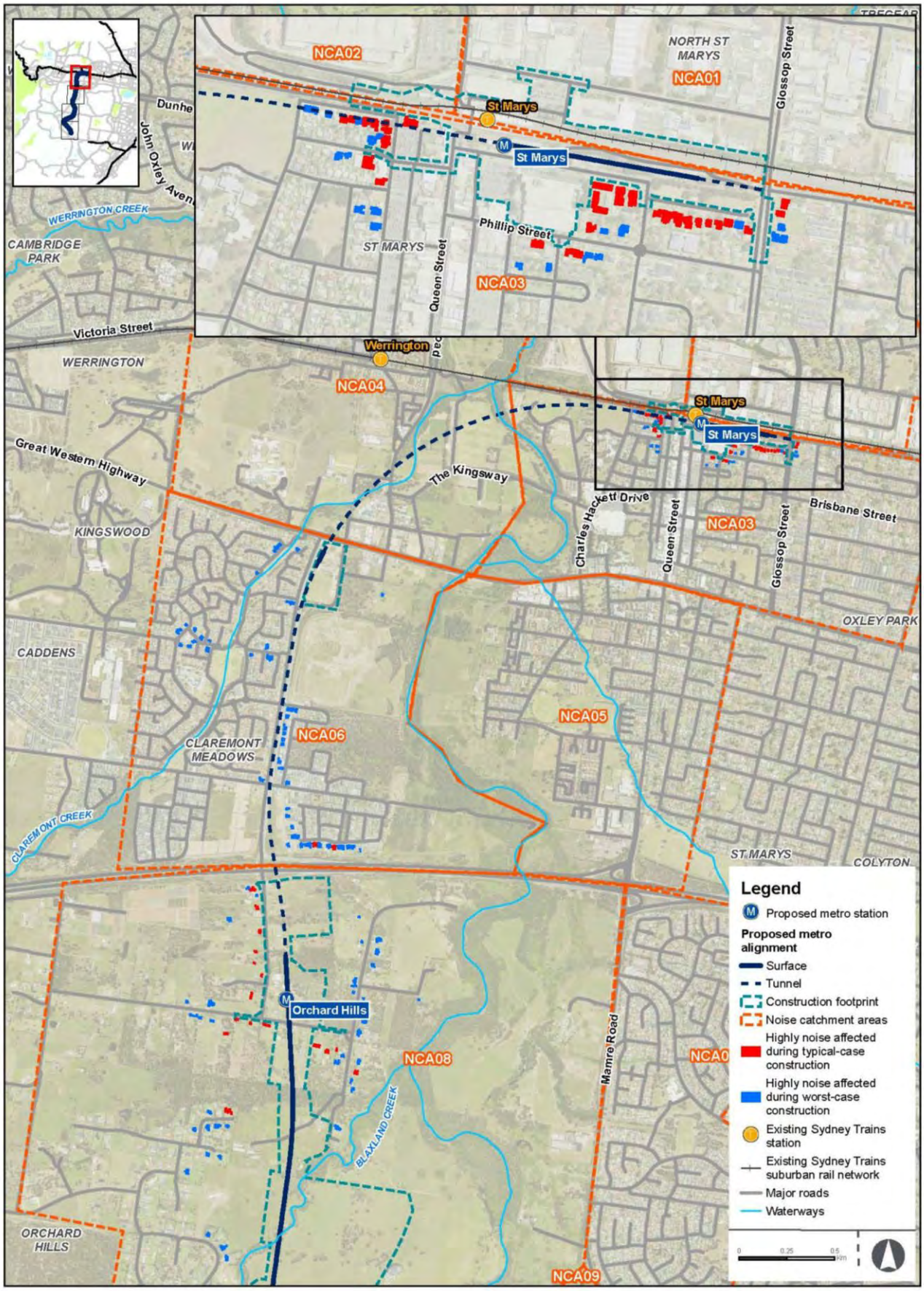

Figure 2 Detailed Land Use Survey, Appendix B of the CSSI Approval

3.1.1 Sensitive land uses

The project is surrounded by a diverse community of various sensitive receiver types and land uses. These include:

- Residential, including high-rise apartment, villas, homes, and townhouses
- Commercial
- Places of worship
- Childcare and early-learning centers
- Educational facilities
- Medical clinics
- Some light industry
- Heritage listed structures

The project is divided into several Noise Catchment Areas (NCAs), surrounding the project boundaries. The NCA boundaries represent logical boundaries based on topography and the type of receivers applicable for that location.

An overview of the NCAs is provided below in **Table 4**, and an illustration is provided in **Figure 3**.

Table 4 Noise Catchment Area overview

NCA	Locality	Description
NCA01	St Marys - North of rail corridor	Predominantly commercial land use
NCA02	St Marys – South of rail corridor	Predominately Residential with commercial (inc. Medical centre and a hotel) scattered along Queen Street of St Marys

Per **CoA E37**, sensitive land use and other land use survey was carried out to confirm land use surround the project site.

Figure 3 below provides an overview of noise sensitive receivers within the locality of the project's location at St Marys.

Figure 3 Overview of St Marys sensitive land uses. Source: Nearmaps

3.1.2 Heritage listed structures

The railway station at St Marys is listed on the State Heritage Register, RailCorp s170 Register, and the Penrith Local Environmental Plan (LEP) 2010. The structure listed as the St Marys Railways Station Group was opened in the 1860s and was a critical structure during World War II.

An aerial overview of the vibration sensitive structures is provided below in **Figure 4**.

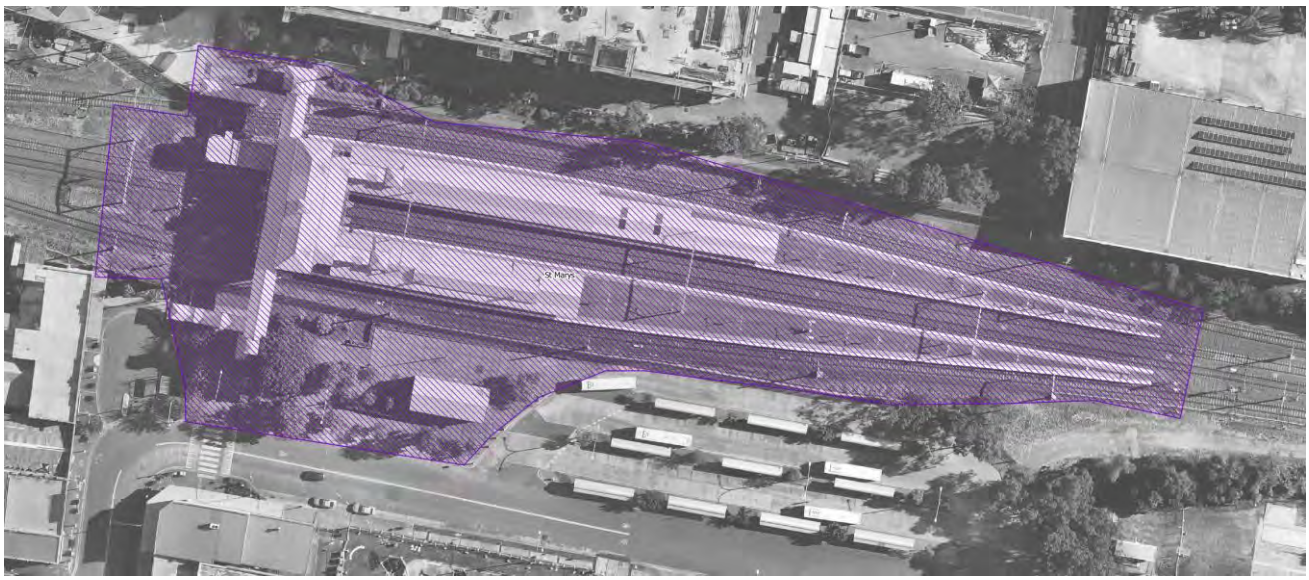

Figure 4 Vibration sensitive structures within the project site

3.1.3 Unattended ambient noise monitoring

Noise monitoring results and relevant data has been retrieved from the Sydney Metro - Western Sydney Airport Technical Paper 2 October 2020.

The noise levels presented in the EIS are considered representative and valid.

No new monitoring has been undertaken, as the EIS data would be relevant as it was undertaken prior to the COVID-19 pandemic and any government issued lockdowns.

Table 5 below tabulates the summary of unattended noise logging results.

Table 5 Unattended noise logger results

Logger Location	Rating Background Noise Level (RBL)			Average Noise Level (L_{Aeq})		
	Day	Evening	Night	Day	Evening	Night
NM01	38	(41) 38[A]	(40) 38[A]	53	53	50
NM02	37	(40) 37[A]	36	55	59	51

Note: Data and logger IDs are as they were presented within the SM WSA Technical Paper 2
Note **A**: Where evening or night-time background noise levels exceed that of the previous period, they have been set at the background noise of the previous period, per NPfI recommendations

4 Noise and Vibration Criteria

The EPA recommends management levels and goals when assessing the potential impacts of construction related noise and vibration.

The Conditions of Approval (refer to **Table 2**) reference relevant guidelines, policies, and standards tabulated in **Table 3** which provide the framework for management of noise and vibration from construction sites in New South Wales.

This section summarises the noise and vibration goals relevant to the Project as approved under CoA **E43**. The noise and vibration criteria varies over the different time periods defined throughout any one 24 hour period (generally more stringent criteria applies in more sensitive evening and night-time periods).

4.1 Airborne construction noise management levels

4.1.1 Residential receivers

Airborne construction noise which impacts residences and other sensitive land uses is assessed and managed through the Department of Environment and Climate Change's Interim Construction Noise Guideline (2009).

Project Specific Noise Management Levels (NMLs) are established based on the existing acoustic environment, then applied to sensitive receivers as guideline noise limits. These noise levels were previously established by another Acoustic Consultant in early 2020 during the EIS stage of the Sydney Metro - Western Sydney Airport project.

For more information on the background and ambient noise levels, please refer to the Sydney Metro - Western Sydney Airport Technical Paper 2 Noise and Vibration.

Where noise levels are predicted (or measured) to exceed the NMLs, construction noise minimisation practices are recommended to be investigated and managed under CoA **E46**.

Table 6 below describes the noise management levels pertaining to residential receivers and how to apply them.

Table 6 Noise at residences using quantitative assessment (ICNG, 2009)

Time of Day	NML LAeq,15min	How to apply
Standard hours Monday to Friday 7:00 am to 6:00 pm Saturday 8:00 am to 1:00 pm No work on Sundays or Public Holidays	RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted (or measured $L_{Aeq(15\ minute)}$) is greater than the noise affect level, the proponent should apply all feasible and reasonable work practises to meet the noise affected level. • The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly Noise Affected >75 dBA	The highly noise affected level represents the point above which there may be a strong community reaction to noise. • Where noise is above the level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: o Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences o If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5 dB	• A strong justification would typically be required for works outside the recommended standard hours. • The proponent should apply all feasible and reasonable work practices to meet the noise affected level. • Where all feasible and reasonable practices have been applied and noise is more than 5 dBA above the noise affected level, the proponent should negotiate with the community.

The resulting Noise Management Levels (NMLs) for all residential noise-sensitive receivers is tabulated below in **Table 7**. These levels represent the noise levels in which projects potential impact, and subsequent noise monitoring (during works) is to be assessed against.

Table 7 Noise Management Level (dBA $L_{Aeq,15\ minute}$) for Residential Receivers

NCA	Logger ID	Standard	Out of Hours (RBL +5)			Sleep Disturbance (RBL+15)
		Day	Day	Evening	Night-time	
NCA01	NM01	48	43	43	43	53
NCA02	NM02	47	42	42	41	(51) 52[A]

Note: Sleep Disturbance screening is based on L_{Amax} noise levels (refer to **Definitions**)
Note A: Sleep disturbance criterion set at 52 dB (L_{Amax}) as per **Definitions**

4.1.1.1 Sleep disturbance and awakening

Condition of Approval item **E42** requires an assessment of Sleep Disturbance and Sleep Awakening events as part of inclusion within the out-of-hours protocol.

Where construction works are planned to extend over more than two consecutive nights, the ICNG recommends that an assessment of sleep disturbance impacts should be completed. A method for assessing sleep disturbance is contained in the EPA's Noise Policy for Industry (NPfI) with further guidance sourced from the EPA Road Noise Policy (RNP, 2016).

Although the NPfI sleep disturbance criteria relates to industrial noise, it is also considered relevant for reviewing potential impacts from construction noise as a screening criteria to identify the need for further assessment.

The NPfI notes that a detailed maximum noise level assessment should be undertaken where a project results in night-time noise levels which exceed a noise level of 52 dBA L_{AFmax} or the prevailing background level plus 15 dB, whichever is the greater.

The RNP indicates that internal noise levels between 50 and 55 dB L_{Amax} are unlikely to cause sleep awakenings, however above this threshold a sleep awakening event is considered likely to occur.

To assess external noise levels, a conservative +10 dB outside-to-inside correction is applied as outlined in the ICNG, hence an external noise level screening of 65 dB L_{Amax} is adopted to assess the likelihood of a sleep awakening event occurring.

4.1.2 Other sensitive land uses and commercial receivers

The project is surrounded by a number of non-residential land uses. **Table 8** below outlines the NMLs for other sensitive receivers.

Table 8 Noise at sensitive land uses (other than residential) using quantitative assessment

Land use	Management level $L_{Aeq,15\ minute}$ (applicable when properties are in use)
Industrial Premises	External noise level 75 dBA
Offices, retail outlets and other commercial properties	External noise level 70 dBA
Classrooms at school and other educational institutions	Internal noise level 45 dBA
Hospital wards and operating theatres	Internal noise level 45 dBA
Places of worship	Internal noise level 45 dBA
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level 65 dBA
Passive recreation areas (characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External noise level 60 dBA
Community centres	Refer to the recommended 'maximum' internal levels outlined in AS2107 for specific uses

Other noise-sensitive receivers not defined in the ICNG require noise level criteria derived from AS 2017:2016.

The AS 2107 noise level criteria are generally provided as internal levels, and an internal-to-external correction of +10 dB has been applied to assume a conservative noise level with an open window for ventilation.

Table 9 NMLs for 'Other Sensitive Receivers' based on AS2107

Land use	Noise Management Level $L_{Aeq,15\ minute}$	
	Internal	External
Childcare Centre	60 dBA play area 40 dBA sleeping area	70 dBA play area 50 dBA sleeping area
Public Library	45 dBA	55 dBA
Public Buildings	50 dBA	60 dBA
Café/Bar or Restaurant	50 dBA	60 dBA
Hotel	40 dBA	50 dBA

4.1.3 Maximum allowable Sound Power Levels

The Sydney Metro Construction Noise and Vibration Standard (SM CNVS) provides restrictions for the maximum allowable sound power levels from plant equipment.

These restrictions are replicated below in **Table 10**.

Table 10 Maximum Allowable noise levels from plant equipment, SM WSA CNVS

Equipment	Maximum Allowable Sound Power Level (SWL) dB, L_{Amax}	Maximum Allowable Sound Pressure Level (SPL) dB, L_{Amax} at 7 m
Excavator Hammer	118	93
Excavator (approx. 3 tonne)	90	65
Excavator (approx. 6 tonne)	95	70
Excavator (approx. 10 tonne)	100	75
Excavator (approx. 20 tonne)	105	80
Excavator (approx. 30 tonne)	110	85
Excavator (approx. 40 tonne)	115	90
Skidsteer Loaders (approx. 1/2 tonne)	107	82
Skidsteer Loaders (approx. 1 tonne)	110	85
Dozer (tracking) - equiv. CAT D8	118	93
Dozer (tracking) - equiv. CAT D9	120	95
Dozer (tracking) - equiv. CAT D10	121	96
Backhoe/FE Loader	111	86
Dump Truck (approx. 15 tonne)	108	83
Concrete Truck	112	87
Concrete Pump	109	84
Concrete Vibrator	105	80
Bored Piling Rig	110	85
Scraper	110	85
Grader	110	85
Vibratory Roller (approx. 10 tonne)	114	89
Vibratory Pile Driver	121	96
Impact Piling Rig	134	109
Compressor (approx. 600 CFM)	100	75
Compressor (approx. 1500 CFM)	105	80
Concrete Saw	118	93
Jackhammer	113	88
Generator	104	79
Lighting Tower	80	55
Flood Lights	90	65
Cherry Picker	102	77
Mobile Crane	110	85

4.2 Construction vibration guidelines

Construction Vibration Criteria approved under the SSI 10051 Application is outlined in CoA **E43** of the approval application.

Generally, construction which produces vibration may be group into three categories:

- Human Comfort – in which the occupants of a building are disturbed
- Building Contents – in which highly sensitive equipment or other machinery may be affected
- Structural or cosmetic damage – in which the integrity of the buildings structure may be compromised, or weak non-structural components may be damaged.

4.2.1 Structural or cosmetic damage

Damage caused as a result of vibration can occur due to short-term vibration (vibration which does not occur often enough to cause structural fatigue nor produce resonance) or long-term vibration (all other types of vibration).

Where the potential for structural damage may occur, dilapidation assessments may be necessary to be undertaken prior to and during, or following, construction.

Structural damage vibration guidelines are provided below, derived from British Standard BS 7385 and German Standard DIN 4150.

4.2.1.1 Safe working distances

As a guide, minimum working distances for typical items of vibration intensive plant are listed below in **Table 11**. This data is provided by TfNSW's Construction Noise and Vibration Strategy (CNVS, 2018).

The minimum working distances are quoted for both cosmetic damage (BS 7385 and DIN4150) and human comfort (Assessing Vibration – A Technical Guideline).

The minimum working distances for cosmetic damage are recommended to be complied with at all times, unless otherwise approved by the relevant authority.

The distances provided in **Table 11** are indicative and would vary depending on the plant or item used for the works, as well as the geotechnical conditions within the surrounding earth.

Generally, vibration monitoring is recommended where construction works within these distances to particular sensitive structures are to occur. The monitoring would verify the minimum working distances at specific locations, which then may be applied to establish a buffer zone surrounding the proposed alignment.

Where the vibration monitoring demonstrates exceedances of the structural/cosmetic damage criteria (refer to **Section 4.2.1.3**), alternative construction methodology may be required, such as selection of equipment designed to produce less vibration (where feasible and reasonable).

In such case, construction works are not recommended to continue until attended vibration measurements confirm any risk of cosmetic damage, particularly to heritage structures and items of state significance.

Table 11 Recommended minimum working distances from vibration intensive plant (TfNSW CNVS)

Plant Item	Approximate Size / Weight / Model	Minimum Distance for Cosmetic Damage (BS7385)	Minimum Distance for Human Response (DEC Assessing Vibration)	Heritage (DIN4150)
Vibratory Roller	1-2 tonne	5 m	15 – 20 m	11 m
	2-4 tonne	6 m	20 m	14 m
	4-6 tonne	12 m	40 m	27 m
	7-13 tonne	15 m	100 m	33 m
	13-18 tonne	20 m	100 m	44 m
	>18 tonne	25 m	100 m	55 m
Small Hydraulic Hammer	300 kg (5 to 12texcavator)	2 m	7 m	5 m
Medium Hydraulic Hammer	900 kg (12 to 18t excavator)	7 m	23 m	16 m
Large Hydraulic Hammer	1600 kg (18 to 34t excavator)	22 m	73 m	49 m
Pile Driver – Vibratory	Sheet piles	2 to 20 m	20 m	15 m
Piling Rig - Bored	≤ 800 mm	2 m (nominal)	N/A	6 m
Piling Rig – Hammer	12 t down force	15 m	50 m	45 m
Jackhammer	Hand held	1 m	Avoid contact with structure	3 m

Note: Distances are indicative only, where heavy machinery falls within safe working distances, attended vibration monitoring should be undertaken to confirm vibration levels

Note: Heritage safe working distances are conservative

4.2.1.2 Transient Vibration

BS 7385 provides recommendations in vibration limitations regarding transient vibration. The limits outlined below in **Table 12** are conservative and are judged to give a minimum risk to which vibration may cause damage to buildings.

Table 12 Transient vibration, British Standard BS 7385-3: 1993

Type of Building	Peak component particle velocity (PPV) in frequency range of predominant pulse	
	4 Hz – 15 Hz	15 Hz and above
Reinforced or framed structures. Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
Unreinforced or light framed structures. Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Note: Values referred to are at the base of the building

4.2.1.3 German Standard DIN 4150

The German Standard *DIN 4150-3 Structural Vibration Part 3 – Effects of vibration on structures* is used to measure and evaluate effects of vibration on structures which may cause damage or discomfort. Damage is referred to as any permanent effect of vibration that reduces the serviceability of a structure or one of its components.

Table 13 below summarises DIN4150-3 for vibration velocity values used to evaluate the effects of short-term and impulsive vibration. These levels have been established to reflect limits below which no structural damage is expected to occur and are considered conservative.

Damage can be classified as cracks forming in plastered surfaces of walls, or existing cracks becoming enlarged, or separation of lightweight walls from load bearing walls.

The values presented in **Table 13** use the Peak Particle Velocity (PPV) metric. This metric (measured in millimeters per second) is used in evaluating the transient of a vibration waveform which would cause damage to a structure or cause some cosmetic damage.

As structural damage is frequency dependent (that is, some frequencies would be more harmful than others), the lower the frequency the more likely the potential for damage to occur, therefore more stringent limits apply at lower frequencies.

Table 13 Guideline values for vibration velocity when evaluating the effects of short-term vibration on structures

Type of structure	Guideline values for peak particle velocity (PPV) in mm/s			
	Vibration at the foundation frequency of			Vibration at the horizontal place of highest floor at all frequencies
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz	
Dwellings and building of similar design and/or occupancy	5	5 to 15	15 to 20	15
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
Structures that because of their particular sensitivity to vibration (structurally unsound), do not correspond to those listed above.	**3**	**3 to 8**	**8 to 10**	**8**

Note: Bold references project-specific criteria and would be the controlling vibration guideline values assigned to the structure located near St Marys station

4.2.1.4 Vibration screening

The proposed construction activities are not anticipated to use heavily intensive vibration producing plant equipment, however some plant equipment such as Wacker-packers, jackhammers, haulage trucks and mobile cranes may operate within a relatively close proximity to the heritage structures.

With the guideline values from DIN4150 outlined in **Table 13**, conservative vibration damage screening levels per receiver type have been established based on the potentially worst-case scenario of large trucks being in use at any point along the works boundaries.

- Heritage or other sensitive: 8 mm/s at 10 m
  - The Goods Shed: 3 mm/s at the foundation/base
    - Transient vibration exceeding the British Standard limitations (15mm/s PPV, refer to **Table 12**) increases the risk of cosmetic damage (new or exacerbated) significantly
- 'T 166' Jib Crane: 15 mm/s at the foundation/base
  - Structure is encased within concrete. Structure composed primarily of World War 2 era steel materials, and considered in good condition for its age (circa 1943)
  - Transient vibration may exacerbate existing, or cause minor cosmetic damage to the concrete footings
- Sandstone foundation of existing lift-shaft: 15mm/s on structure

- Not proposed to be altered during construction works, however sandstone (pending structural engineer inspection/advice) may weaken overtime due to dampness or extended period of high humidity, or caused by expansion/contraction over time (through hot/cold, wet/dry cycles)
- High transient vibration (>50 mm/s) may cause some cosmetic damage to any external lose stone
- Any aged mortar may be damaged or break free at lower levels (>15 mm/s).

Vibration impacts anticipated onto the nearest sensitive structure (the Goods Shed) has the potential to exacerbate existing cosmetic damage, such as existing cracks in the brick-and-mortar structure, and any existing glass cracks or window frame dilapidation.

No structural integrity concerns are anticipated, however caution is still recommended due to the significance of some of the adjacent structures, and their existing condition (specifically the Goods Shed) through alarmed vibration monitoring. A Vibration Monitoring Program is provided in **Appendix II**.

4.2.2 Human comfort

Construction activities which have the potential to create ground-borne vibrations may impact sensitive receivers near the project works. Humans are responsive to vibration and some discomfort may arise due to various activities, their intensity and duration.

Structural or cosmetic damage to buildings due to vibration only occur at extreme levels, relative to what humans find tolerable.

For human comfort and exposure to vibration, the NSW document *Assessing Vibration: A Technical Guideline* (DEC, 2006) provides the relevant guidance's derived from British Standards.

Table 14 below tabulates the Vibration Dose Values for human comfort. These values represent a guideline for the total accumulation of vibration energy during a 16 hour day-time period.

Table 14 Vibration Dose Values (VDV) for Intermittent Vibration

Location	Daytime Preferred value	Daytime Maximum value
Critical areas	0.1	0.2
Residences	0.2	0.4
Offices, schools, educational institutions and places of worship	0.4	0.8
Workshops	0.8	1.6

Note: Daytime is 07:00 hrs to 22:00 hrs

The significance of calculated or predicted VDV at the relevant places of interest can be assessed in terms of human response.

Table 15 below tabulates guideline VDV ranges in residential buildings at which a human response or adverse comment to construction vibration may be likely.

Table 15 Vibration Dose Value ranges which might result in various probabilities of adverse comment within residential buildings

Place and time	Low probability of adverse comment [1] $m/s^{-1.75}$	Adverse comment possible $m/s^{-1.75}$	Adverse comment probable [2] $m/s^{-1.75}$
Residential buildings 16 hr day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings 8 hr night	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

Note 1: Below these ranges adverse comment is not expected
Note 2: Above these ranges adverse comment is very likely
Note 3: For offices and workshops, multiplying factors of 2 and 4 respectively should be applied to the above vibration dose ranges for 16 h day

Construction activities are concentrated to the railway station, and a small distance by Queen Street and Station Street. The closest impacted by vibration residential premises occupied by humans is approximately 170 m.

No other sensitive location outlined in **Table 14** during a survey of the local sensitive land uses has been identified. Table 15

4.3 Ground-borne noise

Ground-borne noise impacts are generally caused by high-vibration intensive plant equipment such as tunneling machines.

The ICNG provides guidance for the management of ground-borne noise (GNML) as approved under CoA **E44**, these recommendations are tabulated below in **Table 16** applicable only to residential receivers.

Table 16 Ground-borne noise management levels

Evening 18:00 hrs to 22:00 hrs	Night-time 22:00 hrs to 07:00 hrs
40 dB $L_{Aeq,15min}$	35 dB $L_{Aeq,15min}$

The internal noise levels are to be assessed at the centre of the most-affected habitable room. For a limited number of discrete, ongoing ground-borne noise events, such as drilling or rock-hammering, the L_{Amax} noise descriptor using a slow response on the sound level meter may be better than the L_{Aeq} noise descriptor (15 min) in describing the noise impacts.

The level of mitigation of ground-borne noise would depend on the extent of impacts and also on the scale and duration of works.

Any restriction on the days when construction work is allowed would take into account whether the community:

- Has identified times of day when they are more sensitive to noise (for example Sundays or public holidays)
- Is prepared to accept a longer construction duration in exchange for days of respite.

The proposed methodology at St Marys do not have any tunnelling machines or relatively high-vibration intensive equipment.

5 Construction Noise and Vibration Impact Statement

A range of small and large plant equipment is proposed to be utilised in order to undertake the appropriate constructions activities associated with the Project. This section summarises the anticipated construction scenarios and associated predicted noise and vibration impacts.

The outcome of the DNVIS (Detailed Noise and Vibration Impact Statement) will be used to determine the expected worst-case scenario impacts of the surrounding sensitive community and land uses to satisfy CoA **E47**.

5.1 Noise

5.1.1 Classification of impact

Noise impacts to the surrounding sensitive land use(s) are considered on a case-by-case basis. Noise Sensitive Receivers (NSRs) surrounding works locations are broken down into three subcategories:

Table 17 sumarised the three impact categories for receivers, noise and vibration activities, and the time of the day.

Table 17 Categories of Impacts

Impact Category	Receivers	Noise	Time of day
Low Impact	Commercial buildings and scattered low-density residential populations	No noise or vibration intensive activities	Monday to Friday 18:00 - 22:00 hrs Saturday 13:00 – 22:00 hrs Sunday and Public Holiday 08:00 – 18:00 hrs
Moderate Impact	Typical density residential populations	Short/intermittent high noise and/or vibration intensive activities	Monday to Friday 22:00 - 07:00 hrs Saturday 22:00 – 08:00 hrs Sunday 08:00 – 18:00 hrs
High Impact	Aged Care (or other residential home for the elderly), high-density unit blocks/persistent complainers or residents deemed to have “construction noise fatigue”.	Prolonged high noise and/or vibration intensive activities	Sunday and Public Holiday 18:00 – 07:00 hrs

5.1.2 Proposed activities

The proposed construction activities have been divided into 10 construction scenarios within which the proposed enabling works are expected to be completed.

The potential impacts associated with these key activities are assessed based on the type of work that is being carried out, and the time of day/week over which the works are scheduled to occur.

Construction is expected to be completed in various stages with the construction activities expected to be completed by January 2023.

It is expected that the activities related to the enabling works are required to work outside the standard daytime hours as approved under CoA **E42** – Out of Hours Work Protocol.

The anticipated hours are as follows as defined in the SM-WSA CNVS:

Daytime Standard Hours	Monday to Friday Saturday	07:00 hrs to 18:00 hrs 08:00 hrs to 13:00 hrs
Evening (OOHW)	Monday to Friday Saturday Sunday / Public Holidays	18:00 hrs to 22:00 hrs 13:00 hrs to 22:00 hrs 08:00 hrs to 18:00 hrs
Night-time (OOHW)	Monday to Friday Saturday Sunday / Public Holidays	22:00 hrs to 07:00 hrs 22:00 hrs to 08:00 hrs 18:00 hrs to 07:00 hrs

Out of hours works and weekend rail Possessions are proposed for works which cannot reasonably be undertaken throughout the normal working-week.

An illustrative overview is provided below in **Table 18**.

Table 18 Out of Hours overview

Hour Commencing	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
Monday																								
Tuesday																								
Wednesday																								
Thursday	OOHW Night							Standard Hours											OOHW Evening					
Friday																								
Saturday																								
Sunday																			OOHW Night					
Public Holidays																								

Note: As defined within the SM-WSA CNVS

Table 19 below provides a general outline of the construction scenarios and their corresponding activity.

Table 19 Work Scenarios for assessment purposes – St Marys Enabling Works

Scenario ID	Scenario	Impact Category	Tentative Duration	Day	Out of Hours			
					Monday to Saturday		Sunday	
					Evening	Night	Evening	Night
SN.001	Geotechnical Investigations	Moderate Impact	January 2022	✓	✓	×	✓	×

Scenario ID	Scenario	Impact Category	Tentative Duration	Day	Out of Hours			
					Monday to Saturday		Sunday	
					Evening	Night	Evening	Night
SN.002	Site Establishment Demobilisation	Moderate Impac	March - April 2022	✓	✓	×r	✓	×A
SN.003	Vegetation Management	Moderate Impact	March - April 2022	✓	✓	×	✓	×
SN.004	Vegetation Management	Highly Noise Intensive Works	March - April 2022	✓	✓	×	✓	×
SN.005	Substructure works (stormwater easement)	Moderate Impact	March - April 2022	✓	✓	×	✓	×
SN.006	Removal of existing infrastructure | Stairs | Old Lift Shaft	Moderate Impac	May - October 2022	✓	✓	✓	✓	×A
SN.007	Removal of existing infrastructure | Stairs	Highly Noise Intensive Works	May – July 2022	✓	✓	×	✓	×
SN.008	Excavation works for new lift shaft Auguring works	Moderate Impact	May - August 2022	✓	✓	✓	✓	×
SN.009	Installation Works Footings for Stairs OOHW"	Moderate Impact	April - July 2022	✓	✓	✓	✓	×A
SN.010	Installation Works Structural Steel | New Lift Shaft	Moderate Impact	May - December 2022	✓	✓	✓	✓	×A

Note A: Packdown works may be undertaken during this period
Note: Subject to change or alterations
Note: Sunday Evening is defined as all-day Sunday
Note: Sunday Night is defined as 18:00 -07:00 hrs the following Monday

5.2 Noise model

5.2.1 Calculation methodology

Noise levels have been predicted using 3D predictive software SoundPLAN ver8.2. The prediction model was undertaken using the Industrial Noise ISO 9613 algorithms.

Buildings and the local terrain have been digitised within the model to represent the land surrounding the project's alignment boundaries.

Data was sourced from Geoscape building footprint database, NSW Spatial Services, and aerial imaging sourced via Nearmaps.

5.2.2 Source noise levels

The Sound Power Levels (SWL) for general and typical construction equipment is provided in **Table 20**. The levels tabulated below are derived from global standard databases. Construction scenarios were provided to ADE, and confirmed with the construction manager and Transport for Tomorrow prior to running the assessment. The percentage of on-time per 15 minute period is based on industry best practice and experience.

Table 20 Sound Power Levels (SWL) for the construction equipment – St Marys Enabling Works

Scenario Number	Scenario Name	Impact Category	Equipment	Number of Equipment	Percentage of on-time per 15 minutes	Resultant overall SWL L_{Aeq}	Scenario SWL L_{Aeq}
SN.001	Geotechnical Investigations	Moderate Impact	Hand Tools_	1	33%	89	107
			Auger Drill Rig	1	33%	106	
			Light Ute	1	33%	93	
			Excavator (14 tonne)	1	53%	94	
SN.002	Site Establishment / Demobilisation	Moderate Impact	Hand Tools	1	33%	89	105
			Vehicle (light commercial)	1	33%	101	
			Flatbed Truck	1	47%	97	
			Generator	1	100%	102	
SN.003	Vegetation Management	Moderate Impact	Elevated Working Platform	1	20%	90	106
			Vehicle (light commercial)	1	33%	101	
			Mulching machine	1	67%	103	
			Excavator (14 tonne)	1	33%	92	

Scenario Number	Scenario Name	Impact Category	Equipment	Number of Equipment	Percentage of on-time per 15 minutes	Resultant overall SWL L_{Aeq}	Scenario SWL L_{Aeq}
SN.004	Vegetation Management	Highly Noise Intensive Works	Chainsaw	1	47%	108	110
			Vehicle (light commercial)	1	33%	101	
			Mulching machine	1	67%	103	
			Excavator (14 tonne)	1	33%	92	
			Elevated Working Platform	1	20%	90	
SN.005	Substructure works (stormwater easement)	Moderate Impact	Excavator (14 tonne)	1	53%	94	112
			Auger (hand)	1	33%	98	
			Generator	1	100%	102	
			Truck	1	33%	102	
			Concrete Mixer Truck	1	33%	98	
			Wacker Packer	1	47%	110	
SN.006	Removal of existing infrastructure | Stairs | Old Lift Shaft	Moderate Impact	Mobile Crane - Franna	1	53%	95	108
			Elevated Working Platform	1	20%	90	
			Vehicle (light commercial)	1	33%	101	
			Delivery Truck	1	40%	104	
			Generator	1	100%	102	
SN.007	Removal of existing infrastructure | Stairs	Highly Noise Intensive Works	Mobile Crane - Franna	1	53%	95	116
			Elevated Working Platform	1	33%	92	
			Vehicle (light commercial)	1	33%	101	
			Concrete Saw [A]	1	47%	116	
			Excavator (Breaker - Small) [A]	1	47%	114	
SN.008	Excavation works for new lift shaft Auguring works	Moderate Impact	Truck	1	33%	102	110
			Excavator (14 tonne)	1	67%	95	
			Vehicle (light commercial)	1	33%	101	
			Generator	1	100%	102	
			Auger Drill Rig	1	33%	106	
			Suction Truck	1	67%	98	

Scenario Number	Scenario Name	Impact Category	Equipment	Number of Equipment	Percentage of on-time per 15 minutes	Resultant overall SWL L_{Aeq}	Scenario SWL L_{Aeq}
SN.009	Installation Works Footings for Stairs OOHW"	Moderate Impact	Truck	2	33%	105	109
			Excavator (14 tonne)	1	67%	95	
			Vehicle (light commercial)	1	53%	103	
			Generator	1	100%	102	
			Concrete Mixer Truck	1	47%	100	
SN.010	Installation Works Structural Steel | New Lift Shaft	Moderate Impact	Mobile Crane - Franna	1	47%	95	107
			Excavator (14 tonne)	1	33%	92	
			Vehicle (light commercial)	1	33%	101	
			Generator	1	100%	102	
			Elevated Working Platform	1	20%	90	
			Truck	1	33%	102	
			Hand Tools (5mins)	1	100%	94	
			Welding Equipment	1	20%	90	

Note A: The rock breaker in SN.007 is not anticipated or expected to be in operation within the same 15 minute time period as the concrete saw. The DNVIS takes a conservative approach to not include the breaker in the same noise level calculation as the saw. The noise level with the rock breaker for this scenario would be 114 dBA (Leq) when the saw is not in use. If the two plant items would be in use within the same 15-minute period, the overall scenario noise level would be 118 dBA Leq – this is not considered realistic

Note B: The use of a wacker packer may be used during SN.010 during the standard day-time period only. An additional scenario was considered for implementation, however conservatively the worst-case scenario when this plant equipment is in use would be the same as the day-time predicted noise levels during SN.005

5.2.3 Results overview

The predicted noise levels are analysed in accordance with the Conditions of Approval outlined in **Table 2**, the policies, guidelines and standards outlined in **Table 3**, and are presented below.

The following tables and figures provide the maximum worst-case $L_{Aeq,15min}$ noise level predicted at the facade of the most impacted sensitive receiver for each NCA during all approved construction hour periods.

During most of the construction works, it is reasonable to expect that the noise levels would be lower than the predicted noise levels at the receiver, as the noise model does not take into account the mitigation measures outlined within this DNVIS, discussed in **Section 6**.

5.2.4 Noise management level exceedances (project wide)

Table 21 summarises the number of residential receivers which are predicted to experience noise levels which exceed the Noise Management Level, including receivers which would experience noise levels exceeding 75 dBA ($L_{Aeq,15min}$).

The carpark immediately due-north of the project site is the only commercial premises in NCA01 is anticipated to exceed the NML of 70 dBA (L_{eq}) due to proximity to the works.

NML exceedances within NCA02 are predominately residential and commercial on the southern side of the rail line.

Table 21 Project wide overview of NML exceedances

ID	Number of Receivers exceeding relevent Noise Management Level									
	Total	Standard Daytime		Out of Hours Works						
				Out of Hours Period 1			Out of Hours Period 2			
		>NML	HNA	Sunday Day	Monday to Friday Evening	Saturday Evening	Sunday Evening[A]	Night	Sleep	Awakening
SN.001	1451	23	-	90	124	129	-	-	-	-
SN.002		19	-	54	79	84	79	105	4	-
SN.003		23	-	76	99	103	-	-	-	-
SN.004		82	-	224	283	289	-	-	-	-
SN.005		160	-	364	433	439	-	-	-	-
SN.006		31	-	109	144	150	144	182	1	-
SN.007		295	-	588	650	657	-	-	-	-
SN.008		75	-	199	244	250	-	315	87	-
SN.009		47	-	144	182	188	182	226	62	-
SN.010		20	-	80	109	114	109	144	62	-

Note: The predicted NML exceedances includes all noise sensitive receivers, except OOH where only residential land use is considered 'in use'
Note: Highly Noise Affected only applies to residential receivers
Note: NML Exceedances for residential land use is based on noise logger data discussed in **Section 4.1**.
Note A: Sunday and Public Holidays 18:00 – 22:00 is considered 'night'

5.2.4.1 Extent of NML exceedances

The extent and distribution of the NML exceedances are tabulated below in **Table 22**.

Table 22 Distribution of NML Exceedances

Scenario	Number of Receivers																							
	Total	Distribution of NML exceedances																						
		Day				Saturday Evening 13:00 - 22:00 hrs				Sunday Day (08:00 - 18:00)				Evening				Sunday Evening (18:00 - 22:00)				Night time			
		0 - 10 dB	10 - 20 dB	20 - 30 dB	>30dB	0 - 10 dB	10 - 20 dB	20 - 30 dB	>30dB	0 - 10 dB	10 - 20 dB	20 - 30 dB	>30dB	0 - 10 dB	10 - 20 dB	20 - 30 dB	>30dB	0 - 10 dB	10 - 20 dB	20 - 30 dB	>30dB	0 - 10 dB	10 - 20 dB	20 - 30 dB	>30dB
SN.001	1451	16	2	-	-	91	2	-	-	89	-	-	-	91	2	-	-	-	-	-	-	-	-	-	-
SN.002		7	1	-	-	56	1	-	-	54	-	-	-	56	1	-	-	78	-	-	-	80	1	-	-
SN.003		16	-	-	-	78	-	-	-	76	-	-	-	78	-	-	-	-	-	-	-	-	-	-	-
SN.004		57	1	-	-	212	9	-	-	207	8	-	-	212	9	-	-	-	-	-	-	-	-	-	-
SN.005		113	4	-	-	335	26	-	-	332	23	-	-	335	26	-	-	-	-	-	-	-	-	-	-
SN.006		18	2	-	-	110	3	-	-	107	1	-	-	110	3	-	-	141	2	-	-	144	4	-	-
SN.007		213	8	-	-	502	72	-	-	497	70	-	-	502	72	-	-	-	-	-	-	-	-	-	-
SN.008		52	2	-	-	192	6	-	-	188	4	-	-	192	6	-	-	-	-	-	-	229	13	-	-
SN.009		29	2	-	-	145	4	-	-	141	2	-	-	145	4	-	-	175	3	-	-	179	5	-	-
SN.010		11	2	-	-	80	3	-	-	79	1	-	-	80	3	-	-	107	1	-	-	108	3	-	-

Note: Only residential receivers are counted where works are considered out-of-hours works
Note: All exceedances are considered worst-case

A bar graph illustration of the above table is provided below in **Figure 5** and tabulates the spread of the exceedances across all work periods.

Evening and night-time data only shows residential exceedances, as there is no reasonable expectation that commercial properties are in operation during these time periods.

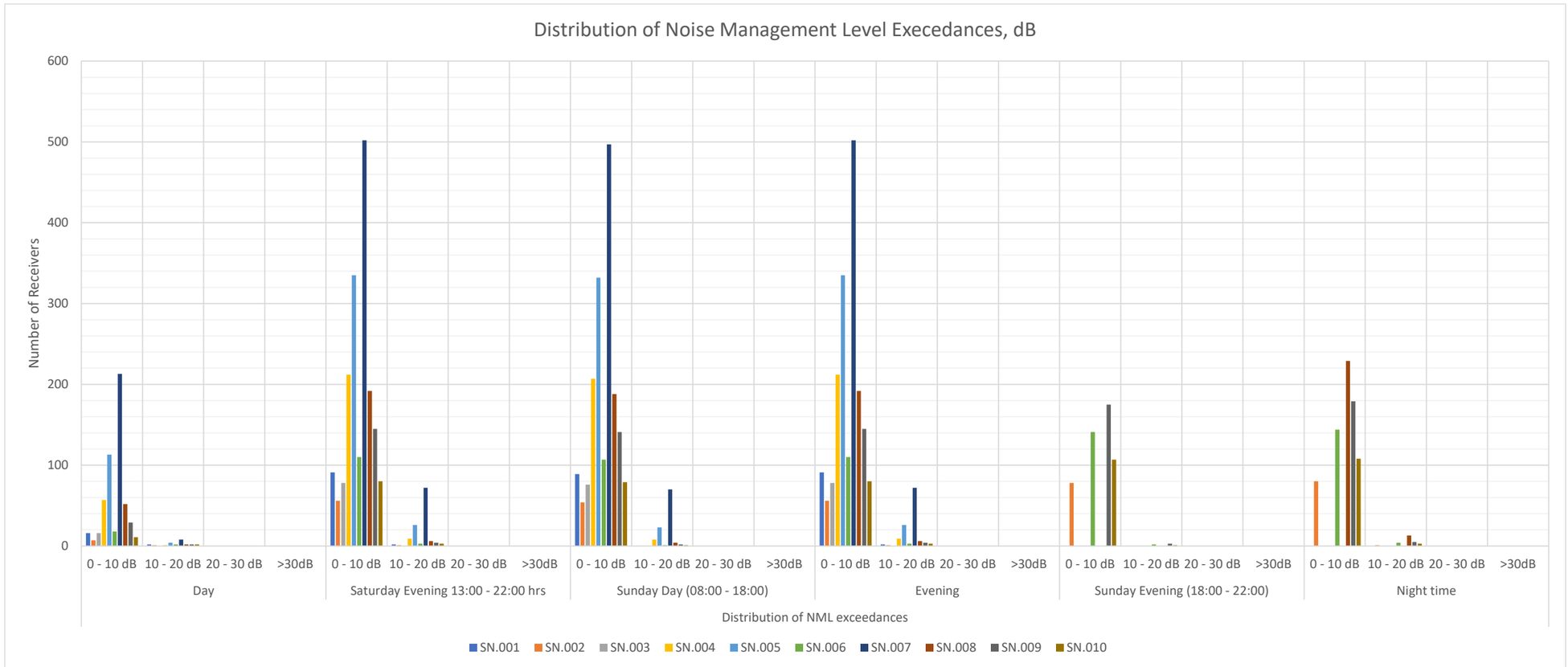

Figure 5 Distribution of NML exceedances (all receivers)

5.2.4.2 Highly noise affected

Noise sensitive residential receivers are not predicted to exceed 75 dB $L_{Aeq,15min}$ noise levels (highly noise affected).

The most noise intensive construction scenarios include the proposed use of a concrete or demo saw at locations south of the southern platform by Station Street and Queen Street. The closest line-of-sight residential receiver is located at 3 Station Street with approximately 180 m from the nearest concrete saw-cutting plant equipment.

Other residential receivers close to the project location are shielded by two story commercial premises. Due to this, the natural shielding of those buildings, provide some attenuation benefit to the surrounding noise sensitive receivers.

Nonetheless, during this activity attended noise monitoring is recommended to be undertaken to confirm the noise levels provided in this impact statement to ensure appropriate noise mitigation measures have been implemented.

5.2.4.3 Impact to surrounding receivers

Some of the works are occurring in time-sensitive periods of the day (ie Weekend days, evening, and night-time periods). The works proposed to be operated during these periods are not anticipated to be prolonged, as the use of cranes or other lifting equipment would have tasks which would be completed in reasonable time frames.

The unit blocks approximately 100 m east of the site are low density and not considered high impact receivers.

5.2.4.3.1 Works undertaken during Sunday night

For conservative purposes, some works are assessed as being undertaken during the Sunday night-time period (ie 18:00 – 07:00 hrs). This time period is classified as *high impact*.

None of the works assessed in this DNVIS are anticipated to be undertaken during this time period, however some site pack down and commissioning works may be undertaken during this period, with pack-down and commissioning anticipated to be completed by 06:00 hrs at the latest.

Construction scenarios and associated plant equipment outlined in **Table 20** are not anticipated to be used, with the exception of some light vehicles (such as 4x4s and utility vehicles), elevated working platform, and hand tools to complete the shutdown.

5.2.5 Worst-case average noise levels

The following maps provide an illustrative overview of the noise models predicted worst-case scenario noise levels, project-wide (ie all scenarios).

The noise model predictions for each building present the maximum noise level at any level or facade. As noise models accounts for reflection orders as noise may bounce off buildings, the closest facade facing towards the noise source may not necessarily be the most impacted facade, due to this noise calculation algorithm.

Table 23 tabulates the predicted residential worst case noise levels.

Table 23 Residential worst-case predicted noise levels, dBA $L_{Aeq,15min}$

NCA / Scenario	Residential - Worst Case Predicted Noise Levels, $L_{Aeq,15min}$ dB									
	SN.001	SN.002	SN.003	SN.004	SN.005	SN.006	SN.007	SN.008	SN.009	SN.010
Daytime | Sunday | Saturday Out of Hours – Evening 13:00 – 22:00										
NCA01	-	-	-	-	-	-	-	-	-	-
NCA02	52	51	51	55	58	54	62	56	55	53
Night-time Out of Hours 22:00 – 08:00										
NCA01	-	-	-	-	-	-	-	-	-	-
NCA02	-	51	-	-	-	54	-	56	55	53

Table 24 below tabulates the predicted worst case noise levels for commercial premises.

Table 24 Commercial worst-case noise levels

NCA / Scenario	Commercial - Worst Case Predicted Noise Levels, $L_{Aeq,15min}$ dB									
	SN.001	SN.002	SN.003	SN.004	SN.005	SN.006	SN.007	SN.008	SN.009	SN.010
Daytime										
NCA01	64	62	62	66	70	66	74	68	67	65
NCA02	84	82	74	78	89	85	84	87	86	84

The following maps provide an overview of the per-receiver worst-case scenario maximum noise levels, dBA $L_{eq,15min}$ project wide for each day, daytime out of hours (Saturday/Sunday evening) , evening, and night-time.

Figure 6 Daytime, worst-case scenario noise levels dBA $L_{Aeq,15min}$

Figure 7 Daytime out of hours, worst-case scenario noise levels dBA $L_{Aeq,15min}$

Figure 8 Evening time, worst-case scenario noise levels dBA $L_{Aeq,15min}$

Figure 9 Night-time, worst-case scenario noise levels dBA $L_{Aeq,15min}$

5.2.5.1 Works scenario noise overview

Part of the CNVS process is to establish general noise contours and distance based L_{eq} noise levels as a guide for general construction activities.

Table 25 below tabulates the predicted noise levels as set distances from the works, and the corresponding estimated at-receiver noise level at that distance.

Table 25 Noise levels for general construction activities per each scenario

Scenario	Distance from works, resultant estimated noise level, dBA $L_{eq,15min}$ Sound Pressure Level					
	10 m	25 m	50 m	75 m	100 m	200 m
SN.001	79	71	65	61	59	53
SN.002	77	69	63	59	57	51
SN.003	78	70	64	60	58	52
SN.004	82	74	68	64	62	56
SN.005	84	76	70	66	64	58
SN.006	80	72	66	62	60	54
SN.007	88	80	74	70	68	62
SN.008	82	74	68	64	62	56
SN.009	81	73	67	63	61	55
SN.010	79	71	65	61	59	53

Note: Calculation assumes hard ground for noise propagation for a conservative estimation

Noise contours proving an illustrative overview of the noise spread during all ten (10) stages of construction scenarios are provided over the following figures.

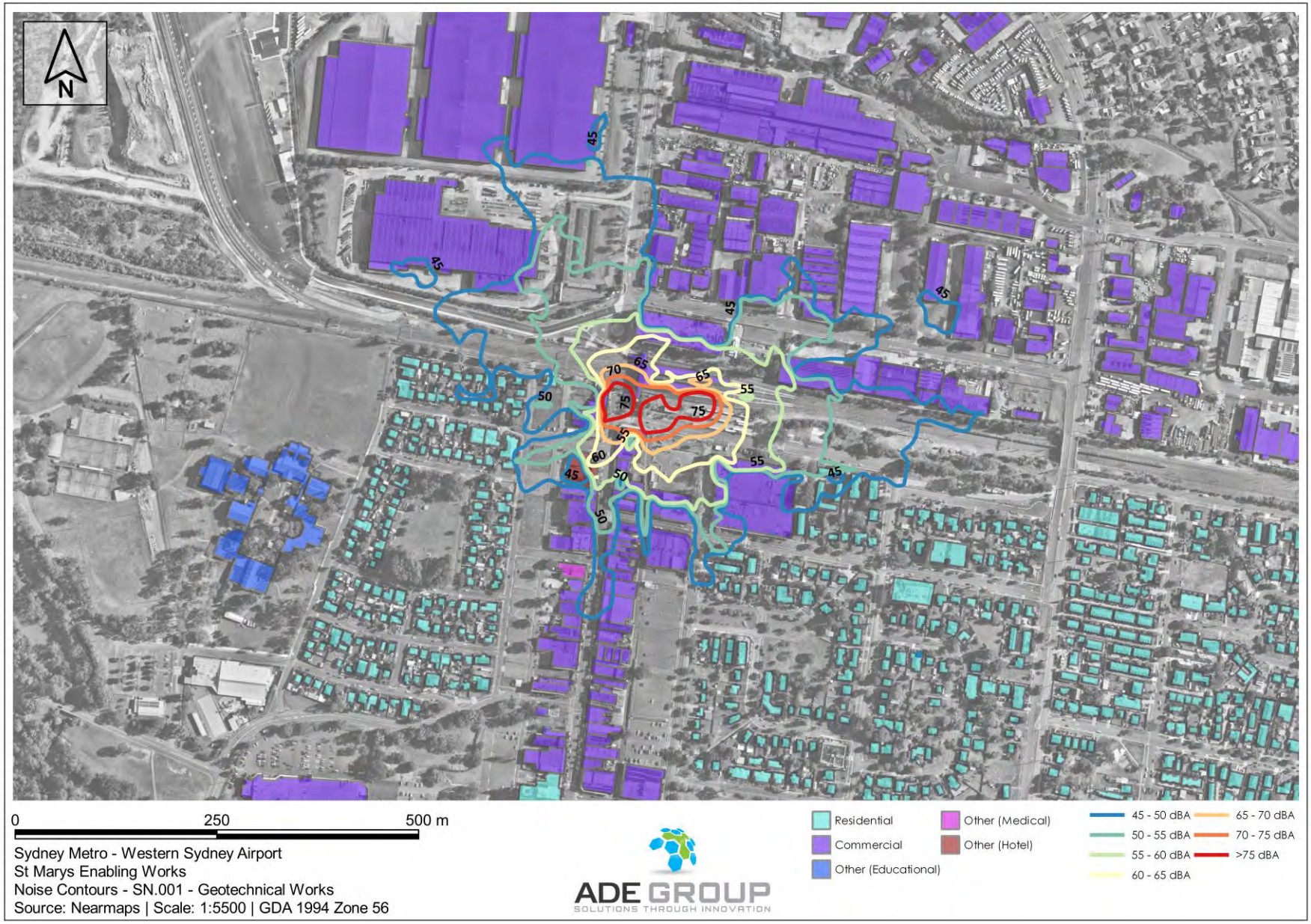

Figure 10 Geotechnical works

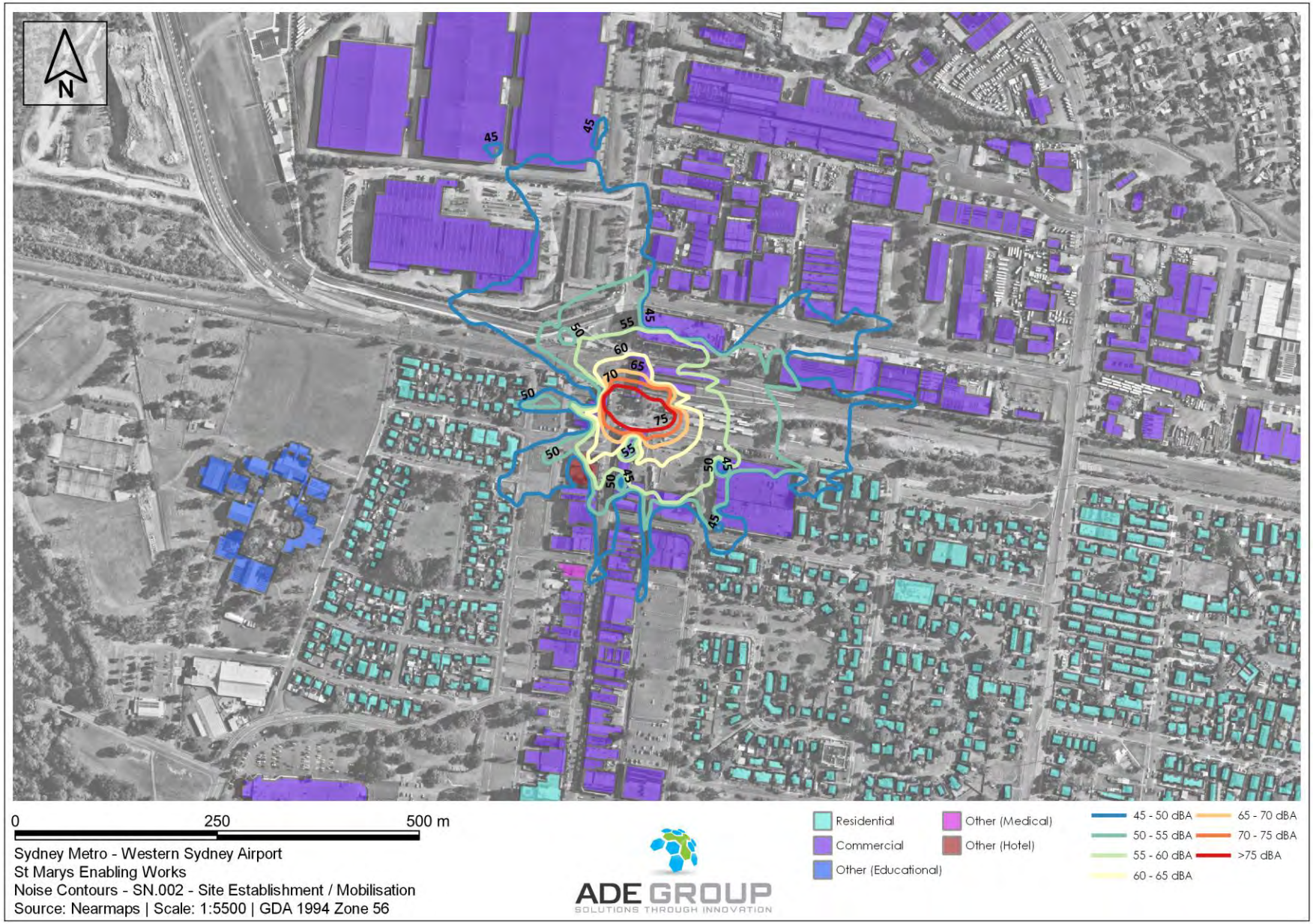

Figure 11 Site establishment and mobilization

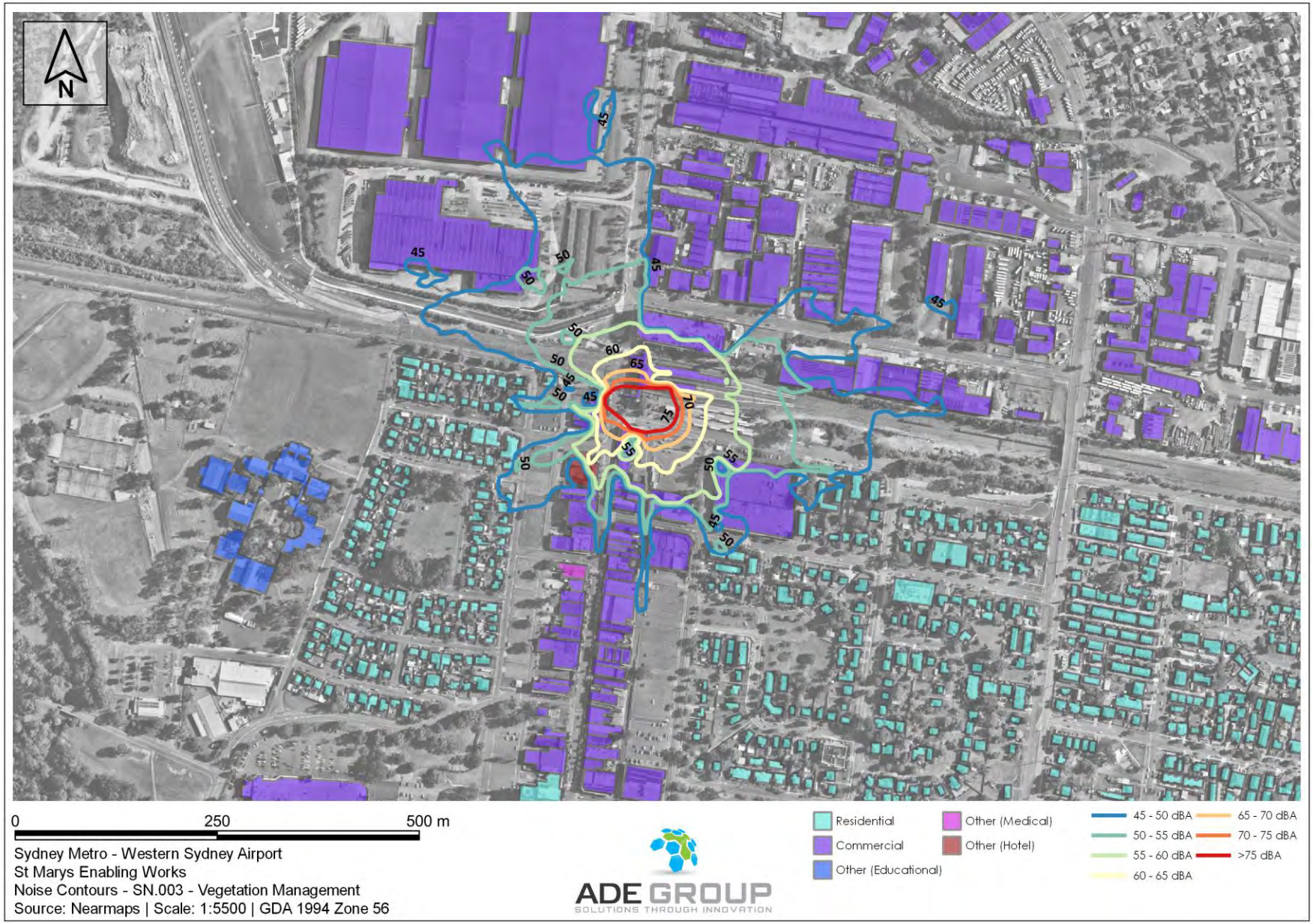

Figure 12 Vegetation management

Figure 13 Vegetation management high impact works

Figure 14 Substructure works

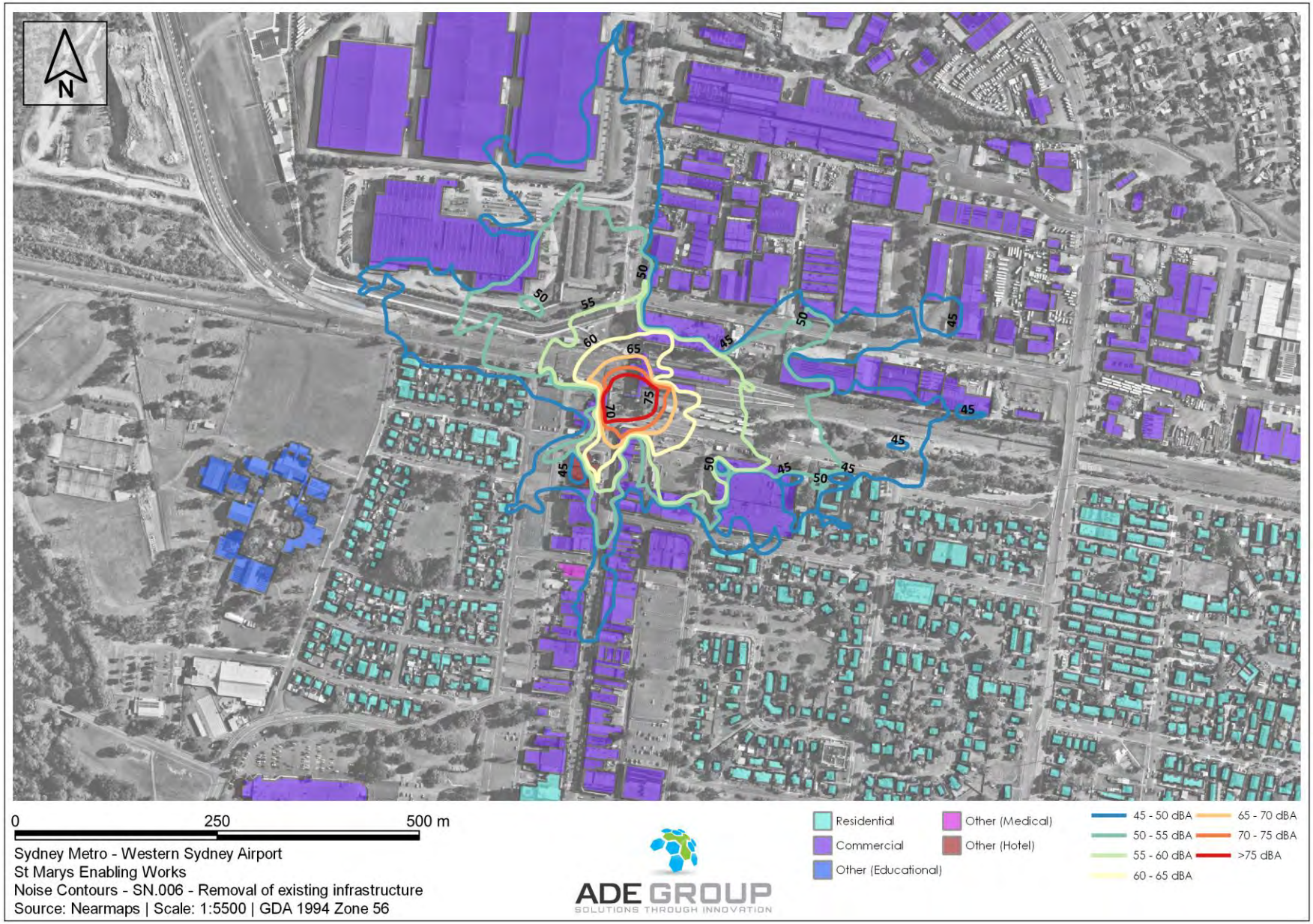

Figure 15 Removal of the existing infrastructure

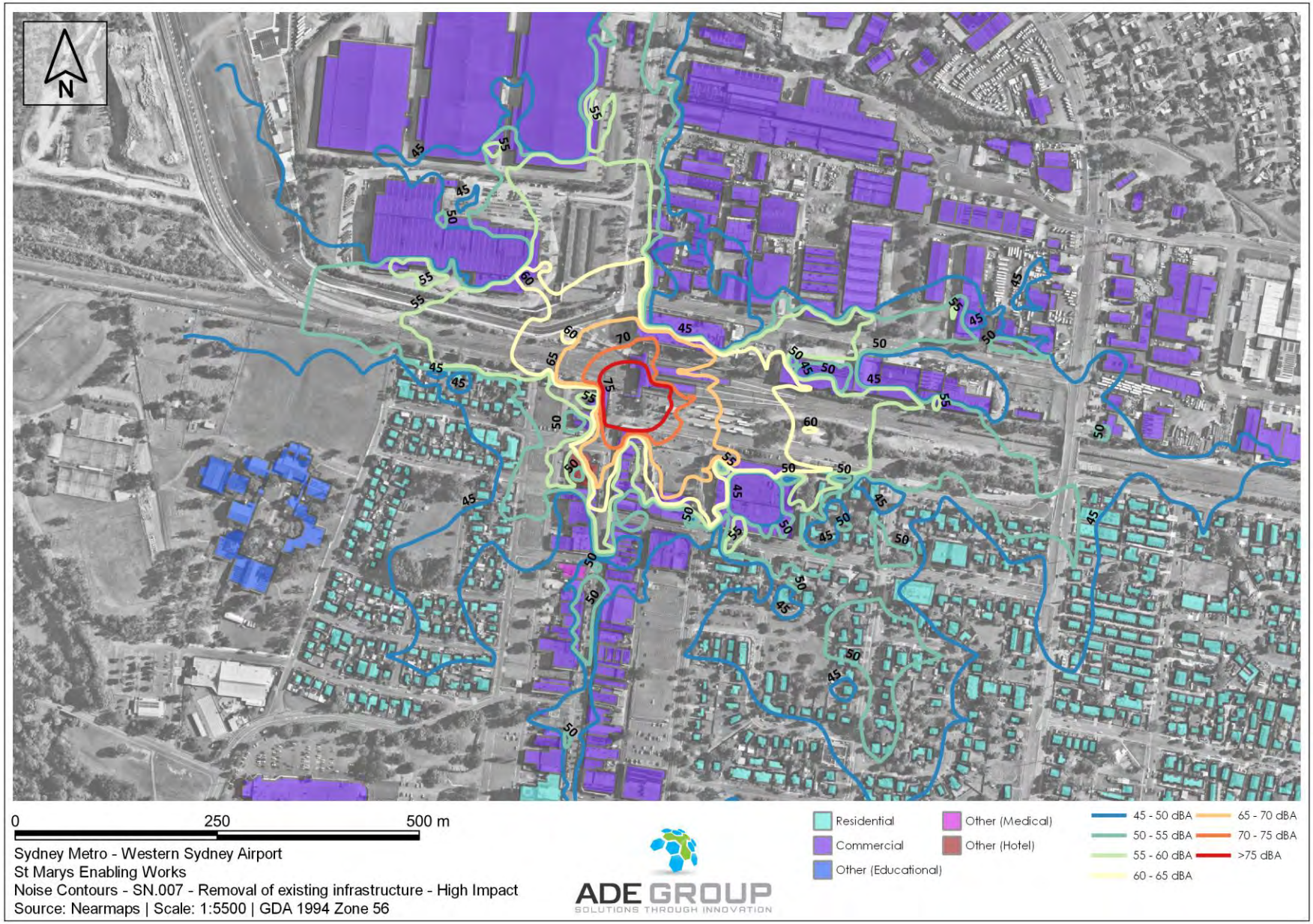

Figure 16 Removal of the existing infrastructure – High impact works

Figure 17 Excavation for new infrastructure

Figure 18 Footings installation

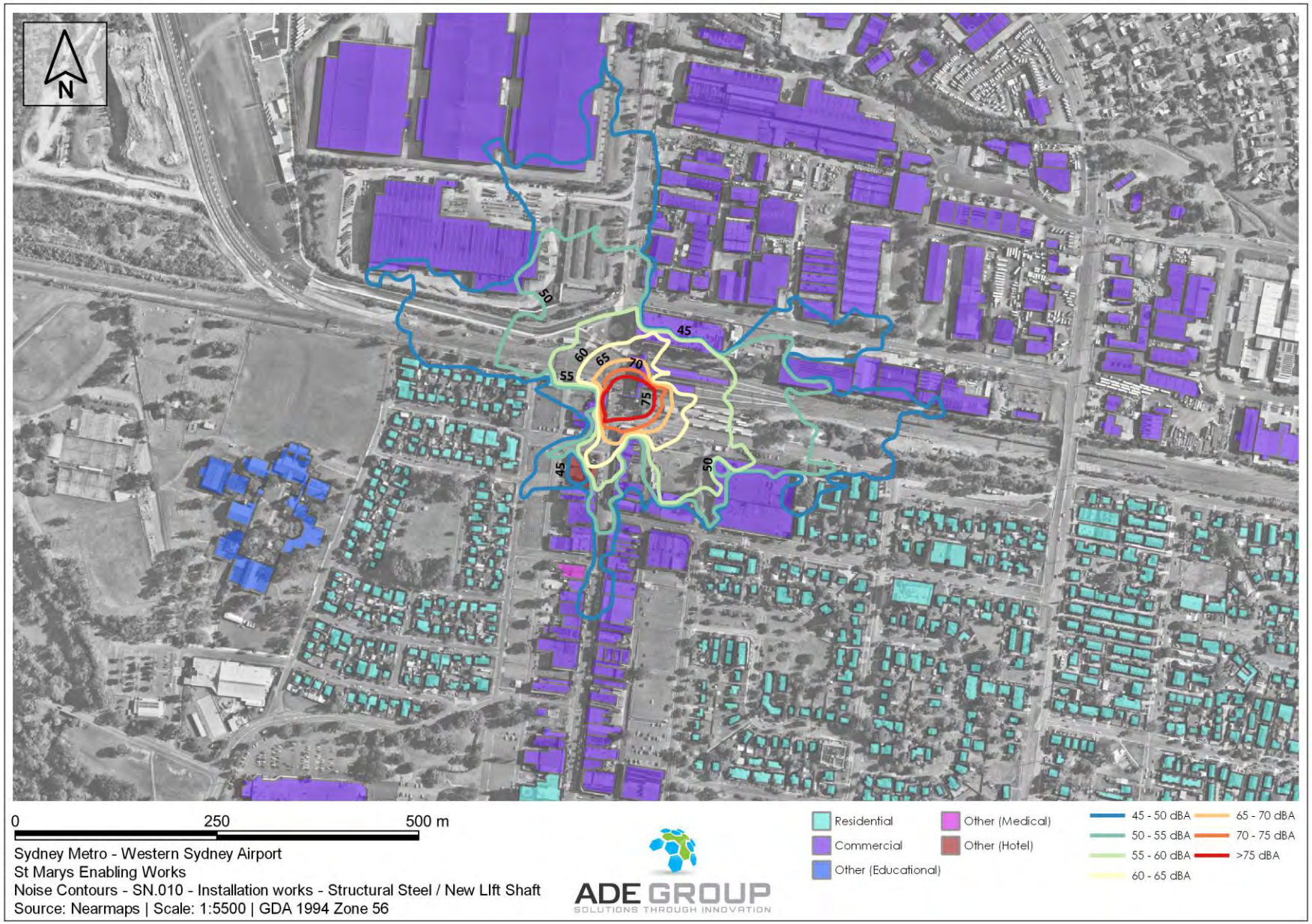

Figure 19 Structural Steel works and New Lift installation

5.2.6 Sleep Disturbance and Awakening

An L_{max} noise assessment was undertaken for all plant equipment proposed for use during the night time period to assess the likely hood of noise events causing sleep disturbance.

Approximately 87 residential properties are predicted to exceed the sleep disturbance criterion of the prevailing background noise level +15 dB or 52 dBA L_{max} whichever was greater.

This is likely due to the topography sloping up westward from the project site, allowing less built environment to act as shields to the houses further up the hill westward, and, the low assumed background noise levels.

For residential receivers, noise levels during the nighttime periods are not anticipated to exceed an external $L_{A1,1minute}$ noise levels greater than 65 dBA L_{max}. Sleep awakening events are considered be have a low chance of occurring, as distances between the works and receivers, and the surrounding built environment provide shielding to noise sensitive receivers which may have been impacted by noise during the night.

Residential properties predicted to experience noise levels resulting in sleep disturbance is provided in **Figure 20** below.

Figure 20 Residential receivers exceeding Sleep Disturbance

5.3 Discussion

5.3.1 NCA01

This catchment area is dominated by commercial premises, north of the railway station. The noise management level is not exceeded by any one business with the exception of the new multistorey car park immediately north of the works site.

5.3.2 NCA02

This catchment area is dominated by residential receivers with mixed commercial premises down Queen Street. Most of the residential receivers (single and double-story homes with a few apartment buildings) are shielded from most of the noise-intensive works due to their distance and other buildings in line-of-sight to the works.

Residual noise impacts are due to diffracted effects of noise, and pockets of lane ways where noise is not blocked by other structures.

Approximately **87** residential premises are predicted to exceed the sleep disturbance criteria, although no awakening events are anticipated due the nature of the works, and the anticipation that no highly noise-intensive plant machinery would not be used during the night-time period.

Most of the impacted noise sensitive receivers (NSRs) are moderate-impact receivers, with the most impacted NSRs being low and medium impact receivers of low density land use.

5.3.3 Cumulative impacts

Residential receivers in close proximity to St Marys Railway Station are currently impacted by existing construction projects within the area. These projects in the area include the relocation of the bus interchange from its current location to the existing southern parking lot across the road from the interchange and the construction of a slip road off Chesham Street.

Immediately north of the station construction has completed on the new multi-story car park, for which fit-out works are currently underway.

The presence of the exiting construction projects in the immediate surroundings to the Sydney Metro Enabling Works in which the construction works are proposed to be undertaken would have a cumulative effect on the local communities.

The dominate noise impacts outlined in this DNVIS is expected to be use of the concrete saw during preliminary drilling works. Residences may be impacted by other works not related to the project including but not limited to:

- Construction traffic
- Road pavement machines, line marking trucks, concrete mixing trucks
- Hand tools
- Delivery trucks
- Vibratory rollers or compactors.

5.4 Vibration

The safe working distances outlined in **Section 4.2.1.1** and presented in **Table 11** are considered to be stringently conservative for continuous vibration. Works within the safe working distances does not guarantee that any impact would occur, rather that consideration regarding methodology and potential impacts may be required.

The distances provided in **Table 11** are specific for vibration intensive equipment. The most vibration intensive equipment proposed for use would be auger rigs, rock-breaker attachments, Wacker packers, concrete trucks or other loaded haulage trucks proposed for use during works pertaining to construction of the lift shaft.

A subjective risk assessment is provided below in **Table 26** which outlines the most vibration sensitive structures in close proximity to the Project.

Table 26 Potential vibration impacts

Item	Approximate Distance (m) to works	Type of structure	Risk assessment		
			Cosmetic	Structural	Vibration Monitoring
St Marys Station The Goods Shed	≈8 m	Heritage State Significant	Medium	Not Likely	During vibration intensive works
Jib Crane	≈3 m	Heritage State Significant	Low [A]	Not Likely	During vibration intensive works
Liftshaft Foundations	≈1 m	Heritage State Significant	Low	Not Likely	During vibration intensive works

Note: Risk assessment is subjective and not formulated from any structural engineering advice
Note A: Low risk of some minor cosmetic damage to the concrete base structure which the jib crane is mounted to

5.4.1 Geotechnical Works

Construction on the lift shaft and surrounding support structures primarily utilize non-destructive digging (NDD) techniques, although to gain access to the under-slab of the external section of the railway station, a concrete saw would be used to cut 1 m x 1 m section to allow for auger drilling equipment to bore through to the ground.

These works are expected to be non-invasive and no vibration impacts to the surrounding structures is anticipated.

5.4.2 Enabling Works

During the main stages of the enabling works (primarily Substructure works) the use of a Wacker-packer may be used near sensitive structure.

The introduction of any vibration intensive plant other than the NDD plant equipment be used (including that of the vibration-intensive Wacker packer) within a close proximity (within 5 m) to the Goods Shed would be required to undergo vibration monitoring during the activities to ensure that no residual vibration energy would impede on the structure causing some minor cosmetic damage (ie the exacerbation of existing cracks in brick/mortar/sandstone, or weathering of timber window frame structures where non-safety glass may be installed).

The Goods Shed has some minor damage to the structure already including existing cracks in the external brick and mortar, and likely some window damage as well. Continuous vibration onto the structure has the potential to exacerbate this damage, causing these cracks to grow, or, dislodge additional mortar from the brickwork.

Should the use of any impact piling, vibratory roller or compactor be used at any time during these works, vibration monitoring is recommended to be undertaken where high vibration intensive compacting works are expected within 5 m of any sensitive structure as illustrated below in **Figure 21**.

Figure 21 St Marys The Goods Shed - 5 m buffer zone

A typical 88 kgs Wacker Packer would have a conservative estimated PPV of approximately 2 mm/s at one (1) meter from the plant equipment.

The likely hood of the heritage structure vibration value guideline of 3 mm/s exceeding at 5 m is low, however caution would still be recommended to be exercised as information provided to us indicate that the structure has existing damage. This estimation was undertaken with conservative dynamic compaction theory and is only indicative of typical plant equipment.

5.4.3 Jib Crane and Sandstone Foundations

Additionally, the jib crane is considered to be in good condition. Although it is the only jib crane left in NSW, its foundation is encased within concrete, stiffening the structure. If the concrete (not considered heritage or sensitive) has any existing damage, some minor cosmetic damage may occur in the form of cracks or small chips, should transient vibration exceed 50 mm/s.

The Lift shafts Sandstone foundations, pending structural engineer advice, may have some stiffening damage to its external face, ie some weathering damage or some erosion. Impulsive vibration may cause some exacerbation of existing cosmetic damage to the sandstone, should the existing damage be due to natural environmental effects (ie water erosion or softening due to moisture or high-humidity/temperature fluctuations.

Vibration monitoring on the structures (or representative where feasible and reasonable) may be necessary to alert construction personnel of any potential transient vibration impacts during use of any vibration intensive works, where the use of any equipment outlined in **Table 11** is utilized, or with the addition of a Wacker packer in operation within a close proximity (conservative 1 m) to the two structures.

5.4.4 Vibration monitoring

An example vibration monitoring plan is provided in **Appendix II**.

The following vibration limits apply:

- The Goods Shed: 3 mm/s continuous, 15 mm/s transient
  - Where vibration levels exceed 3 mm/s, work methodology should be reviewed
  - Where vibration levels exceed 15 mm/s the works should stop until an investigation into the vibration impact is undertaken
- The Jib Crane: 15 mm/s transient vibration
- Sandstone foundations of the lift shaft: 50 mm/s transient
  - Where vibration levels exceed 50 mm/s, work methodology should be reviewed.

5.4.5 Impact to human comfort

The distances between the works location and the nearest residential receptor exceeds 100 m. There are no ground borne noise, ground vibration, or other vibration impacts anticipated to cause any degree of discomfort to any residential receiver during any time period as no vibration intensive plant are proposed for operation during time sensitive periods.

6 Environmental Mitigation Measures

6.1 Ongoing risk analysis

The general implementation of any noise and vibration mitigation measure is subject to a risk analysis through the DNVIS process, described in **Section 5**.

The purpose of the DNVIS is to assess the proposed works pertaining to the Project, and identify and justify site-specific measures in addition to any standard mitigation measures (described in **Section 6.3**), to manage any potential worst-case scenario impacts from construction works to ensure compliance with CoA **E47, E48,** and **E49**, and all relevant regulatory documents.

Further means of risk analysis shall include regular meetings and reviews by the Project team, including site inspections (pre-start up and machinery checks), and, noise and vibration monitoring where necessary such as in response to complaints, or during OOH works for noise model validation.

6.2 Feasibility and reasonableness

The environmental mitigation measured outlined in this Section of the DNVIS are to be applied where feasible and reasonable.

Feasibility relates to the any and all engineering considerations (ie what can be practicable built or implemented), such as safety issues (ie restrictions), access requirements, maintenance requirements, and the inherent limitations of different methodologies to reduce noise from the Project site.

Reasonableness relates to measures implemented from feasible methodologies, and whether the overall noise reduction benefits are significant or not, such as any existing noise levels absent of the works, cost of mitigation, impact a mitigation may have on the wider community (ie extension of road interruptions), or the duration of the noise impact on the surrounding sensitive land uses.

6.3 Standard mitigation

Specific Mitigation Measures would be identified through consultation with affected sensitive land uses per CoA **E47** as identified in this DNVIS via the Transport for Tomorrow Communications Team. A full list of the impacted sensitive land uses, and their recommended mitigation measures is provided in **Appendix III**.

Further consultation with identified affected sensitive land use would be undertaken to identify any sensitive land-use specific mitigation necessary to minimise any noise and vibration impacts identified in this DNVIS.

The SM CNVS provides a base framework for all feasible and reasonable noise management and mitigation practices.

The strategies outlined below in **Table 27** describe various work practices to minimise noise on work sites. These items summarise the most effective measures, designed to manage and lower noise impacts from construction works.

Table 27 Standard Mitigation Measures

Action Required	Applies to	Details
Management Measures		
Implementation of any project specific mitigation measurement required	Airborne Noise Ground-borne noise and vibration	In addition to the measures set out in this table, any project specific mitigation measures identified in the environmental assessment documentation (e.g. EA, REF, submissions or representations report) or approval or licence conditions must be implemented.
Implement community consultation measures	Airborne Noise Ground-borne noise and vibration	• Periodic Notification (monthly letterbox drop)1 • Website • Project information and construction response telephone line • Email distribution list • Place Managers
Register of noise sensitive receivers	Airborne Noise Ground-borne noise and vibration	A register of all noise and vibration sensitive receivers (NSRs) would be kept on site. The register would include the following details for each NSR: • Address of receiver • Category of receiver (e.g. Residential, Commercial etc.) • Contact name and phone number
Site Inductions	Airborne Noise Ground-borne noise and vibration	All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include: • All relevant project specific and standard noise and vibration mitigation measures • Relevant licence and approval conditions • Permissible hours of work • Any limitations on high noise generating activities • Location of nearest sensitive receivers • Construction employee parking areas • Designated loading/unloading areas and procedures • Site opening/closing times (including deliveries) • Environmental incident procedures

Action Required	Applies to	Details
Behavioural practices	Airborne Noise	• 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. • No excessive revving of plant and vehicle engines • Controlled release of compressed air.
Monitoring	Airborne Noise Ground-borne noise and vibration	A noise monitoring program is to be carried out for the duration of the works in accordance with the Construction Noise and Vibration Management Plan and any approval and licence conditions.
Attended vibration measurements	Ground-borne noise and vibration	Attended vibration measurements are required at the commencement of vibration generating activities to confirm that vibration levels satisfy the criteria for that vibration generating activity. Where there is potential for exceedances of the criteria further vibration site law investigations would be undertaken to determine the site-specific safe working distances for that vibration generating activity. Continuous vibration monitoring with audible and visible alarms would be conducted at the nearest sensitive receivers whenever vibration generating activities need to take place inside the applicable safe-working distances.
Source Controls		
Construction hours and scheduling	Airborne Noise Ground-borne noise and vibration	Where feasible and reasonable, construction would be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels would be scheduled during less sensitive time periods.
Construction respite periods	Airborne Noise Ground-borne noise and vibration	High noise and vibration generating activities may only be carried out in continuous blocks, not exceeding 3 hours each, with a minimum respite period of one hour between each block
Equipment selection	Airborne Noise Ground-borne noise and vibration	Use quieter and less vibration emitting construction methods where feasible and reasonable. For example, when piling is required, bored piles rather than impact-driven piles will minimise noise and vibration impacts. Similarly, diaphragm wall construction techniques, in lieu of sheet piling, will have significant noise and vibration benefits.
Maximum noise levels	Airborne Noise	The noise levels of plant and equipment must have operating Sound Power Levels compliant with the criteria in **Table 10**.
Rental plant and equipment	Airborne Noise	The noise levels of plant and equipment items are to be considered in rental decisions and in any case cannot be used on site unless compliant with the criteria in **SM CNVS Table 13**.
Plan worksites and activities to minimise noise and vibration	Airborne Noise Ground-borne noise and vibration	Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site.

Action Required	Applies to	Details
Non-tonal reversing alarms	Airborne Noise	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.
Minimise disturbance arising from delivery of goods to construction sites	Airborne Noise	• Loading and unloading of materials/deliveries is to occur as far as possible from NSRs • Select site access points and roads as far as possible away from NSRs • Dedicated loading/unloading areas to be shielded if close to NSRs • Delivery vehicles to be fitted with straps rather than chains for unloading, wherever feasible and reasonable
Path Controls		
Shield stationary noise sources such as pumps, compressors, fans etc	Airborne Noise	Stationary noise sources would be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained. Appendix F of AS 2436: 1981 lists materials suitable for shielding.
Shield sensitive receivers from noisy activities	Airborne Noise	Use structures to shield residential receivers from noise such as site shed placement; earth bunds; fencing; erection of operational stage noise barriers (where practicable) and consideration of site topography when situating plant.

6.4 Specific noise and vibration mitigation

Site-specific mitigation consistent with the Sydney Metro - Western Sydney Airport EIS are recommended be implemented prior to site occupation, and conformance assured at all times during construction works as feasibly and reasonably as possible. Specific mitigation will be confirmed with prior to site occupation as the Project is expected to exceed 12 months in duration.

Specific mitigation measures for the community as per CoA **E47** include letterbox distribution to all residential properties within a 100 m (day works) radius of the works, seven days in advance to the works commencing. Contact details, description of works, potential impacts to parking and shift times are to be outlined in each monthly and possession specific notification.

Targeted consultation via door knocking, specific notification and phone calls will be undertaken where noise modelling has predicted additional mitigation measures of respite offers or alternate accommodation will be offered.

Additionally, this DNVIS shall be updated accordingly as community consultation is undertaken.

Table 28 which follows provides an overview of the site-specific noise and vibration control measures.

Table 28 Specific noise and vibration control measures

ID	Measure / Requirement	When to implement	How to implement	Responsibility for Implementation	Reference
General					
NV01	Training will be provided to all project personnel, including relevant sub-contractors on noise and vibration requirements from this plan through inductions, toolboxes and targeted awareness training.	Pre- Construction, Construction	All personnel will be inducted before commencing work	All contractors	Good Practice
NV02	Public address systems used at any construction site will not be used outside normal construction hours, except where prior consultation has been undertaken with potentially affected residents or in the case of emergency. Public address systems would be designed to limit noise spillage off- site.	Construction	All personnel will be aware of the normal construction hours	All contractors	Good Practice
NV03	Work areas and layouts, parking areas, plant equipment and any relevant material stockpile sites will be positioned away from or out of direct line of sight to noise-sensitive locations where feasible and reasonable.	Construction	Site compound details provided in the ECM	All contractors	Good Practice
NV04	Site entry and exit points will be located as far as possible from sensitive receivers where possible, considering the importance of safe access.	Construction	Site compound details provided in the ECM	All contractors	Good Practice
NV05	Where possible, the compounds, refueling areas and areas near potentially noise and vibration sensitive receivers, will be designed to promote one-way traffic so that vehicle reversing movements are minimised.	Construction	The traffic management plan is designed to comply with this (to be prepared)	All contractors	Good Practice
NV06	Site training / tool-box talks will reinforce expected behavioral practices on site such as no swearing or unnecessary shouting or loud stereos/ radios on site, no dropping materials from height where practicable, no throwing of items and no slamming of doors.	Construction	All personnel will undertake inductions and receive ongoing site training	All contractors	Good Practice
NV07	Where possible, noise intensive work will be undertaken within the standard construction hours of: • 7 am – 6 pm, Monday to Friday • 8 am – 1 pm Saturday • No work on Sunday or public holidays Where complaints are received in response to high noise activities (eg. Rock breaking) respite periods will be applied (e.g. 3 hours of work with 1 hour of no high noise work). Work generating high noise and/or vibration levels would be scheduled during less sensitive time periods.	Construction	All personnel will undertake inductions	All contractors	Good Practice

ID	Measure / Requirement	When to implement	How to implement	Responsibility for Implementation	Reference
NV08	Construction Planning will provide for adequate respite periods for Sensitive Receptors from noise and vibration associated with construction activities No blasting activity shall be undertaken during the hours of 5 pm to 9 am on weekdays, on weekends (other than 9 am to 1 pm Saturdays) and on public holidays.	Construction	Planning will be undertaken to program works	All contractors	Good Practice
Plant and Equipment					
NV09	Undertake saw-cutting operations during standard work hours wherever possible to minimise noise impacts	Construction	Works planning and assessment to be undertake prior to commencing.	All contractors	Good Practice
NV10	Plant or machinery will not be permitted to 'warm-up' before the nominated working hours.	Construction Plant equipment near receivers	All personnel will undertake inductions and receive ongoing site training.	All contractors	Good Practice
NV11	Avoiding queueing and switching off engines when equipment is not in use for extended periods (ie 30 minutes).	Construction	All personnel will undertake inductions and receive ongoing site training.	All contractors	Good Practice
NV12	Where possible, the occurrence of consecutive noisy works within the same locality, and/or noisy plant/equipment working close together in the same locality will be avoided or otherwise minimised.	Construction	Works will be schedules ahead of time, where possible	All contractors	Good Practice
NV13	Where possible high noise generating work (such as use of a concrete saw or hydraulic hammer) will be undertaken during standard construction hours, even in the event of an out-of- hour works approval.	Construction	Works will be schedules ahead of time, where possible	All contractors	Good Practice
NV14	Manually adjustable or ambient noise sensitive or 'quacker' type reversing alarms on plant and/or flashing lights will be used at night.	Construction	All vehicles on site will be tested and fitted with appropriate controls before commencing works.	All contractors	Good Practice
NV15	Where possible, plan noisy works to be undertaken away from noise sensitive receivers.	Construction	Works will be schedules ahead of time, where possible	All contractors	Good Practice
NV16	All construction plant and equipment used on the site will be, in addition to other relevant requirements: - Fitted with properly maintained noise suppression devices in accordance with the manufacturer's specifications. Maintained in an efficient condition. - Operated in a proper and efficient manner	Construction	All vehicles on site will be tested and fitted with appropriate controls before commencing works.	All contractors	Good Practice

ID	Measure / Requirement	When to implement	How to implement	Responsibility for Implementation	Reference
NV17	When loading trucks, materials are to be placed into trucks as far as practical, rather than dropped from a height.	Construction	Works will be schedules ahead of time, where possible. Workers will be trained accordingly on unloading	All contractors	Good Practice
NV18	Truck movements will be kept to a minimum, i.e. that trucks are sufficiently utilised for each trip.	Construction	Works will be schedules ahead of time, where possible	All contractors	Traffic and Access CEMP
NV19	Noisy and vibration generating plant working simultaneously close together will be avoided to the greatest extent practical adjacent to noise affected / vibration sensitive receivers.	Construction	Works will be schedules ahead of time, where possible, and in combination with the location of sensitive receivers	All contractors	Good Practice
NV20	Where practical, at the end of shifts, excavation and/or ripping plant will be taken from their work areas and left overnight away from the immediate vicinity of sensitive receivers. Warming up of the plant will then be conducted away from such receivers.	Construction	Machinery storage points will be determined in combination with the location of sensitive receivers	All contractors	Good Practice
NV21	Trucks will limit compression braking as far as practicable	Construction	Machinery storage points will be determined in combination with the location of sensitive receivers	All contractors	Good Practice
NV22	Where possible, noise generating equipment will be strategically positioned to take advantage of natural screening from geographical features, earthwork features (e.g. stockpiles) or other structures to reduce the transmission of noise between work sites and receiver locations.	Construction	The locations of noise generating equipment will be in combination with the location of geographical features and structures.	All contractors	Good Practice
NV23	Construction activities which are predicted to exceed any noise management levels will be identified	Pre- Construction, Construction	Predicted exceedances will be through work planning prior to starting and verified through monitoring.	All contractors	Good Practice
NV24	Selection of less noisy plant and equipment and less noise emitting construction methods, where feasible. Use of electric powered tools and plant machinery such as chainsaws, leaf blowers etc should be considered over petrol/two-stroke engine plant equipment, where feasible.	Construction	Works planning and assessment to be undertaken prior to commencing.	All contractors	Good Practice

ID	Measure / Requirement	When to implement	How to implement	Responsibility for Implementation	Reference
NV25	Structures (site sheds, stockpiles / bunds, hoarding) will be used where possible to shield residential receivers from noise.	Construction	Works planning and assessment to be undertaken prior to commencing.	All contractors	Good Practice
Consultation and Complaints Management					
NV26	All complaints received will be managed in accordance with the Community Communications Strategy.	Construction	A Community Communications Strategy	All contractors	Good Practice
NV27	Affected receivers will receive notifications for construction activities likely to affect their amenity through noise and vibration.	Pre- Construction, Construction	Noisy construction activities are to be pre-determined.	All contractors	Good Practice
Survey, Monitoring and Reporting					
NV28	Noise and vibration monitoring of plant and equipment will be undertaken to ensure the noise performance levels predicted in this Noise and Vibration CEMP are being met and do not exceed the maximum noise levels tabulated in **Table 10**.	Pre- Construction, Construction	Plan and schedule monitoring to a program. Reported in Monthly Report	All contractors	Good Practice
NV29	Noise and vibration monitoring will be undertaken in accordance with the Sydney Metro CNVS. The program for construction noise and vibration monitoring indicates monitoring frequency, location, how the results of this monitoring are recorded and, procedures that are followed where significant exceedances of relevant noise and vibration goals are detected.	Construction	Monitoring and record keeping to be undertaken in accordance with this plan. Contractor require to undertake monitoring for construction activities.	All contractors	Good Practice
NV30	Quantitative noise and vibration impact assessments will be carried out prior to construction. Where a potential exceedance of the construction noise and vibration management levels is identified, additional mitigation measures (such as individual briefings, letter box drops, phone calls, emails and specific notifications to affected sensitive receivers) would be considered.	Construction	Monitoring and community consultation	All contractors	Good Practice
NV31	All complaints handling would be in accordance with Transport for Tomorrows' Community Communications Strategy.	Construction	Monitoring and record keeping being undertaken in accordance with this plan.	All contractors	Communications Strategy
NV32	Noise and vibration monitoring in response to complaints within an acceptable time frame of receipt of the complaint where feasible. Survey results compared against the noise levels presented in **Section 5.2.5**.	Construction	Reported in Monthly Report	All contractors	Good Practice

ID	Measure / Requirement	When to implement	How to implement	Responsibility for Implementation	Reference
NV33	Noise monitoring would be carried out where a potential exceedance of the construction noise management levels has been identified.	Pre- Construction, Construction	Monitoring and record keeping being undertaken in accordance with this plan.	All contractors	Good Practice
NV34	Vibration monitoring would be carried out at the nearest affected receiver where it is anticipated that an item of plant would exceed the cosmetic damage criteria.	Construction	Monitoring and record keeping being undertaken in accordance with this plan.	All contractors	Good Practice
Respite from Noisy Activities					
NV35	For work activities considered to be noisy (eg. hammering, grinding etc – excluding blasting, if any), adopt an 8.30 am start and a 5 pm finish with two one-hour respite periods starting at 11.30am and 2pm respectively. Saturday works will commence at 8am and finish at 1pm with a one-hour respite period starting at 11am.	Construction	Monitoring and record keeping being undertaken in accordance with this plan.	All contractors	Good Practice

6.4.1 Specific measures identified through consultation

Part of the DNVIS process is to identify and establish specific mitigation measures identified through consultation with affected sensitive land user(s) in order to satisfy Condition of Approval item **E57**.

Transport for Tomorrow's Community Engagement Team have completed stakeholder mapping at St Marys, and identified preliminary mitigation measures for consultation in 2022. A stakeholder mapping document has been developed and is accessible to all members of the Community Engagement Team as an excel spreadsheet in MS Teams. This document will continue to be updated as required throughout the duration of the project.

In order to develop a comprehensive stakeholder list, Transport for Tomorrow's Community Engagement Team continue to collaborate with other Transport for NSW agencies, Sydney Metro and Sydney Trains.

Consultation for affected sensitive land users commenced in early 2022.

A specific notification will be distributed to receivers identified in **Appendix III**, inviting stakeholders to inform the project team of considerations around individual circumstances, ie business operation times due to circumstance.

Respite periods during out of hours works are to be identified in consultation with the community. The consultation must include (but is not limited to) the following

- a progressive schedule for periods no less than three (3) months, of likely out-of-hours work
- a description of the potential work, location and duration of the out-of-hours work
- the noise characteristics and likely noise levels of the work
- likely mitigation and management measures which aim to achieve the relevant NMLs under Condition **E43** (including the circumstances of when respite or relocation offers will be available and details about how the affected community can access these offers).

An example of respite periods may include one (1) hour of respite every three (3) hours of works duration in any out of hours period.

Table 29 below identifies specific receivers and the consultation methods that will be undertaken, inviting stakeholders to inform the project team of considerations around individual circumstances. A notification will contain project contact details, and a QR code linking stakeholders to a project specific webpage.

This notification will contain project contact details, and a QR code linking stakeholders to a project specific webpage

- A phone call (individual briefing) will be made where contact details are obtainable, encouraging sensitive land user(s) to provide information around their circumstance
- A door knock will be carried out for local businesses and educational/health facilities
- A St Marys Specific webpage is published on Engagement HQ (https://yoursay.transport.nsw.gov.au/st-marys-station) with more information around construction impacts and suggested mitigation measures
- An online survey will be available on the webpage inviting visitors to identify concerns and suggest opportunities for improvement
- Where reasonable and feasible, feedback received from relevant receivers will be considered for implementation for the duration of work.

Table 29 Specific mitigation through consultation with sensitive land user(s)

Receiver	Consideration	Consultation and engagement methods
Medical Facility, Queen Street	Patient consultation, day surgery	Business Management Strategy (if required) Individual briefings Notifications Project specific webpage Online feedback survey Meetings 24hr and general Infoline Projects email address
General Commercial Premises, Queen Street	Operational times	Business Management Strategy (if required) Individual briefings Notifications Project specific webpage Online feedback survey Meetings 24hr and general Infoline Projects email address

Additional respite periods include works undertaken during highly noise intensive activities.

Works scenarios SN.004 and SN.007 use plant equipment which are classified as highly noise intensive activities. Respite periods would be at least one (1) hour in duration every three (3) hours of works. Refer to **NV35** in **Table 28** for respite from noisy activities.

Per CoA **E39**, works which utilize highly noise intensive plant equipment, the use of this equipment would be restricted to normal hours (refer to **Section 2.1.1**) where any of the following plant equipment are proposed for use:

- Chain saws or other power saw plant equipment (petrol or electric)
- Grinding of metal or metallic objects, concrete or masonry (such as concrete or diamond saw)
- Any drilling, impact piling, rock hammering or other rock breaking activities
- Vibratory rolling.

Refer to **Definitions** for a more comprehensive list of plant equipment restricted to standard hours works.

6.4.2 Additional noise mitigation measures

In accordance with the Sydney Metro CNVS, the implementation of standard mitigation measures, and compliance with maximum sound power levels for plant and equipment, construction hour management, and standard community consultation measures outlined within the CNVS should reduce the noise and any potential vibration impacts on nearby sensitive receivers.

The Sydney Metro CNVS provides guidance for Sydney Metro Projects where exceedances of the construction noise and vibration management levels are likely to, or are predicted to occur.

These measures are summarised from the SM CNVS and presented below in **Table 30**.

Table 30 Description of Additional Mitigation Measures

Measure	Description	Abbreviation
Alternative Accommodation	Alternative accommodation options may be provided for residents living in close proximity to construction works that are likely to incur unreasonably high impacts over an extended period of time. Alternative accommodation will be determined on a case-by-case basis.	AA
Monitoring	Where it has been identified that specific construction activities are likely to exceed the relevant noise or vibration goals, noise or vibration monitoring may be conducted at the affected receiver(s) or a nominated representative location (typically the nearest receiver where more than one receiver have been identified). Monitoring can be in the form of either unattended logging or operator attended surveys. The purpose of monitoring is to inform the relevant personnel when the noise or vibration goal has been exceeded so that additional management measures may be implemented.	M
Individual briefings	Individual briefings are used to inform stakeholders about the impacts of high noise activities and mitigation measures that will be implemented. Communications representatives from the contractor would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project.	IB
Letterbox Drops	For each Sydney Metro project, a newsletter is produced and distributed to the local community via letterbox drop and the project mailing list. These newsletters provide an overview of current and upcoming works across the project and other topics of interest. The objective is to engage and inform and provide project-specific messages. Advanced warning of potential disruptions (e.g. traffic changes or noisy works) can assist in reducing the impact on the community. Content and newsletter length is determined on a project-by-project basis. Most projects distribute notifications on a monthly basis. Each newsletter is graphically designed within a branded template.	LB
Project Specific Respite Offer	The purpose of a project specific respite offer is to provide residents subjected to lengthy periods of noise or vibration respite from an ongoing impact.	RO
Phone calls, emails	Phone calls and/or emails detailing relevant information would be made to identified/affected stakeholders within 7 days of proposed work. Phone calls and/or emails provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs etc.	PC
Specific Notification	Specific notifications would be letterbox dropped or hand distributed to identified stakeholders no later than 7 days ahead of construction activities that are likely to exceed the noise objectives. This form of communication is used to support periodic notifications, or to advertise unscheduled works.	SN

6.4.3 Applying additional mitigation measures

Additional Mitigation Measures (AMM) are recommended to be considered to offset impacts where the application of standard and project-specific mitigation measures (outlined in **Table 27** and **Table 28**) are taken into consideration when assessing the potential noise and vibration impacts, however the relevant NMLs are still predicted to be exceeded.

Table 31 below tabulates the thresholds for each time period and range of noise above the predicted L_{eq} impact to the surrounding sensitive receivers.

Table 31 Additional Mitigation Measures

Construction Hours	Predicted dBA (L_{eq}) above ANML		Additional management measures
	Range (dB)		
Standard Hours Monday to Friday - 7am to 6pm Saturday - 8am to 1pm	0	10	-
	10	20	LB
	20	30	LB, M, SN
	>30		LB, M, SN
OOHW Evening Monday to Friday - 6pm to 10pm Saturday - 1pm to 10pm Sunday and Public Holiday 8:00 am to 6:00 pm)	0	10	LB
	10	20	LB, M,
	20	30	LB, M, SN, RO
	>30		LB, M, SN, IB, PC, RO
OOHW Night Monday to Friday 10:00pm -7:00am Saturday - 10pm to 8am Sunday/PH - 6pm to 7:00am	0	10	LB
	10	20	LB, M, SN, RO
	20	30	LB, M, SN, IB, PC, RO, AA
	>30		LB, M, SN, IB, PC, RO, AA

Notes SN = Specific Notification PC = Phone calls IB = Individual Briefings M = Monitoring LB = Letterbox Drops
AA = Alternate Accommodation RO = Respite offer

6.4.3.1 Overview of additional mitigation measures

Under the Sydney Metro Construction Noise and Vibration Standard, and the TfNSW CNVS, noise levels predicted to exceed the Noise Management Levels (NMLs) require specific additional mitigation measures, summarised above in **Table 31**.

Figure 22 presents noise sensitive receivers for each scenario in which the predicted L_{Aeq} noise level exceeds the relevant NML for that receiver, triggering the requirement for additional noise mitigation during standard working hours.

The extent of the mitigation necessary is broken down per each scenario in the following figures.

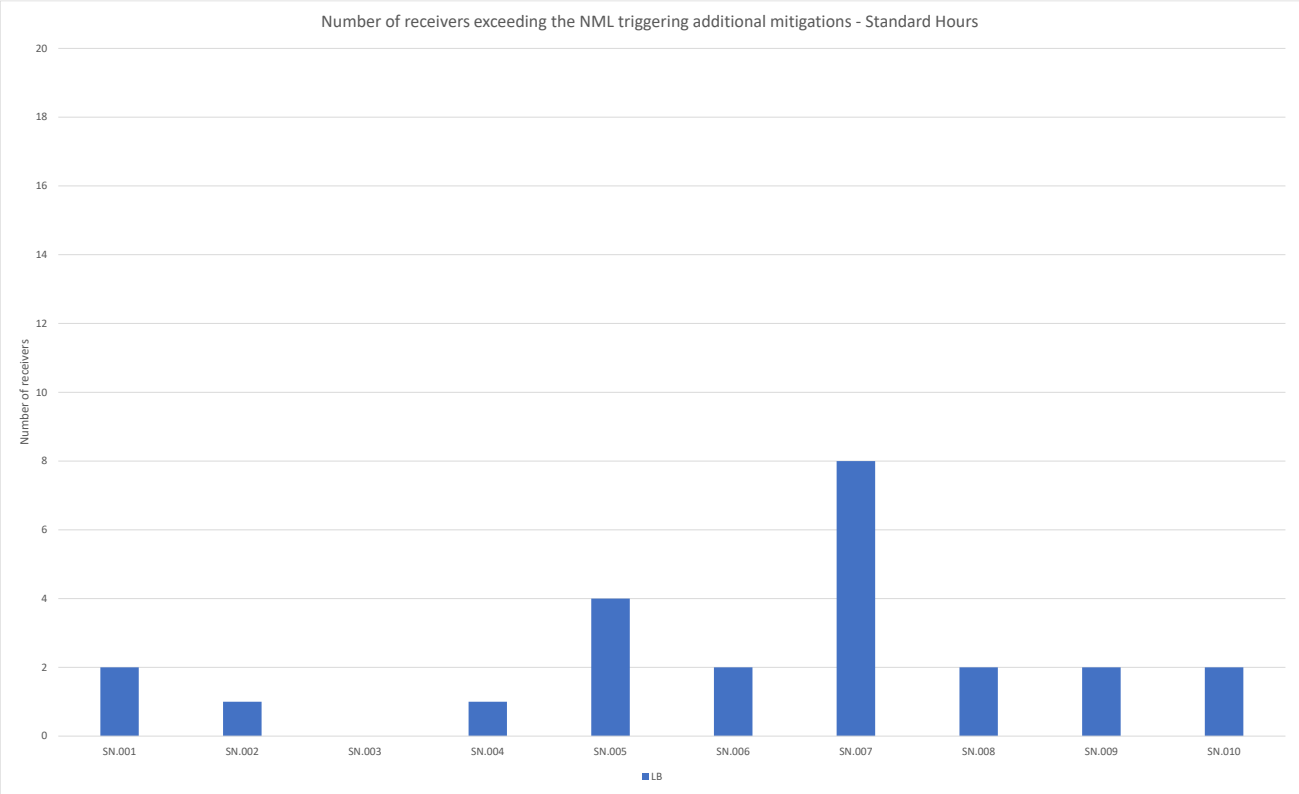

Figure 22 Additional mitigation measures standard construction hours

Figure 23 below illustrates the distribution of additional mitigation measures during the evening time period.

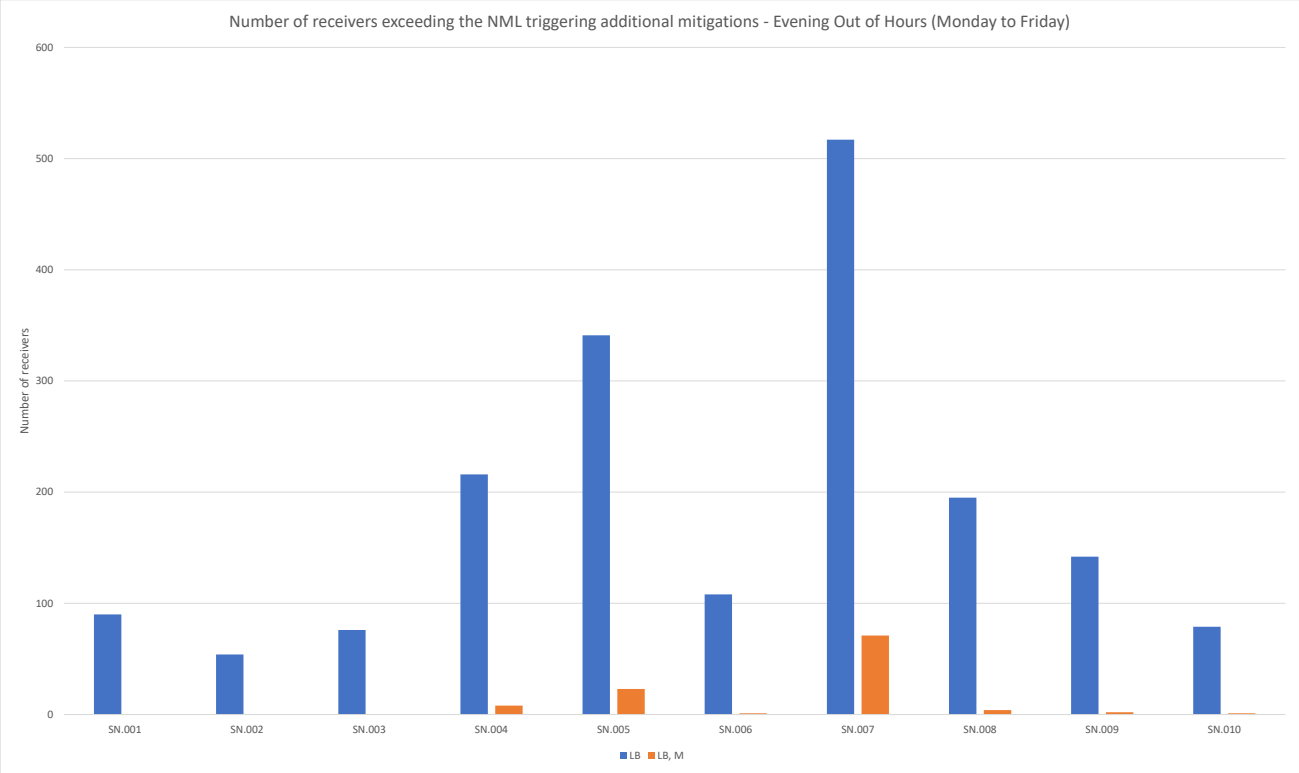

Figure 23 Additional mitigation measures evening out of hours period

Figure 24 below illustrates the distribution of additional mitigation measures during the Saturday out of hours period.

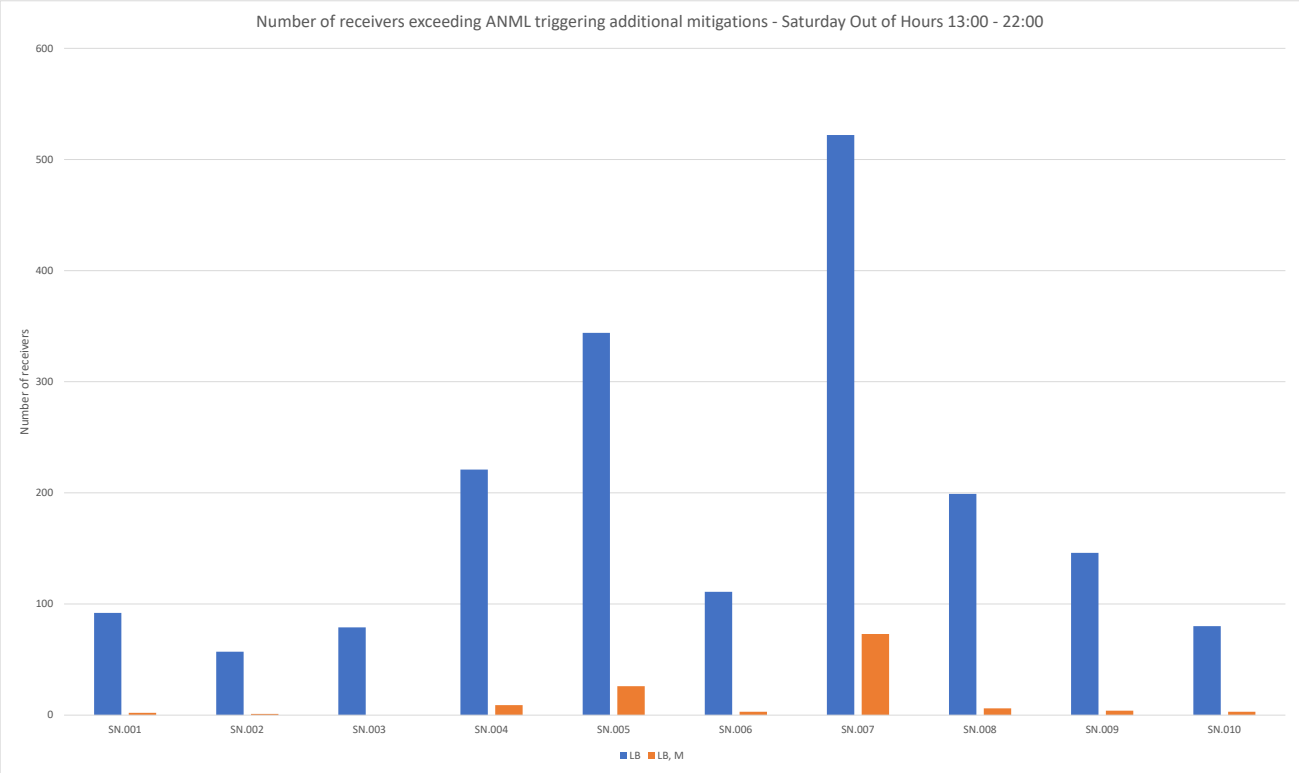

Figure 24 Additional mitigation measures Saturday out-of-hours

Figure 25 below illustrates the distribution of additional mitigation measures during the night-time period.

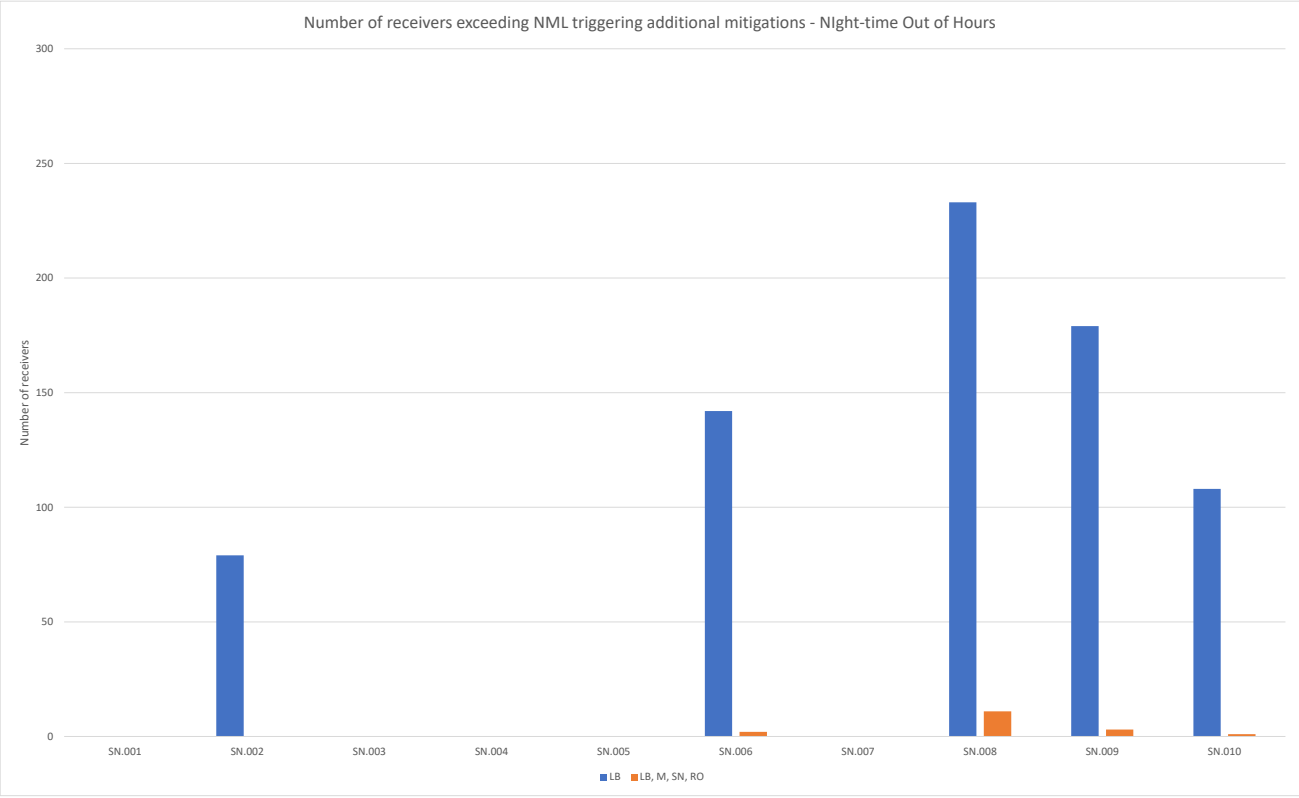

Figure 25 Additional mitigation measures night-time out of hours period

Figure 26 below illustrates the distribution of additional mitigation measures during the Sunday evening period, defined as the time period between 08:00 hrs and 18:00 hrs.

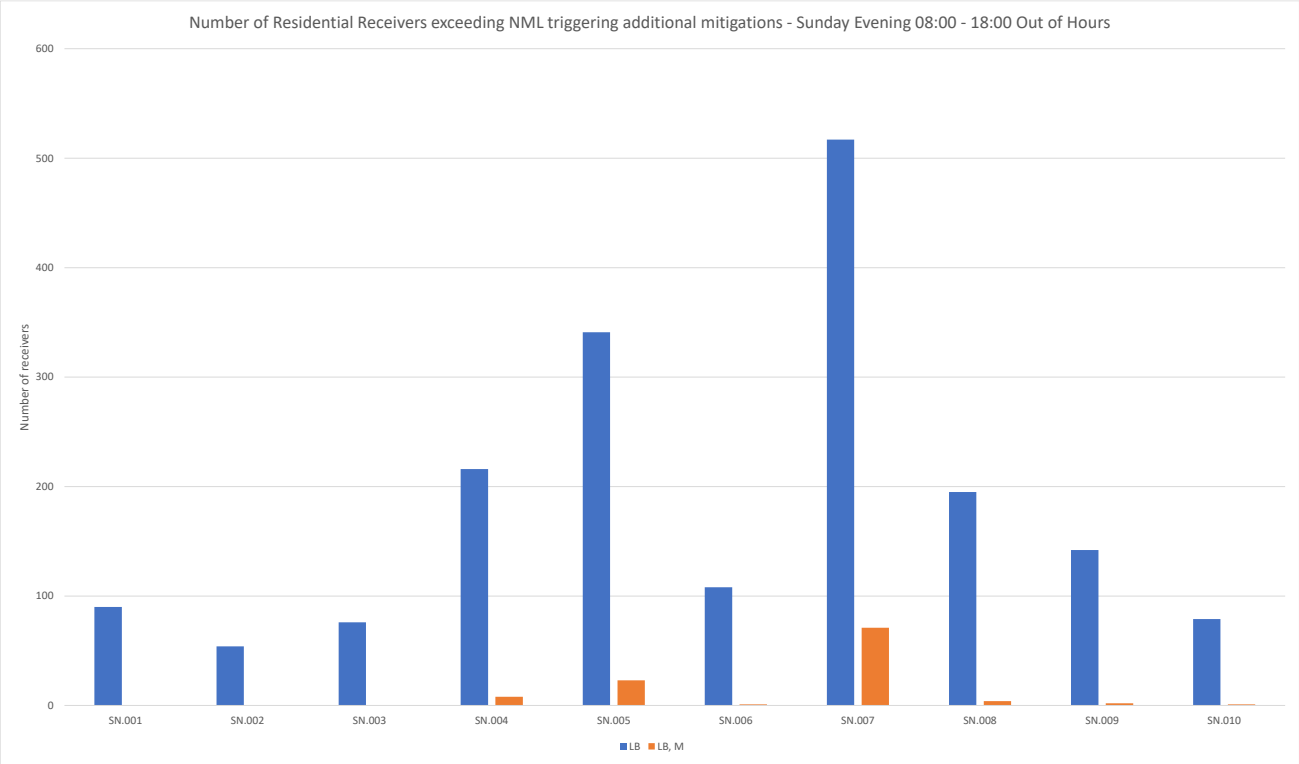

Figure 26 Additional mitigation measures Sunday Evening 08:00 – 18:00 hrs

Figure 27 below illustrates the distribution of additional mitigation measures during the Sunday Nighttime out of hours period. Under the SM CNVS, Sunday night-time starts at 18:00 hrs and runs through to 07:00 hrs the following Monday morning (where not an observed public holiday).

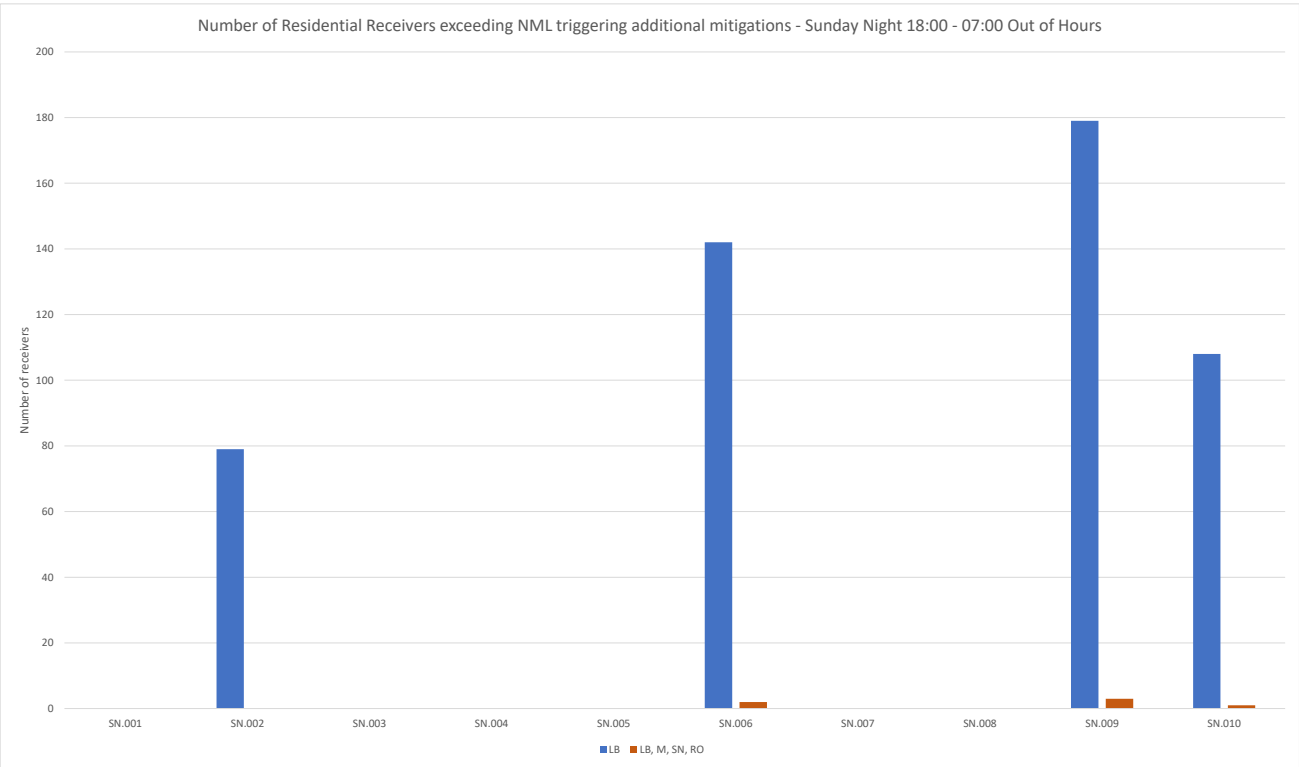

Figure 27 Additional mitigation measures Sunday Night-time (18:00 – 07:00)

6.4.3.2 Extent of additional mitigation measures

A detailed overview of each receiver is provided in **Appendix III**.

The following maps provide an illustrative overview of the extent of the necessary and required AMM.

These properties trigger additional mitigation due to the relatively low background noise management levels during the night-time period, the works proposed during this period, and, the proximity of the receivers to the works.

Note: In regards to **Figure 32**, works assessed in this DNVIS are not anticipated to be undertaken during Sunday evening period (18:00 onwards). Some packdown and toolbox works would occur during this period, with commissioning expected to be undertaken during this period of time.

The map is included in the list of additional mitigations, should any of the outlined construction scenarios be undertaken during this period. This DNVIS will be updated to reflect any changes in methodology, or construction scenarios including their anticipated time of operation should this occur.

Figure 28 Additional Noise Mitigation Measures, Daytime extent (all receivers)

Figure 29 Additional Noise Mitigation Measures, Daytime Out of Hours period extent (Residential receivers)

Figure 30 Additional Noise Mitigation Measures, Evening Out of Hours period extent (Residential receivers)

Figure 31 Additional Noise Mitigation Measures, Night-time Out of Hours period extent (Residential receivers)

Figure 32 Sunday Night 18:00 hrs onwards additional noise mitigation measures (worst case scenario)

6.4.4 Mitigation discussion

6.4.4.1 Standard hours

Letterbox drops are recommended to surrounding sensitive land uses including commercial premises within 600 m of the project boundaries.

6.4.4.2 Saturday out of hours

The high number of AMM triggers during this period is due the relatively low background noise levels, and the works proposed to occur during this period of time (ie Saturday 13:00 hrs onwards, and, Sundays). Refer to **Section 5.1.2** for an overview of proposed work activities.

Letterbox drops are recommended to extent to Glossop Street approximately 480 m to the east, Chapel Street approximately 460 m to the south, and all residential receivers to the south-west up to Charles Hackett Drive, approximately 570 m in distance.

Letterbox drops to additional high-rise apartments exceeding three storeys in height is also recommended (in all directions) as line-of-sight and lack of buildings to shield from noise results in the noise model triggering those premises for AMM during all time periods.

6.4.4.3 Evening time

Letterbox drops as above, and, monitoring is recommended at the nearest sensitive receivers or most impacted during works to confirm noise levels within this report.

Sunday 08:00 – 18:00 is considered evening-time under the SM CNVS, respite offers are required under this condition during this time period.

6.4.4.4 Night-time

No works are anticipated to generate noise works during the night-time which would trigger alternative accommodation. Should any change of proposed plant equipment be implemented to include any noise intensive plant (such as chain-saw, vibratory rolling, rock breaking, concrete/demo saw use) may have an impact to the residential receivers and trigger this measure.

Letterbox drops, respite offer, specific notification, and, attended noise monitoring is recommended during most night-time works or as the works progress to ensure that implemented noise reducing strategies and mitigation measures are effective.

Should the noise levels during any period noise survey show noise levels exceeding those outlined within this DNVIS, the following recommendations are formulated:

- Review of implemented mitigation (standard and specific)
- Review of sensitive land-use specific mitigation measures
- Review of methodology of works undertaken in relation to that which is outlined in this DNVIS
  - Any alternate or changes to work scenarios, plant equipment, or noise intensive works operating during other sensitive time periods, this DNVIS is to be updated to reflect any changes and provide recommendations pertaining to any additional noise mitigation management strategies or measures.

6.4.5 Respite Offer overview

A number of premises are triggered for respite offers (RO) during the evening and night-time works. A total of five apartment blocks and additional six residential houses are triggered for respite offers during Saturday Night-time, and Sunday works.

The works triggering these are SN.008 during the night-time, and evening and night works during SN.006, SN.009 and SN.010 where high impact works are anticipated to be undertaken during sensitive time periods.

The southwestern properties are triggering due to noise diffraction and are not considered to be immediately impacted from the works. Project wide RO is presented below in **Figure 33**.

Figure 33 Extent of Respite Offer mitigation

An overview is provided in **Appendix III**.

6.4.6 Summary

The summary of the mitigation extent can be presented on a per-distance basis.

Figure 34 below summarises a general distribution and spread of additional mitigations based on 250 m distances from the centre of the works.

These buffer rings represent the spread of the mitigation which would assist the communications team in formulating how far the mitigations (such as general letter box drops) would go.

Figure 34 Extent of additional noise mitigations

7 Conclusion

ADE Consulting Group Pty Ltd (ADE) was commissioned by Transport for Tomorrow (TfT, the 'Client') to undertake a Detailed Noise and Vibration Impact Statement (DNVIS) for proposed Enabling Works (part of the Sydney Metro - Western Sydney Airport Project) at St Marys Train Station.

A 3D noise model was built in SoundPlan to assess the potential noise impacts of the construction on the nearby noise sensitive receivers. This assessment found the following:

- Residential sensitive land uses are not predicted to exceed ICNG defined Highly Noise Affected criteria of >75 dB $L_{Aeq,15min}$
- 87 Residential receivers are predicted to exceed night-time sleep disturbance screen criterion– no sleep awakening events are anticipated (ie external noise levels exceeding 65 dB L_{Amax})
- Additional Noise Mitigation Measures (AMM) in accordance with the Sydney Metro Construction Noise and Vibration Strategy (v4.3) are required for surrounding sensitive land uses
  - Letterbox drops are recommended for all sensitive land uses within 480 m east of the project location to Glossop Street, 460 m south to Chapel Street (all apartment buildings exceeding three story's in height), and 570 m south-west to Charles Hackett Drive
  - Residences east of Glossop Street would experience cumulative impacts from nearby construction
- Vibration impacts are not anticipated due to the lack of vibration-intensive machinery or plant proposed for use
  - Vibration monitoring at the external Goods Shed (part of the St Marys Heritage Listed Structure) is required should any vibration intensive equipment (refer to **Section 4.2.1.1**) operated within 5 m of the external structure or any other sensitive structure
    - A formal dilapidation or structural/building condition assessment is recommended (if not done prior) to confirm the condition of the heritage structure
  - No vibration impacts to human comfort are anticipated due to the distance to the nearest residential premises exceeding 100 m.

A detailed overview of the properties triggered for Additional noise Mitigation Measures is provided in **Appendix III**.

Respite offer is triggered during Sunday Evening (08:00 – 18:00 hrs) where noise levels are anticipated to exceed 20 dBA above the NML at some residential receivers with direct line of sight to the works location, and Saturday night-time where works are considered *Moderate Impact* to surrounding noise sensitive receivers. Property Specific premises triggered for RO is presented in **Section 6.4.5**.

Respite periods in consultation with the community are required per CoA **E57** during out of hours works.

Additional recommendations are formulated:

- The noise assessment is based on information, equipment, locations, and methodology provided to us and confirmed with Transport for Tomorrow, the noise assessment is required to be updated should any change in methodology be proposed, as shielding effects from the existing platform and station infrastructure and surrounding commercial properties benefit the community with regards to the spread of the noise during time sensitive periods
- Noise monitoring is recommended where identified within this report during concrete saw-cutting activities to confirm noise levels predicted within the model
  - In the event of noise or vibration complaints:

- Attended noise/vibration monitoring in accordance with the SW WSA CNVS
- Noise management level or sleep disturbance/awakening criteria exceedances would be responded through review of equipment on site
- Review of implemented mitigation (standard and specific)
- Review of sensitive-land use specific mitigation measures (per CoA **E47**)
- Review of feasible and reasonable mitigation

- Vibration monitoring is recommended where any vibration intensive plant equipment are anticipated to be in operation at distances fewer than 5 m from the heritage structure, identified in **Section 5.3**.

Appendix I – Glossary

1 Sound Pressure Level

Defined as:

$$L_p = 10log_{10}\left(\frac{p^2}{p_{ref}^2}\right)dB$$

In the above equation, p is the sound pressure fluctuation relative to atmospheric pressure, and *pref* is 20 microPascals (2 x 10-5 Pa), the approximate threshold of hearing.

Sound or noise is the sensation produced at the ear by small fluctuations in atmospheric pressure. Human ears are sensitive to changes to sound pressure over a wide range, from 20 microPascals to 60 Pascals, in lieu of using a linear scale to represent this range, a logarithmic scale is adopted to better handle

2 Sound Power Level

Sound power level cannot be directly measured using a microphone, it does not change with distance and is not influenced by atmospheric conditions. The sound power level refers to the total energy of the sound, and is reference to 1 Pico Watt.

3 Weighting and Loudness

The overall level of a sound is usually expressed as dB(A) and not dB. Weighting refers to the human ear's frequency response to sound. Typically, sound is measured with an A-weighted filter which reduces the significance of lower frequencies and very high frequencies, increasing the importance of mid-frequencies (500 Hz to 4 kHz), and being a good measure of the "loudness" of a sound.

A change of 1 to 2 dB(A) is difficult to detect, whilst a change of 3 to 5 dB(A) corresponds to a small but noticeable change. A 10 dB(A) change corresponds to a doubling or halving in apparent loudness.

4 Noise Metrics and Statistical Noise Levels

i) L_{Aeq} - The time averaged A-weighted sound pressure level for the interval, as defined in AS1005.1. It is generally described as the equivalent continuous A-weighted sound pressure level that has the same mean square pressure level as a sound that varies over time. It can be considered as the average sound pressure level over the measurement period.

ii) L_{Amin}/L_{Amax} - Minimum or Maximum A-weighted noise level detected during the measuring period. It refers to the minimum background noise detected or the maximum L*p* measured.

iii) L_{A90} - A-weighted noise level which is exceeded for 90% of the measuring period. It is usually used as the descriptor for background noise level during the measurement period.

iv) L_{A1} - Noise level which is exceeded for 1% of the measurement period.

v) L_{A10} - Noise level which is exceeded for 10% of the measurement period. The L_{A10} is often referred to as the average *maximum* noise level.

5 Background Noise

The underlying level of noise present in the ambient noise, excluding the noise source which is under investigation, when extraneous noise is removed.

6 Ambient Noise

Ambient noise of an environment: the all-encompassing sound associated with that environment, being a composite of sounds from many sources.

7 Vibration

The mechanical oscillations occurring about an equilibrium point. The oscillations may be periodic such as the motion of a pendulum or random. Vibration is most commonly expressed in terms of displacement, velocity, acceleration and frequency, all of which are related

8 Displacement

The change in position of an object, is a vector quantity. (Stress indicator).

9 Velocity

The rate of change of displacement, is a vector quantity. (Fatigue indicator).

10 Acceleration

The rate of change of velocity, is a vector quantity. (Indicator of force).

11 Frequency

The number of times a periodic function or vibration occurs or repeats itself in a specified time, often 1 second – cycles per second. Frequency is measured in Hertz.

12 Hertz

The unit of frequency or pitch of a sound. One hertz equals one cycle per second.

13 Peak Particle Velocity (PPV)

The greatest instantaneous particle velocity during a given time interval if measurements are made in 3-axis. The resultant Peak Particle Velocity (PPV) is the vector sum i.e. the square root of the summed squares of the maximum velocities, regardless of when in the time history those occur.

14 Root Mean Square rms

The rms value of a set of numbers is the square root of the average of their squares. Best used when assessing building damage.

15 Vibration Dose Value VDV

The Vibration Dose Value (VDV) is used for assessing intermittent vibration. A cumulative measurement of the vibration level received over an 8-hour or 16-hour period. Best used when the structure is occupied.

16 Peak

The peak is the maximum amplitude during a measurement period.

17 Peak to Peak P-P

The peak-to-peak (P-P) is the difference between the maximum positive and maximum negative amplitudes of a waveform.

18 Logarithmic Scale

Comparing frequency with large amplitude differences be accomplished using a logarithmic scale. Critical vibration components usually occur at low amplitudes compared to the rotational frequency vibration. These components are not revealed on a linear amplitude scale because low amplitudes are compressed at the bottom of the scale, however a logarithmic scale shows prominent vibration components equally well at any amplitude.

19 Zero Crossing Frequency

Determining the apparent dominate frequency of a given sample can be achieved by using the Zero Crossing Frequency.

20 Primary Waves P Waves

Alternating compressions ('pushes') and dilations ('pulls') in the same direction as the wave is propagating. P waves are the first arriving energy, smaller and higher frequency than S waves.

21 Secondary Waves S Waves

Alternating transverse motions perpendicular to the direction of propagation. Slower than P waves.

22 Rayleigh Waves R Waves

Motion is both in the direction of propagation and perpendicular (in a vertical plane). R waves are also dispersive, and amplitudes decrease with depth.

23 Accelerometer

A vibration sensor whose electrical output is directly proportional to the acceleration component of the vibration. The two most common accelerometer types are the traditional charge type and the IEPE, integrated electronic piezoelectric type with a built-in line-drive amplifier to enable the output signal to be transmitted over 'longer cable runs'.

24 Geophone

Geophones measure velocity by means of a magnetic core surrounded by an electrical coil. When the surface vibrates, the geophone housing moves however the coil stays stationary, thus the movement of the magnet in the coil causes an electrical current which is calibrated to velocity of vibration.

25 Filter

A device for separating components of a signal on the basis of their frequency. It allows components in one or more frequency bands to pass relatively unattenuated, and it attenuates components in other frequency bands. Modifies the frequency spectrum of a signal usually while it is in electrical form.

26 Short-term vibration

Vibration which does not occur often enough to cause structural fatigue, and which does not produce resonance in the structure being evaluated.

27 Long-term vibration

All types of vibration not covered by the definition of 'short-term vibration'

Appendix II – Monitoring Program

This section provides an indicative Monitoring Program for Vibration during the project's duration. The recommendations outlined below are indicative and tentative.

Vibration

Baseline monitoring

Vibration criteria are not based on background levels, as such, background vibration monitoring is not required or necessary, as there are no significant existing vibration sources in proximity to the site, or any adjacent vibration sensitive receivers/structures of concern.

Frequency of vibration monitoring

The following vibration monitoring shall be undertaken:

- At the commencement of site occupation, prior to any vibration generating activities that may have the potential to impact any adjacent heritage structure
- Where deemed to be relevant to construction works in response to a vibration related complaint
- On-going throughout the duration of the demolition works
- Where vibration sensitive structures are determined by an authority or other expert to 'fall' or structurally 'fail' within the safe working distances established for each item of plant, those safe working distances may be re-established based on site law

Method

Vibration monitoring is recommended to be undertaken in compliance and in accordance with the relevant vibration measurement requirements outlined in **Table 3** of **Section 2.3**.

Monitoring equipment would be located on or adjacent to adjacent heritage structures where feasible and reasonable (with respect to security, access, and available ground space), as agreed with the heritage specialist (if engaged) or as recommended by a competent Acoustic Engineer or Consultant as required under CoA **E55**.

Where mounted directly to a structure's foundation, beeswax or other suitable means where possible would be recommended. Non-destructive/invasive monitoring techniques are recommended be employed to ensure that damage to any heritage items does not occur, or further exacerbates existing damage or introduced additional risks of damage.

Unattended monitoring is likely the most feasible due to the nature and duration of the works (as vibration intensive works are likely intermittent and infrequent).

A monitoring system would be installed to warn plant operators or site environmental officer (or equivalent) that vibration from plant is too intensive and has the potential to cause some degree of cosmetic or structural damage to the adjacent structures. This may include SMS alarms, beacon, or other alert systems.

The following vibration metrics shall be recorded, stored and reported at intervals not exceeding 15 minutes:

- Peak Particle Velocity (PPV)
  - Component frequency
- Acceleration.

All monitoring will be recorded over a representative sampling interval where the worst-case vibration levels can be captures. All unattended monitoring would be undertaken continuously whilst all plant is operational at all times.

Reporting and record keeping

All monitoring will be in accordance with BS 7385 Part 2-1993, and Assessing Vibration: A Technical Guideline (DEC, 2006), in that:

- Time record of measurements
- Instrumentation
  - Serial number, sensor information, calibration information, firmware version
- Monitoring location and mounting methodology
  - Alternative methodology to be justified
- Measurement intervals
  - Plant and equipment or activity/scenario under investigation.

Monitoring data will be made available to Transport for Tomorrow, or Sydney Metro (Western Sydney Airport) (or other environmental representative) as requested.

Monitoring locations

Vibration monitoring recommendations are formulated within this DNVIS. The purpose for undertaking unattended environmental vibration monitoring is to ascertain any vibration impacts of the construction, and to compare recorded data against set noise and vibration goals, guidelines, limitations and criteria, as well as refine minimum safe working distances for plant equipment during occupation of the site (refer to **Section 4.2.1.1**).

The locations recommended are considered conservatively representative of the nearest impacted receiver:

- Within a feasible and reasonable distance to the most impacted facade of 'The Goods Shed'
  - External facade by the adjacent tree
  - Under an external public seating (must be blocked by fencing/hording to prevent tampering/damage/theft of the device)
  - Inside the shed at the base of the most impact facade
- Heritage foundations of any surrounding or adjacent structure, including the lift shaft (based on advice from the projects Structural Engineer and Heritage Specialist)
- On, or adjacent to the heritage Jib-Crane, adjacent to the project site where vibration intensive works are proposed to be undertaken.

Simultaneous vibration monitoring may not be necessary, the logger or monitoring device deployed may be moved and relocated at the approval of the site or project manager pending justification of the engaged Acoustic Consultant or Engineer.

Mounting methodology should avoid intrusive options such as masonry or dyno-bolt tools, as existing cosmetic damage exists on the external facade. At the approval the project's appointed Heritage Specialist and not withstanding any documentation elsewise, approved mounting methodology includes:

- Ground plate with or without sandbag coverage
- Sensor-on-structure using adhesive beeswax, or other epoxy adhesive resin (where not deemed intrusive)
- Ground-spike within surrounding exposed earth, where present.

An aerial overview of the recommended locations is presented below in **Figure 35**. These locations are based on at-receiver criteria outlined in **Section 4.2**, and are only illustrated on conservative basis. Monitoring locations should be confirmed with the client and heritage specialist prior to installation of any vibration monitoring or other data logging equipment.

Limitations and thresholds

Vibration monitoring during works would be limited to the following vibration values:

- The Goods Shed: 3 mm/s continuous, 15 mm/s Transient
  - Measured at the foundation of the structure where able, or, within 5 m of the structure the limitation may increase to
  - Where vibration levels exceed 3 mm/s, work methodology should be reviewed
  - Where vibration levels exceed 15 mm/s the works should stop until an investigation into the vibration impact is undertaken
- The Jib Crane: 15 mm/s transient vibration measured at the base of the structure, or on the structure by the jib cranes' mast
- Sandstone foundations of the lift shaft: 50 mm/s transient
  - Where vibration levels exceed 50 mm/s, work methodology should be reviewed.

Figure 35 Heritage – Vibration monitoring recommended locations

Appendix III – Additional Mitigation Measures

This section provides a comprehensive overview for the address of the triggered additional mitigation measure for each of the day, evening, and night-time period in which the assessment covers.

Refer to **Table 31** for abbreviation definitions.

Properties triggered for Respite Offer

ADE_ID	REC	NCA	Address	Mitigation	Triggered
157	RES	NCA02	UNIT 3 2 STATION ST, ST MARYS NSW 2760	LB, M, SN, RO	Night-time
298	RES	NCA02	73 CARINYA AV, ST MARYS NSW 2760	LB, M, SN, RO	Night-time
309	RES	NCA02	55 CARINYA AV, ST MARYS NSW 2760	LB, M, SN, RO	Night-time
504	RES	NCA02	53 CARINYA AV, ST MARYS NSW 2760	LB, M, SN, RO	Night-time
650	RES	NCA02	14/3 STATION ST, ST MARYS NSW 2760	LB, M, SN, RO	Night-time, Sunday Night
852	RES	NCA02	78 CARINYA AV, ST MARYS NSW 2760	LB, M, SN, RO	Night-time, Sunday Night
939	RES	NCA02	16 ACACIA AV, ST MARYS NSW 2760	LB, M, SN, RO	Night-time
992	RES	NCA02	4/34-36 PHILLIP ST, ST MARYS NSW 2760	LB, M, SN, RO	Night-time
1024	RES	NCA02	57 CARINYA AV, ST MARYS NSW 2760	LB, M, SN, RO	Night-time
1083	RES	NCA02	17/3 STATION ST, ST MARYS NSW 2760	LB, M, SN, RO	Night-time
1312	RES	NCA02	10/3 STATION ST, ST MARYS NSW 2760	LB, M, SN, RO	Night-time, Sunday Night

Note: Night-time refers to Monday to Saturday 22:00 hrs to 08:00 hrs
Note: Sunday Night begins at 18:00 hrs on Sundays, until 07:00 hrs the following day (Monday - if it does not fall on an observerd public holiday, elsewise 08:00 hrs)

Additional Mitigation Measures –Standard hours

ADE_ID	REC	NCA	Address	Day
309	RES	NCA02	55 CARINYA AV, ST MARYS NSW 2760	LB
504	RES	NCA02	53 CARINYA AV, ST MARYS NSW 2760	LB
650	RES	NCA02	14/3 STATION ST, ST MARYS NSW 2760	LB
717	COM	NCA02	17 QUEEN ST, ST MARYS NSW 2760	LB
812	COM	NCA02	9 QUEEN ST, ST MARYS NSW 2760	LB
852	RES	NCA02	78 CARINYA AV, ST MARYS NSW 2760	LB
1083	RES	NCA02	17/3 STATION ST, ST MARYS NSW 2760	LB
1164	OHO	NCA02	27 QUEEN ST, ST MARYS NSW 2760	LB
1312	RES	NCA02	10/3 STATION ST, ST MARYS NSW 2760	LB

Note: COM refers to Commercial Property, OHO refers to Other (Hotel)

Additional Mitigation Measures – Daytime OOH Period 1

ADE ID	REC	NCA	Address	Day OOH P1
1	RES	NCA02	19 ARALUEN AV, ST MARYS NSW 2760	LB
2	RES	NCA02	2/81 AUSTRALIA ST, ST MARYS NSW 2760	LB
4	RES	NCA02	17 CHAMPNESS CR, ST MARYS NSW 2760	LB
5	RES	NCA02	35 AUSTRALIA ST, ST MARYS NSW 2760	LB
7	RES	NCA02	9 WARATAH ST, ST MARYS NSW 2760	LB
8	RES	NCA02	UNIT 13 18-20 CHAMPNESS CR, ST MARYS NSW 2760	LB
11	RES	NCA02	1 KALANG AV, ST MARYS NSW 2760	LB
12	RES	NCA02	8 CHESHAM ST, ST MARYS NSW 2760	LB, M
15	RES	NCA02	4 KING ST, ST MARYS NSW 2760	LB
18	RES	NCA02	19 ARALUEN AV, ST MARYS NSW 2760	LB
21	RES	NCA02	36 CHAMPNESS CR, ST MARYS NSW 2760	LB
24	RES	NCA02	26 KING ST, ST MARYS NSW 2760	LB
27	RES	NCA02	4/3 AUSTRALIA ST, ST MARYS NSW 2760	LB
34	RES	NCA02	96 GLOSSOP ST, ST MARYS NSW 2760	LB
35	RES	NCA02	4/142-144 GLOSSOP ST, ST MARYS NSW 2760	LB
37	RES	NCA02	6 ACACIA AV, ST MARYS NSW 2760	LB, M
43	RES	NCA02	7/10-16 CHAPEL ST, ST MARYS NSW 2760	LB
44	RES	NCA02	6 CHAMPNESS CR, ST MARYS NSW 2760	LB
47	RES	NCA02	1/39-41 GIDLEY ST, ST MARYS NSW 2760	LB
51	RES	NCA02	2 KUNGALA ST, ST MARYS NSW 2760	LB
52	RES	NCA02	6 MERINDA ST, ST MARYS NSW 2760	LB
54	RES	NCA02	32 GIDLEY ST, ST MARYS NSW 2760	LB
55	RES	NCA02	23 BLAIR AV, ST MARYS NSW 2760	LB
56	RES	NCA02	6/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
58	RES	NCA02	138 GLOSSOP ST, ST MARYS NSW 2760	LB
60	RES	NCA02	UNIT 11 119-121 GLOSSOP ST, ST MARYS NSW 2760	LB
61	RES	NCA02	4 BENALONG ST, ST MARYS NSW 2760	LB
66	RES	NCA02	9 ARALUEN AV, ST MARYS NSW 2760	LB
70	RES	NCA02	1/17 AUSTRALIA ST, ST MARYS NSW 2760	LB
71	RES	NCA02	38 KENNY AV, ST MARYS NSW 2760	LB
75	RES	NCA02	5 PHILLIP ST, ST MARYS NSW 2760	LB
78	RES	NCA02	9 KALANG AV, ST MARYS NSW 2760	LB
79	RES	NCA02	151-153 GLOSSOP ST, ST MARYS NSW 2760	LB
81	RES	NCA02	3 ARALUEN AV, ST MARYS NSW 2760	LB
82	RES	NCA02	14 CHAPEL ST, ST MARYS NSW 2760	LB
83	RES	NCA02	UNIT 2 15 AUSTRALIA ST, ST MARYS NSW 2760	LB
85	RES	NCA02	31 LETHBRIDGE ST, ST MARYS NSW 2760	LB
86	RES	NCA02	16 BENALONG ST, ST MARYS NSW 2760	LB
87	RES	NCA02	65 AUSTRALIA ST, ST MARYS NSW 2760	LB
88	RES	NCA02	7 KALANG AV, ST MARYS NSW 2760	LB
89	RES	NCA02	4 PHILLIP ST, ST MARYS NSW 2760	LB
90	RES	NCA02	156 GLOSSOP ST, ST MARYS NSW 2760	LB
91	RES	NCA02	104 GLOSSOP ST, ST MARYS NSW 2760	LB
92	RES	NCA02	132 GLOSSOP ST, ST MARYS NSW 2760	LB
98	RES	NCA02	7 BENALONG ST, ST MARYS NSW 2760	LB
99	RES	NCA02	127 GLOSSOP ST, ST MARYS NSW 2760	LB
100	RES	NCA02	187-189 ADELAIDE ST, ST MARYS NSW 2760	LB
103	RES	NCA02	3/49 AUSTRALIA ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
104	RES	NCA02	126 GLOSSOP ST, ST MARYS NSW 2760	LB
105	RES	NCA02	8/142-144 GLOSSOP ST, ST MARYS NSW 2760	LB
111	RES	NCA02	5 STAPLETON PDE, ST MARYS NSW 2760	LB
112	RES	NCA02	167 BRISBANE ST, ST MARYS NSW 2760	LB
113	RES	NCA02	5 KALANG AV, ST MARYS NSW 2760	LB
117	RES	NCA02	28 AUSTRALIA ST, ST MARYS NSW 2760	LB
119	RES	NCA02	59 CARINYA AV, ST MARYS NSW 2760	LB, M
125	RES	NCA02	9 CHAMPNESS CR, ST MARYS NSW 2760	LB
126	RES	NCA02	145 GLOSSOP ST, ST MARYS NSW 2760	LB
127	RES	NCA02	9 NARIEL ST, ST MARYS NSW 2760	LB
129	RES	NCA02	1/1 BROCK AV, ST MARYS NSW 2760	LB
134	RES	NCA02	6 PHILLIP ST, ST MARYS NSW 2760	LB
135	RES	NCA02	30A GIDLEY ST, ST MARYS NSW 2760	LB
136	RES	NCA02	UNIT 4 119-121 GLOSSOP ST, ST MARYS NSW 2760	LB
141	RES	NCA02	4/43 AUSTRALIA ST, ST MARYS NSW 2760	LB
142	RES	NCA02	20 BLAIR AV, ST MARYS NSW 2760	LB
144	RES	NCA02	5/10-14 ROSS PL, ST MARYS NSW 2760	LB, M
147	RES	NCA02	2/11 CHAPEL ST, ST MARYS NSW 2760	LB
149	RES	NCA02	5/11 AUSTRALIA ST, ST MARYS NSW 2760	LB
152	RES	NCA02	19 KALANG AV, ST MARYS NSW 2760	LB
154	RES	NCA02	2 MERINDA ST, ST MARYS NSW 2760	LB
157	RES	NCA02	UNIT 3 2 STATION ST, ST MARYS NSW 2760	LB, M
159	RES	NCA02	63 CARINYA AV, ST MARYS NSW 2760	LB, M
167	RES	NCA02	14 NARIEL ST, ST MARYS NSW 2760	LB
168	RES	NCA02	18 BENALONG ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
169	RES	NCA02	17 PHILLIP ST, ST MARYS NSW 2760	LB, M
171	RES	NCA02	4/156 BRISBANE ST, ST MARYS NSW 2760	LB
177	RES	NCA02	159 GLOSSOP ST, ST MARYS NSW 2760	LB
178	RES	NCA02	UNIT 2 151-153 GLOSSOP ST, ST MARYS NSW 2760	LB
181	RES	NCA02	5 STAPLETON PDE, ST MARYS NSW 2760	LB
186	RES	NCA02	3 KALANG AV, ST MARYS NSW 2760	LB
187	RES	NCA02	7 PHILLIP ST, ST MARYS NSW 2760	LB, M
190	RES	NCA02	19 BENALONG ST, ST MARYS NSW 2760	LB
192	RES	NCA02	33 CARINYA AV, ST MARYS NSW 2760	LB
193	RES	NCA02	23 AUSTRALIA ST, ST MARYS NSW 2760	LB
195	RES	NCA02	1 BROCK AV, ST MARYS NSW 2760	LB
196	RES	NCA02	18 GIDLEY ST, ST MARYS NSW 2760	LB
202	RES	NCA02	16 CHAPEL ST, ST MARYS NSW 2760	LB
207	RES	NCA02	10 BENALONG ST, ST MARYS NSW 2760	LB
212	RES	NCA02	4 ROSS PL, ST MARYS NSW 2760	LB
213	RES	NCA02	2 WARRAMUNGA ST, ST MARYS NSW 2760	LB
214	RES	NCA02	44 CHAMPNESS CR, ST MARYS NSW 2760	LB
215	RES	NCA02	151-153 GLOSSOP ST, ST MARYS NSW 2760	LB
216	RES	NCA02	151-153 GLOSSOP ST, ST MARYS NSW 2760	LB
220	RES	NCA02	118 GLOSSOP ST, ST MARYS NSW 2760	LB
224	RES	NCA02	1/38 CHAPEL ST, ST MARYS NSW 2760	LB
226	RES	NCA02	245 GREAT WESTERN HWY, ST MARYS NSW 2760	LB
227	RES	NCA02	6/74 HOBART ST, ST MARYS NSW 2760	LB
228	RES	NCA02	16 BLAIR AV, ST MARYS NSW 2760	LB, M

ADE ID	REC	NCA	Address	Day OOH P1
231	RES	NCA02	3A ROSS PL, ST MARYS NSW 2760	LB
232	RES	NCA02	42 AUSTRALIA ST, ST MARYS NSW 2760	LB
234	RES	NCA02	26 PHILLIP ST, ST MARYS NSW 2760	LB, M
236	RES	NCA02	6 CHAPEL ST, ST MARYS NSW 2760	LB
237	RES	NCA02	1/134 GLOSSOP ST, ST MARYS NSW 2760	LB
240	RES	NCA02	5 BROCK AV, ST MARYS NSW 2760	LB
241	RES	NCA02	11 AUSTRALIA ST, ST MARYS NSW 2760	LB
242	RES	NCA02	3/38 CHAPEL ST, ST MARYS NSW 2760	LB
245	RES	NCA02	11 STAPLETON PDE, ST MARYS NSW 2760	LB
253	RES	NCA02	13 ARALUEN AV, ST MARYS NSW 2760	LB
255	RES	NCA02	3/38 CHAPEL ST, ST MARYS NSW 2760	LB
262	RES	NCA02	15 KUNGALA ST, ST MARYS NSW 2760	LB
264	RES	NCA02	42 CHAPEL ST, ST MARYS NSW 2760	LB
265	RES	NCA02	4 CHAPEL ST, ST MARYS NSW 2760	LB
267	RES	NCA02	115 GLOSSOP ST, ST MARYS NSW 2760	LB
270	RES	NCA02	41 AUSTRALIA ST, ST MARYS NSW 2760	LB
271	RES	NCA02	4 ACACIA AV, ST MARYS NSW 2760	LB
272	RES	NCA02	27 LITTLE CHAPEL ST, ST MARYS NSW 2760	LB
277	RES	NCA02	20 CHAPEL ST, ST MARYS NSW 2760	LB
278	RES	NCA02	1 CHESHAM ST, ST MARYS NSW 2760	LB
280	RES	NCA02	25 CHAMPNESS CR, ST MARYS NSW 2760	LB
281	RES	NCA02	11 LETHBRIDGE ST, ST MARYS NSW 2760	LB, M
283	RES	NCA02	6/32 CHAPEL ST, ST MARYS NSW 2760	LB
284	RES	NCA02	3 CAMIRA ST, ST MARYS NSW 2760	LB, M
285	RES	NCA02	3 CHAPEL ST, ST MARYS NSW 2760	LB
287	RES	NCA02	9 CHESHAM ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
288	RES	NCA02	166 GLOSSOP ST, ST MARYS NSW 2760	LB
290	RES	NCA02	11 BLAIR AV, ST MARYS NSW 2760	LB
291	RES	NCA02	6 AUSTRALIA ST, ST MARYS NSW 2760	LB
292	RES	NCA02	34 AUSTRALIA ST, ST MARYS NSW 2760	LB
293	RES	NCA02	10 MERINDA ST, ST MARYS NSW 2760	LB
294	RES	NCA02	47 KALANG AV, ST MARYS NSW 2760	LB
298	RES	NCA02	73 CARINYA AV, ST MARYS NSW 2760	LB, M
299	RES	NCA02	6 BROCK AV, ST MARYS NSW 2760	LB
303	RES	NCA02	120 GLOSSOP ST, ST MARYS NSW 2760	LB
305	RES	NCA02	9 PHILLIP ST, ST MARYS NSW 2760	LB
306	RES	NCA02	3 KALANG AV, ST MARYS NSW 2760	LB
308	RES	NCA02	180 CANBERRA ST, ST MARYS NSW 2760	LB
309	RES	NCA02	55 CARINYA AV, ST MARYS NSW 2760	LB, M
312	RES	NCA02	5 CHESHAM ST, ST MARYS NSW 2760	LB, M
315	RES	NCA02	15 LETHBRIDGE ST, ST MARYS NSW 2760	LB, M
318	RES	NCA02	9 BENALONG ST, ST MARYS NSW 2760	LB
320	RES	NCA02	154 GLOSSOP ST, ST MARYS NSW 2760	LB
321	RES	NCA02	SYDNEY CITY MISSION FAMILY DAY CARE 50 GIDLEY ST, ST MARYS NSW 2760	LB
322	RES	NCA02	3/1 BROCK AV, ST MARYS NSW 2760	LB
324	RES	NCA02	13 BENALONG ST, ST MARYS NSW 2760	LB
325	RES	NCA02	2 ACACIA AV, ST MARYS NSW 2760	LB, M
328	RES	NCA02	17 KUNGALA ST, ST MARYS NSW 2760	LB
330	RES	NCA02	44 CHAMPNESS CR, ST MARYS NSW 2760	LB
331	RES	NCA02	29 LITTLE CHAPEL ST, ST MARYS NSW 2760	LB
335	RES	NCA02	182 ADELAIDE ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
337	RES	NCA02	11 ARALUEN AV, ST MARYS NSW 2760	LB
344	RES	NCA02	14 NARIEL ST, ST MARYS NSW 2760	LB
346	RES	NCA02	37 CARINYA AV, ST MARYS NSW 2760	LB
351	RES	NCA02	19 CHAMPNESS CR, ST MARYS NSW 2760	LB
352	RES	NCA02	13 WARATAH ST, ST MARYS NSW 2760	LB
353	RES	NCA02	109 GLOSSOP ST, ST MARYS NSW 2760	LB
354	RES	NCA02	13 BLAIR AV, ST MARYS NSW 2760	LB
357	RES	NCA02	10 BENALONG ST, ST MARYS NSW 2760	LB
359	RES	NCA02	45 CARINYA AV, ST MARYS NSW 2760	LB, M
364	RES	NCA02	136 GLOSSOP ST, ST MARYS NSW 2760	LB
366	RES	NCA02	14 PHILLIP ST, ST MARYS NSW 2760	LB, M
367	RES	NCA02	23 PHILLIP ST, ST MARYS NSW 2760	LB, M
368	RES	NCA02	13 NARIEL ST, ST MARYS NSW 2760	LB
369	RES	NCA02	13 CAMIRA ST, ST MARYS NSW 2760	LB, M
373	RES	NCA02	UNIT 10 160-162 GLOSSOP ST, ST MARYS NSW 2760	LB
374	RES	NCA02	4/19-21 CHAPEL ST, ST MARYS NSW 2760	LB
375	RES	NCA02	23 BENALONG ST, ST MARYS NSW 2760	LB
376	RES	NCA02	3 CHESHAM ST, ST MARYS NSW 2760	LB, M
378	RES	NCA02	36 KENNY AV, ST MARYS NSW 2760	LB
379	RES	NCA02	10/31-39 LITTLE CHAPEL ST, ST MARYS NSW 2760	LB
386	RES	NCA02	18 CHAPEL ST, ST MARYS NSW 2760	LB
388	RES	NCA02	3 PHILLIP ST, ST MARYS NSW 2760	LB
391	RES	NCA02	7 ROSS PL, ST MARYS NSW 2760	LB
397	RES	NCA02	8 KING ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
402	RES	NCA02	8 ROSS PL, ST MARYS NSW 2760	LB
403	RES	NCA02	14 BENALONG ST, ST MARYS NSW 2760	LB
405	RES	NCA02	9/160 BRISBANE ST, ST MARYS NSW 2760	LB
408	RES	NCA02	2 CHESHAM ST, ST MARYS NSW 2760	LB, M
411	RES	NCA02	4 GIDLEY ST, ST MARYS NSW 2760	LB, M
419	RES	NCA02	49 KENNY AV, ST MARYS NSW 2760	LB
420	RES	NCA02	9/31-39 LITTLE CHAPEL ST, ST MARYS NSW 2760	LB
421	RES	NCA02	43 LITTLE CHAPEL ST, ST MARYS NSW 2760	LB
424	RES	NCA02	37 AUSTRALIA ST, ST MARYS NSW 2760	LB
427	RES	NCA02	164 GLOSSOP ST, ST MARYS NSW 2760	LB
432	RES	NCA02	4/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
437	RES	NCA02	281 GREAT WESTERN HWY, ST MARYS NSW 2760	LB
439	RES	NCA02	17 BENALONG ST, ST MARYS NSW 2760	LB
441	RES	NCA02	21 PHILLIP ST, ST MARYS NSW 2760	LB
446	RES	NCA02	27 KING ST, ST MARYS NSW 2760	LB
450	RES	NCA02	16 MERINDA ST, ST MARYS NSW 2760	LB
451	RES	NCA02	1/2 NARIEL ST, ST MARYS NSW 2760	LB
456	RES	NCA02	31 PHILLIP ST, ST MARYS NSW 2760	LB, M
459	RES	NCA02	84 AUSTRALIA ST, ST MARYS NSW 2760	LB
460	RES	NCA02	35 KENNY AV, ST MARYS NSW 2760	LB
464	RES	NCA02	9 STAPLETON PDE, ST MARYS NSW 2760	LB
467	RES	NCA02	5 ARALUEN AV, ST MARYS NSW 2760	LB
470	RES	NCA02	46 THOMPSON AV, ST MARYS NSW 2760	LB
471	RES	NCA02	2/34-36 PHILLIP ST, ST MARYS NSW 2760	LB, M

ADE ID	REC	NCA	Address	Day OOH P1
474	RES	NCA02	3/3 NARIEL ST, ST MARYS NSW 2760	LB, M
477	RES	NCA02	3/143 BRISBANE ST, ST MARYS NSW 2760	LB
479	RES	NCA02	4/134 GLOSSOP ST, ST MARYS NSW 2760	LB
480	RES	NCA02	UNIT 3 18 LETHBRIDGE ST, ST MARYS NSW 2760	LB, M
488	RES	NCA02	3 BROCK AV, ST MARYS NSW 2760	LB
489	RES	NCA02	8 CHAPEL ST, ST MARYS NSW 2760	LB
492	RES	NCA02	8 PHILLIP ST, ST MARYS NSW 2760	LB
493	RES	NCA02	7 LETHBRIDGE ST, ST MARYS NSW 2760	LB, M
500	RES	NCA02	14 ROSS PL, ST MARYS NSW 2760	LB, M
502	RES	NCA02	43 CARINYA AV, ST MARYS NSW 2760	LB
504	RES	NCA02	53 CARINYA AV, ST MARYS NSW 2760	LB, M
505	RES	NCA02	36 CHAPEL ST, ST MARYS NSW 2760	LB
509	RES	NCA02	29 LETHBRIDGE ST, ST MARYS NSW 2760	LB
510	RES	NCA02	71 CARINYA AV, ST MARYS NSW 2760	LB, M
514	RES	NCA02	TNHS 4 154 BRISBANE ST, ST MARYS NSW 2760	LB
516	RES	NCA02	41 AUSTRALIA ST, ST MARYS NSW 2760	LB
517	RES	NCA02	40 GIDLEY ST, ST MARYS NSW 2760	LB
518	RES	NCA02	10 PHILLIP ST, ST MARYS NSW 2760	LB
519	RES	NCA02	6 NARIEL ST, ST MARYS NSW 2760	LB
520	RES	NCA02	161 BRISBANE ST, ST MARYS NSW 2760	LB
528	RES	NCA02	15 NARIEL ST, ST MARYS NSW 2760	LB
530	RES	NCA02	41 KALANG AV, ST MARYS NSW 2760	LB
531	RES	NCA02	1/10-16 CHAPEL ST, ST MARYS NSW 2760	LB
532	RES	NCA02	1/140 GLOSSOP ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
534	RES	NCA02	13 CHAMPNESS CR, ST MARYS NSW 2760	LB
536	RES	NCA02	18 LETHBRIDGE ST, ST MARYS NSW 2760	LB
537	RES	NCA02	1/3 CHAMPNESS CR, ST MARYS NSW 2760	LB
541	RES	NCA02	5 CHAPEL ST, ST MARYS NSW 2760	LB
544	RES	NCA02	12 MERINDA ST, ST MARYS NSW 2760	LB
545	RES	NCA02	21 KUNGALA ST, ST MARYS NSW 2760	LB
549	RES	NCA02	11 BROCK AV, ST MARYS NSW 2760	LB
550	RES	NCA02	2 BENALONG ST, ST MARYS NSW 2760	LB
553	RES	NCA02	7 AUSTRALIA ST, ST MARYS NSW 2760	LB
555	RES	NCA02	28 CHAMPNESS CR, ST MARYS NSW 2760	LB
558	RES	NCA02	7 CHESHAM ST, ST MARYS NSW 2760	LB, M
560	RES	NCA02	1 CHAMPNESS CR, ST MARYS NSW 2760	LB, M
564	RES	NCA02	8 BROCK AV, ST MARYS NSW 2760	LB
565	RES	NCA02	149 GLOSSOP ST, ST MARYS NSW 2760	LB
570	RES	NCA02	38 CHAMPNESS CR, ST MARYS NSW 2760	LB
571	RES	NCA02	12 NARIEL ST, ST MARYS NSW 2760	LB
572	RES	NCA02	133 GLOSSOP ST, ST MARYS NSW 2760	LB
574	RES	NCA02	51 CARINYA AV, ST MARYS NSW 2760	LB, M
575	RES	NCA02	15 LETHBRIDGE ST, ST MARYS NSW 2760	LB, M
577	RES	NCA02	22 KUNGALA ST, ST MARYS NSW 2760	LB
579	RES	NCA02	5/3 NARIEL ST, ST MARYS NSW 2760	LB
580	RES	NCA02	1/32 KING ST, ST MARYS NSW 2760	LB
582	RES	NCA02	4 CHESHAM ST, ST MARYS NSW 2760	LB
584	RES	NCA02	40 CHAMPNESS CR, ST MARYS NSW 2760	LB
591	RES	NCA02	10 NARIEL ST, ST MARYS NSW 2760	LB
593	RES	NCA02	41 THOMPSON AV, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
600	RES	NCA02	31 KING ST, ST MARYS NSW 2760	LB
601	RES	NCA02	20 ACACIA AV, ST MARYS NSW 2760	LB, M
602	RES	NCA02	13 LETHBRIDGE ST, ST MARYS NSW 2760	LB, M
603	RES	NCA02	27 LETHBRIDGE ST, ST MARYS NSW 2760	LB
604	RES	NCA02	12 STAPLETON PDE, ST MARYS NSW 2760	LB
605	RES	NCA02	21 CHAMPNESS CR, ST MARYS NSW 2760	LB
608	RES	NCA02	4 MERINDA ST, ST MARYS NSW 2760	LB
612	RES	NCA02	22 CHAPEL ST, ST MARYS NSW 2760	LB
616	RES	NCA02	160A BRISBANE ST, ST MARYS NSW 2760	LB
617	RES	NCA02	21 BENALONG ST, ST MARYS NSW 2760	LB
621	RES	NCA02	7 WARATAH ST, ST MARYS NSW 2760	LB
622	RES	NCA02	1/171-173 BRISBANE ST, ST MARYS NSW 2760	LB
623	RES	NCA02	8 KUNGALA ST, ST MARYS NSW 2760	LB
624	RES	NCA02	49 KALANG AV, ST MARYS NSW 2760	LB, M
626	RES	NCA02	23 KALANG AV, ST MARYS NSW 2760	LB
630	RES	NCA02	39 AUSTRALIA ST, ST MARYS NSW 2760	LB
632	RES	NCA02	34 CHAMPNESS CR, ST MARYS NSW 2760	LB
635	RES	NCA02	29 KUNGALA ST, ST MARYS NSW 2760	LB
643	RES	NCA02	1/168 GLOSSOP ST, ST MARYS NSW 2760	LB
645	RES	NCA02	16 MERINDA ST, ST MARYS NSW 2760	LB
648	RES	NCA02	13 AUSTRALIA ST, ST MARYS NSW 2760	LB
650	RES	NCA02	14/3 STATION ST, ST MARYS NSW 2760	LB, M
657	RES	NCA02	4 STAPLETON PDE, ST MARYS NSW 2760	LB
658	RES	NCA02	7A AUSTRALIA ST, ST MARYS NSW 2760	LB
659	RES	NCA02	12 CHAPEL ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
661	RES	NCA02	1 KING ST, ST MARYS NSW 2760	LB
663	RES	NCA02	6 CHESHAM ST, ST MARYS NSW 2760	LB, M
665	RES	NCA02	MARYS TINY TOTS PRE-SCHOOL 29 PHILLIP ST, ST MARYS NSW 2760	LB
668	RES	NCA02	4 CHAMPNESS CR, ST MARYS NSW 2760	LB
669	RES	NCA02	1 CHAPEL ST, ST MARYS NSW 2760	LB
670	RES	NCA02	177 ADELAIDE ST, ST MARYS NSW 2760	LB
672	RES	NCA02	40 CHAMPNESS CR, ST MARYS NSW 2760	LB
675	RES	NCA02	13 KALANG AV, ST MARYS NSW 2760	LB
677	RES	NCA02	11 CAMIRA ST, ST MARYS NSW 2760	LB, M
681	RES	NCA02	4 KUNGALA ST, ST MARYS NSW 2760	LB
683	RES	NCA02	37 KENNY AV, ST MARYS NSW 2760	LB
688	RES	NCA02	11 CHAMPNESS CR, ST MARYS NSW 2760	LB
689	RES	NCA02	14 KUNGALA ST, ST MARYS NSW 2760	LB
693	RES	NCA02	9/142-144 GLOSSOP ST, ST MARYS NSW 2760	LB
697	RES	NCA02	14 LETHBRIDGE ST, ST MARYS NSW 2760	LB
699	RES	NCA02	43 THOMPSON AV, ST MARYS NSW 2760	LB
700	RES	NCA02	7 CAMIRA ST, ST MARYS NSW 2760	LB
703	RES	NCA02	1/143 BRISBANE ST, ST MARYS NSW 2760	LB
706	RES	NCA02	44 THOMPSON AV, ST MARYS NSW 2760	LB
708	RES	NCA02	1/19 AUSTRALIA ST, ST MARYS NSW 2760	LB
709	RES	NCA02	6 KING ST, ST MARYS NSW 2760	LB
710	RES	NCA02	8/17 AUSTRALIA ST, ST MARYS NSW 2760	LB
713	RES	NCA02	39 KENNY AV, ST MARYS NSW 2760	LB
716	RES	NCA02	1/34-36 PHILLIP ST, ST MARYS NSW 2760	LB, M
718	RES	NCA02	3/44 AUSTRALIA ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
723	RES	NCA02	14 STAPLETON PDE, ST MARYS NSW 2760	LB
724	RES	NCA02	47 AUSTRALIA ST, ST MARYS NSW 2760	LB
732	RES	NCA02	80 AUSTRALIA ST, ST MARYS NSW 2760	LB
733	RES	NCA02	8 MERINDA ST, ST MARYS NSW 2760	LB
735	RES	NCA02	52/51 KING ST, ST MARYS NSW 2760	LB
736	RES	NCA02	10 ACACIA AV, ST MARYS NSW 2760	LB, M
737	RES	NCA02	9 CAMIRA ST, ST MARYS NSW 2760	LB
738	RES	NCA02	42 CHAMPNESS CR, ST MARYS NSW 2760	LB
740	RES	NCA02	25 KALANG AV, ST MARYS NSW 2760	LB
746	RES	NCA02	12 BLAIR AV, ST MARYS NSW 2760	LB
748	RES	NCA02	39 CARINYA AV, ST MARYS NSW 2760	LB
750	RES	NCA02	158 GLOSSOP ST, ST MARYS NSW 2760	LB
753	RES	NCA02	2 CHAMPNESS CR, ST MARYS NSW 2760	LB, M
755	RES	NCA02	19 LETHBRIDGE ST, ST MARYS NSW 2760	LB, M
756	RES	NCA02	75 CARINYA AV, ST MARYS NSW 2760	LB, M
758	RES	NCA02	152 GLOSSOP ST, ST MARYS NSW 2760	LB
759	RES	NCA02	1/21 AUSTRALIA ST, ST MARYS NSW 2760	LB
760	RES	NCA02	36 CHAPEL ST, ST MARYS NSW 2760	LB
763	RES	NCA02	7 ARALUEN AV, ST MARYS NSW 2760	LB
765	RES	NCA02	16 KUNGALA ST, ST MARYS NSW 2760	LB
769	RES	NCA02	COMMUNITY WELFARE CENTRE 26 GIDLEY ST, ST MARYS NSW 2760	LB
773	RES	NCA02	30 CHAPEL ST, ST MARYS NSW 2760	LB
774	RES	NCA02	UNIT 2 9 CHESHAM ST, ST MARYS NSW 2760	LB
778	RES	NCA02	161 GLOSSOP ST, ST MARYS NSW 2760	LB
782	RES	NCA02	46 KENNY AV, ST MARYS NSW 2760	LB
783	RES	NCA02	33 LETHBRIDGE ST, ST MARYS NSW 2760	LB
787	RES	NCA02	31 KUNGALA ST, ST MARYS NSW 2760	LB
792	RES	NCA02	UNIT 5 15 AUSTRALIA ST, ST MARYS NSW 2760	LB
793	RES	NCA02	10A CHESHAM ST, ST MARYS NSW 2760	LB
795	RES	NCA02	6/140 GLOSSOP ST, ST MARYS NSW 2760	LB
800	RES	NCA02	150 GLOSSOP ST, ST MARYS NSW 2760	LB
801	RES	NCA02	3 WARATAH ST, ST MARYS NSW 2760	LB, M
802	RES	NCA02	4/140 GLOSSOP ST, ST MARYS NSW 2760	LB
807	RES	NCA02	6 CHAPEL ST, ST MARYS NSW 2760	LB
809	RES	NCA02	83 HOBART ST, ST MARYS NSW 2760	LB
811	RES	NCA02	30 PHILLIP ST, ST MARYS NSW 2760	LB, M
813	RES	NCA02	15 STAPLETON PDE, ST MARYS NSW 2760	LB
815	RES	NCA02	8/160 BRISBANE ST, ST MARYS NSW 2760	LB
817	RES	NCA02	9 CHAPEL ST, ST MARYS NSW 2760	LB
819	RES	NCA02	19 BLAIR AV, ST MARYS NSW 2760	LB
820	RES	NCA02	18 CHAPEL ST, ST MARYS NSW 2760	LB
821	RES	NCA02	291 GREAT WESTERN HWY, ST MARYS NSW 2760	LB
822	RES	NCA02	19 PHILLIP ST, ST MARYS NSW 2760	LB, M
828	RES	NCA02	5/111-113 GLOSSOP ST, ST MARYS NSW 2760	LB
829	RES	NCA02	4/38 CHAPEL ST, ST MARYS NSW 2760	LB
830	RES	NCA02	1 CAMIRA ST, ST MARYS NSW 2760	LB
833	RES	NCA02	7 STAPLETON PDE, ST MARYS NSW 2760	LB
835	RES	NCA02	42 KENNY AV, ST MARYS NSW 2760	LB
836	RES	NCA02	1 ARALUEN AV, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
842	RES	NCA02	29 CARINYA AV, ST MARYS NSW 2760	LB
846	RES	NCA02	1/3 AUSTRALIA ST, ST MARYS NSW 2760	LB
847	RES	NCA02	2/39 AUSTRALIA ST, ST MARYS NSW 2760	LB
848	RES	NCA02	25 AUSTRALIA ST, ST MARYS NSW 2760	LB
850	RES	NCA02	12 BROCK AV, ST MARYS NSW 2760	LB
852	RES	NCA02	78 CARINYA AV, ST MARYS NSW 2760	LB, M
854	RES	NCA02	27 CHAMPNESS CR, ST MARYS NSW 2760	LB
856	RES	NCA02	118 GLOSSOP ST, ST MARYS NSW 2760	LB
859	RES	NCA02	76 HOBART ST, ST MARYS NSW 2760	LB
868	RES	NCA02	4 NARIEL ST, ST MARYS NSW 2760	LB
869	RES	NCA02	1/19-21 CHAPEL ST, ST MARYS NSW 2760	LB
873	RES	NCA02	41 LITTLE CHAPEL ST, ST MARYS NSW 2760	LB
876	RES	NCA02	12 KUNGALA ST, ST MARYS NSW 2760	LB
880	RES	NCA02	56 AUSTRALIA ST, ST MARYS NSW 2760	LB
881	RES	NCA02	12 LETHBRIDGE ST, ST MARYS NSW 2760	LB
888	RES	NCA02	2 BROCK AV, ST MARYS NSW 2760	LB
890	RES	NCA02	31 KALANG AV, ST MARYS NSW 2760	LB
891	RES	NCA02	28 PHILLIP ST, ST MARYS NSW 2760	LB, M
893	RES	NCA02	12 BENALONG ST, ST MARYS NSW 2760	LB
900	RES	NCA02	170 GLOSSOP ST, ST MARYS NSW 2760	LB
901	RES	NCA02	9 AUSTRALIA ST, ST MARYS NSW 2760	LB
903	RES	NCA02	UNIT 5 15 AUSTRALIA ST, ST MARYS NSW 2760	LB
904	RES	NCA02	1B AUSTRALIA ST, ST MARYS NSW 2760	LB
907	RES	NCA02	1/102A GLOSSOP ST, ST MARYS NSW 2760	LB
911	RES	NCA02	40 THOMPSON AV, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
915	RES	NCA02	7A WARATAH ST, ST MARYS NSW 2760	LB, M
916	RES	NCA02	12 ACACIA AV, ST MARYS NSW 2760	LB
919	RES	NCA02	114 GLOSSOP ST, ST MARYS NSW 2760	LB
920	RES	NCA02	13 STAPLETON PDE, ST MARYS NSW 2760	LB
922	RES	NCA02	8/54 KING ST, ST MARYS NSW 2760	LB
926	RES	NCA02	47 KENNY AV, ST MARYS NSW 2760	LB
927	RES	NCA02	8 NARIEL ST, ST MARYS NSW 2760	LB
933	RES	NCA02	24 CHAMPNESS CR, ST MARYS NSW 2760	LB
934	RES	NCA02	31 KALANG AV, ST MARYS NSW 2760	LB
935	RES	NCA02	17 KALANG AV, ST MARYS NSW 2760	LB
937	RES	NCA02	7 NARIEL ST, ST MARYS NSW 2760	LB
938	RES	NCA02	34 KENNY AV, ST MARYS NSW 2760	LB
939	RES	NCA02	16 ACACIA AV, ST MARYS NSW 2760	LB, M
940	RES	NCA02	25 KING ST, ST MARYS NSW 2760	LB
942	RES	NCA02	15 CAMIRA ST, ST MARYS NSW 2760	LB, M
944	RES	NCA02	24 CHAPEL ST, ST MARYS NSW 2760	LB
946	RES	NCA02	47 CARINYA AV, ST MARYS NSW 2760	LB, M
947	RES	NCA02	1B AUSTRALIA ST, ST MARYS NSW 2760	LB
950	RES	NCA02	6 STAPLETON PDE, ST MARYS NSW 2760	LB
956	RES	NCA02	42 THOMPSON AV, ST MARYS NSW 2760	LB
959	RES	NCA02	12 STAPLETON PDE, ST MARYS NSW 2760	LB
964	RES	NCA02	8 CHAPEL ST, ST MARYS NSW 2760	LB
966	RES	NCA02	21 BENALONG ST, ST MARYS NSW 2760	LB
971	RES	NCA02	21 KALANG AV, ST MARYS NSW 2760	LB
976	RES	NCA02	9/74 HOBART ST, ST MARYS NSW 2760	LB
977	RES	NCA02	9 BLAIR AV, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
981	RES	NCA02	8 CHAMPNESS CR, ST MARYS NSW 2760	LB
982	RES	NCA02	41 CARINYA AV, ST MARYS NSW 2760	LB
983	RES	NCA02	12 GIDLEY ST, ST MARYS NSW 2760	LB
985	RES	NCA02	7 CHAMPNESS CR, ST MARYS NSW 2760	LB
987	RES	NCA02	14 MERINDA ST, ST MARYS NSW 2760	LB
989	RES	NCA02	30 AUSTRALIA ST, ST MARYS NSW 2760	LB
991	RES	NCA02	7B WARATAH ST, ST MARYS NSW 2760	LB
992	RES	NCA02	4/34-36 PHILLIP ST, ST MARYS NSW 2760	LB, M
996	RES	NCA02	7 BLAIR AV, ST MARYS NSW 2760	LB
999	RES	NCA02	6/5 AUSTRALIA ST, ST MARYS NSW 2760	LB
1001	RES	NCA02	14 ACACIA AV, ST MARYS NSW 2760	LB
1002	RES	NCA02	6 ROSS PL, ST MARYS NSW 2760	LB
1004	RES	NCA02	5B ROSS PL, ST MARYS NSW 2760	LB
1005	RES	NCA02	83 HOBART ST, ST MARYS NSW 2760	LB
1006	RES	NCA02	118 GLOSSOP ST, ST MARYS NSW 2760	LB
1010	RES	NCA02	11/142-144 GLOSSOP ST, ST MARYS NSW 2760	LB
1015	RES	NCA02	39 LITTLE CHAPEL ST, ST MARYS NSW 2760	LB
1017	RES	NCA02	14 BLAIR AV, ST MARYS NSW 2760	LB
1018	RES	NCA02	18 BLAIR AV, ST MARYS NSW 2760	LB
1021	RES	NCA02	69 CARINYA AV, ST MARYS NSW 2760	LB
1023	RES	NCA02	1/39 AUSTRALIA ST, ST MARYS NSW 2760	LB
1024	RES	NCA02	57 CARINYA AV, ST MARYS NSW 2760	LB, M
1026	RES	NCA02	41 KENNY AV, ST MARYS NSW 2760	LB
1028	RES	NCA02	8 STAPLETON PDE, ST MARYS NSW 2760	LB
1029	RES	NCA02	45 AUSTRALIA ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
1030	RES	NCA02	151-153 GLOSSOP ST, ST MARYS NSW 2760	LB
1032	RES	NCA02	2 ROSS PL, ST MARYS NSW 2760	LB, M
1033	RES	NCA02	30 CHAMPNESS CR, ST MARYS NSW 2760	LB
1038	RES	NCA02	8 BENALONG ST, ST MARYS NSW 2760	LB
1039	RES	NCA02	38 CHAMPNESS CR, ST MARYS NSW 2760	LB
1040	RES	NCA02	32 CHAMPNESS CR, ST MARYS NSW 2760	LB
1046	RES	NCA02	MANNA BANI UNIT 11 34-36 GIDLEY ST, ST MARYS NSW 2760	LB
1047	RES	NCA02	128 GLOSSOP ST, ST MARYS NSW 2760	LB
1048	RES	NCA02	10 BLAIR AV, ST MARYS NSW 2760	LB
1049	RES	NCA02	190 ADELAIDE ST, ST MARYS NSW 2760	LB
1051	RES	NCA02	1 BENALONG ST, ST MARYS NSW 2760	LB
1052	RES	NCA02	81 AUSTRALIA ST, ST MARYS NSW 2760	LB
1054	RES	NCA02	5/49 AUSTRALIA ST, ST MARYS NSW 2760	LB
1056	RES	NCA02	1 WARATAH ST, ST MARYS NSW 2760	LB
1057	RES	NCA02	16 GIDLEY ST, ST MARYS NSW 2760	LB
1059	RES	NCA02	5 BLAIR AV, ST MARYS NSW 2760	LB
1060	RES	NCA02	28 CHAPEL ST, ST MARYS NSW 2760	LB
1068	RES	NCA02	4/49 AUSTRALIA ST, ST MARYS NSW 2760	LB
1072	RES	NCA02	2/102 GLOSSOP ST, ST MARYS NSW 2760	LB
1075	RES	NCA02	26 CHAPEL ST, ST MARYS NSW 2760	LB
1076	RES	NCA02	106 GLOSSOP ST, ST MARYS NSW 2760	LB
1077	RES	NCA02	6/174 GLOSSOP ST, ST MARYS NSW 2760	LB
1080	RES	NCA02	4 AUSTRALIA ST, ST MARYS NSW 2760	LB
1081	RES	NCA02	11 KALANG AV, ST MARYS NSW 2760	LB
1083	RES	NCA02	17/3 STATION ST, ST MARYS NSW 2760	LB, M

ADE ID	REC	NCA	Address	Day OOH P1
1086	RES	NCA02	44 KENNY AV, ST MARYS NSW 2760	LB
1088	RES	NCA02	5 WARATAH ST, ST MARYS NSW 2760	LB, M
1089	RES	NCA02	123 GLOSSOP ST, ST MARYS NSW 2760	LB
1091	RES	NCA02	3/19 AUSTRALIA ST, ST MARYS NSW 2760	LB
1094	RES	NCA02	3 BENALONG ST, ST MARYS NSW 2760	LB
1097	RES	NCA02	9 BROCK AV, ST MARYS NSW 2760	LB
1099	RES	NCA02	21 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1100	RES	NCA02	18 KUNGALA ST, ST MARYS NSW 2760	LB
1101	RES	NCA02	45 KENNY AV, ST MARYS NSW 2760	LB
1104	RES	NCA02	15 KALANG AV, ST MARYS NSW 2760	LB
1108	RES	NCA02	25 PHILLIP ST, ST MARYS NSW 2760	LB, M
1109	RES	NCA02	145 GLOSSOP ST, ST MARYS NSW 2760	LB
1111	RES	NCA02	27 KUNGALA ST, ST MARYS NSW 2760	LB
1113	RES	NCA02	7 ARALUEN AV, ST MARYS NSW 2760	LB
1115	RES	NCA02	2 PHILLIP ST, ST MARYS NSW 2760	LB
1117	RES	NCA02	3A ROSS PL, ST MARYS NSW 2760	LB
1118	RES	NCA02	38 AUSTRALIA ST, ST MARYS NSW 2760	LB
1119	RES	NCA02	27 PHILLIP ST, ST MARYS NSW 2760	LB, M
1120	RES	NCA02	15 BLAIR AV, ST MARYS NSW 2760	LB
1123	RES	NCA02	47 THOMPSON AV, ST MARYS NSW 2760	LB
1125	RES	NCA02	24 PHILLIP ST, ST MARYS NSW 2760	LB, M
1127	RES	NCA02	1 CHAMPNESS CR, ST MARYS NSW 2760	LB, M
1128	RES	NCA02	116 GLOSSOP ST, ST MARYS NSW 2760	LB
1129	RES	NCA02	2/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
1131	RES	NCA02	2/64 AUSTRALIA ST, ST MARYS NSW 2760	LB
1135	RES	NCA02	20 KUNGALA ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
1142	RES	NCA02	9/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
1143	RES	NCA02	26 CHAMPNESS CR, ST MARYS NSW 2760	LB
1144	RES	NCA02	5/111-113 GLOSSOP ST, ST MARYS NSW 2760	LB
1148	RES	NCA02	7 WARATAH ST, ST MARYS NSW 2760	LB
1151	RES	NCA02	26 CHAMPNESS CR, ST MARYS NSW 2760	LB
1152	RES	NCA02	40 KENNY AV, ST MARYS NSW 2760	LB
1153	RES	NCA02	75 HOBART ST, ST MARYS NSW 2760	LB
1158	RES	NCA02	17 LETHBRIDGE ST, ST MARYS NSW 2760	LB, M
1159	RES	NCA02	4/51 AUSTRALIA ST, ST MARYS NSW 2760	LB
1162	RES	NCA02	167 GLOSSOP ST, ST MARYS NSW 2760	LB
1169	RES	NCA02	20 GIDLEY ST, ST MARYS NSW 2760	LB
1170	RES	NCA02	14 GIDLEY ST, ST MARYS NSW 2760	LB
1171	RES	NCA02	2/19-21 CHAPEL ST, ST MARYS NSW 2760	LB
1172	RES	NCA02	16 CHAMPNESS CR, ST MARYS NSW 2760	LB
1173	RES	NCA02	42 AUSTRALIA ST, ST MARYS NSW 2760	LB
1174	RES	NCA02	169 BRISBANE ST, ST MARYS NSW 2760	LB
1175	RES	NCA02	28 KING ST, ST MARYS NSW 2760	LB
1176	RES	NCA02	33 KALANG AV, ST MARYS NSW 2760	LB
1177	RES	NCA02	169 GLOSSOP ST, ST MARYS NSW 2760	LB
1179	RES	NCA02	11 BENALONG ST, ST MARYS NSW 2760	LB
1182	RES	NCA02	17 BLAIR AV, ST MARYS NSW 2760	LB
1188	RES	NCA02	35 CARINYA AV, ST MARYS NSW 2760	LB
1190	RES	NCA02	22 CHAMPNESS CR, ST MARYS NSW 2760	LB
1199	RES	NCA02	UNIT 5 139A BRISBANE ST, ST MARYS NSW 2760	LB
1202	RES	NCA02	9/74 HOBART ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
1206	RES	NCA02	5B ROSS PL, ST MARYS NSW 2760	LB
1207	RES	NCA02	37 AUSTRALIA ST, ST MARYS NSW 2760	LB
1208	RES	NCA02	11 WARATAH ST, ST MARYS NSW 2760	LB
1214	RES	NCA02	53 THOMPSON AV, ST MARYS NSW 2760	LB
1218	RES	NCA02	182 GLOSSOP ST, ST MARYS NSW 2760	LB
1219	RES	NCA02	12 AUSTRALIA ST, ST MARYS NSW 2760	LB
1228	RES	NCA02	23 KING ST, ST MARYS NSW 2760	LB
1229	RES	NCA02	17 ARALUEN AV, ST MARYS NSW 2760	LB
1235	RES	NCA02	3/32 CHAPEL ST, ST MARYS NSW 2760	LB
1236	RES	NCA02	20 BENALONG ST, ST MARYS NSW 2760	LB
1239	RES	NCA02	29 KALANG AV, ST MARYS NSW 2760	LB
1240	RES	NCA02	147 GLOSSOP ST, ST MARYS NSW 2760	LB
1242	RES	NCA02	299-311 GREAT WESTERN HWY, ST MARYS NSW 2760	LB
1243	RES	NCA02	43 KALANG AV, ST MARYS NSW 2760	LB
1245	RES	NCA02	118 GLOSSOP ST, ST MARYS NSW 2760	LB
1246	RES	NCA02	16 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1248	RES	NCA02	10 KUNGALA ST, ST MARYS NSW 2760	LB
1250	RES	NCA02	5/5 AUSTRALIA ST, ST MARYS NSW 2760	LB
1253	RES	NCA02	1 STAPLETON PDE, ST MARYS NSW 2760	LB
1254	RES	NCA02	82 HOBART ST, ST MARYS NSW 2760	LB
1255	RES	NCA02	7/3 WARRAMUNGA ST, ST MARYS NSW 2760	LB
1257	RES	NCA02	5/34 AUSTRALIA ST, ST MARYS NSW 2760	LB
1262	RES	NCA02	47 AUSTRALIA ST, ST MARYS NSW 2760	LB
1269	RES	NCA02	1 ROSS PL, ST MARYS NSW 2760	LB
1270	RES	NCA02	36A AUSTRALIA ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
1272	RES	NCA02	18 ACACIA AV, ST MARYS NSW 2760	LB, M
1274	RES	NCA02	2 AUSTRALIA ST, ST MARYS NSW 2760	LB
1275	RES	NCA02	1 BROCK AV, ST MARYS NSW 2760	LB
1276	RES	NCA02	8 CHESHAM ST, ST MARYS NSW 2760	LB, M
1279	RES	NCA02	42 CHAMPNESS CR, ST MARYS NSW 2760	LB
1281	RES	NCA02	UNIT 12 119-121 GLOSSOP ST, ST MARYS NSW 2760	LB
1287	RES	NCA02	16/31-39 LITTLE CHAPEL ST, ST MARYS NSW 2760	LB
1290	RES	NCA02	177 CANBERRA ST, ST MARYS NSW 2760	LB
1291	RES	NCA02	51 THOMPSON AV, ST MARYS NSW 2760	LB
1293	RES	NCA02	15 ARALUEN AV, ST MARYS NSW 2760	LB
1296	RES	NCA02	8 ACACIA AV, ST MARYS NSW 2760	LB
1298	RES	NCA02	6 BENALONG ST, ST MARYS NSW 2760	LB
1299	RES	NCA02	27 KALANG AV, ST MARYS NSW 2760	LB
1302	RES	NCA02	29 KING ST, ST MARYS NSW 2760	LB
1304	RES	NCA02	32 PHILLIP ST, ST MARYS NSW 2760	LB, M
1306	RES	NCA02	10 KING ST, ST MARYS NSW 2760	LB
1307	RES	NCA02	2/6-10 BLAIR AV, ST MARYS NSW 2760	LB
1311	RES	NCA02	185 CANBERRA ST, ST MARYS NSW 2760	LB
1312	RES	NCA02	10/3 STATION ST, ST MARYS NSW 2760	LB, M
1314	RES	NCA02	21 BLAIR AV, ST MARYS NSW 2760	LB
1317	RES	NCA02	125 GLOSSOP ST, ST MARYS NSW 2760	LB
1319	RES	NCA02	2/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
1324	RES	NCA02	UNIT 6 160-162 GLOSSOP ST, ST MARYS NSW 2760	LB
1326	RES	NCA02	10 STAPLETON PDE, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
1327	RES	NCA02	15 BENALONG ST, ST MARYS NSW 2760	LB
1332	RES	NCA02	28 AUSTRALIA ST, ST MARYS NSW 2760	LB
1333	RES	NCA02	5 PHILLIP ST, ST MARYS NSW 2760	LB, M
1334	RES	NCA02	UNIT 12 160-162 GLOSSOP ST, ST MARYS NSW 2760	LB
1335	RES	NCA02	6/32 CHAPEL ST, ST MARYS NSW 2760	LB
1336	RES	NCA02	16 NARIEL ST, ST MARYS NSW 2760	LB
1337	RES	NCA02	5 BENALONG ST, ST MARYS NSW 2760	LB
1340	RES	NCA02	20 BLAIR AV, ST MARYS NSW 2760	LB
1342	RES	NCA02	3/1 STATION ST, ST MARYS NSW 2760	LB, M
1345	RES	NCA02	15 WARATAH ST, ST MARYS NSW 2760	LB
1347	RES	NCA02	13/3 NARIEL ST, ST MARYS NSW 2760	LB
1352	RES	NCA02	172 GLOSSOP ST, ST MARYS NSW 2760	LB
1353	RES	NCA02	163 BRISBANE ST, ST MARYS NSW 2760	LB
1356	RES	NCA02	9 LETHBRIDGE ST, ST MARYS NSW 2760	LB, M
1358	RES	NCA02	4 BROCK AV, ST MARYS NSW 2760	LB
1360	RES	NCA02	49 CARINYA AV, ST MARYS NSW 2760	LB, M
1363	RES	NCA02	2/171-173 BRISBANE ST, ST MARYS NSW 2760	LB
1365	RES	NCA02	1/32 CHAPEL ST, ST MARYS NSW 2760	LB
1372	RES	NCA02	5 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1378	RES	NCA02	6/43 AUSTRALIA ST, ST MARYS NSW 2760	LB
1380	RES	NCA02	2 STAPLETON PDE, ST MARYS NSW 2760	LB
1382	RES	NCA02	10A CHESHAM ST, ST MARYS NSW 2760	LB
1383	RES	NCA02	28 GIDLEY ST, ST MARYS NSW 2760	LB
1385	RES	NCA02	167 BRISBANE ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Day OOH P1
1386	RES	NCA02	16 CHAPEL ST, ST MARYS NSW 2760	LB
1387	RES	NCA02	12 CHAPEL ST, ST MARYS NSW 2760	LB
1396	RES	NCA02	6 PHILLIP ST, ST MARYS NSW 2760	LB
1403	RES	NCA02	5 CAMIRA ST, ST MARYS NSW 2760	LB
1414	RES	NCA02	13 BROCK AV, ST MARYS NSW 2760	LB
1417	RES	NCA02	14 CHAPEL ST, ST MARYS NSW 2760	LB
1418	RES	NCA02	UNIT 17 18-20 CHAMPNESS CR, ST MARYS NSW 2760	LB
1421	RES	NCA02	19 KUNGALA ST, ST MARYS NSW 2760	LB
1422	RES	NCA02	5 CHAMPNESS CR, ST MARYS NSW 2760	LB, M
1424	RES	NCA02	130 GLOSSOP ST, ST MARYS NSW 2760	LB
1425	RES	NCA02	4 STAPLETON PDE, ST MARYS NSW 2760	LB
1428	RES	NCA02	157 GLOSSOP ST, ST MARYS NSW 2760	LB
1429	RES	NCA02	176 GLOSSOP ST, ST MARYS NSW 2760	LB
1430	RES	NCA02	16 ROSS PL, ST MARYS NSW 2760	LB
1431	RES	NCA02	7/30 KING ST, ST MARYS NSW 2760	LB
1441	RES	NCA02	8/6-10 BLAIR AV, ST MARYS NSW 2760	LB
1443	RES	NCA02	12 BENALONG ST, ST MARYS NSW 2760	LB
1445	RES	NCA02	3/21 AUSTRALIA ST, ST MARYS NSW 2760	LB
1446	RES	NCA02	10 BROCK AV, ST MARYS NSW 2760	LB
1447	RES	NCA02	2/48-48A GIDLEY ST, ST MARYS NSW 2760	LB
1450	RES	NCA02	37/11 PHILLIP ST, ST MARYS NSW 2760	LB, M
1451	RES	NCA02	124 GLOSSOP ST, ST MARYS NSW 2760	LB
1452	RES	NCA02	4/38 CHAPEL ST, ST MARYS NSW 2760	LB
1453	RES	NCA02	317/159 QUEEN ST, ST MARYS NSW 2760	LB

Additional Mitigation Measures – Evening-time OOH Period 1

ADE ID	REC	NCA	Address	Eve
4	RES	NCA02	17 CHAMPNESS CR, ST MARYS NSW 2760	LB
7	RES	NCA02	9 WARATAH ST, ST MARYS NSW 2760	LB
12	RES	NCA02	8 CHESHAM ST, ST MARYS NSW 2760	LB
34	RES	NCA02	96 GLOSSOP ST, ST MARYS NSW 2760	LB
37	RES	NCA02	6 ACACIA AV, ST MARYS NSW 2760	LB
44	RES	NCA02	6 CHAMPNESS CR, ST MARYS NSW 2760	LB
75	RES	NCA02	5 PHILLIP ST, ST MARYS NSW 2760	LB
78	RES	NCA02	9 KALANG AV, ST MARYS NSW 2760	LB
81	RES	NCA02	3 ARALUEN AV, ST MARYS NSW 2760	LB
86	RES	NCA02	16 BENALONG ST, ST MARYS NSW 2760	LB
89	RES	NCA02	4 PHILLIP ST, ST MARYS NSW 2760	LB
119	RES	NCA02	59 CARINYA AV, ST MARYS NSW 2760	LB
125	RES	NCA02	9 CHAMPNESS CR, ST MARYS NSW 2760	LB
134	RES	NCA02	6 PHILLIP ST, ST MARYS NSW 2760	LB
142	RES	NCA02	20 BLAIR AV, ST MARYS NSW 2760	LB
144	RES	NCA02	5/10-14 ROSS PL, ST MARYS NSW 2760	LB
157	RES	NCA02	UNIT 3 2 STATION ST, ST MARYS NSW 2760	LB
159	RES	NCA02	63 CARINYA AV, ST MARYS NSW 2760	LB
168	RES	NCA02	18 BENALONG ST, ST MARYS NSW 2760	LB
169	RES	NCA02	17 PHILLIP ST, ST MARYS NSW 2760	LB
187	RES	NCA02	7 PHILLIP ST, ST MARYS NSW 2760	LB
190	RES	NCA02	19 BENALONG ST, ST MARYS NSW 2760	LB
192	RES	NCA02	33 CARINYA AV, ST MARYS NSW 2760	LB
207	RES	NCA02	10 BENALONG ST, ST MARYS NSW 2760	LB
212	RES	NCA02	4 ROSS PL, ST MARYS NSW 2760	LB
214	RES	NCA02	44 CHAMPNESS CR, ST MARYS NSW 2760	LB
228	RES	NCA02	16 BLAIR AV, ST MARYS NSW 2760	LB
234	RES	NCA02	26 PHILLIP ST, ST MARYS NSW 2760	LB
271	RES	NCA02	4 ACACIA AV, ST MARYS NSW 2760	LB
278	RES	NCA02	1 CHESHAM ST, ST MARYS NSW 2760	LB
280	RES	NCA02	25 CHAMPNESS CR, ST MARYS NSW 2760	LB
281	RES	NCA02	11 LETHBRIDGE ST, ST MARYS NSW 2760	LB
284	RES	NCA02	3 CAMIRA ST, ST MARYS NSW 2760	LB
287	RES	NCA02	9 CHESHAM ST, ST MARYS NSW 2760	LB
298	RES	NCA02	73 CARINYA AV, ST MARYS NSW 2760	LB, M
305	RES	NCA02	9 PHILLIP ST, ST MARYS NSW 2760	LB
309	RES	NCA02	55 CARINYA AV, ST MARYS NSW 2760	LB
312	RES	NCA02	5 CHESHAM ST, ST MARYS NSW 2760	LB
315	RES	NCA02	15 LETHBRIDGE ST, ST MARYS NSW 2760	LB
325	RES	NCA02	2 ACACIA AV, ST MARYS NSW 2760	LB
330	RES	NCA02	44 CHAMPNESS CR, ST MARYS NSW 2760	LB
351	RES	NCA02	19 CHAMPNESS CR, ST MARYS NSW 2760	LB
352	RES	NCA02	13 WARATAH ST, ST MARYS NSW 2760	LB
357	RES	NCA02	10 BENALONG ST, ST MARYS NSW 2760	LB
359	RES	NCA02	45 CARINYA AV, ST MARYS NSW 2760	LB
366	RES	NCA02	14 PHILLIP ST, ST MARYS NSW 2760	LB
367	RES	NCA02	23 PHILLIP ST, ST MARYS NSW 2760	LB
369	RES	NCA02	13 CAMIRA ST, ST MARYS NSW 2760	LB
376	RES	NCA02	3 CHESHAM ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Eve
388	RES	NCA02	3 PHILLIP ST, ST MARYS NSW 2760	LB
391	RES	NCA02	7 ROSS PL, ST MARYS NSW 2760	LB
408	RES	NCA02	2 CHESHAM ST, ST MARYS NSW 2760	LB
411	RES	NCA02	4 GIDLEY ST, ST MARYS NSW 2760	LB
441	RES	NCA02	21 PHILLIP ST, ST MARYS NSW 2760	LB
456	RES	NCA02	31 PHILLIP ST, ST MARYS NSW 2760	LB
467	RES	NCA02	5 ARALUEN AV, ST MARYS NSW 2760	LB
471	RES	NCA02	2/34-36 PHILLIP ST, ST MARYS NSW 2760	LB
474	RES	NCA02	3/3 NARIEL ST, ST MARYS NSW 2760	LB
480	RES	NCA02	UNIT 3 18 LETHBRIDGE ST, ST MARYS NSW 2760	LB
492	RES	NCA02	8 PHILLIP ST, ST MARYS NSW 2760	LB
493	RES	NCA02	7 LETHBRIDGE ST, ST MARYS NSW 2760	LB
500	RES	NCA02	14 ROSS PL, ST MARYS NSW 2760	LB
504	RES	NCA02	53 CARINYA AV, ST MARYS NSW 2760	LB
509	RES	NCA02	29 LETHBRIDGE ST, ST MARYS NSW 2760	LB
510	RES	NCA02	71 CARINYA AV, ST MARYS NSW 2760	LB
518	RES	NCA02	10 PHILLIP ST, ST MARYS NSW 2760	LB
534	RES	NCA02	13 CHAMPNESS CR, ST MARYS NSW 2760	LB
536	RES	NCA02	18 LETHBRIDGE ST, ST MARYS NSW 2760	LB
537	RES	NCA02	1/3 CHAMPNESS CR, ST MARYS NSW 2760	LB
558	RES	NCA02	7 CHESHAM ST, ST MARYS NSW 2760	LB
560	RES	NCA02	1 CHAMPNESS CR, ST MARYS NSW 2760	LB
570	RES	NCA02	38 CHAMPNESS CR, ST MARYS NSW 2760	LB
574	RES	NCA02	51 CARINYA AV, ST MARYS NSW 2760	LB
575	RES	NCA02	15 LETHBRIDGE ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Eve
579	RES	NCA02	5/3 NARIEL ST, ST MARYS NSW 2760	LB
582	RES	NCA02	4 CHESHAM ST, ST MARYS NSW 2760	LB
591	RES	NCA02	10 NARIEL ST, ST MARYS NSW 2760	LB
601	RES	NCA02	20 ACACIA AV, ST MARYS NSW 2760	LB
602	RES	NCA02	13 LETHBRIDGE ST, ST MARYS NSW 2760	LB
603	RES	NCA02	27 LETHBRIDGE ST, ST MARYS NSW 2760	LB
605	RES	NCA02	21 CHAMPNESS CR, ST MARYS NSW 2760	LB
612	RES	NCA02	22 CHAPEL ST, ST MARYS NSW 2760	LB
617	RES	NCA02	21 BENALONG ST, ST MARYS NSW 2760	LB
621	RES	NCA02	7 WARATAH ST, ST MARYS NSW 2760	LB
623	RES	NCA02	8 KUNGALA ST, ST MARYS NSW 2760	LB
624	RES	NCA02	49 KALANG AV, ST MARYS NSW 2760	LB
650	RES	NCA02	14/3 STATION ST, ST MARYS NSW 2760	LB, M
663	RES	NCA02	6 CHESHAM ST, ST MARYS NSW 2760	LB
668	RES	NCA02	4 CHAMPNESS CR, ST MARYS NSW 2760	LB
675	RES	NCA02	13 KALANG AV, ST MARYS NSW 2760	LB
677	RES	NCA02	11 CAMIRA ST, ST MARYS NSW 2760	LB
688	RES	NCA02	11 CHAMPNESS CR, ST MARYS NSW 2760	LB
697	RES	NCA02	14 LETHBRIDGE ST, ST MARYS NSW 2760	LB
716	RES	NCA02	1/34-36 PHILLIP ST, ST MARYS NSW 2760	LB
736	RES	NCA02	10 ACACIA AV, ST MARYS NSW 2760	LB
738	RES	NCA02	42 CHAMPNESS CR, ST MARYS NSW 2760	LB
746	RES	NCA02	12 BLAIR AV, ST MARYS NSW 2760	LB
748	RES	NCA02	39 CARINYA AV, ST MARYS NSW 2760	LB
753	RES	NCA02	2 CHAMPNESS CR, ST MARYS NSW 2760	LB
755	RES	NCA02	19 LETHBRIDGE ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Eve
756	RES	NCA02	75 CARINYA AV, ST MARYS NSW 2760	LB
769	RES	NCA02	COMMUNITY WELFARE CENTRE 26 GIDLEY ST, ST MARYS NSW 2760	LB
774	RES	NCA02	UNIT 2 9 CHESHAM ST, ST MARYS NSW 2760	LB
793	RES	NCA02	10A CHESHAM ST, ST MARYS NSW 2760	LB
801	RES	NCA02	3 WARATAH ST, ST MARYS NSW 2760	LB
811	RES	NCA02	30 PHILLIP ST, ST MARYS NSW 2760	LB
822	RES	NCA02	19 PHILLIP ST, ST MARYS NSW 2760	LB
828	RES	NCA02	5/111-113 GLOSSOP ST, ST MARYS NSW 2760	LB
829	RES	NCA02	4/38 CHAPEL ST, ST MARYS NSW 2760	LB
830	RES	NCA02	1 CAMIRA ST, ST MARYS NSW 2760	LB
836	RES	NCA02	1 ARALUEN AV, ST MARYS NSW 2760	LB
846	RES	NCA02	1/3 AUSTRALIA ST, ST MARYS NSW 2760	LB
852	RES	NCA02	78 CARINYA AV, ST MARYS NSW 2760	LB, M
854	RES	NCA02	27 CHAMPNESS CR, ST MARYS NSW 2760	LB
881	RES	NCA02	12 LETHBRIDGE ST, ST MARYS NSW 2760	LB
891	RES	NCA02	28 PHILLIP ST, ST MARYS NSW 2760	LB
901	RES	NCA02	9 AUSTRALIA ST, ST MARYS NSW 2760	LB
907	RES	NCA02	1/102A GLOSSOP ST, ST MARYS NSW 2760	LB
915	RES	NCA02	7A WARATAH ST, ST MARYS NSW 2760	LB
916	RES	NCA02	12 ACACIA AV, ST MARYS NSW 2760	LB
935	RES	NCA02	17 KALANG AV, ST MARYS NSW 2760	LB
937	RES	NCA02	7 NARIEL ST, ST MARYS NSW 2760	LB
939	RES	NCA02	16 ACACIA AV, ST MARYS NSW 2760	LB
942	RES	NCA02	15 CAMIRA ST, ST MARYS NSW 2760	LB
946	RES	NCA02	47 CARINYA AV, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Eve
981	RES	NCA02	8 CHAMPNESS CR, ST MARYS NSW 2760	LB
982	RES	NCA02	41 CARINYA AV, ST MARYS NSW 2760	LB
985	RES	NCA02	7 CHAMPNESS CR, ST MARYS NSW 2760	LB
991	RES	NCA02	7B WARATAH ST, ST MARYS NSW 2760	LB
992	RES	NCA02	4/34-36 PHILLIP ST, ST MARYS NSW 2760	LB
996	RES	NCA02	7 BLAIR AV, ST MARYS NSW 2760	LB
1001	RES	NCA02	14 ACACIA AV, ST MARYS NSW 2760	LB
1005	RES	NCA02	83 HOBART ST, ST MARYS NSW 2760	LB
1017	RES	NCA02	14 BLAIR AV, ST MARYS NSW 2760	LB
1018	RES	NCA02	18 BLAIR AV, ST MARYS NSW 2760	LB
1021	RES	NCA02	69 CARINYA AV, ST MARYS NSW 2760	LB
1024	RES	NCA02	57 CARINYA AV, ST MARYS NSW 2760	LB
1032	RES	NCA02	2 ROSS PL, ST MARYS NSW 2760	LB
1038	RES	NCA02	8 BENALONG ST, ST MARYS NSW 2760	LB
1046	RES	NCA02	MANNA BANI UNIT 11 34-36 GIDLEY ST, ST MARYS NSW 2760	LB
1048	RES	NCA02	10 BLAIR AV, ST MARYS NSW 2760	LB
1056	RES	NCA02	1 WARATAH ST, ST MARYS NSW 2760	LB
1057	RES	NCA02	16 GIDLEY ST, ST MARYS NSW 2760	LB
1059	RES	NCA02	5 BLAIR AV, ST MARYS NSW 2760	LB
1060	RES	NCA02	28 CHAPEL ST, ST MARYS NSW 2760	LB
1072	RES	NCA02	2/102 GLOSSOP ST, ST MARYS NSW 2760	LB
1081	RES	NCA02	11 KALANG AV, ST MARYS NSW 2760	LB
1083	RES	NCA02	17/3 STATION ST, ST MARYS NSW 2760	LB
1088	RES	NCA02	5 WARATAH ST, ST MARYS NSW 2760	LB
1099	RES	NCA02	21 LETHBRIDGE ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Eve
1100	RES	NCA02	18 KUNGALA ST, ST MARYS NSW 2760	LB
1104	RES	NCA02	15 KALANG AV, ST MARYS NSW 2760	LB
1108	RES	NCA02	25 PHILLIP ST, ST MARYS NSW 2760	LB
1113	RES	NCA02	7 ARALUEN AV, ST MARYS NSW 2760	LB
1115	RES	NCA02	2 PHILLIP ST, ST MARYS NSW 2760	LB
1119	RES	NCA02	27 PHILLIP ST, ST MARYS NSW 2760	LB
1125	RES	NCA02	24 PHILLIP ST, ST MARYS NSW 2760	LB
1127	RES	NCA02	1 CHAMPNESS CR, ST MARYS NSW 2760	LB
1128	RES	NCA02	116 GLOSSOP ST, ST MARYS NSW 2760	LB
1129	RES	NCA02	2/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
1142	RES	NCA02	9/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
1148	RES	NCA02	7 WARATAH ST, ST MARYS NSW 2760	LB
1158	RES	NCA02	17 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1172	RES	NCA02	16 CHAMPNESS CR, ST MARYS NSW 2760	LB
1190	RES	NCA02	22 CHAMPNESS CR, ST MARYS NSW 2760	LB
1208	RES	NCA02	11 WARATAH ST, ST MARYS NSW 2760	LB
1236	RES	NCA02	20 BENALONG ST, ST MARYS NSW 2760	LB
1246	RES	NCA02	16 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1254	RES	NCA02	82 HOBART ST, ST MARYS NSW 2760	LB
1272	RES	NCA02	18 ACACIA AV, ST MARYS NSW 2760	LB
1276	RES	NCA02	8 CHESHAM ST, ST MARYS NSW 2760	LB
1281	RES	NCA02	UNIT 12 119-121 GLOSSOP ST, ST MARYS NSW 2760	LB
1296	RES	NCA02	8 ACACIA AV, ST MARYS NSW 2760	LB
1304	RES	NCA02	32 PHILLIP ST, ST MARYS NSW 2760	LB
1307	RES	NCA02	2/6-10 BLAIR AV, ST MARYS NSW 2760	LB
1312	RES	NCA02	10/3 STATION ST, ST MARYS NSW 2760	LB, M
1314	RES	NCA02	21 BLAIR AV, ST MARYS NSW 2760	LB
1319	RES	NCA02	2/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
1333	RES	NCA02	5 PHILLIP ST, ST MARYS NSW 2760	LB
1340	RES	NCA02	20 BLAIR AV, ST MARYS NSW 2760	LB
1342	RES	NCA02	3/1 STATION ST, ST MARYS NSW 2760	LB
1345	RES	NCA02	15 WARATAH ST, ST MARYS NSW 2760	LB
1347	RES	NCA02	13/3 NARIEL ST, ST MARYS NSW 2760	LB
1356	RES	NCA02	9 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1360	RES	NCA02	49 CARINYA AV, ST MARYS NSW 2760	LB
1372	RES	NCA02	5 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1382	RES	NCA02	10A CHESHAM ST, ST MARYS NSW 2760	LB
1383	RES	NCA02	28 GIDLEY ST, ST MARYS NSW 2760	LB
1396	RES	NCA02	6 PHILLIP ST, ST MARYS NSW 2760	LB
1403	RES	NCA02	5 CAMIRA ST, ST MARYS NSW 2760	LB
1418	RES	NCA02	UNIT 17 18-20 CHAMPNESS CR, ST MARYS NSW 2760	LB
1422	RES	NCA02	5 CHAMPNESS CR, ST MARYS NSW 2760	LB
1430	RES	NCA02	16 ROSS PL, ST MARYS NSW 2760	LB
1441	RES	NCA02	8/6-10 BLAIR AV, ST MARYS NSW 2760	LB
1443	RES	NCA02	12 BENALONG ST, ST MARYS NSW 2760	LB
1450	RES	NCA02	37/11 PHILLIP ST, ST MARYS NSW 2760	LB
1453	RES	NCA02	317/159 QUEEN ST, ST MARYS NSW 2760	LB
1455	RES	NCA02	Under construction at 98 Glossop Street, St Marys NSW 2760	LB
1456	RES	NCA02		LB

Additional Mitigation Measures – Night-time OOH Period 2

ADE ID	REC	NCA	Address	Night
4	RES	NCA02	17 CHAMPNESS CR, ST MARYS NSW 2760	LB
7	RES	NCA02	9 WARATAH ST, ST MARYS NSW 2760	LB
12	RES	NCA02	8 CHESHAM ST, ST MARYS NSW 2760	LB
34	RES	NCA02	96 GLOSSOP ST, ST MARYS NSW 2760	LB
37	RES	NCA02	6 ACACIA AV, ST MARYS NSW 2760	LB
44	RES	NCA02	6 CHAMPNESS CR, ST MARYS NSW 2760	LB
55	RES	NCA02	23 BLAIR AV, ST MARYS NSW 2760	LB
60	RES	NCA02	UNIT 11 119-121 GLOSSOP ST, ST MARYS NSW 2760	LB
75	RES	NCA02	5 PHILLIP ST, ST MARYS NSW 2760	LB
78	RES	NCA02	9 KALANG AV, ST MARYS NSW 2760	LB
81	RES	NCA02	3 ARALUEN AV, ST MARYS NSW 2760	LB
86	RES	NCA02	16 BENALONG ST, ST MARYS NSW 2760	LB
89	RES	NCA02	4 PHILLIP ST, ST MARYS NSW 2760	LB
91	RES	NCA02	104 GLOSSOP ST, ST MARYS NSW 2760	LB
113	RES	NCA02	5 KALANG AV, ST MARYS NSW 2760	LB
119	RES	NCA02	59 CARINYA AV, ST MARYS NSW 2760	LB
125	RES	NCA02	9 CHAMPNESS CR, ST MARYS NSW 2760	LB
127	RES	NCA02	9 NARIEL ST, ST MARYS NSW 2760	LB
134	RES	NCA02	6 PHILLIP ST, ST MARYS NSW 2760	LB
136	RES	NCA02	UNIT 4 119-121 GLOSSOP ST, ST MARYS NSW 2760	LB
142	RES	NCA02	20 BLAIR AV, ST MARYS NSW 2760	LB
144	RES	NCA02	5/10-14 ROSS PL, ST MARYS NSW 2760	LB
149	RES	NCA02	5/11 AUSTRALIA ST, ST MARYS NSW 2760	LB
157	RES	NCA02	UNIT 3 2 STATION ST, ST MARYS NSW 2760	LB, M, SN, RO
159	RES	NCA02	63 CARINYA AV, ST MARYS NSW 2760	LB
167	RES	NCA02	14 NARIEL ST, ST MARYS NSW 2760	LB
168	RES	NCA02	18 BENALONG ST, ST MARYS NSW 2760	LB
169	RES	NCA02	17 PHILLIP ST, ST MARYS NSW 2760	LB
187	RES	NCA02	7 PHILLIP ST, ST MARYS NSW 2760	LB
190	RES	NCA02	19 BENALONG ST, ST MARYS NSW 2760	LB
192	RES	NCA02	33 CARINYA AV, ST MARYS NSW 2760	LB
207	RES	NCA02	10 BENALONG ST, ST MARYS NSW 2760	LB
212	RES	NCA02	4 ROSS PL, ST MARYS NSW 2760	LB
214	RES	NCA02	44 CHAMPNESS CR, ST MARYS NSW 2760	LB
228	RES	NCA02	16 BLAIR AV, ST MARYS NSW 2760	LB
234	RES	NCA02	26 PHILLIP ST, ST MARYS NSW 2760	LB
242	RES	NCA02	3/38 CHAPEL ST, ST MARYS NSW 2760	LB
255	RES	NCA02	3/38 CHAPEL ST, ST MARYS NSW 2760	LB
271	RES	NCA02	4 ACACIA AV, ST MARYS NSW 2760	LB
277	RES	NCA02	20 CHAPEL ST, ST MARYS NSW 2760	LB
278	RES	NCA02	1 CHESHAM ST, ST MARYS NSW 2760	LB
280	RES	NCA02	25 CHAMPNESS CR, ST MARYS NSW 2760	LB
281	RES	NCA02	11 LETHBRIDGE ST, ST MARYS NSW 2760	LB
284	RES	NCA02	3 CAMIRA ST, ST MARYS NSW 2760	LB
287	RES	NCA02	9 CHESHAM ST, ST MARYS NSW 2760	LB
298	RES	NCA02	73 CARINYA AV, ST MARYS NSW 2760	LB, M, SN, RO

ADE ID	REC	NCA	Address	Night
305	RES	NCA02	9 PHILLIP ST, ST MARYS NSW 2760	LB
309	RES	NCA02	55 CARINYA AV, ST MARYS NSW 2760	LB, M, SN, RO
312	RES	NCA02	5 CHESHAM ST, ST MARYS NSW 2760	LB
315	RES	NCA02	15 LETHBRIDGE ST, ST MARYS NSW 2760	LB
318	RES	NCA02	9 BENALONG ST, ST MARYS NSW 2760	LB
324	RES	NCA02	13 BENALONG ST, ST MARYS NSW 2760	LB
325	RES	NCA02	2 ACACIA AV, ST MARYS NSW 2760	LB
330	RES	NCA02	44 CHAMPNESS CR, ST MARYS NSW 2760	LB
346	RES	NCA02	37 CARINYA AV, ST MARYS NSW 2760	LB
351	RES	NCA02	19 CHAMPNESS CR, ST MARYS NSW 2760	LB
352	RES	NCA02	13 WARATAH ST, ST MARYS NSW 2760	LB
357	RES	NCA02	10 BENALONG ST, ST MARYS NSW 2760	LB
359	RES	NCA02	45 CARINYA AV, ST MARYS NSW 2760	LB
366	RES	NCA02	14 PHILLIP ST, ST MARYS NSW 2760	LB
367	RES	NCA02	23 PHILLIP ST, ST MARYS NSW 2760	LB
369	RES	NCA02	13 CAMIRA ST, ST MARYS NSW 2760	LB
374	RES	NCA02	4/19-21 CHAPEL ST, ST MARYS NSW 2760	LB
376	RES	NCA02	3 CHESHAM ST, ST MARYS NSW 2760	LB
388	RES	NCA02	3 PHILLIP ST, ST MARYS NSW 2760	LB
391	RES	NCA02	7 ROSS PL, ST MARYS NSW 2760	LB
402	RES	NCA02	8 ROSS PL, ST MARYS NSW 2760	LB
403	RES	NCA02	14 BENALONG ST, ST MARYS NSW 2760	LB
408	RES	NCA02	2 CHESHAM ST, ST MARYS NSW 2760	LB
411	RES	NCA02	4 GIDLEY ST, ST MARYS NSW 2760	LB
441	RES	NCA02	21 PHILLIP ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Night
451	RES	NCA02	1/2 NARIEL ST, ST MARYS NSW 2760	LB
456	RES	NCA02	31 PHILLIP ST, ST MARYS NSW 2760	LB
467	RES	NCA02	5 ARALUEN AV, ST MARYS NSW 2760	LB
471	RES	NCA02	2/34-36 PHILLIP ST, ST MARYS NSW 2760	LB
474	RES	NCA02	3/3 NARIEL ST, ST MARYS NSW 2760	LB
480	RES	NCA02	UNIT 3 18 LETHBRIDGE ST, ST MARYS NSW 2760	LB
488	RES	NCA02	3 BROCK AV, ST MARYS NSW 2760	LB
492	RES	NCA02	8 PHILLIP ST, ST MARYS NSW 2760	LB
493	RES	NCA02	7 LETHBRIDGE ST, ST MARYS NSW 2760	LB
500	RES	NCA02	14 ROSS PL, ST MARYS NSW 2760	LB
502	RES	NCA02	43 CARINYA AV, ST MARYS NSW 2760	LB
504	RES	NCA02	53 CARINYA AV, ST MARYS NSW 2760	LB, M, SN, RO
509	RES	NCA02	29 LETHBRIDGE ST, ST MARYS NSW 2760	LB
510	RES	NCA02	71 CARINYA AV, ST MARYS NSW 2760	LB
518	RES	NCA02	10 PHILLIP ST, ST MARYS NSW 2760	LB
519	RES	NCA02	6 NARIEL ST, ST MARYS NSW 2760	LB
534	RES	NCA02	13 CHAMPNESS CR, ST MARYS NSW 2760	LB
536	RES	NCA02	18 LETHBRIDGE ST, ST MARYS NSW 2760	LB
537	RES	NCA02	1/3 CHAMPNESS CR, ST MARYS NSW 2760	LB
555	RES	NCA02	28 CHAMPNESS CR, ST MARYS NSW 2760	LB
558	RES	NCA02	7 CHESHAM ST, ST MARYS NSW 2760	LB
560	RES	NCA02	1 CHAMPNESS CR, ST MARYS NSW 2760	LB
570	RES	NCA02	38 CHAMPNESS CR, ST MARYS NSW 2760	LB
571	RES	NCA02	12 NARIEL ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Night
574	RES	NCA02	51 CARINYA AV, ST MARYS NSW 2760	LB
575	RES	NCA02	15 LETHBRIDGE ST, ST MARYS NSW 2760	LB
579	RES	NCA02	5/3 NARIEL ST, ST MARYS NSW 2760	LB
582	RES	NCA02	4 CHESHAM ST, ST MARYS NSW 2760	LB
591	RES	NCA02	10 NARIEL ST, ST MARYS NSW 2760	LB
601	RES	NCA02	20 ACACIA AV, ST MARYS NSW 2760	LB
602	RES	NCA02	13 LETHBRIDGE ST, ST MARYS NSW 2760	LB
603	RES	NCA02	27 LETHBRIDGE ST, ST MARYS NSW 2760	LB
605	RES	NCA02	21 CHAMPNESS CR, ST MARYS NSW 2760	LB
612	RES	NCA02	22 CHAPEL ST, ST MARYS NSW 2760	LB
617	RES	NCA02	21 BENALONG ST, ST MARYS NSW 2760	LB
621	RES	NCA02	7 WARATAH ST, ST MARYS NSW 2760	LB
623	RES	NCA02	8 KUNGALA ST, ST MARYS NSW 2760	LB
624	RES	NCA02	49 KALANG AV, ST MARYS NSW 2760	LB
650	RES	NCA02	14/3 STATION ST, ST MARYS NSW 2760	LB, M, SN, RO
658	RES	NCA02	7A AUSTRALIA ST, ST MARYS NSW 2760	LB
663	RES	NCA02	6 CHESHAM ST, ST MARYS NSW 2760	LB
668	RES	NCA02	4 CHAMPNESS CR, ST MARYS NSW 2760	LB
675	RES	NCA02	13 KALANG AV, ST MARYS NSW 2760	LB
677	RES	NCA02	11 CAMIRA ST, ST MARYS NSW 2760	LB
688	RES	NCA02	11 CHAMPNESS CR, ST MARYS NSW 2760	LB
697	RES	NCA02	14 LETHBRIDGE ST, ST MARYS NSW 2760	LB
716	RES	NCA02	1/34-36 PHILLIP ST, ST MARYS NSW 2760	LB
736	RES	NCA02	10 ACACIA AV, ST MARYS NSW 2760	LB
738	RES	NCA02	42 CHAMPNESS CR, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Night
746	RES	NCA02	12 BLAIR AV, ST MARYS NSW 2760	LB
748	RES	NCA02	39 CARINYA AV, ST MARYS NSW 2760	LB
753	RES	NCA02	2 CHAMPNESS CR, ST MARYS NSW 2760	LB
755	RES	NCA02	19 LETHBRIDGE ST, ST MARYS NSW 2760	LB
756	RES	NCA02	75 CARINYA AV, ST MARYS NSW 2760	LB
765	RES	NCA02	16 KUNGALA ST, ST MARYS NSW 2760	LB
769	RES	NCA02	COMMUNITY WELFARE CENTRE 26 GIDLEY ST, ST MARYS NSW 2760	LB
774	RES	NCA02	UNIT 2 9 CHESHAM ST, ST MARYS NSW 2760	LB
793	RES	NCA02	10A CHESHAM ST, ST MARYS NSW 2760	LB
801	RES	NCA02	3 WARATAH ST, ST MARYS NSW 2760	LB
809	RES	NCA02	83 HOBART ST, ST MARYS NSW 2760	LB
811	RES	NCA02	30 PHILLIP ST, ST MARYS NSW 2760	LB
822	RES	NCA02	19 PHILLIP ST, ST MARYS NSW 2760	LB
828	RES	NCA02	5/111-113 GLOSSOP ST, ST MARYS NSW 2760	LB
829	RES	NCA02	4/38 CHAPEL ST, ST MARYS NSW 2760	LB
830	RES	NCA02	1 CAMIRA ST, ST MARYS NSW 2760	LB
836	RES	NCA02	1 ARALUEN AV, ST MARYS NSW 2760	LB
846	RES	NCA02	1/3 AUSTRALIA ST, ST MARYS NSW 2760	LB
852	RES	NCA02	78 CARINYA AV, ST MARYS NSW 2760	LB, M, SN, RO
854	RES	NCA02	27 CHAMPNESS CR, ST MARYS NSW 2760	LB
868	RES	NCA02	4 NARIEL ST, ST MARYS NSW 2760	LB
881	RES	NCA02	12 LETHBRIDGE ST, ST MARYS NSW 2760	LB
891	RES	NCA02	28 PHILLIP ST, ST MARYS NSW 2760	LB
901	RES	NCA02	9 AUSTRALIA ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Night
907	RES	NCA02	1/102A GLOSSOP ST, ST MARYS NSW 2760	LB
915	RES	NCA02	7A WARATAH ST, ST MARYS NSW 2760	LB
916	RES	NCA02	12 ACACIA AV, ST MARYS NSW 2760	LB
919	RES	NCA02	114 GLOSSOP ST, ST MARYS NSW 2760	LB
927	RES	NCA02	8 NARIEL ST, ST MARYS NSW 2760	LB
933	RES	NCA02	24 CHAMPNESS CR, ST MARYS NSW 2760	LB
935	RES	NCA02	17 KALANG AV, ST MARYS NSW 2760	LB
937	RES	NCA02	7 NARIEL ST, ST MARYS NSW 2760	LB
939	RES	NCA02	16 ACACIA AV, ST MARYS NSW 2760	LB, M, SN, RO
942	RES	NCA02	15 CAMIRA ST, ST MARYS NSW 2760	LB
946	RES	NCA02	47 CARINYA AV, ST MARYS NSW 2760	LB
959	RES	NCA02	12 STAPLETON PDE, ST MARYS NSW 2760	LB
981	RES	NCA02	8 CHAMPNESS CR, ST MARYS NSW 2760	LB
982	RES	NCA02	41 CARINYA AV, ST MARYS NSW 2760	LB
985	RES	NCA02	7 CHAMPNESS CR, ST MARYS NSW 2760	LB
991	RES	NCA02	7B WARATAH ST, ST MARYS NSW 2760	LB
992	RES	NCA02	4/34-36 PHILLIP ST, ST MARYS NSW 2760	LB, M, SN, RO
996	RES	NCA02	7 BLAIR AV, ST MARYS NSW 2760	LB
1001	RES	NCA02	14 ACACIA AV, ST MARYS NSW 2760	LB
1004	RES	NCA02	5B ROSS PL, ST MARYS NSW 2760	LB
1005	RES	NCA02	83 HOBART ST, ST MARYS NSW 2760	LB
1006	RES	NCA02	118 GLOSSOP ST, ST MARYS NSW 2760	LB
1017	RES	NCA02	14 BLAIR AV, ST MARYS NSW 2760	LB
1018	RES	NCA02	18 BLAIR AV, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Night
1021	RES	NCA02	69 CARINYA AV, ST MARYS NSW 2760	LB
1024	RES	NCA02	57 CARINYA AV, ST MARYS NSW 2760	LB, M, SN, RO
1032	RES	NCA02	2 ROSS PL, ST MARYS NSW 2760	LB
1033	RES	NCA02	30 CHAMPNESS CR, ST MARYS NSW 2760	LB
1038	RES	NCA02	8 BENALONG ST, ST MARYS NSW 2760	LB
1046	RES	NCA02	MANNA BANI UNIT 11 34-36 GIDLEY ST, ST MARYS NSW 2760	LB
1048	RES	NCA02	10 BLAIR AV, ST MARYS NSW 2760	LB
1056	RES	NCA02	1 WARATAH ST, ST MARYS NSW 2760	LB
1057	RES	NCA02	16 GIDLEY ST, ST MARYS NSW 2760	LB
1059	RES	NCA02	5 BLAIR AV, ST MARYS NSW 2760	LB
1060	RES	NCA02	28 CHAPEL ST, ST MARYS NSW 2760	LB
1072	RES	NCA02	2/102 GLOSSOP ST, ST MARYS NSW 2760	LB
1076	RES	NCA02	106 GLOSSOP ST, ST MARYS NSW 2760	LB
1081	RES	NCA02	11 KALANG AV, ST MARYS NSW 2760	LB
1083	RES	NCA02	17/3 STATION ST, ST MARYS NSW 2760	LB, M, SN, RO
1088	RES	NCA02	5 WARATAH ST, ST MARYS NSW 2760	LB
1099	RES	NCA02	21 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1100	RES	NCA02	18 KUNGALA ST, ST MARYS NSW 2760	LB
1104	RES	NCA02	15 KALANG AV, ST MARYS NSW 2760	LB
1108	RES	NCA02	25 PHILLIP ST, ST MARYS NSW 2760	LB
1113	RES	NCA02	7 ARALUEN AV, ST MARYS NSW 2760	LB
1115	RES	NCA02	2 PHILLIP ST, ST MARYS NSW 2760	LB
1119	RES	NCA02	27 PHILLIP ST, ST MARYS NSW 2760	LB
1125	RES	NCA02	24 PHILLIP ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Night
1127	RES	NCA02	1 CHAMPNESS CR, ST MARYS NSW 2760	LB
1128	RES	NCA02	116 GLOSSOP ST, ST MARYS NSW 2760	LB
1129	RES	NCA02	2/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
1142	RES	NCA02	9/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
1144	RES	NCA02	5/111-113 GLOSSOP ST, ST MARYS NSW 2760	LB
1148	RES	NCA02	7 WARATAH ST, ST MARYS NSW 2760	LB
1151	RES	NCA02	26 CHAMPNESS CR, ST MARYS NSW 2760	LB
1158	RES	NCA02	17 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1171	RES	NCA02	2/19-21 CHAPEL ST, ST MARYS NSW 2760	LB
1172	RES	NCA02	16 CHAMPNESS CR, ST MARYS NSW 2760	LB
1188	RES	NCA02	35 CARINYA AV, ST MARYS NSW 2760	LB
1190	RES	NCA02	22 CHAMPNESS CR, ST MARYS NSW 2760	LB
1206	RES	NCA02	5B ROSS PL, ST MARYS NSW 2760	LB
1208	RES	NCA02	11 WARATAH ST, ST MARYS NSW 2760	LB
1235	RES	NCA02	3/32 CHAPEL ST, ST MARYS NSW 2760	LB
1236	RES	NCA02	20 BENALONG ST, ST MARYS NSW 2760	LB
1246	RES	NCA02	16 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1254	RES	NCA02	82 HOBART ST, ST MARYS NSW 2760	LB
1269	RES	NCA02	1 ROSS PL, ST MARYS NSW 2760	LB
1272	RES	NCA02	18 ACACIA AV, ST MARYS NSW 2760	LB
1276	RES	NCA02	8 CHESHAM ST, ST MARYS NSW 2760	LB
1281	RES	NCA02	UNIT 12 119-121 GLOSSOP ST, ST MARYS NSW 2760	LB
1296	RES	NCA02	8 ACACIA AV, ST MARYS NSW 2760	LB
1298	RES	NCA02	6 BENALONG ST, ST MARYS NSW 2760	LB
1304	RES	NCA02	32 PHILLIP ST, ST MARYS NSW 2760	LB
1307	RES	NCA02	2/6-10 BLAIR AV, ST MARYS NSW 2760	LB
1312	RES	NCA02	10/3 STATION ST, ST MARYS NSW 2760	LB, M, SN, RO
1314	RES	NCA02	21 BLAIR AV, ST MARYS NSW 2760	LB
1317	RES	NCA02	125 GLOSSOP ST, ST MARYS NSW 2760	LB
1319	RES	NCA02	2/13 AUSTRALIA ST, ST MARYS NSW 2760	LB
1333	RES	NCA02	5 PHILLIP ST, ST MARYS NSW 2760	LB
1340	RES	NCA02	20 BLAIR AV, ST MARYS NSW 2760	LB
1342	RES	NCA02	3/1 STATION ST, ST MARYS NSW 2760	LB
1345	RES	NCA02	15 WARATAH ST, ST MARYS NSW 2760	LB
1347	RES	NCA02	13/3 NARIEL ST, ST MARYS NSW 2760	LB
1356	RES	NCA02	9 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1360	RES	NCA02	49 CARINYA AV, ST MARYS NSW 2760	LB
1372	RES	NCA02	5 LETHBRIDGE ST, ST MARYS NSW 2760	LB
1382	RES	NCA02	10A CHESHAM ST, ST MARYS NSW 2760	LB
1383	RES	NCA02	28 GIDLEY ST, ST MARYS NSW 2760	LB
1396	RES	NCA02	6 PHILLIP ST, ST MARYS NSW 2760	LB
1403	RES	NCA02	5 CAMIRA ST, ST MARYS NSW 2760	LB
1417	RES	NCA02	14 CHAPEL ST, ST MARYS NSW 2760	LB
1418	RES	NCA02	UNIT 17 18-20 CHAMPNESS CR, ST MARYS NSW 2760	LB
1422	RES	NCA02	5 CHAMPNESS CR, ST MARYS NSW 2760	LB
1430	RES	NCA02	16 ROSS PL, ST MARYS NSW 2760	LB
1441	RES	NCA02	8/6-10 BLAIR AV, ST MARYS NSW 2760	LB
1443	RES	NCA02	12 BENALONG ST, ST MARYS NSW 2760	LB
1450	RES	NCA02	37/11 PHILLIP ST, ST MARYS NSW 2760	LB

ADE ID	REC	NCA	Address	Night
1453	RES	NCA02	317/159 QUEEN ST, ST MARYS NSW 2760	LB
1455	RES	NCA02	Under construction at 98 Glossop Street, St Marys NSW 2760	LB
1456	RES	NCA02		LB

ADECONSULTINGGROUP
SOLUTIONS THROUGH INNOVATION

Further details regarding ADE's Services are available via

info@ade.group www.ade.group

ADE Consulting Group Pty Ltd

Sydney
Unit 6/7 Millennium Court,
Silverwater, NSW 2128 Australia

Newcastle
Unit 9/103 Glenwood Drive
Thornton, NSW 2322, Australia

ADE Consulting Group (QLD) Pty Ltd

Brisbane
Unit 3/22 Palmer Place
Murarrie, QLD 4172, Australia

ADE Consulting Group (VIC) Pty Ltd

Melbourne
Unit 4/95 Salmon Street
Port Melbourne, VIC 3207, Australia