

ACOUSTICS ADVISOR ENDORSEMENT SYDNEY METRO WEST (SSI 10038)

Review of	Central Tunnelling Package: Tunnelling DNVIS	Reviewed document reference:	21028-NV-RP-10-7 Revision 7 Dated: 4 June 2024
Prepared by:	Larry Clark, Alternate Acoustics Advisor		
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As approved Alternate Acoustics Advisor (AA) for the Sydney Metro West project, I reviewed Revision 7 of the Sydney Metro West – CTP – Detailed Noise and Vibration Impact Statement (DNVIS) for tunnelling.

Revision 7 is an update of revision 6, primarily clarifying cross passages hammering times.

I am satisfied with the update clarifications, and I endorse Revision 7 of the Tunnelling DNVIS.

Larry Clark

Larry Clark, Metro West Alternate Acoustics Advisor

**Acciona Ferrovia Joint Venture
Sydney Metro West Central Tunnelling Package
Tunnelling**

**Detailed noise and vibration impact statement
May 2024**

Doc no. 21028-NV-RP-10-7





Detailed noise and vibration impact statement

Client	Acciona Ferrovia Joint Venture
Project	Sydney Metro West Central Tunnelling Package
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Revision history

0	13 May 2022	Draft report to client
1	21 June 2022	Update following client comments / stakeholder feedback
2	15 July 2022	Updated to include mined cavern at Burwood North
3	28 October 2022	Updated with AA / ER comments
4	1 December 2022	Updated with AA comments
5	18 July 2023	Updated cross passages locations, and AA comments
6	9 September 2023	Updated with AA comments
7	4 June 2024	Updated comments clarifying Cross Passages Hammering times

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Definition of acoustic terms and acronyms

AA	Acoustic Advisor
AMM	Additional mitigation measures – applicable where standard measures have been implemented and NML is still expected to be exceeded.
Assessment period	The period in a day over which assessments are made.
Background noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation.
CNVMP	Construction Noise and Vibration Management Plan prepared under CoA C5
CNVS	Sydney Metro Construction Noise and Vibration Standard v4.3
CoA	Condition of Approval for Sydney Metro West – Concept and State 1 (SSI 10038)
CSSI	Critical State Significant Infrastructure
CTP	Central Tunnelling Package
Decibel (dB)	A measure of sound equivalent to 20 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure, and 10 times the logarithm (to base 10) of the ratio of a given sound power to a reference power.
dB(A)	Unit used to measure ‘A-weighted’ sound pressure levels. A-weighting is an adjustment made to sound-level measurement to approximate the response of the human ear.
dB(C)	Unit used to measure ‘C-weighted’ sound pressure levels, an adjustment made to sound level to approximate low frequency noise between 10 Hz and 200 Hz.
DPE	NSW Department of Planning and Environment
EIS	Environmental Impact Statement
Extraneous noise	Noise resulting from activities that are not typical of the area such as construction, and traffic generated by holiday periods or special events such as concerts or sporting events. Normal daily traffic is not considered to be extraneous.
GBN	Ground-borne noise
GB NML	Ground-borne noise management level
Highly affected receivers	Residential receivers are considered to be highly noise affected where construction activities are determined to have an L_{Aeq} , 15 minute noise level of 75 dB(A) or higher.
Highly noise intensive works	Construction activities which are defined as annoying under the ICNG. See Section 2.1.2.
ICNG	Interim Construction Noise Guideline (Department of Environment and Climate Change 2009)
Noise assessment criteria	A standard rule or test by which the acceptability of the nature and characteristics of noise may be judged or evaluated. Criteria are generally based on guidelines or standards developed by Government agencies (eg EPA) to protect the majority of people for the majority of the time from adverse impacts.
NCA	Noise Catchment Area

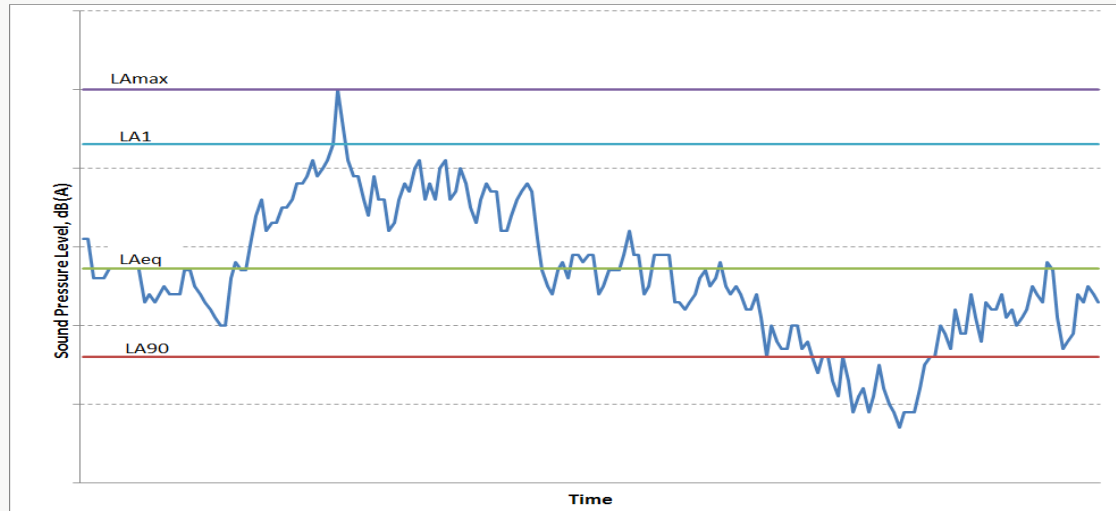
Noise level statistics

L_{A90} – The A-weighted sound pressure level exceeded 90% of the monitoring period. This is considered to represent the background noise.

L_{Aeq} – The equivalent continuous A-weighted noise level—the level of noise equivalent to the energy average of noise levels occurring over a measurement period.

L_{A1} – The A-weighted sound pressure level exceeded 1% of the monitoring period.

L_{Amax} – The maximum A-weighted noise level associated with the measurement period.



NML	Noise Management Level
PPV	Peak Particle Velocity – Measurement of ground-borne vibration in units of mm/s
RBL	Rating Background Level - a single figure that represents the background noise level for assessment purposes
ROL	Road Occupancy Licence – granted by Transport for NSW and required for any activity likely to impact on traffic flow.
Sound Power Level (SWL)	The A-weighted sound power level is a logarithmic ratio of the acoustic power output of a source relative to 10-12 watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.
Sound Pressure Level (SPL)	This is the level of noise, usually expressed in dB(A), as measured by a standard sound level meter with a pressure microphone. The sound pressure level in dB(A) gives a close indication of the subjective loudness of noise. A technical definition for the sound pressure level, in decibels, is 20 times the logarithm (base 10) of the ratio of any two quantities related to a given sound pressure to a reference pressure (typically 20 μ Pa equivalent to 0 dB).
TBM	Tunnel boring machine
Tonal noise	Noise with perceptible and definite pitch or tone
VDV	Vibration dose value – used when assessing intermittent vibration as it is sensitive to peaks in vibration acceleration and accumulates the vibration energy received over the daytime and night-time periods
VML	Vibration Management Level

***Note: Additional definitions for construction related terms can be found in the Project Conditions of Approval.**

1. Introduction

1.1 Project overview

Sydney Metro is Australia's biggest public transport program comprising four main packages of work including Metro North West Line, Sydney Metro City and Southwest, Sydney Metro West and Sydney Metro Greater West. The Sydney Metro West component involves the construction and operation of a metro rail line, around 24km in length, between Westmead and the Sydney CBD.

The planning approvals and environmental impact assessment for Sydney Metro West has been split into a number of stages recognising the size of the project. This includes:

- Stage 1 – Concept and all major civil construction works including station excavation and tunnelling between Westmead and The Bays. Planning approval for this stage was granted in March 2021.
- Stage 2 – All major civil construction works including station excavation and tunnelling from The Bays to Sydney CBD
- Stage 3 – Tunnel fit-out, construction of stations, ancillary facilities and station precincts, and operation and maintenance of the Sydney Metro West line

Acciona Ferrovia Joint Venture (AFJV) was commissioned to deliver the Central Tunnel Package of Stage 1, comprising excavation of five station boxes and around 11.5 kilometres of twin-bore tunnel between The Bays and Sydney Olympic Park (the Project). An overview of the Project is presented in Figure 1-1, which includes the tunnel alignment and location of the station boxes at:

- The Bays
- Five Dock
- Burwood North
- North Strathfield
- Sydney Olympic Park

1.2 Detailed Noise and Vibration Impact Statement

This Detailed Noise and Vibration Impact Statement (DNVIS) covers tunnelling between The Bays and Sydney Olympic Park Station boxes during standard hours and outside standard hours. Tunnelling is defined as horizontal excavation of the mainline tunnels as well as cross passages. A pedestrian adit between the two Burwood North shafts will be addressed as part of the DNVIS for the Burwood North sites.

Construction hours of tunnelling are defined in the Project Conditions of Approval (CoA), as outlined in the Construction Noise and Vibration Management Plan. Tunnelling may be undertaken 24 hours per day, 7 days per week in accordance with CoA D37d (See Section 2.2).

1.3 Interface with other DNVIS

Though related to tunnelling, airborne noise and vibration from surface works in support of tunnelling, including spoil handling and haulage, deliveries, maintenance, ventilation and other activities interfacing with surface sites have been addressed as part of the DNVIS for each surface sites (e.g. Sydney Olympic Park, North Strathfield, Burwood North, Five Dock and The Bays).

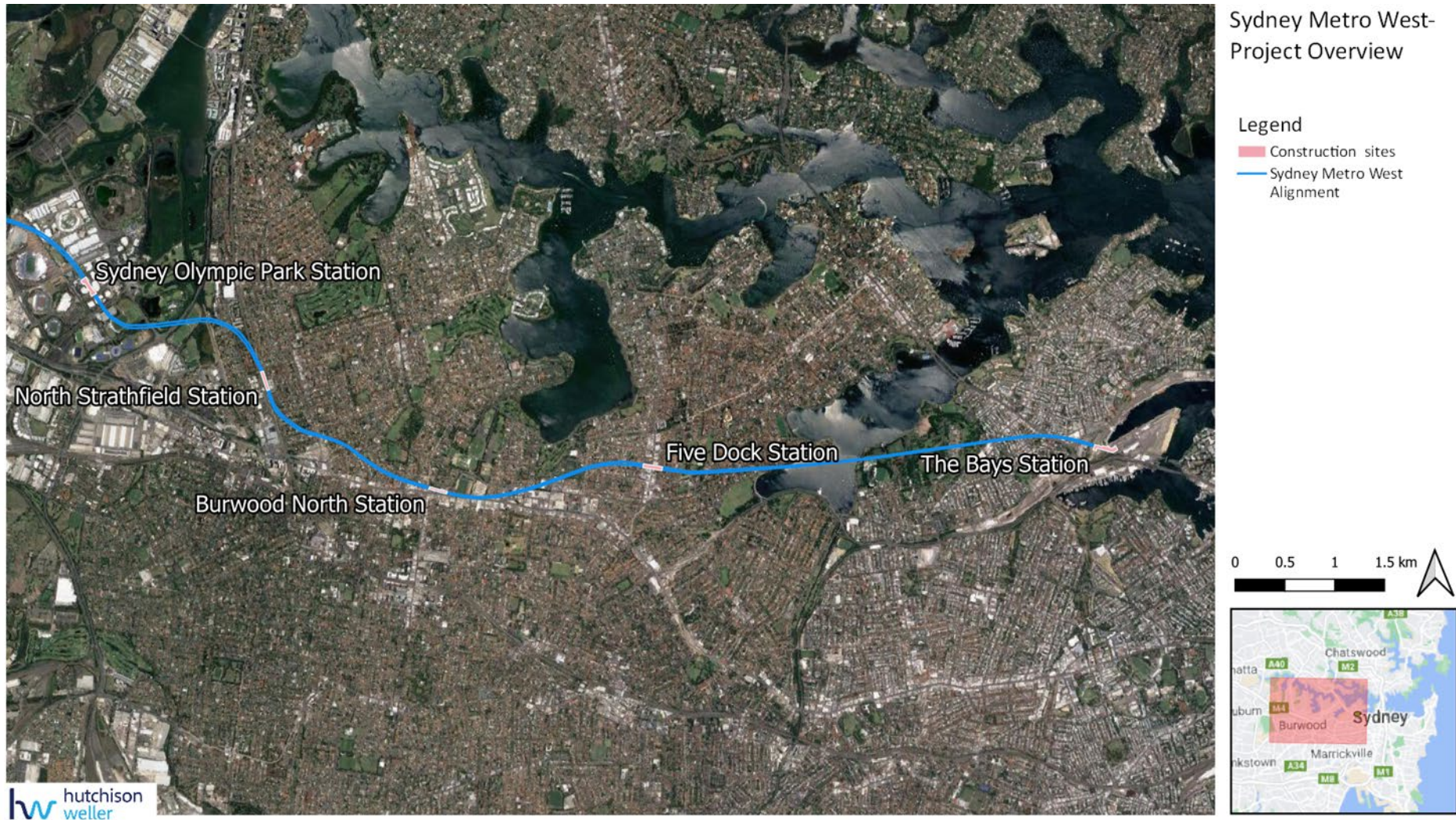


Figure 1-1 Overview of the CTP of Stage 1 of the Sydney Metro West Project.

1.4 Purpose and structure

This Detailed Noise and Vibration Impact Assessment (DNVIS) has been prepared in accordance with the Sydney Metro (2020) Construction Noise and Vibration Standard, v 4.3 (CNVS) and supplements the Project's CNVMP as required in the Project's CoA D43.

The objective of the DNVIS is to establish the location, nature and scale of proposed works, assess the level of impact on the community's amenity and include mitigation measures identified through consultation with affected sensitive land users.

The structure of this DNVIS meets the requirements of the Condition of Approval D43 and the CNVS and includes:

- Section 2 – Construction works and hours
- Section 3 – Identification of noise and vibration sensitive receivers and existing noise levels
- Section 4 – Construction noise and vibration objectives
- Section 5 – Description of planned works, equipment and sound power levels
- Section 6 – Construction noise assessment – predicted noise levels and exceedances of objectives, including sleep disturbance
- Section 7 – Construction vibration assessment
- Section 8 – Traffic noise assessment
- Section 9 – Mitigation and management, including consultation

2. Construction works and hours

2.1 Summary of planned works

Tunnelling will involve excavation of twin tunnels at a diameter of around 7 metres between The Bays and Sydney Olympic Park, with the alignment illustrated in Figure 1-1.

Commencing at The Bays in late 2022 and early 2023 and moving west, two tunnel boring machines (TBMs) would progress at between 50 and 70 metres per day depending on the location and conditions. A summary of the anticipated tunnelling program is shown in Table 2-1.

Table 2-1 Anticipated tunnelling program

Location	TBM 3	TBM4	Average Rate (m/d) TBM 3	Average Rate (m/d) TBM 4
Launch Date	20-Dec-22	19-Jan-23		
Tunnelling Duration The Bays to Five Dock	89	92	49.0	47.4
Traverse Five Dock (days)	15	15		
Relaunch from Five Dock (days)	2	2	8.4	8.5
Five Dock to Burwood	28	28	71.2	71.2
Traverse Burwood (days)	17	17		
Relaunch from Burwood (days)	2	2	8.5	8.5
Burwood to North Strathfield (days)	27	27	65.9	66.4
Traverse North Strathfield (days)	10	10		
Relaunch from North Strathfield (days)	2	2	8.5	8.5
North Strathfield to Olympic Park (days)	46	24	65.6	85.5

Cross passages at an interval of around 240 metres will be excavated by a specialised machine with 600 kg rock hammer attachment (Brokk), rock drilled and shotcreted. Based on work during standard hours, cross passage excavation would take around 16 days for standard locations and up to 25 days for locations with sumps. Where cross passage locations can be identified for evening / night excavation without unacceptable noise and vibration, these durations would be dramatically reduced.

At Burwood North, two additional tunnelling works will be completed as separate activities from the mainline tunnel drives. At the Burwood North station box, a mined cavern used as a crossover passage for the up and down lines will be situated at the western end of the station. The cavern will be located about 30 metres underground with a 15 metre roof height, extending about 140 metres from the western end of the station box before resuming the twin tunnel mainline configuration.

A smaller 7 metre diameter, 45-metre-long tunnel to be used as a pedestrian adit (passage) beneath Parramatta Road will be excavated between the two Burwood North shafts.

The mainline crossover cavern will be excavated using a combination of road header and rock breakers in combination with rock drilling to stabilise the cavern roof while a single road header will be used to form the tunnel for the pedestrian adit.

In total, excavation of both the cavern and the pedestrian adit is expected to take around 2 months each to complete.

The location of the mined cavern will impact residential and commercial receivers that are directly above the works. A separate assessment of these impacts included in Section 5.5.3 of this report.

The pedestrian adit will pass between the north and south shafts at Burwood crossing underneath Parramatta Road. As there are no predicted impacts on residential or commercial properties for this activity, noise and vibration from this package of work will be assessed and managed as part of the Burwood North DNVIS.

At Five Dock, an underground cavern will connect the east and west station boxes and will be comprised of three sections. The main cavern will connect the two shafts with a small portal section either side of the station boxes in line with the tunnel shafts.

The main cavern section will follow the alignment crossing underneath The Great North Road and directly below residences at 108 and 110 Great North Road. The other shorter cavern sections are located under Waterview Street and East Street however, these caverns do not pass below any residential buildings, stopping just within the respective property boundaries.

The main body of the cavern will be located around 15-20 metres below the surface with the cavern mining being completed using road headers and rock breakers. The cavern roof will be stabilised using rock bolts as the works progress.

As the cavern mining is likely to impact commercial and residential receivers during some phases of this work an assessment of the potential ground borne noise and vibration impacts has been completed in Section 5.5.4.

Supporting activities such as management of spoil from the TBM and delivery of concrete segment liners will be addressed with assessment of surface ancillary sites in each relevant DNVIS.

During TBM tunnelling works, a 'walk through' of the TBM will be necessary at the Five Dock, Burwood and North Strathfield station boxes. After breaking through the eastern tunnel nozzles, the TBM will traverse the station box floor to the western side of the box. Any required maintenance will be completed at this time and the TBM will be prepared for the forward leg of the journey. As the TBM will be in the open station box during the walk through, an assessment of airborne noise impacts for each of these sites will be included in the site specific DNVIS along with details of the timing and duration of the associated activities.

2.2 Approved construction hours

Working hours are set by CoA D35 to D36 as summarised in Table 2-2. Use of power saws, rock breakers, drills and other tonal or impulsive activities are defined as annoying under the Interim Construction Noise Guideline (ICNG) and are 'highly noise intensive works'. Rock hammering within the tunnels is not restricted to the hours in Table 2-2.

Table 2-2 Approved construction hours

CoA	Construction activity	Monday to Friday	Saturday	Sunday / Public holiday
D35	Approved construction	7:00 am to 6:00 pm	8:00 am to 6:00 pm	No work (unless approved under out-of-hours work protocol)
D36	Highly noise intensive works	8:00 am to 6:00 pm ¹	8:00 am to 1:00 pm ¹	No work (unless approved under out-of-hours work protocol)

Notes:

1. if continuously, then not exceeding three hours, with a minimum cessation of work of not less than one hour.

Notwithstanding Conditions D35 and D36 of the CoA, CoA D37 specifies prescribed activities, including tunnelling, that may be undertaken outside the approved hours.

CoA 37(d): By prescribed activity, including

- i.tunnelling (excluding cut and cover tunnelling and surface works) is permitted 24 hours a day, seven days a week; or
- ii.delivery of material that is required to be delivered outside of standard construction hours in Condition D35 of this schedule to directly support tunnelling activities except between the hours 10:00 pm and 7:00 am to / from the Five Dock and Westmead construction sites and to / from Burwood North construction site using any roads / streets other than directly from Parramatta Road
- iii.work within an acoustic shed where there is no exceedance of noise levels under Low impact circumstances identified in (b) above, unless otherwise agreed by the Planning Secretary.

3. Existing environment

3.1 Existing environment

Between The Bays and Sydney Olympic Park, the tunnel alignment and cross-passages locations traverse more than 11 kilometres through areas of suburban residential receivers, with isolated industrial and/or commercial areas.

In some areas, the alignment is close to major sources of existing transport noise, such as the M4 Motorway, the T7 Olympic Park Line near Sydney Olympic Park, the T9 Northern Line near North Strathfield, Parramatta Road in Burwood and Concord, and City West Link near Lilyfield. Other sources of existing noise along the alignment include urban noise, noise associated with sporting events in Sydney Olympic Park, and industrial noise in areas in White Bay/Glebe Island.

For ground-borne noise and vibration associated with tunnelling, sensitive receivers up to 100 metres of the tunnel alignment have been included in the assessment. These are illustrated in Figure 3-2 to Figure 3-5.

3.2 Other sensitive receivers

Review of non-residential sensitive receivers potentially affected by tunnelling noise and vibration is presented in Table 3-1.

Table 3-1 Summary of identified non-residential sensitive receivers

NCA	Receiver	Receiver type
8	Ibis & Novotel 11 Olympic Blvd, Sydney Olympic Park	Hotel
	Pullman Hotel 9 Olympic Blvd, Sydney Olympic Park	Hotel
10	17 George St, North Strathfield	Education
	1a Hamilton St, North Strathfield	Education
11	2a Napier St, North Strathfield	Place of Worship
	3 Carrington St, North Strathfield	Place of Worship
12	56-60 Burton St, Concord	Education
	121 Queens Rd, Five Dock	Education
	17 Burton St, Concord	Place of Worship
	2 Ada St, Concord	Education
14	16 Lancelot St, Five Dock	Residential
	Five Dock Public School 33 Henry St, Five Dock	Education
	175 Great North Rd, Five Dock	Place of Worship
	143 Great North Rd, Five Dock	Medical
	171 Great North Rd, Five Dock	Place of Worship
15	121 First Av, Five Dock	Education
	120 Great North Rd, Five Dock	Place of Worship
19	Sydney University	Education
	Rozelle Child Care Centre 450 Balmain Rd	Childcare
20	Callan Park Hotel 726 Darling St, Rozelle	Hotel
	2a-2b Gordon St, Rozelle	Education
	7 Quirk St, Rozelle	Childcare
	40 Victoria Rd, Rozelle	Hotel
	756 Darling St, Rozelle	Community Use

3.3 Heritage items

Potentially affected heritage items in and around the project corridor are summarised in Table 3-2. The majority of these will be more affected by surface works associated with the station box excavation and have been addressed for these impacts in corresponding DNVIS documents. However, White Bay Power Station is located directly above the tunnel additional consideration of this site is necessary.

Table 3-2 Summary of identified heritage items

Heritage Item	Construction Site	Significance
State Abattoirs	Sydney Olympic Park	State Environmental Planning Policy (State Significant Precincts) 2005 Listing No. A; Sydney Regional Environmental Plan No24 – Homebush Bay Area Item No. 1
North Strathfield Railway Station Group	North Strathfield	Railcorp's Section 170 4801029
St Alban's Anglican Church	Five Dock	Canada Bay LEP Item No. I226
White Bay Power Station	The Bays	SHR Listing No. 01015
		Urban Growth NSW Development Corporation S170 4500460
White Bay Power Station (inlet) canal	The Bays	Port Authority of NSW s170 4560062

3.4 SOPA assets

The Sydney Olympic Park Authority (SOPA) has been consulted on the location of its assets in relation to the tunnel alignment. A number of drains, pits and piezometers are adjacent to or above the tunnel alignment. Pits are noted by SOP to be relatively shallow, at around 5 – 9 metres below the surface and constructed from reinforced concrete. Drains would be around 1 metre from the surface and constructed from Medium or High Density Polyethylene (MDPE or HDPE) based on descriptions in the SOPA Remediated Lands Management Plan. The potential impact of tunnelling vibration in these assets is addressed in Section 5.5.1.

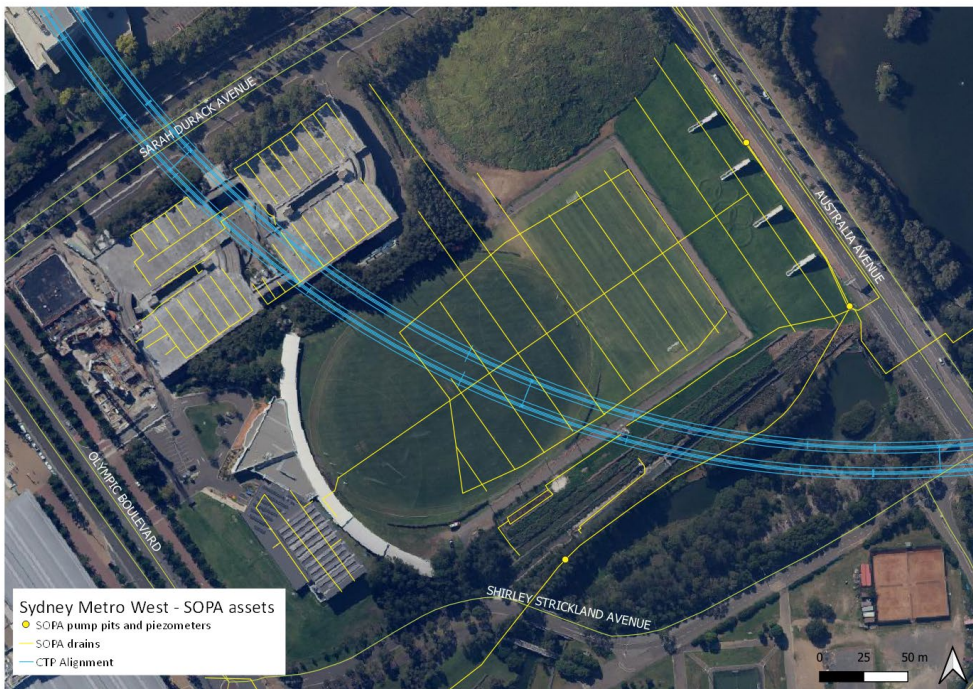


Figure 3-1 SOPA Assets adjacent to tunnel alignment

3.5 Noise catchment areas

Though ground-borne Noise Management Levels (NMLs) and Vibration Management Levels (VML) do not vary by location, receivers adjacent to the tunnel alignment sites have been divided into Noise Catchment Areas (NCAs) to assist identification and management of affected receivers. NCAs reflect similar traits such as existing noise environment, land uses and potential exposure to noise and vibration from the Project.

NCAs established as part of the EIS are summarised in Table 3-3 and illustrated in Figure 3-2 to Figure 3-5.

Table 3-3 Summary of work areas, Noise Catchment Areas and land uses

NCA	Location	Description
8	Olympic Park - Western portion near Olympic Park Station.	Mainly commercial and sporting uses, with 'other sensitive' receivers including hotels and educational facilities. Residential apartments are in the south, east and west.
9	Olympic Park - Eastern portion	Mix of commercial and residential. There are several high-rise residential apartment buildings near Australia Avenue.
10	North Strathfield – west of the existing rail corridor	Mainly residential receivers with some commercial premises in the south near the M4 Motorway and in the west. 'Other sensitive' receivers include McDonald College and Our Lady of the Assumption Catholic Primary School.
11	North Strathfield – east of the existing rail corridor	Mainly residential with areas of commercial receivers along Queen Street and Concord Road. Strathfield North Public School is in the north.
12	Burwood - North of Parramatta Road	Mainly residential with some commercial areas on Parramatta Road. 'Other sensitive' receivers: Concord High School, St Mary's Catholic Primary, St Marys Catholic Church and St Luke's Church.
13	Burwood - South of Parramatta Road	Mainly residential, with commercial areas along Parramatta Road and Burwood Road. 'Other sensitive' receivers include Bath Arms Hotel, Southern Cross Catholic College and Methodist Ladies College.
14	Five Dock - West of Great North Road	Mainly residential. Commercial receivers are along Great North Road. 'Other sensitive' receivers include the St Albans Anglican Church, Sunshine Early

NCA	Location	Description
		Learning Centres x 2, Garfield Street Child Centre, Five Dock Police station, Five Dock Public School, and several local practices.
15	Five Dock - East of Great North Road	Mainly residential. Commercial receivers are along Great North Road and 'other sensitive' receivers include Domremy Catholic Church.
16	Between Five Dock and the Bays -North of Parramatta River in Russell Lea and Iron Cove.	Mainly residential.
17	Between Five Dock and the Bays - North of City West Link in Rodd Point.	Mainly residential.
18	Between Five Dock and the Bays -South of City West Link in Haberfield.	Mainly residential. Dobroyd Point Public School is in the west and Robson Park is in the north
19	Between Five Dock and the Bays - North of City West Link in Lilyfield.	mainly residential. 'Other sensitive' receivers include the University of Tasmania, NSW/Ambulance, Sydney University College of the Arts, Orange Grove Public School, and several outdoor recreation areas.
20	The Bays - West of Victoria Road	Mainly residential with some commercial receivers along Victoria Road and Lilyfield Road. 'Other sensitive' receivers include Sydney Community College, St Joseph's Catholic Church and Rosebud Cottage child care centre
21	The Bays - East of Victoria Road (Includes White Bay, the former White Bay Power Station and Glebe Island)	Mainly residential, with various commercial areas surrounding White Bay and Glebe Island. 'Other sensitive' receivers include Inner Sydney Montessori School and C3 Church Balmain.

3.6 Background noise survey

Background noise monitoring was undertaken as part of the Sydney Metro West Project EIS (Section 2, Technical Paper 2) through unattended background noise monitoring at representative locations. Monitoring was completed in March and July 2019 for each of the NCAs listed in Table 3-2.

Noise levels in the CTP works area generally display a diurnal trend with lower levels during the night-time than the daytime and evening periods (with some exceptions). This is characteristic of urban and suburban areas, where the ambient noise environment is primarily influenced by road traffic.

This baseline information was used to establish the Rating Background Level (RBL), which represents the average minimum background sound level for each measurement period, averaged over the measurement days. The RBL at each NCA is provided in Table 3-4.

The RBL is not relevant to setting noise or vibration management levels for this assessment but is provided for each NCA to illustrate the existing level of neighbourhood noise.

Table 3-4 Background noise levels

NCA	Noise level (dBA)		
	Day 7:00 am to 6:00 pm	Evening 6:00 pm to 10:00 pm	Night 10:00 pm to 7:00 am
8	48	48	46
9	48	46	41
10	47	47	44
11	51	47	39
12	43	43 (47) ¹	42



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NCA	Noise level (dBA)		
	Day 7:00 am to 6:00 pm	Evening 6:00 pm to 10:00 pm	Night 10:00 pm to 7:00 am
13	48	48	44
14	42	41	33
15	43	43 (44) ¹	38
16	36	36 (39) ¹	33
17	43	43 (45) ¹	37
18	48	45	37
19	43	43	35
20	51	51	45
21	48	47	39

Notes:

1. The monitored evening level was higher than the daytime. In this situation the NPfI requires that the evening level be reduced to match the daytime.
2. Daytime is 7:00am to 6:00pm, evening is 6:00pm to 10:00pm and night-time is 10:00pm to 7:00am.

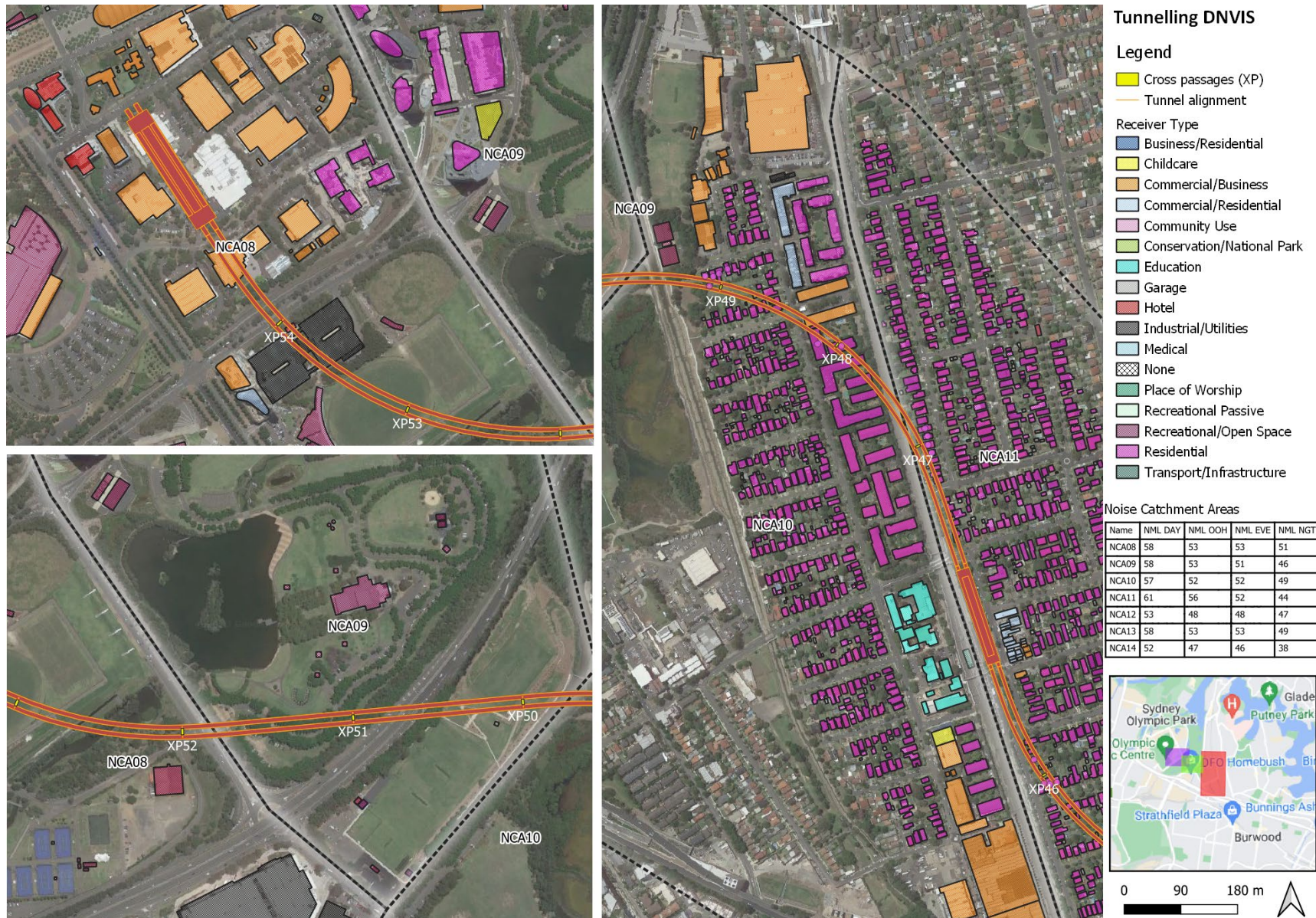


Figure 3-2 Tunnel alignment and sensitive receivers (Sydney Olympic Park to North Strathfield)



Figure 3-3 Tunnel alignment and sensitive receivers (Burwood North)



Figure 3-4 Tunnel alignment and sensitive receivers (Five Dock)



Figure 3-5 Tunnel alignment and sensitive receivers (The Bays)

4. Noise and vibration assessment criteria

4.1 Overview

Project CoA D43 requires works to be assessed within this DNVIS where they may exceed vibration criteria and/or ground-borne noise levels specified in CoA D39 and D40 at any residence outside construction hours identified in CoA D35, or where receivers will be highly noise affected. This condition will be applicable considering tunnelling operations occur outside standard hours.

This DNVIS includes specific mitigation measures identified through consultation with affected sensitive land user(s) and these mitigation measures will be implemented for the duration of tunnelling.

This DNVIS has been provided to the AA and ER before the commencement of the planned works.

CoA D39 requires noise and vibration from construction activity to be managed with guidance from:

- Noise: the Interim Construction Noise Guideline (ICNG, DECC 2009)
- Vibration for human exposure: Assessing Vibration: A Technical Guideline (DEC, 2006)
- Vibration for building damage: BS 7385 Part 2-1993 – Evaluation and measurement for vibration in buildings Part 2, and
- Vibration for damage of unsound heritage items: DIN 4150-3 Structural Vibration – effects of vibration on structures.

The over-arching document for assessment and management of noise and vibration impacts on this Sydney Metro project is the Sydney Metro *Construction Noise and Vibration Standard* (CNVS, v 4.3, Transport for NSW 2020). The following sections outline the framework of these guidelines and the way this DNVIS will assist to assess and manage impacts.

4.2 Ground-borne noise

CoA D40 requires all reasonable and feasible mitigation measures to be applied when the following residential ground-borne noise levels are exceeded. These levels are in line with the ICNG and CNVS and are only applicable when ground-borne noise levels are higher than airborne noise levels at residential receivers during the evening and night periods to protect the amenity and sleep of people when they are at home.

- a) evening (6:00 pm to 10:00 pm) — internal LAeq(15 minute): 40 dB(A); and
- b) night (10:00 pm to 7:00 am) — internal LAeq(15 minute): 35 dB(A).

The CNVS builds on guidance provided by the ICNG and recommends further mitigation measures where all reasonable and feasible mitigation measures to minimise noise at the nearest receivers have been implemented and construction noise is still predicted to exceed the noise or vibration objectives.

The Additional Mitigation Measures Matrix (AMMM) for ground-borne noise taken from the CNVS are presented in Table 4-1.

Table 4-1 Additional Mitigation Measures Matrix for ground-borne noise (CNVS)

Construction hours	dB above NML	Additional management measures
Approved hours Monday – Friday: 7am – 6pm Saturday: 8am to 6pm	No NML for ground-borne noise during standard hours (human comfort vibration levels only - Table 4-6)	
Evening Monday – Friday: 6pm – 10pm Saturday: 7am – 8am, 6pm – 10pm Sunday / PH: 8am – 6pm	0 to 10 10 to 20 > 20	LB LB, M, SN LB, M, SN, IB, PC, RO
Night Monday – Saturday: 10am – 7am Saturday: 10pm – 8am) Sunday / PH: 6pm – 7am	0 to 10 10 to 20 > 20	LB, M, SN LB, M, SN, IB, PC, RO, AA LB, M, SN, IB, PC, RO, AA

Notes: LB = Letterbox drops
M = monitoring
SN = Specific notification
IB = Individual briefings
PC = Phone calls
RO = Project specific respite offer
AA = Alternative accommodation

For other sensitive receivers, including commercial receivers such as offices and retail areas, the ICNG does not provide guidance in relation to acceptable ground-borne noise levels. The NVMP; however, has adopted an internal level derived from the airborne NML presented in the ICNG for commercial premises and assuming a minimum 20dB(A) noise reduction from outside to inside with closed windows, consistent with the Project EIS.

For other noise sensitive receivers, guidance is taken from the recommended 'maximum' internal noise levels in *AS/NZS 2107:2000 Acoustics – Recommended design sound levels and reverberation times for building interiors* to determine suitable noise management levels. The ground-borne noise objectives for 'other' noise sensitive land uses are identified in Table 4-2.

Table 4-2 Ground-borne NML for other sensitive receivers

Receiver type	NML, dBA	Reference
Class room at school or other educational institution	45	ICNG
Place of worship	45	ICNG
Commercial premises (e.g. offices)	50	ICNG
Commercial premises (e.g. retail)	55	AS/NZS 2107:2000
Industrial premises	55-60	ICNG, AS/NZS 2107:2000

4.3 Vibration management

4.3.1 Human comfort

When assessing human exposure to construction-related vibration, the CNVS requires vibration goals to be established using *Environmental Noise Management Assessing Vibration: A Technical Guideline* (DECC 2006), which provides criteria for the assessment of vibration impacts on humans.

Construction activities typically generate vibration of an intermittent nature, which is assessed using a Vibration Dose Value (VDV). Acceptable values of vibration doses are presented in Table 4-3 for sensitive receivers.

Table 4-3 VDV Vibration criteria

Receiver type	Low probability of adverse comment (m/s ^{1.75})	Adverse comment possible (m/s ^{1.75})	Adverse comment probable (m/s ^{1.75})
Residential buildings – 16 hour day (7am to 11pm) ¹	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings – 8 hour night (11pm to 7am) ¹	0.13	0.26	0.51

Note 1: Day time and night time as described in BS6472:1992 (as referenced in the CNVS), i.e. a daytime period of 16 h or a night time period of 8 h, for example 23.00 h to 07.00 h.

4.3.2 Buildings

Potential building damage from construction vibration requires the application of values in BS 7385 Part 2-1993 *Evaluation and measurement for vibration in buildings* Part 2. These values are presented in Table 4-4 and relate to transient vibration which does not give rise to resonant responses in structures, and to low-rise buildings.

Table 4-4 Guideline values for vibration velocity for the effects of short-term vibration on structures (BS 7385).

Line	Type of building	Peak component particle velocity in frequency range of predominant pulse	
		4 Hz to 15 Hz	15 Hz and above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz to 50 mm/s at 40 Hz and above

Where vibration may give rise to magnification due to resonance, especially at lower frequencies where lower guide values apply, the guide values may be reduced by 50%. The CNVS describes rock breaking/hammering and sheet piling activities as having potential to cause dynamic loading in some structures (e.g. residences).

For activity involving rock breakers, piling rigs, vibratory rollers, excavators, vibration predominantly occurs at frequencies in the 10 Hz to 100 Hz range. On this basis, a conservative vibration damage screening level is:

- Reinforced or framed structures: 25.0 mm/s
- Unreinforced or light framed structures: 7.5 mm/s

4.3.3 Heritage

Heritage buildings and structures would be assessed under a conservative cosmetic damage objectives of 2.5 mm/s peak component particle velocity (from DIN 4150). Where vibration levels at heritage items are identified as exceeding this screening level, structural assessment would be completed by the Project team to confirm the structure's sensitivity to vibration. If a heritage building or structure is found to be structurally unsound (following inspection) the conservative criterion would stand. Where the structure is suitably sound, the guideline values from Table 4-4 would be applicable.

4.3.4 Buried pipework and structures

The potential impacts on SOPA's buried pipework near Sydney Olympic Park are assessed based on guidance provided by DIN 4150. Assuming pipes are manufactured and laid using current technology, guideline values are presented in Table 4-5. All drain pipes would be evaluated using the values in line 3.

Table 4-5 Guideline values for maximum velocity for evaluating the effects of short-term vibration on buried pipework

Line	Pipe material	Guideline values for maximum velocity in mm/s at the pipe
1	Steel, welded	100
2	Vitrified clay, concrete, reinforced concrete, prestressed concrete, metal (with or without a flange)	80
3	Masonry, plastics	50

4.3.5 Sensitive equipment

Where vibration sensitive scientific and/or medical instruments are likely to be in use at an identified vibration sensitive receiver, objectives for the satisfactory operation of the instrument would be sourced from manufacturer's data.

Where manufacturer's data is not available, generic vibration criterion (VC) curves as published by the Society of Photo-Optical Instrumentation Engineers (Gordon 1999) will be adopted as vibration goals. These generic VC curves in units of rms velocity (mm/s) are presented in Figure 4-1 for the following sensitive uses.

- VC-A – Adequate for most instances such as optical microscopes to 400X, microbalances, optical balances, proximity and projection aligners
- VC-B – Appropriate for optical microscopes to 1000X, inspection and lithography equipment to 3 micron line widths
- VC-C – Good for inspection and lithography equipment to 1 micron line width
- VC-D – Suitable for most demanding equipment such as electron microscopes and E-Beam systems
- VC-E Difficult to achieve, for most sensitive equipment such as long-path laser-based, small target systems

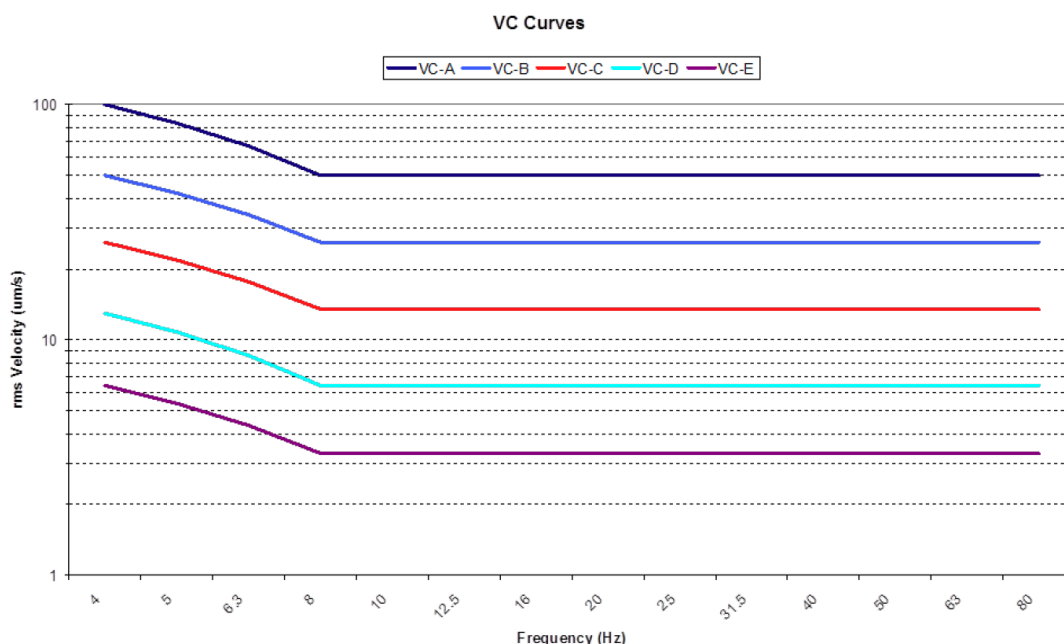


Figure 4-1 VC curves

4.3.6 Additional mitigation measures

The CNVS recommends additional mitigation measures where all standard mitigation measures to minimise vibration at the nearest receivers have been implemented and vibration is still predicted to exceed the maximum guideline values. The Additional Mitigation Measures Matrix (AMMM) for vibration from the CNVS is presented in Table 4-6. Acronyms are defined at Table 4-1.

Table 4-6 Additional Vibration Mitigation Measures (CNVS)

Construction hours	Mitigation measures where predicted vibration levels exceed maximum levels
Approved hours Monday – Friday: 7am – 6pm, Saturday: 8am to 6pm	LB, M, RO
Evening Monday – Friday: 6pm – 10pm; Saturday: 7am – 8am, 6pm – 10pm; Sunday / PH: 8am – 6pm	LB, M, IB, PC, RO, SN
Night Monday – Saturday: 10am – 7am Saturday: 10pm – 8am; Sunday / PH: 6pm – 7am	LB, M, IB, PC, RO, SN, AA

Notes:

- LB = Letterbox drops
- M = monitoring
- RO = Project specific respite offer
- IB = Individual briefings

- SN = Specific notification
- PC = Phone calls
- AA = Alternative accommodation

5. Impact assessment

5.1 Tunnel alignment and XPs

An illustration of the tunnel alignment and cross-passage locations relative to sensitive receivers and NCAs is provided in Figure 3-2 to Figure 3-5. The depth of the tunnel and passages beneath existing ground level varies over the length of the project and is illustrated in Figure 5-1, with a maximum depth to the tunnel centre line of around 97 metres near The Bays and a minimum depth of just 14 metres near North Strathfield. With a tunnel diameter of around 7 metres, the minimum distance to existing ground level is around 10-11 metres.

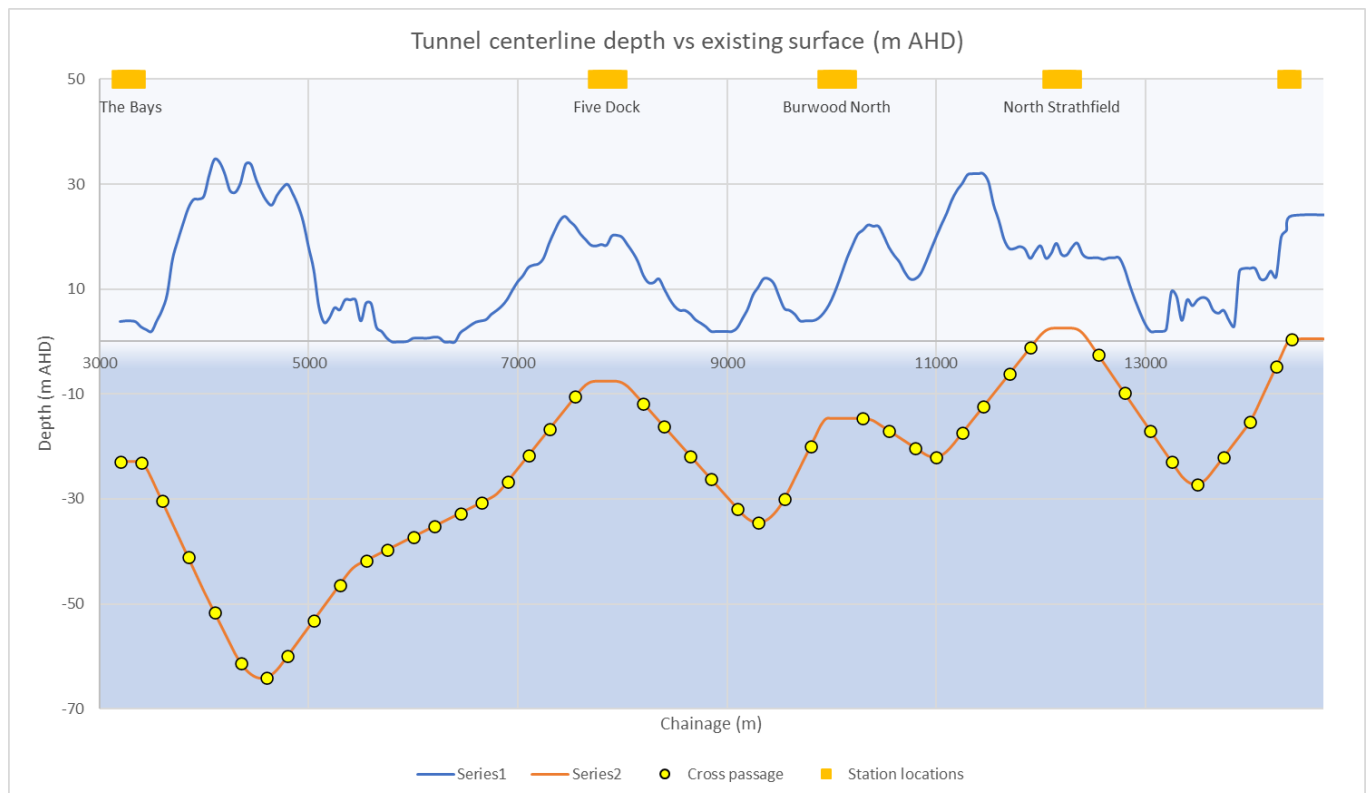


Figure 5-1 Tunnel and XP depth relative to existing ground levels

5.2 GBN and vibration from tunnelling equipment

As described in Section 2.1, the main sources of ground-borne noise and vibration during tunnelling will be:

- Mainline tunnels – tunnel boring machine
- Cross passages and caverns – rock hammer, road header and rock drill rig

Each equipment type will generate vibration, leading potentially to ground-borne noise and vibration at sensitive receivers above the works.

Algorithms used in predictive modelling of ground-borne noise and vibration have been developed from measurement data summarised in the project EIS, which was in turn taken from various tunnelling projects around Sydney and converted to a curve for implementation in predictions. Implemented curves are shown in Figure 5-2 and demonstrate rock breakers have higher levels close to the work compared to the TBMs, but similar levels at larger distances. Road headers are likely to result in the lowest level of impact.

A surface miner may on occasion be used for tunnelling activities where benching of cavern areas at Five Dock is required. There is no supporting data for GBN impacts from a surface miner however, given the operational mode of this type of machine, vibratory impacts are unlikely.

While it is anticipated that a surface miner would only operate during standard hours, to assess potential for a surface miner to generate GBN impacts, the vibration profile from a road header has been adopted for the purposes of assessment.

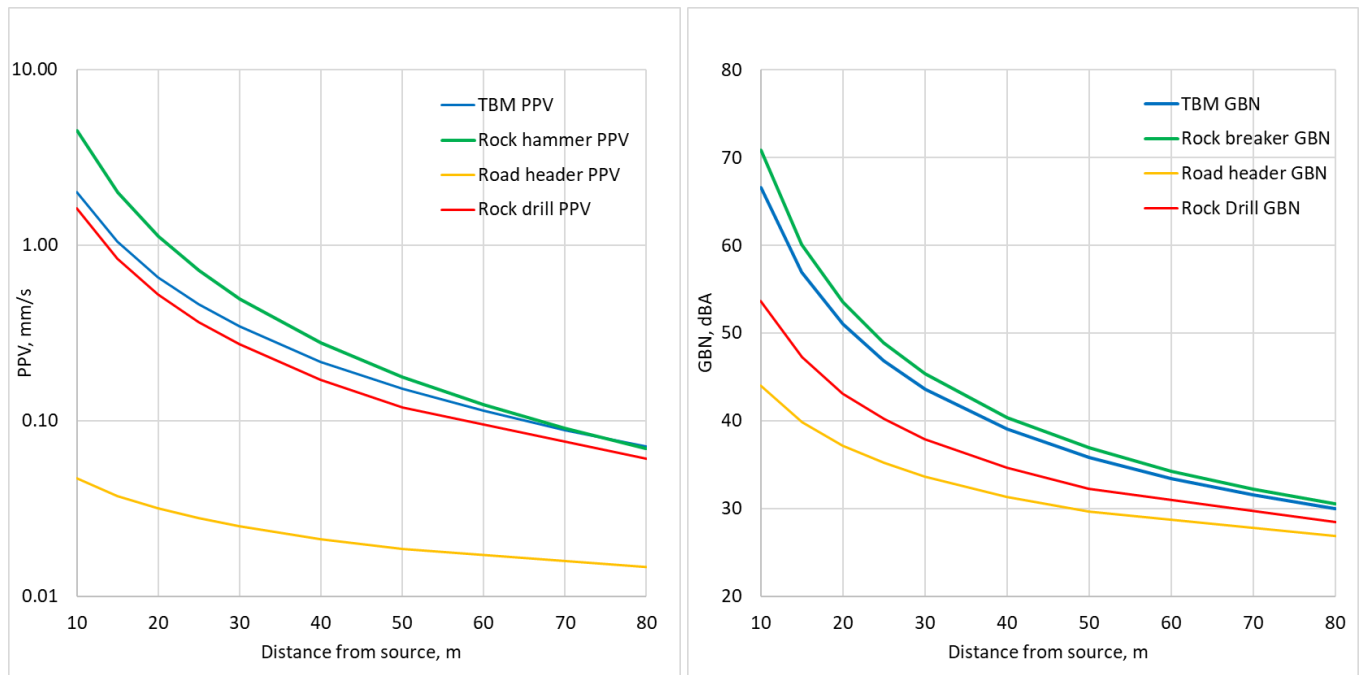


Figure 5-2 Vibration (left) and GBN (right) propagation curves

GBN and vibration predictions are based on typical geology, comprising of Sydney sandstone with a varying depth of shale. Due to localised geology, ground-to-building interaction and a range and variety of structures that exist (e.g. construction type, dimensions, materials, quality of construction, footing conditions etc) actual GBN and vibration levels may vary to what has been predicted. Therefore, verification measurements shall be undertaken at the first opportunity to check and verify the outcomes. Measurement result can be fed back into future predictions and the accuracy improved.

5.3 GBN and vibration modelling

GBN and vibration levels were determined by modelling the distance between each noise source and receiver location and converting the 3D slant distance to a noise or vibration level based on the information presented above.

To estimate the Vibration Dose Value (VDV) for intermittent vibration, the following assumptions were incorporated into eVDV calculations.

- Crest factor: TBM – 3, Rock breaker – 5
- Dominant frequency: TBM 16 Hz, Rock breaker – 30 Hz
- Proportion time operating at reported sound power level over any 15-minute assessment period:
 - o TBM – 100%
 - o Rock breaker – 40%

Predictions are representative of a reasonable worst-case scenario where excavation is undertaken at the closest location to each receiver. These predicted levels may be experienced for a limited amount of time and would decrease as the underground works move further away.

For 'real-time' predictions to address the variability in noise and vibration levels as well as cumulative noise from two TBMs operating concurrently, a construction noise and vibration management tool (KNOWnoise™, see Section 6.1.4) has been developed to assist the construction team in mitigating and managing impacts. This allows the equipment and location to be selected, then predicted levels are instantly available for the team to use for appropriate additional mitigation measures such as notification, measurement and offers of respite.

5.4 Mitigation measures included in the modelling

Mitigation measures would be implemented to ameliorate noise impacts as standard practice throughout the works. Mitigation measures, which may affect the predicted levels include the following, which have been incorporated in the assessment as base assumptions for noise predictions.

- Source noise control strategies:
 - As outlined in Table 25 of Technical Paper 2 within the project EIS, activities supporting tunnelling operations may be required to take place 24/7. Rock breaking in the tunnel and cross passages would only occur between 10:00 pm and 7:00 am where impacts are NML compliant or where appropriate mitigation measures have been implemented in accordance with the project CNVMP. Mainline tunnelling will continue 24/7.
 - Cross passage intervals have been optimised to around 240 metres (previously assessed in EIS). See Figure 3-2 to Figure 3-5 for locations.
 - The cross passages will be constructed with the smallest effective equipment, e.g. a Brokk 500, which uses a smaller hammer of just 600 kg. To be conservative, a 20 – 30 tonne excavator with a hammer of around 1000 kg has been assumed in the assessment. Once verification monitoring is undertaken, the predicted levels may be corrected.

5.5 Predicted noise and vibration

5.5.1 Mainline Tunnelling

Ground-borne noise

Excavation of the twin mainline tunnels using TBMs will potentially result in audible ground-borne noise at a large number of receiver locations along the alignment. Receivers expected to exceed the GB NML are largely concentrated in North Strathfield, Burwood North and Five Dock. Sydney Olympic Park and The Bays are not likely to experience substantial adverse impacts due to the lower population density and the largely commercial land uses.

The numbers of potentially GBN affected properties during TBM excavation is summarised in Table 5-1, divided into NCAs to indicate the higher risk portions of the tunnel alignment.

When tunnelling in the evening or night, the predicted number of receivers above the applicable ground-borne noise management level (GB NML) is likely to be around 140 in the evening and 200 - 250 at night in each of the North Strathfield, Burwood North and Five Dock areas. However, these will not all be at one time. Maps of predicted exceedances of night GB NML for TBM excavation are presented in Appendix A.

Considering additional mitigation measures described in Section 4.2, respite offers / alternative accommodation would be offered to around 100 receivers predicted to experience ground-borne noise levels greater than 10 dB

above the GB NML in each of North Strathfield and Five Dock and around 60 receivers in Burwood North. A summary of predicted impacts is provided in Table 5-1.

Given the expected progression of the TBMs is between 50 and 70 metres per day, the duration of the maximum impact would be short. Figure 5-3 illustrates the anticipated duration of noise impacts for a range of tunnel depths. It is evident the rate of progress means any impacts would be short lived.

Note, the second TBM will be launched a few weeks after the first. So, while cumulative impacts are not likely, a second impact event will be experienced by sensitive receivers.

Table 5-1 Tunnelling with TBM - Number of Receivers with Ground-borne NML Exceedance¹

Study area	Corresponding NCAs	Evening (6pm to 10 pm)			Night-time (10pm to 7am)		
		0-10 dB	10-20 dB	>20 dB	0-10 dB	10-20 dB	>20 dB
Olympic Park	NCA 08	2	0	0	2	0	0
	NCA 09	0	0	0	0	0	0
North Strathfield	NCA 10	13	17	4	22	15	12
	NCA 11	72	21	17	77	44	28
Burwood	NCA 12	131	8	0	192	63	0
	NCA 13	0	0	0	1	0	0
Five Dock	NCA 14	53	43	0	70	68	0
	NCA 15	37	9	0	48	25	0
Between Five Dock and The Bays	NCA 16	0	0	0	0	0	0
	NCA 17	99	0	0	145	2	0
	NCA 18	0	0	0	0	0	0
	NCA 19	0	0	0	0	0	0
The Bays	NCA 20	0	0	0	0	0	0
	NCA 21	3	0	0	14	0	0
	NCA 22	0	0	0	0	0	0

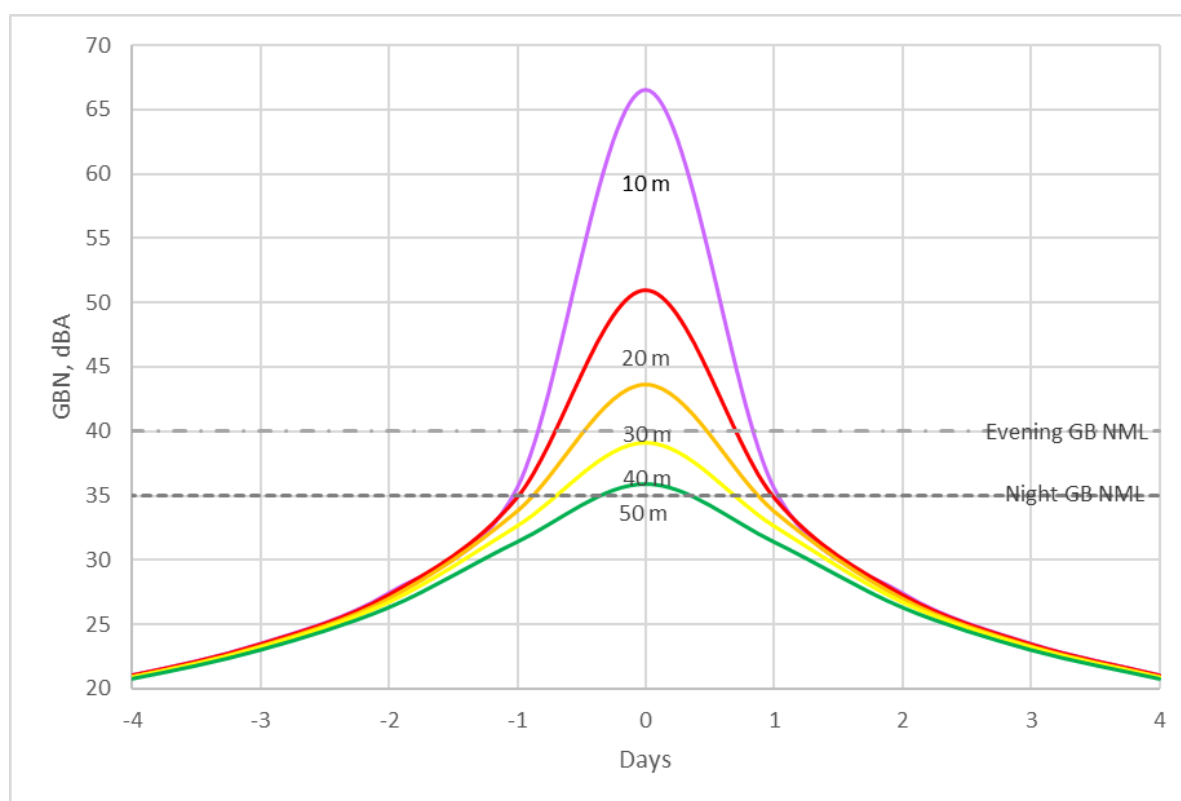


Figure 5-3 Estimated duration of predicted GBN levels at varying tunnel depths (TBM progress of 50 m / day)

Vibration

Human comfort

The ground-borne vibration assessment is based on the worst-case (highest) predicted ground-borne vibration level for sensitive receivers above the tunnel alignment, at the shortest slant distance between source and receiver.

A summary of predicted exceedances of the human comfort vibration management levels from TBMs for each NCA are presented in Table 5-2. The table demonstrates the human comfort criteria may be exceeded in some locations such as North Strathfield, Burwood and Five Dock. This means vibration may be perceptible and would likely be coupled with GBN at the same time.

Table 5-2 Exceedances of human comfort VML

Study area	Corresponding NCAs	Number receivers expected to experience vibration levels above the human comfort VML	
		Day (7am to 10 pm): 0.40 m/s ^{1.75}	Night (10pm to 7am): 0.26 m/s ^{1.75}
Olympic Park	NCA_08	0	1
	NCA_09	0	0
North Strathfield	NCA_10	20	29
	NCA_11	37	72
Burwood	NCA_12	3	103
	NCA_13	0	0
Five Dock	NCA_14	34	76

Study area	Corresponding NCAs	Number receivers expected to experience vibration levels above the human comfort VML	
		Day (7am to 10 pm): 0.40 m/s ^{1.75}	Night (10pm to 7am): 0.26 m/s ^{1.75}
	NCA_15	6	36
Between Five Dock and The Bays	NCA_16	0	0
	NCA_17	0	68
	NCA_18	0	0
	NCA_19	0	0
The Bays	NCA_20	0	0
	NCA_21	0	1
	NCA_22	0	0

Cosmetic damage

The maximum predicted Peak Particle Velocity (PPV) was 2.3 mm/s at any single property during tunnelling. This indicates no cosmetic damage is likely during tunnelling with a TBM.

Considering the depth of SOPA drains and pits near Sydney Olympic Park, the tunnel is between 13 metres and 21 metres below ground level in this area. With drains around 1 metre from the surface, there would be around 12 metres slant distance to the top of the tunnel (if directly overhead), which translates to a PPV from the TBM estimated at less than 2 mm/s. This level is substantially less than the guideline values for buried pipework.

Pits made from concrete would be at a slant distance of around 12 – 13 metres and would also not be impacted by substantial levels of vibration from a TBM.

5.5.2 Cross passages

Ground-borne noise

Cross passages that link the mainline tunnels, as illustrated in Figure 3-2 to Figure 3-5, will use rock breakers to tunnel the short distances between the up and down rail lines. The number of potentially GBN affected properties during cross-passage excavation with this equipment is summarised in Table 5-3 with individual receiver results in Appendix B.

Cross-passage locations have been revised from around 500 metres to a 240-metre interval similar to the EIS. Several of these cross-passages are located beneath unpopulated areas that do not affect any sensitive receivers.

Cross passage excavation is planned to occur 24 hours a day. If ground borne NMLs are not met, mitigation measures specified in the CNVMP will be implemented, including alternative accommodation for moderately and highly impacted receivers during night time hours.

There were no non-residential sensitive receivers such as medical centres, laboratories or recording studios that may be affected by GBN identified in the vicinity of the cross passages. As the GBN NML criteria only apply to residential dwellings during non-standard construction hours, other sensitive receivers are not included in the count of predicted impacts. Should any complaints from non-residential premises be received, they will be addressed under the communications strategy.

Cross passages 31-34, 42 and 46-50 are predicted to require respite offers to affected residential occupants for night time excavation, with a maximum of 6 properties affected for any given location. Cross passages 47 – 50 may also require respite offers where work is undertaken into the evening period.

As predicted levels indicate, several cross-passage locations may be excavated outside standard hours without affecting sensitive receivers.

Though no exceedances are predicted for cross passages 17 and 21 since these are non-residential within the grounds of Sydney University, it may be beneficial to excavate these outside standard hours, in consultation with the university, to avoid the more sensitive times of the day.

Table 5-3 Predicted GBNML exceedances during excavation of cross passages

Cross passage	Evening			Night-time		
	0-10 dB	10-20 dB	>20 dB	0-10 dB	10-20 dB	>20 dB
XP13	0	0	0	0	0	0
XP14	0	0	0	0	0	0
XP15	0	0	0	0	0	0
XP16	0	0	0	0	0	0
XP17	0	0	0	0	0	0
XP18	0	0	0	0	0	0
XP19	0	0	0	0	0	0
XP20	0	0	0	0	0	0
XP21	0	0	0	0	0	0
XP22	0	0	0	0	0	0
XP23	0	0	0	0	0	0
XP24	0	0	0	0	0	0
XP25	0	0	0	3	0	0
XP26	9	0	0	24	0	0
XP27	5	0	0	20	0	0
XP28	7	0	0	24	0	0
XP29	5	0	0	10	0	0
XP30	0	0	0	0	0	0
XP31	6	0	0	14	2	0
XP32	13	0	0	23	5	0
XP33	9	0	0	7	6	0
XP34	5	0	0	3	4	0
XP35	2	0	0	8	0	0
XP36	0	0	0	0	0	0
XP37	0	0	0	5	0	0
XP38	0	0	0	0	0	0
XP39	0	0	0	0	0	0
XP40	5	0	0	11	0	0
XP41	8	0	0	19	4	0
XP42	4	0	0	15	0	0
XP43	0	0	0	9	0	0
XP44	0	0	0	7	0	0
XP45	8	0	0	17	5	0
XP46	2	4	0	5	3	2
XP47	2	4	0	8	2	2
XP48	2	1	0	2	2	0

Cross passage	Evening			Night-time		
	0-10 dB	10-20 dB	>20 dB	0-10 dB	10-20 dB	>20 dB
XP49	4	3	0	8	3	2
XP50	0	0	0	0	0	0
XP51	0	0	0	0	0	0
XP52	0	0	0	0	0	0
XP53	0	0	0	0	0	0
XP54	0	0	0	0	0	0

Vibration

The ground-borne vibration assessment is based on the worst-case (highest) predicted ground-borne vibration level for sensitive receivers above the tunnel alignment, at the shortest slant distance between source and receiver.

Based on operation of a rock breaker for cross-passage excavation, up to 10 properties are expected to experience ground-borne vibration levels above the VML for night time and 2 properties during the day. These properties are in North Strathfield and Five Dock at cross-passages 31-34, 38, 41, and 45-50. Properties likely to exceed the VML are illustrated in Appendix A.

Impacts at affected receivers would be managed in accordance with the ground borne noise mitigation measures detailed in Section 4.2.

No receivers are predicted to experience vibration levels above the cosmetic damage criteria, with the maximum predicted level less than 1.1 mm/s.

5.5.3 Burwood crossover cavern

Ground-borne noise

Excavation of the crossover cavern using rock breakers at night will potentially result in audible ground-borne noise at about 17 residential receiver locations above the crossover cavern. A similar number of properties would be impacted when using rock drills at night.

Where road headers are used during the night-time period, the number of impacted receivers reduces to about 4, due to the lower vibration profile of the equipment. The numbers of potentially GBN affected properties during the cavern excavation is summarised in Table 5-4 for each equipment type.

As the cavern excavation is expected to take around 2 months, where tunnelling activities are necessary during the OOHW periods, additional mitigation measures described in Section 4.2, respite offers / alternative accommodation would be offered to impacted residences.

Table 5-4 Predicted GBNML exceedances during excavation of crossover cavern

Crossover cavern	Evening			Night-time		
	0-10 dB	10-20 dB	>20 dB	0-10 dB	10-20 dB	>20 dB
Road Header	0	0	0	4	0	0
Rock Breaker	14	2	0	6	11	0
Rock Drill	9	0	0	15	0	0

Vibration

Vibration impacts will vary depending on the equipment used to excavate the cavern. Up to 9 properties are expected to experience ground-borne vibration levels above the VML for night time and 4 properties during the day where rock breakers are in operation. These impacts reduce where a road header or rock drill is employed. Properties likely to exceed the VML for rock breaking during the night time mining would be eligible for additional mitigation measures outlined in Table 4-1. These properties are illustrated in Appendix A.

5.5.4 Five Dock station cavern

Ground-borne noise

The use of road headers and rock drills during excavation of the cavern are like to result in audible ground-borne noise impacts during the evening and night time periods. While only one receiver is expected to be impacted by road header activities during the evening, this increases to 15 residential receiver locations during the night. Similar ground borne noise impacts have been assumed for the operation of a surface miner in these locations.

Rock drilling during the evening and night are likely to impact 17 and 40 receiver locations respectively, with at least one receiver location greater than 20 dB above the NML.

The number of impacts from rock breaking indicates around 73 receiver locations would experience levels above the GBNML during the evening and about 96 buildings (76 individual addresses) during the night, with up to about 13 receiver experiencing levels greater than 20 dB above the criteria.

Due to the shallow depth of the caverns in Five Dock and the potential to impact commercial receivers during the daytime and residential receivers during the evening and the night time, the use of rock breakers should be minimised during the excavation of the caverns with alternative methods employed where practicable.

Any tunnelling activities during the OOHW periods would require the application of additional mitigation measures described in Section 4.2. These would include respite offers and alternative accommodation for impacted residences.

Individual results for modelled receivers are presented in Appendix D and a summary of impacts is presented in Table 5-5.

Table 5-5 Predicted GBNML exceedances during excavation of station cavern

Crossover cavern	Evening			Night-time		
	0-10 dB	10-20 dB	>20 dB	0-10 dB	10-20 dB	>20 dB
Road Header/ Surface Miner	1	0	0	15	0	0
Rock Breaker	50	17	6	52	31	13
Rock Drill	14	2	1	31	8	1

Vibration

Ground-borne vibration levels above the VML for evening and night time are greatest when rock breaking is underway with 13 and 20 exceedances respectively. During rock drilling the evening and night impacts would reduce to 8 and 14 respectively. There are no predicted exceedances of the VML criteria when road headers are in use.

6. Summary and recommendations

6.1.1 Risk summary

This DNVIS has established, during tunnelling, noise and vibration is likely to result in adverse impacts on noise sensitive receivers close to the tunnel alignment.

Though predictions indicate exceedances of the ground-borne noise management levels and vibration management levels at sensitive residential buildings during evening and night periods, the duration of any such exceedances would be only a few days for tunnelling when maintaining progress of over 50 metres per day.

Where cross-passages are likely to exceed the NML, these works would be undertaken during standard hours only unless unavoidable, in which case appropriate consultation and respite offers such as offers of alternative accommodation, would be considered and implemented as appropriate.

Based on the above factors, the level of risk from tunnelling through the CTP corridor is relatively low.

However, the NMLs are predicted to be exceeded and appropriate mitigation measures will be implemented. The following measures have been proposed to maintain noise impacts at a practicable minimum.

6.1.2 Standard mitigation

Standard noise mitigation measures described in Table 6-1 should be implemented at all stages of the project in addition to those described in the project Construction Noise and Vibration Management Plan (CNVMP).

In line with CoA D42 best practice construction methods will be implemented where reasonable and feasible to ensure noise is maintained at a practical minimum. Practices will include use of regularly serviced low sound power equipment (e.g. smaller hammers for rock breaking), maximising the spacing between cross passages to reduce the number of impact sites and working in standard hours as far as is practicable.

Consultation will be critical in ensuring the community's expectations are managed, with impacts and durations clearly conveyed, resident's concerns heard, appropriate respite and other mitigation is offered and/or implemented and works outside of hours are not unexpected.

Table 6-1 Standard mitigation measures

Measure	Description
Administrative	
Construction hours	- Cross passage excavation is planned to occur 24 hours a day. If ground borne NMLs are not met, mitigation measures specified in the CNVMP will be implemented, including alternative accommodation for moderately and highly impacted receivers during night time hours. - A register of noise and vibration sensitive receivers would be maintained including their address, receiver type and contact details. This will be helpful to ensure proper notifications and respite are implemented.
Community consultation	- In line with the CNVMP, nearby receivers should be notified of the upcoming works, including the duration and predicted level of impact. - In line with the CNVS, community consultation will be undertaken regarding the DNVIS and proposed mitigation such as respite offers
Site induction	Site Environmental Induction should be delivered to the team and should include consideration and awareness of noise impacts.
Cumulative impacts	Programming for works undertaken outside approved hours will also consider works being undertaken by third parties

Measure	Description
Noise control	
Equipment selection	Priority will be given to the use of quieter and less vibration emitting construction methods and plant alternatives where feasible and reasonable. For example, the Brokk 500 rock breaker has been selected to excavate cross-passages, which should reduce noise levels of this activity.
Monitoring	
Noise monitoring	- Noise monitoring shall be completed to: - verify assumptions of this DNVIS regarding estimated noise and vibration levels, - ensure compliance with the NMLs, - as required by the AMM for each assessed activity and - as required by the NVMP and associated monitoring program.
Vibration monitoring	- Vibration monitoring would be undertaken: - in response to complaints of ground-borne vibration, including for human comfort and for building damage. - to ensure compliance with the NMLs, - as required by the AMM for each assessed activity - as required by the NVMP and associated monitoring program.

6.1.3 Additional mitigation measures

Additional noise mitigation measures described in the CNVS AMMM should also be implemented as indicated in Appendix B for each receiver. AMM for each receiver is indicated by colour-coding as per the AMMM in Table 4-1.

For vibration, AMM should be applied for sensitive receivers where measurement indicates it is applicable. In this case, measurement means either at a single location, which also indicates the likely level (and relevant AMM) at other similarly exposed locations or as established by site law measurements to indicate which receivers would be within the site-specific safe working distances.

6.1.4 Construction noise and vibration management tool – KNOWnoise™

KNOWnoise™ is a project-specific 3D noise and vibration modelling tool available to the project team via a web-based platform to perform its own noise and vibration impact predictions and proactively manage its tunnelling impacts.

Using a simple map interface and selection of the applicable tunnelling equipment, KNOWnoise quickly and easily provides information on which receivers may be impacted for upcoming works. The map is populated with colour-coded points of NML and VML exceedance, and the community team can download reports or spreadsheets of results to consult with residents more efficiently.

The tool will be verified with real measurement data once tunnelling commences to ensure assumptions are appropriate and predicted levels sufficiently accurate.

6.1.5 Monitoring

Several assumptions have been made in this assessment to provide representative predictions, such as work location, equipment types and numbers, intensity of operation and vibration generation capacity and these will be verified once works commence and regularly throughout the program.

Noise and vibration monitoring will be undertaken in line with the Noise and Vibration Monitoring Program and out-of-hours protocol as appropriate and will include attended or unattended monitoring during tunnelling at available locations early in the works. Once a representative sample of measurements has been completed and

the model has been validated, no further monitoring is required for model validation. However, additional monitoring would be conducted in response to noise complaints or community consultation.

In addition to GBN monitoring, attended vibration monitoring is to be undertaken to validate the vibration model and to verify that vibration resulting from tunnelling works are consistent with (or below) vibration predicted in this CNVIS.

6.1.6 Consultation

Condition of Approval D43 requires mitigation measures presented in this DNVIS to be identified through consultation with the affected community. This applies to standard hours and works outside standard hours.

Mitigation measures developed as part of this DNVIS have been formed around community needs and concerns established through the community consultation process, as required by CoA D43.

AFJV place managers' site presence since late 2021, issue of various communication materials and extensive site specific engagement undertaken at The Bays, Five Dock, Burwood North, North Strathfield and Sydney Olympic Park enables identification of various interested and/or sensitive receivers that will require specific engagement as the tunnelling and cross passage work is carried out near their properties.

In May 2023, AFJV distributed a tunnelling newsletter to over 15,000 properties along the tunnelling alignment explaining what tunnelling work will involve including expected impacts.

Since tunnelling started in June 2023 AFJV has been consulting with the community about planned tunnelling work by providing regular 3 to 5 week TBM tunnelling notification lookaheads which also invites feedback to be provided. To date, no specific TBM tunnelling feedback has been received and only 1 ground borne noise complaint relating to road header excavation at Five Dock has been received.

The 3 to 5 week TBM tunnelling notifications are then followed by weekly contact via hardcopy reminder notifications (or phone calls/emails with known stakeholders) 1 to 2 weeks before tunnelling starts under or near properties.

Apart from TBM tunnelling excavation, specific notifications about impacts and mitigation measures associated with cross passage construction will be distributed to affected properties whereas properties expected to be highly affected would be doorknocked to offer mitigation measures. It should be noted that a number of the cross passages are predicted to be below NML and work associated with them will not be felt/heard by the nearby properties.

AFJV hosted tunnelling community open days at The Bays on 18 June 2023 and at Five Dock on 20 August 2023. Adjoining community members were invited to meet the team and discuss current and upcoming work as well as any concerns they may have with the key theme of the open days being tunnelling work methodologies, equipment, associated impacts and mitigation measures. Over 200 community members attended The Bays open day whereas over 4,000 people attended the Five Dock site which was deliberately timed to occur on the same day as the annual Ferragosto festival to maximise exposure. Further tunnelling open days are planned for the Burwood North, North Strathfield and Sydney Olympic Park sites ahead of the tunnelling activities approaching these areas.

In addition to the tunnelling community open days AFJV also hosted tunnelling themed community drop-in information sessions at Burwood North and Five Dock on 5 and 25 May 2023 respectively.

While not TBM tunnelling, it should be noted that in May 2023, a site specific meeting was held for residents of 110 Great North Road, Five Dock to outline station cavern excavation work under the building. This included

description of the work process, explanation of ground borne noise, answers to questions arising and an overview of the approach for mitigation including offers of alternative accommodation for highly impacted residents.

In addition, a number of residents adjacent to the Five Dock station cavern excavation (in Waterview Street and East Street) were individually provided with a briefing about the upcoming work, potential ground borne noise, mitigation measures and had arising questions answered.

Similarly at Burwood North, individual consultation was undertaken in early 2023 with each of the 17 residential receivers above the crossover cavern identified in the DNVIS. Individual briefings outlined the equipment used, timeline of anticipated impacts above the ground borne NML and mitigation measures. Weekly updates were provided to those most impacted and included offers of alternative accommodation for durations when the work was anticipated to have ground borne noise and vibration impacts.



Appendix A. Impact mapping

A.1 Tunnelling GBN



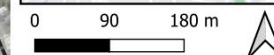
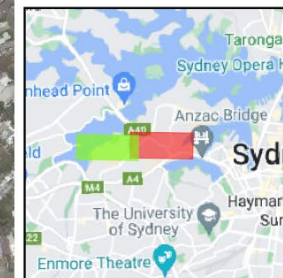
**Tunnelling DNVIS- GBN
Night**

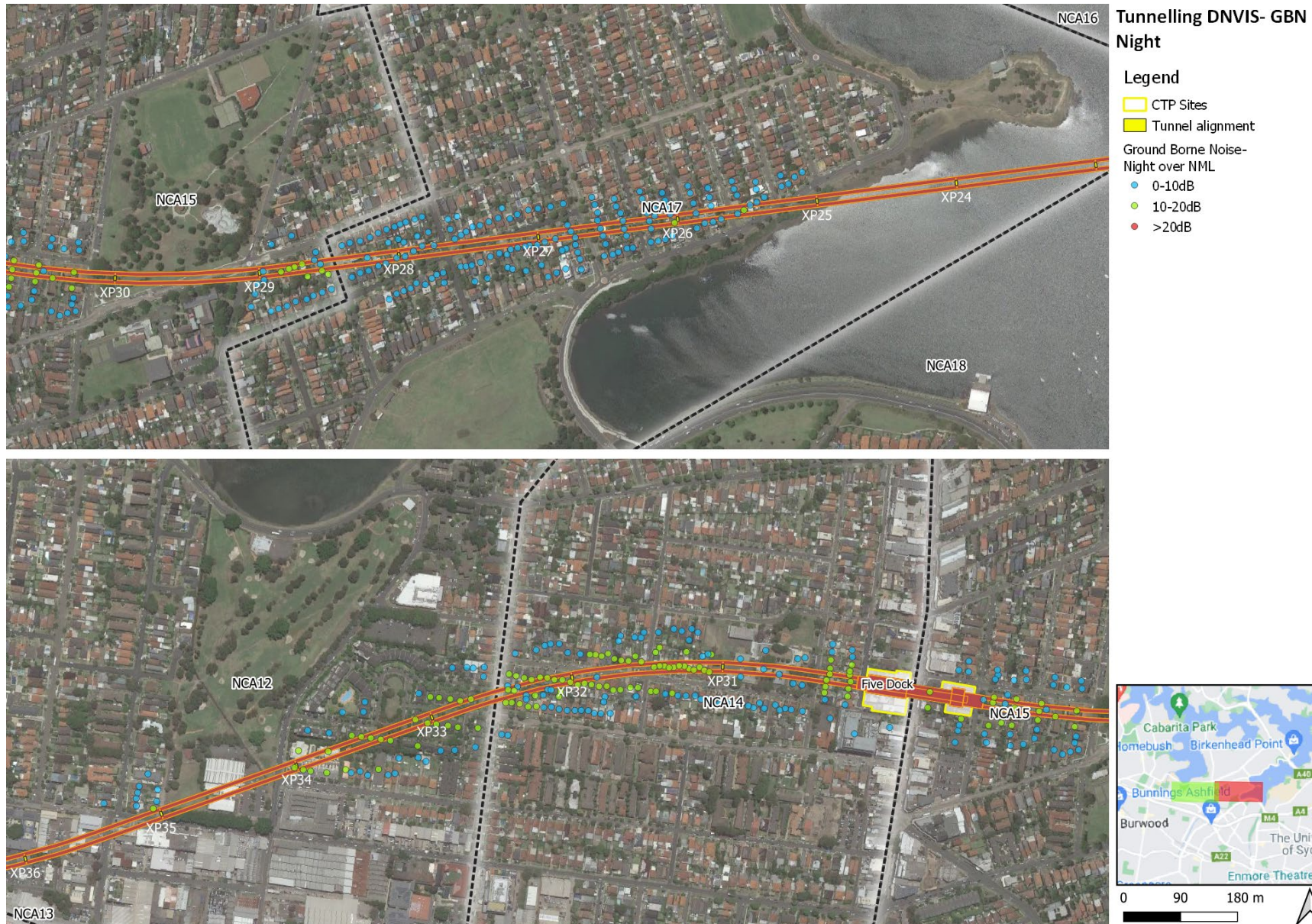
Legend

- CTP Sites
- Tunnel alignment

Ground Borne Noise-
Night over NML

- 0-10dB
- 10-20dB
- >20dB



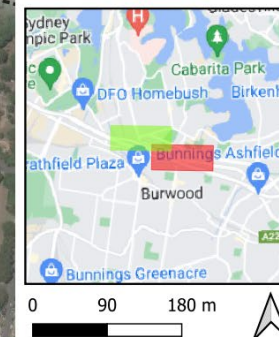


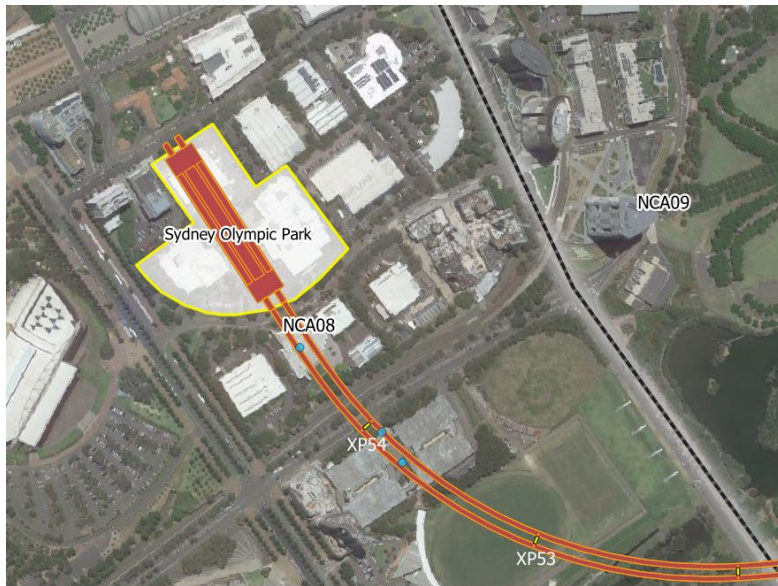


Tunnelling DNVIS- GBN Night

Legend

- CTP Sites
- Tunnel alignment
- Ground Borne Noise-
Night over NML
- 0-10dB
- 10-20dB
- >20dB

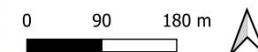
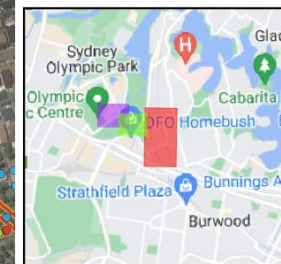




Tunnelling DNVIS- GBN Night

Legend

- CTP Sites
- Tunnel alignment
- Ground Borne Noise-
Night over NML
- 0-10dB
- 10-20dB
- >20dB





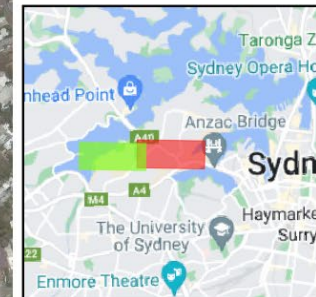
A.2 Cross-passage GBN



**Tunnelling Cross
Passages DNVIS- GBN
Night**

Legend

- CTP Sites
- Tunnel alignment
- Ground Borne Noise-
Night over NML
- 0-10dB
- 10-20dB
- >20dB



0 90 180 m





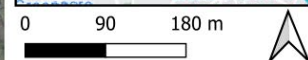
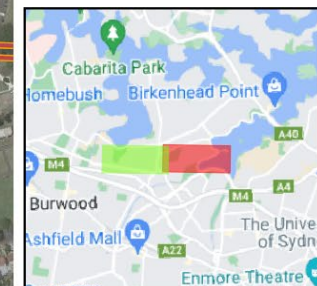
Tunnelling Cross Passages DNVIS- GBN Night

Legend

- Tunnel alignment
- Cross passages (XP)

Ground Borne Noise- Night over NML

- 0-10dB
- 10-20dB
- >20dB





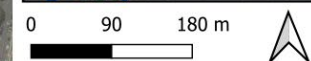
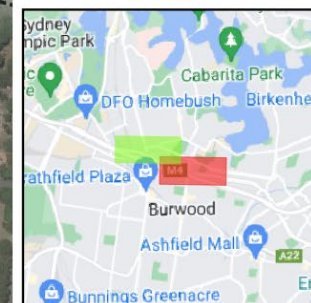
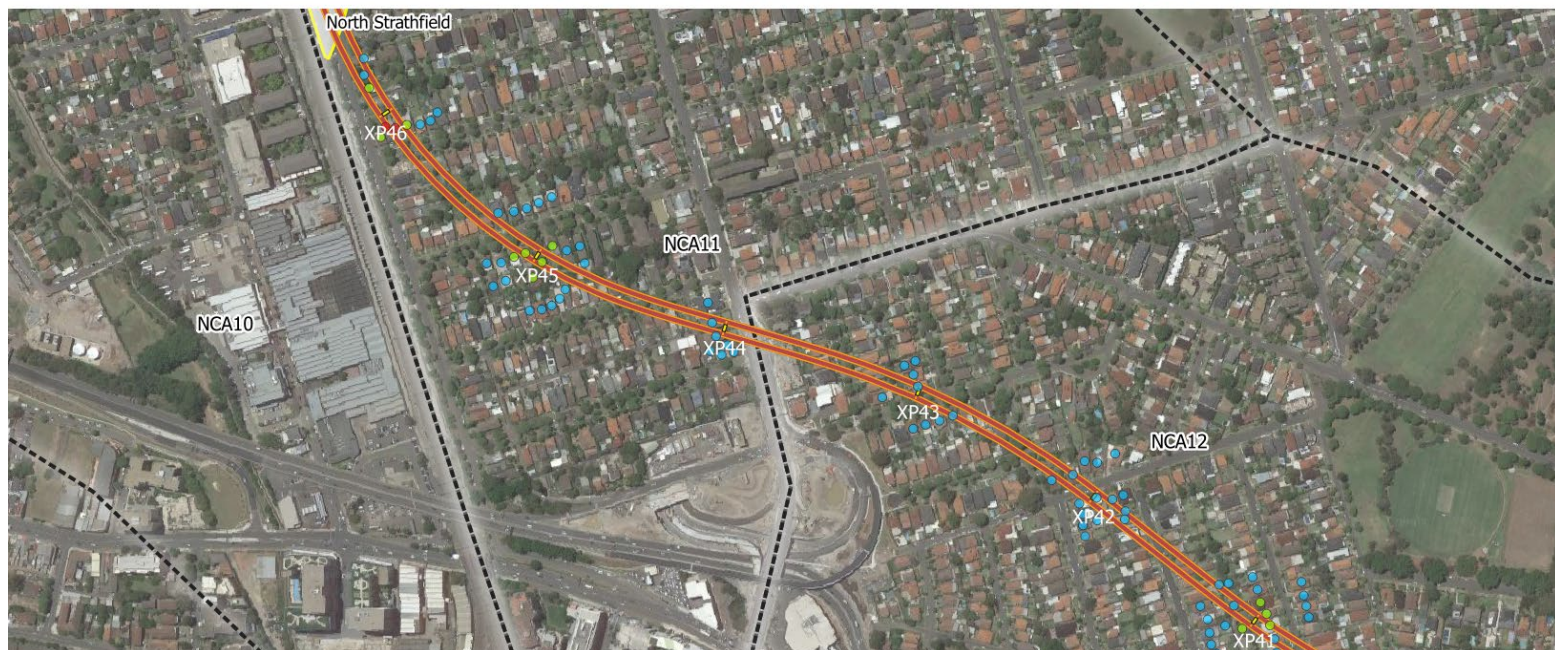
Tunnelling Cross Passages DNVIS- GBN Night

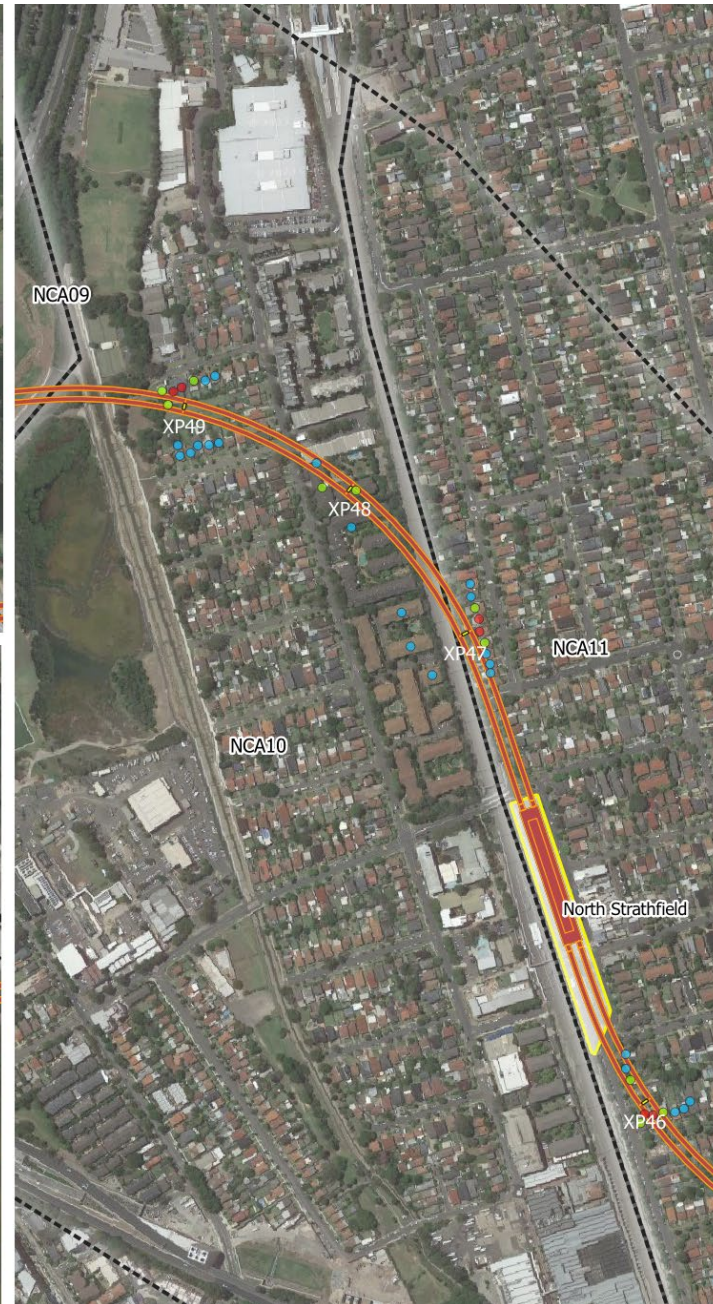
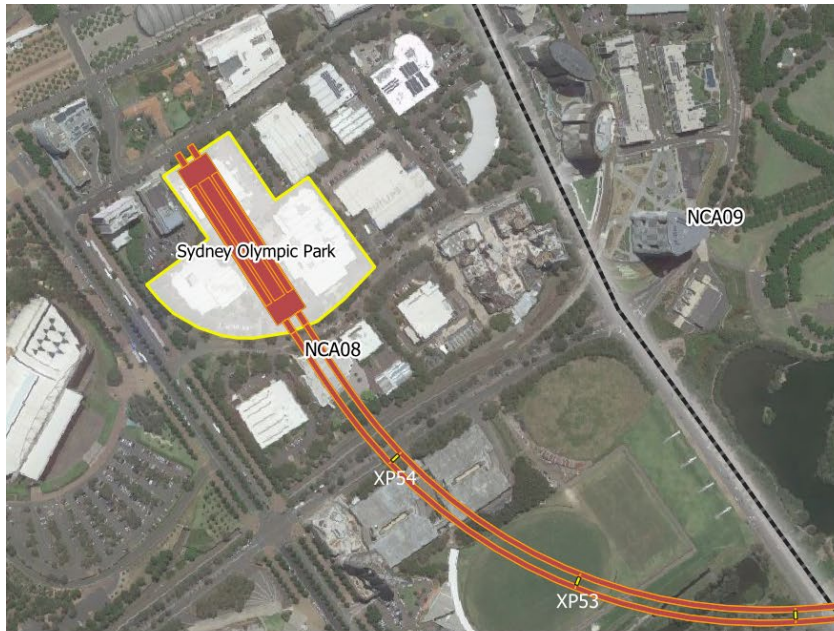
Legend

- CTP Sites
- Tunnel alignment

Ground Borne Noise- Night over NML

- 0-10dB
- 10-20dB
- >20dB

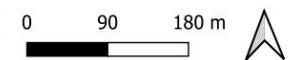
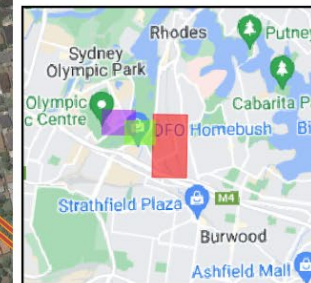




Tunnelling Cross Passages DNVIS- GBN Night

Legend

- CTP Sites
- Tunnel alignment
- Ground Borne Noise-
Night over NML
- 0-10dB
- 10-20dB
- >20dB





A.3 Mined caverns GBN



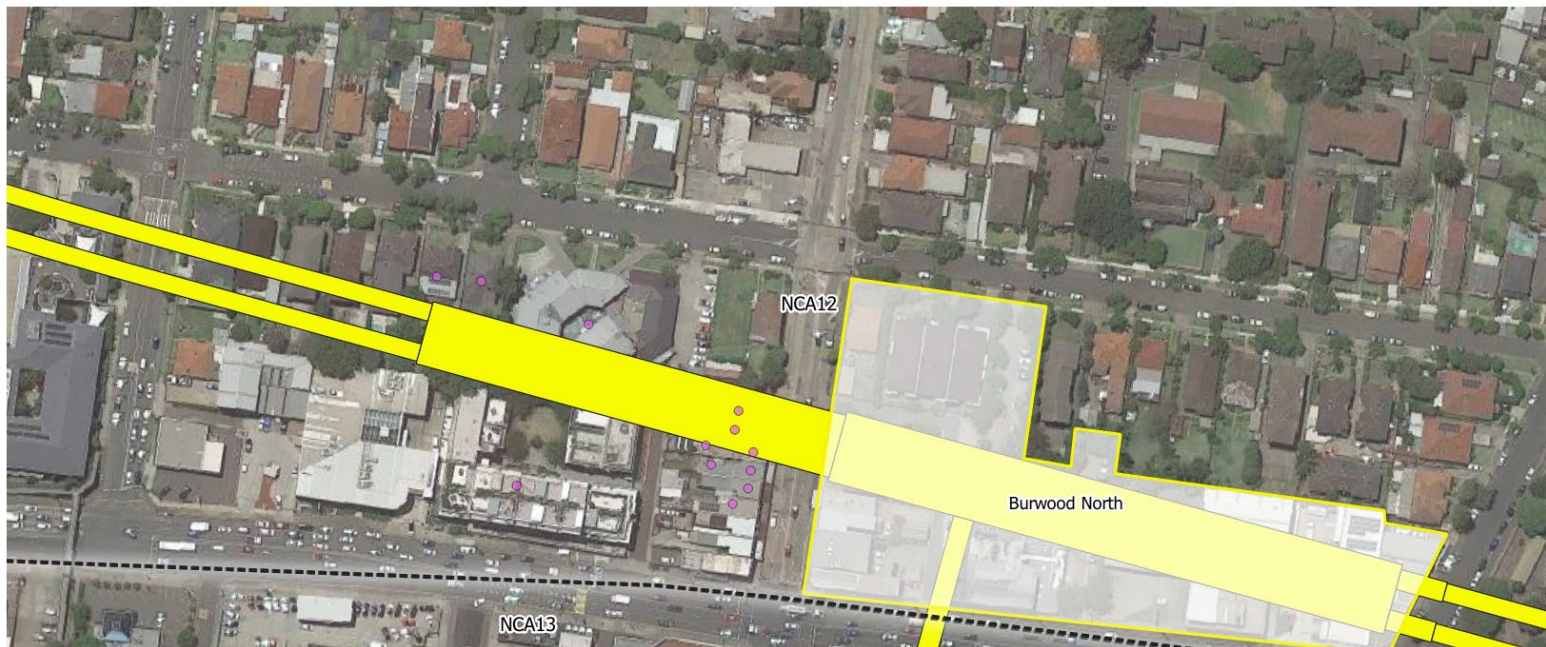
**Burwood Mined Cavern
GBN and VDV Night
Rock Hammer**

Top Map

- CTP Sites
- Tunnel alignment

Ground Borne Noise-
Night over NML

- 0-10dB
- 10-20dB
- >20dB

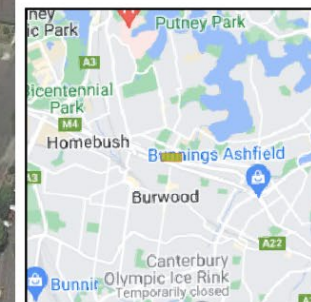


Bottom Map

- CTP Sites
- Tunnel alignment

Vibration (VDV)

- VDV over NML



0 90 180 m





Five Dock Mined Cavern
GBN and VDV Night
Road Header/ Rock Drill

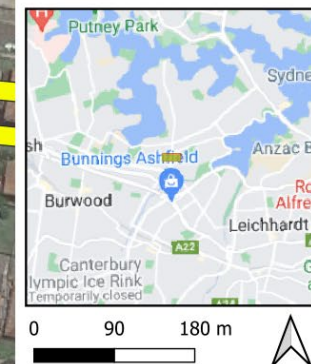
Top Map

- CTP Sites
- Tunnel alignment
- Ground Borne Noise-
Night over NML
- 0-10dB
- 10-20dB
- >20dB



Bottom Map

- CTP Sites
- Tunnel alignment
- Vibration (VDV)
- VDV over NML





A.4 Tunnelling VDV



Tunnelling DNVIS- Vibration (VDV)

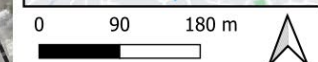
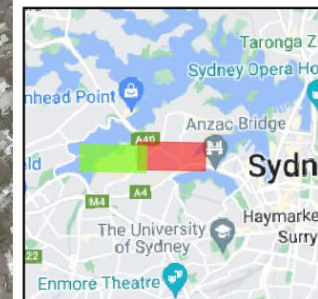
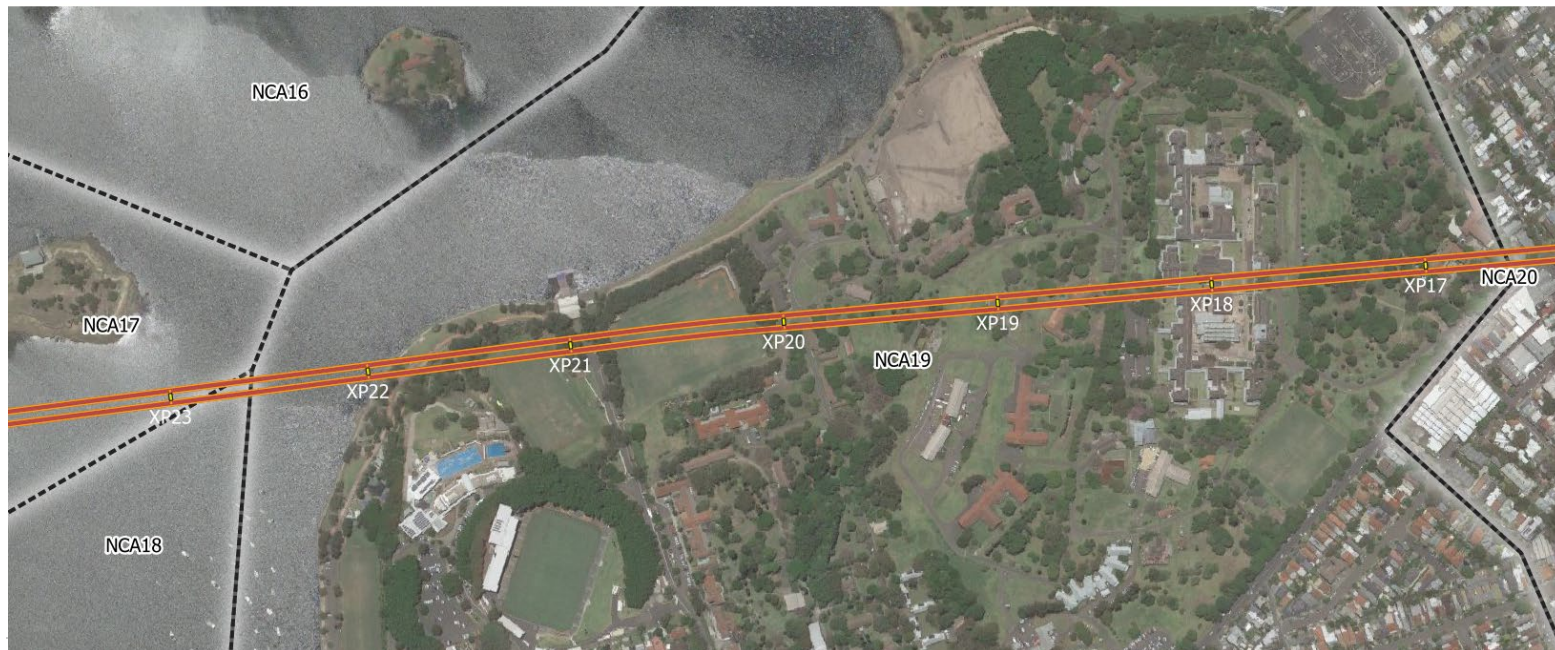
Legend

CTP Sites

Tunnel alignment

Vibration Dose Value (VDV)

• VDV over VML





Tunnelling DNVIS- Vibration (VDV)

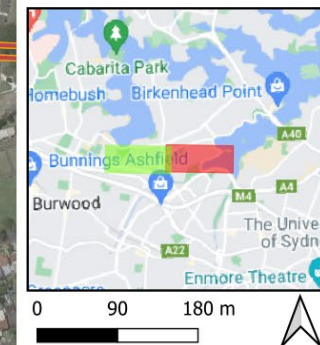
Legend

CTP Sites

Tunnel alignment

Vibration Dose Value (VDV)

VDV over VML





Tunnelling DNVIS- Vibration (VDV)

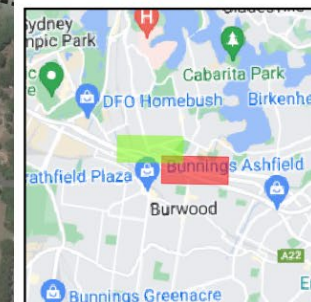
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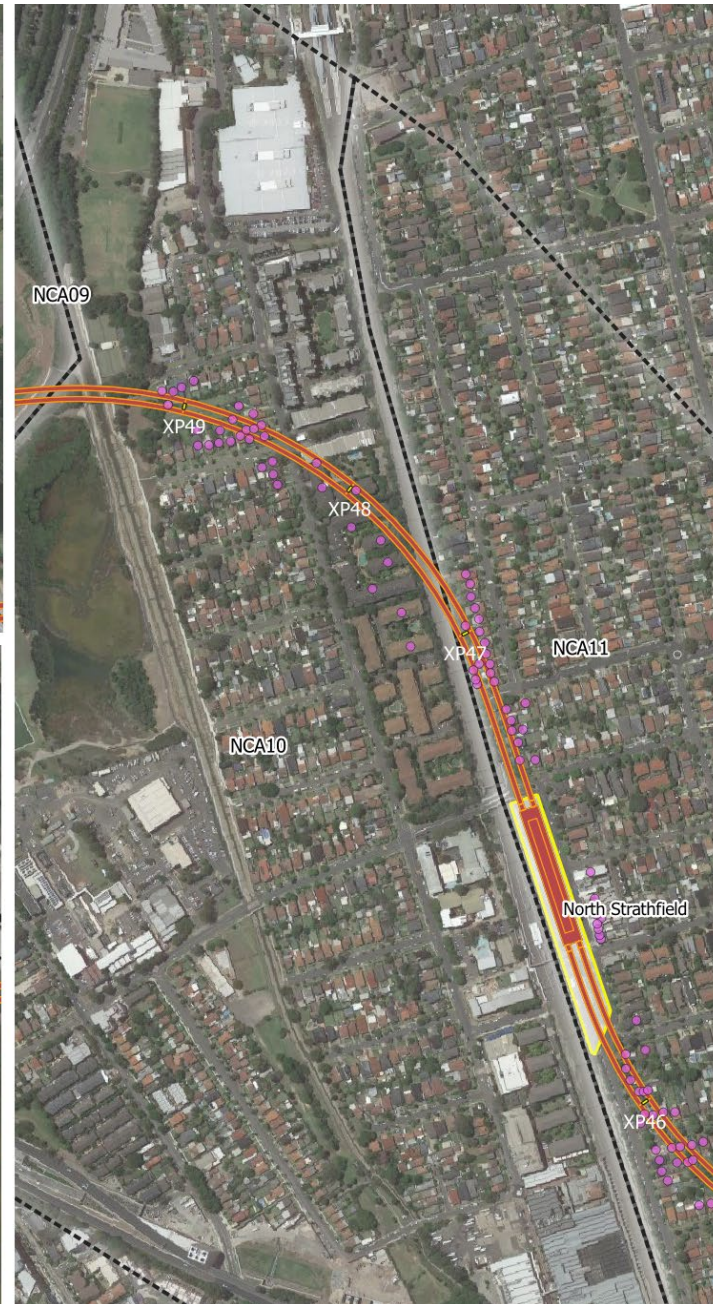
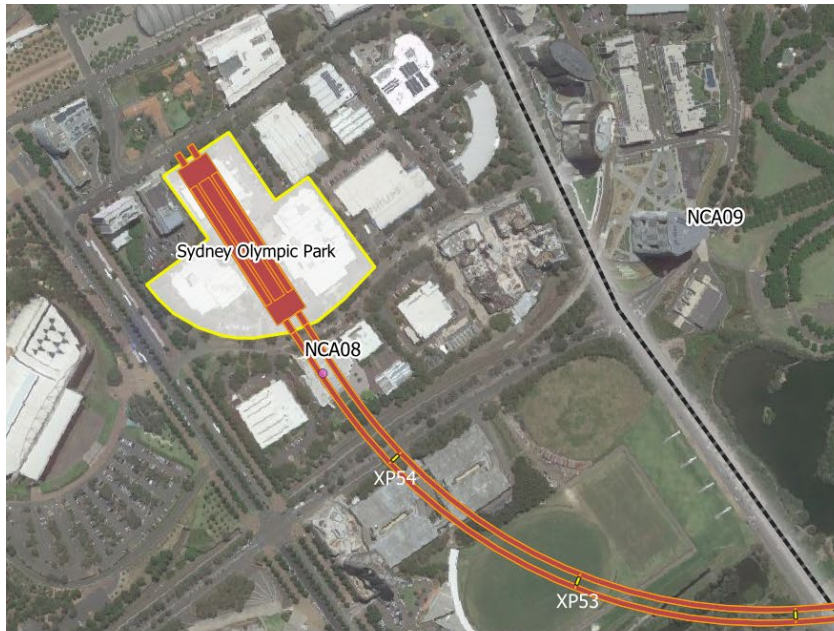
CTP Sites

Tunnel alignment

Vibration Dose Value (VDV)

• VDV over VML





Tunnelling DNVIS- Vibration (VDV)

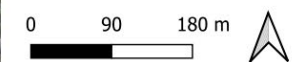
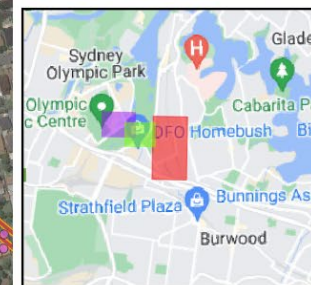
Legend

CTP Sites

Tunnel alignment

Vibration Dose Value (VDV)

VDV over VML





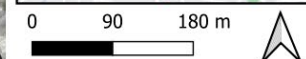
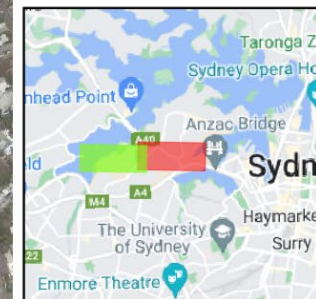
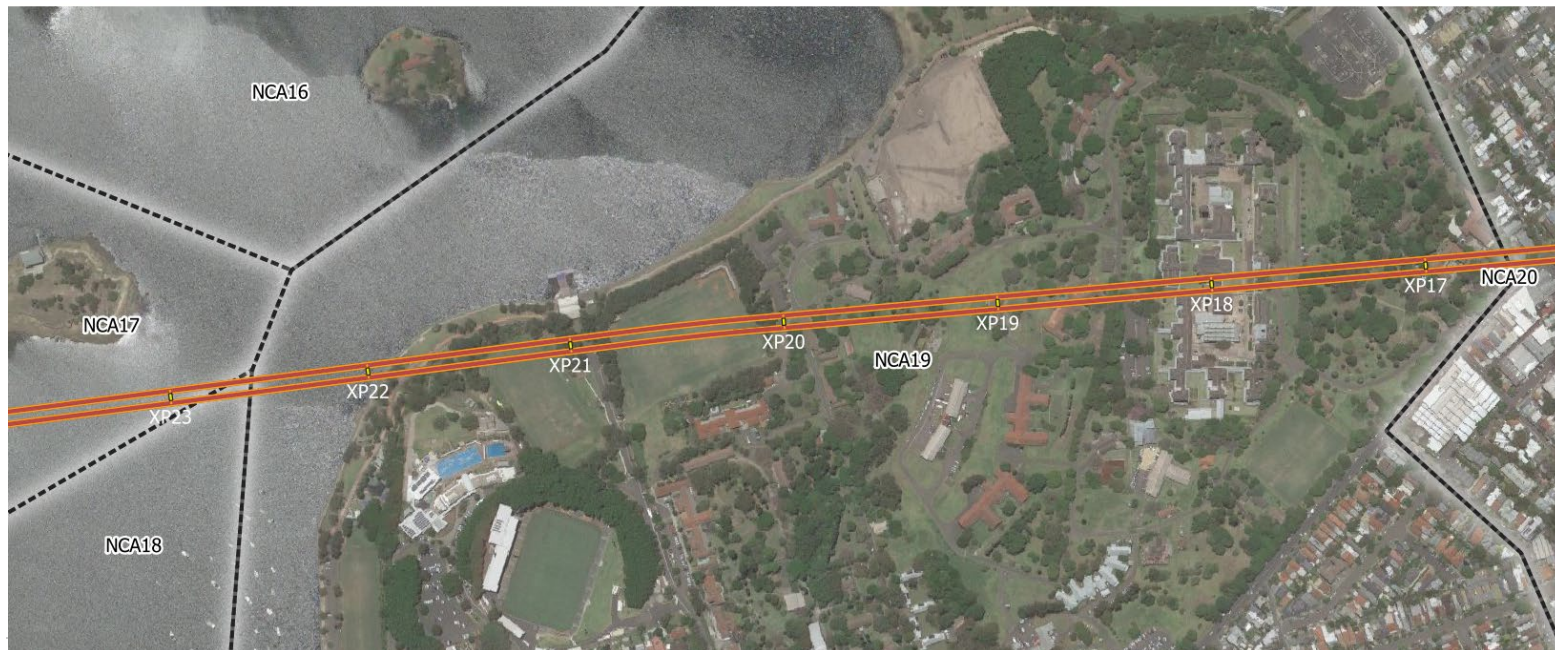
A.5 Cross-passage VDV



Tunnelling Cross Passage DNVIS- Vibration (VDV)

Legend

- Tunnel alignment
- Cross passage (XP)
- VDV over VML

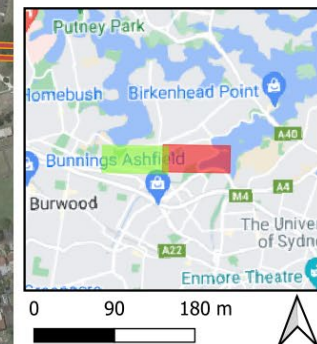




Tunnelling Cross Passage DNVIS- Vibration (VDV)

Legend

- Tunnel alignment
- Cross passage (XP)
- VDV over VML

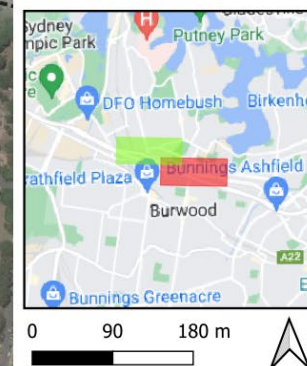
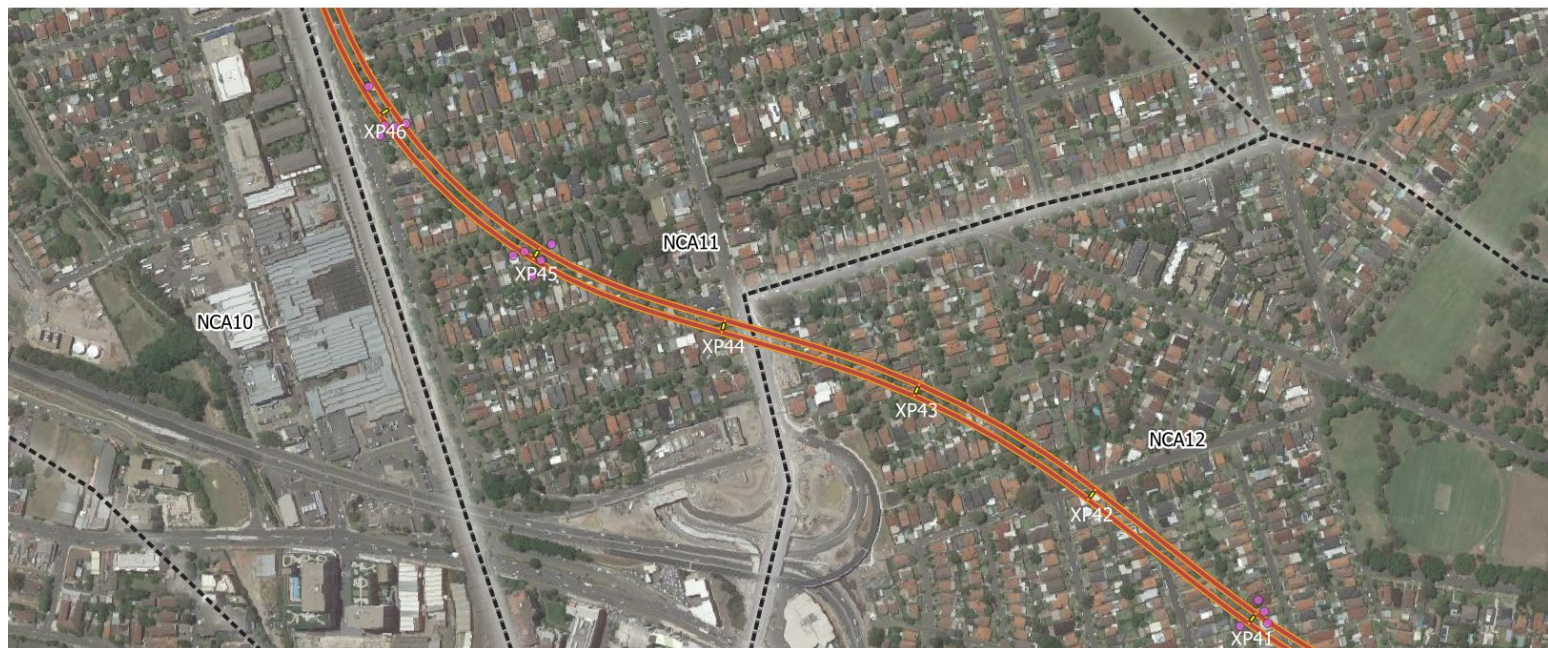


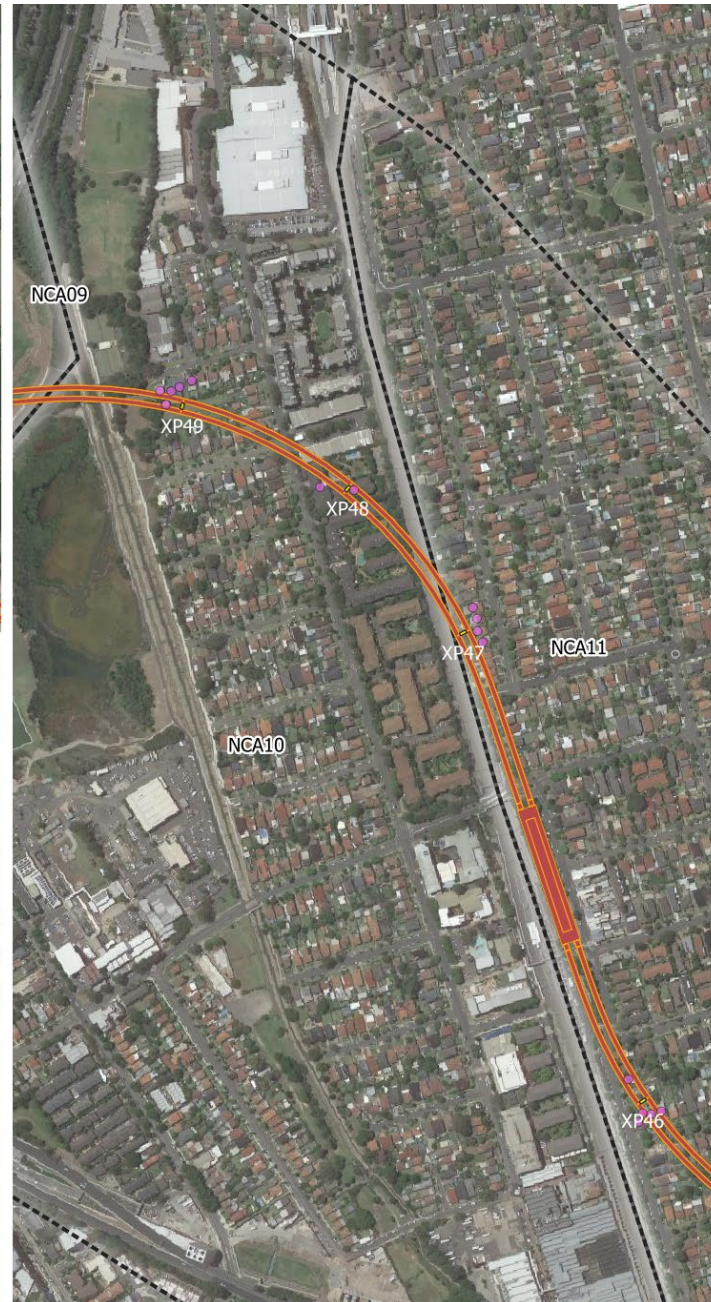
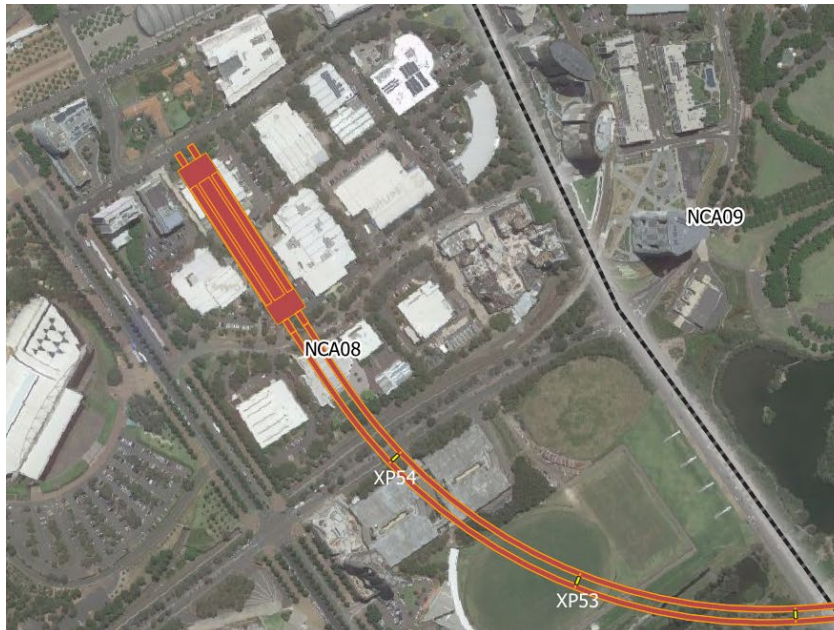


Tunnelling Cross Passage DNVIS- Vibration (VDV)

Legend

- Tunnel alignment
- Cross passage (XP)
- Vibration Dose Value (VDV)
- VDV over VML

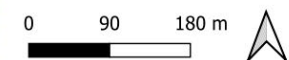
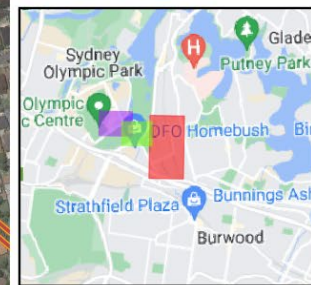




Tunnelling Cross Passage DNVIS- Vibration (VDV)

Legend

- Tunnel alignment
- Cross passage (XP)
- Vibration Dose Value (VDV)
- VDV over VML





Appendix B. Detailed prediction results (supplied as excel spreadsheets)

- B.1 Tunnelling GBN and vibration**
- B.2 Cross passage GBN and Vibration**
- B.3 Burwood mined cavern GBN and Vibration**
- B.4 Five Dock mined cavern GBN and Vibration**

ADDRESS	NCA	Receiver Type	NML			VML m/s ^{1.75}		Predicted	
			DAY	EVE	NIGHT	Day	Night	GBN dB(A)	eVDV m/s ^{1.75}
	NCA_11	Residential	45	40	35		0.26	60	1.08
	NCA_11	Residential	45	40	35		0.26	59	1.04
	NCA_11	Garage	70	70	70		1.6	59	1.00
	NCA_11	Garage	70	70	70		1.6	59	0.98
	NCA_11	Garage	70	70	70		1.6	58	0.96
	NCA_11	Garage	70	70	70		1.6	57	0.88
	NCA_11	Residential	45	40	35		0.26	57	0.87
	NCA_11	Residential	45	40	35		0.26	57	0.84
	NCA_10	Residential	45	40	35		0.26	57	0.84
	NCA_10	Residential	45	40	35		0.26	56	0.81
	NCA_11	Garage	70	70	70		1.6	54	0.65
			55	55	55		1.6	53	0.62
	NCA_11	Residential	45	40	35		0.26	53	0.59
	NCA_11	Residential	45	40	35		0.26	52	0.57
	NCA_10	Residential	45	40	35		0.26	52	0.56
	NCA_11	Residential	45	40	35		0.26	52	0.53
	NCA_10	Residential	45	40	35		0.26	51	0.49
	NCA_08	Industrial/Utilities	55	55	55		1.6	50	0.47
	NCA_11	Residential	45	40	35		0.26	50	0.46
	NCA_11	Residential	45	40	35		0.26	50	0.45
	NCA_14	Residential	45	40	35		0.26	49	0.42
	NCA_11	Residential	45	40	35		0.26	49	0.41
	NCA_10	Residential	45	40	35		0.26	49	0.41
	NCA_14	Residential	45	40	35		0.26	49	0.40
	NCA_14	Residential	45	40	35		0.26	49	0.39
	NCA_12	Residential	45	40	35		0.26	49	0.39
	NCA_12	Residential	45	40	35		0.26	48	0.39
	NCA_14	Education	45	45	45		0.8	48	0.37
	NCA_12	Residential	45	40	35		0.26	48	0.36
	NCA_12	Residential	45	40	35		0.26	48	0.36
	NCA_12	Residential	45	40	35		0.26	48	0.36
	NCA_11	Residential	45	40	35		0.26	48	0.35
	NCA_10	Residential	45	40	35		0.26	47	0.35
	NCA_11	Garage	70	70	70		1.6	47	0.34
	NCA_14	Residential	45	40	35		0.26	47	0.34
	NCA_14	Education	45	45	45		0.8	47	0.34
	NCA_11	Residential	45	40	35		0.26	47	0.33
	NCA_14	Residential	45	40	35		0.26	47	0.33
	NCA_12	Residential	45	40	35		0.26	47	0.32
	NCA_11	Residential	45	40	35		0.26	47	0.32
	NCA_10	Residential	45	40	35		0.26	47	0.32
	NCA_12	Residential	45	40	35		0.26	46	0.31
	NCA_14	Residential	45	40	35		0.26	46	0.31
	NCA_11	Residential	45	40	35		0.26	46	0.30
	NCA_12	Residential	45	40	35		0.26	46	0.29
	NCA_12	Residential	45	40	35		0.26	46	0.29
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	NCA_12	Garage	70	70	70		1.6	46	0.28
	NCA_12	Residential	45	40	35		0.26	45	0.28
	NCA_12	Garage	70	70	70		1.6	45	0.28
	NCA_12	Residential	45	40	35		0.26	45	0.28
	NCA_13	Commercial/Business	50	50	50		0.8	45	0.27
	NCA_12	Residential	45	40	35		0.26	45	0.27
	NCA_12	Residential	45	40	35		0.26	45	0.27
	NCA_14	Residential	45	40	35		0.26	45	0.27
	NCA_10	Garage	70	70	70		1.6	45	0.27
	NCA_13	Commercial/Business	50	50	50		0.8	45	0.26
	NCA_14	Garage	70	70	70		1.6	45	0.26
	NCA_12	Residential	45	40	35		0.26	45	0.26
	NCA_14	Residential	45	40	35		0.26	45	0.26
	NCA_11	Residential	45	40	35		0.26	45	0.25
	NCA_14	Garage	70	70	70		1.6	44	0.25
	NCA_14	Residential	45	40	35		0.26	44	0.25
	NCA_12	Residential	45	40	35		0.26	44	0.24
	NCA_17	Residential	45	40	35		0.26	44	0.24
	NCA_17	Residential	45	40	35		0.26	44	0.24
	NCA_17	Residential	45	40	35		0.26	44	0.24
	NCA_21	Industrial/Utilities	55	55	55		1.6	44	0.23
	NCA_15	Residential	45	40	35		0.26	44	0.23
	NCA_21	Industrial/Utilities	55	55	55		1.6	44	0.23
	NCA_15	Residential	45	40	35		0.26	44	0.23
	NCA_21	Commercial/Business	50	50	50		0.8	44	0.23
	NCA_14	Residential	45	40	35		0.26	43	0.22
	NCA_17	Residential	45	40	35		0.26	43	0.22
	NCA_10	Residential	45	40	35		0.26	43	0.22
	NCA_11	Residential	45	40	35		0.26	43	0.22
	NCA_12	Residential	45	40	35		0.26	43	0.22
	NCA_17	Residential	45	40	35		0.26	43	0.22
	NCA_17	Residential	45	40	35		0.26	43	0.22
	NCA_14	Residential	45	40	35		0.26	43	0.22
	NCA_12	Residential	45	40	35		0.26	43	0.22
	NCA_12	Garage	70	70	70		1.6	43	0.22
	NCA_21	Commercial/Business	50	50	50		0.8	43	0.22
	NCA_10	Residential	45	40	35		0.26	43	0.22
	NCA_17	Residential	45	40	35		0.26	43	0.21
	NCA_12	Residential	45	40	35		0.26	43	0.21
	NCA_15	Residential	45	40	35		0.26	43	0.21
	NCA_17	Residential	45	40	35		0.26	43	0.21
	NCA_14	Residential	45	40	35		0.26	43	0.21
	NCA_12	Residential	45	40	35		0.26	43	0.20
	NCA_21	Commercial/Business	50	50	50		0.8	43	0.20
	NCA_17	Residential	45	40	35		0.26	42	0.20
	NCA_11	Residential	45	40	35		0.26	42	0.20
	NCA_17	Residential	45	40	35		0.26	42	0.20
	NCA_12	Residential	45	40	35		0.26	42	0.19
	NCA_11	Residential	45	40	35		0.26	42	0.19
	NCA_14	Garage	70	70	70		1.6	42	0.19
	NCA_14	Garage	70	70	70		1.6	42	0.19
	NCA_14	Residential	45	40	35		0.26	42	0.19
	NCA_12	Garage	70	70	70		1.6	42	0.19
	NCA_12	Education	45	45	45		0.8	42	0.19
	NCA_12	Residential	45	40	35		0.26	42	0.19
	NCA_21	Commercial/Business	50	50	50		0.8	42	0.19
	NCA_15	Garage	70	70	70		1.6	42	0.19

NCA 14	Garage	70	70	70	1.6	42	0.19
NCA 17	Residential	45	40	35	0.26	42	0.18
NCA 17	Garage	70	70	70	1.6	42	0.18
NCA 12	Residential	45	40	35	0.26	42	0.18
NCA 17	Residential	45	40	35	0.26	42	0.18
NCA 12	Residential	45	40	35	0.26	41	0.18
NCA 15	Garage	70	70	70	1.6	41	0.18
NCA 14	Residential	45	40	35	0.26	41	0.18
NCA 14	Residential	45	40	35	0.26	41	0.18
NCA 12	Residential	45	40	35	0.26	41	0.17
NCA 12	Residential	45	40	35	0.26	41	0.17
NCA 17	Residential	45	40	35	0.26	41	0.17
NCA 12	Residential	45	40	35	0.26	41	0.17
NCA 17	Residential	45	40	35	0.26	41	0.17
NCA 17	Residential	45	40	35	0.26	41	0.17
NCA 17	Residential	45	40	35	0.26	41	0.17
NCA 14	Residential	45	40	35	0.26	41	0.17
NCA 21	Commercial/Business	50	50	50	0.8	41	0.17
NCA 12	Residential	45	40	35	0.26	41	0.17
NCA 11	Residential	45	40	35	0.26	41	0.17
NCA 15	Residential	45	40	35	0.26	41	0.17
NCA 15	Residential	45	40	35	0.26	41	0.16
NCA 12	Residential	45	40	35	0.26	41	0.16
NCA 14	Garage	70	70	70	1.6	41	0.16
NCA 17	Residential	45	40	35	0.26	41	0.16
NCA 17	Garage	70	70	70	1.6	41	0.16
NCA 14	Garage	70	70	70	1.6	40	0.16
NCA 12	Commercial/Business	50	50	50	0.8	40	0.16
NCA 17	Residential	45	40	35	0.26	40	0.16
NCA 12	Residential	45	40	35	0.26	40	0.16
NCA 12	Residential	45	40	35	0.26	40	0.16
NCA 17	Residential	45	40	35	0.26	40	0.15
NCA 12	Recreational/Open Space	65	65	65	1.6	40	0.15
NCA 17	Residential	45	40	35	0.26	40	0.15
NCA 11	Residential	45	40	35	0.26	40	0.15
NCA 14	Residential	45	40	35	0.26	40	0.15
NCA 12	Residential	45	40	35	0.26	40	0.15
NCA 17	Residential	45	40	35	0.26	40	0.15
NCA 14	Garage	70	70	70	1.6	40	0.15
NCA 12	Residential	45	40	35	0.26	40	0.15
NCA 10	Residential	45	40	35	0.26	40	0.15
NCA 12	Commercial/Business	50	50	50	0.8	40	0.15
NCA 17	Garage	70	70	70	1.6	40	0.15
NCA 12	Education	45	45	45	0.8	40	0.15
NCA 12	Residential	45	40	35	0.26	40	0.15
NCA 11	Garage	70	70	70	1.6	40	0.15
NCA 11	Garage	70	70	70	1.6	40	0.15
NCA 21	Commercial/Business	50	50	50	0.8	40	0.15
NCA 12	Residential	45	40	35	0.26	40	0.15
NCA 17	Garage	70	70	70	1.6	40	0.15
NCA 10	Residential	45	40	35	0.26	40	0.14
NCA 12	Residential	45	40	35	0.26	40	0.14
NCA 12	Residential	45	40	35	0.26	39	0.14
NCA 12	Garage	70	70	70	1.6	39	0.14
NCA 14	Garage	70	70	70	1.6	39	0.14
NCA 17	Garage	70	70	70	1.6	39	0.14
NCA 12	Residential	45	40	35	0.26	39	0.14
NCA 12	Residential	45	40	35	0.26	39	0.14
NCA 12	Residential	45	40	35	0.26	39	0.14
NCA 11	Residential	45	40	35	0.26	39	0.14
NCA 12	Commercial/Business	50	50	50	0.8	39	0.14
NCA 11	Residential	45	40	35	0.26	39	0.14
NCA 17	Residential	45	40	35	0.26	39	0.14
NCA 12	Residential	45	40	35	0.26	39	0.14
NCA 14	Garage	70	70	70	1.6	39	0.14
NCA 12	Commercial/Business	50	50	50	0.8	39	0.14
NCA 17	Garage	70	70	70	1.6	39	0.13
NCA 11	Garage	70	70	70	1.6	39	0.13
NCA 11	Residential	45	40	35	0.26	39	0.13
NCA 11	Residential	45	40	35	0.26	39	0.13
NCA 12	Residential	45	40	35	0.26	39	0.13
NCA 17	Residential	45	40	35	0.26	39	0.13
NCA 14	Residential	45	40	35	0.26	39	0.13
NCA 17	Garage	70	70	70	1.6	39	0.13
NCA 12	Education	45	45	45	0.8	39	0.13
NCA 21	Industrial/Utilities	55	55	55	1.6	39	0.13
NCA 14	Residential	45	40	35	0.26	39	0.13
NCA 17	Residential	45	40	35	0.26	39	0.13
NCA 10	Residential	45	40	35	0.26	39	0.13
NCA 17	Garage	70	70	70	1.6	39	0.13
NCA 21	Commercial/Business	50	50	50	0.8	39	0.13
NCA 12	Residential	45	40	35	0.26	39	0.13
NCA 12	Garage	70	70	70	1.6	39	0.13
NCA 12	Commercial/Business	50	50	50	0.8	39	0.13
NCA 12	Commercial/Business	50	50	50	0.8	39	0.13
NCA 12	Commercial/Business	50	50	50	0.8	39	0.13
NCA 14	Garage	70	70	70	1.6	39	0.13
NCA 12	Residential	45	40	35	0.26	39	0.13
NCA 11	Residential	45	40	35	0.26	39	0.13
NCA 12	Residential	45	40	35	0.26	39	0.13
NCA 17	Residential	45	40	35	0.26	39	0.13
NCA 12	Residential	45	40	35	0.26	39	0.13
NCA 12	Residential	45	40	35	0.26	39	0.12
NCA 17	Garage	70	70	70	1.6	39	0.12
NCA 10	Residential	45	40	35	0.26	39	0.12
NCA 17	Residential	45	40	35	0.26	39	0.12
NCA 11	Residential	45	40	35	0.26	38	0.12
NCA 17	Residential	45	40	35	0.26	38	0.12
NCA 17	Residential	45	40	35	0.26	38	0.12
NCA 10	Commercial/Business	50	50	50	0.8	38	0.12
NCA 17	Residential	45	40	35	0.26	38	0.12
NCA 12	Residential	45	40	35	0.26	38	0.12
NCA 12	Residential	45	40	35	0.26	38	0.12
NCA 14	Residential	45	40	35	0.26	38	0.12
NCA 15	Residential	45	40	35	0.26	38	0.12
NCA 14	Residential	45	40	35	0.26	38	0.12
NCA 12	Garage	70	70	70	1.6	38	0.12

NCA	10	Garage	70	70	70		1.6	36	0.09
NCA	10	Residential	45	40	35		0.26	36	0.09
0	0	Recreational/Open Space	65	65	65		1.6	36	0.09
NCA	12	Residential	45	40	35		0.26	36	0.09
NCA	14	Residential	45	40	35		0.26	36	0.09
NCA	12	Residential	45	40	35		0.26	36	0.09
NCA	17	Residential	45	40	35		0.26	36	0.09
NCA	17	Residential	45	40	35		0.26	36	0.09
NCA	11	Residential	45	40	35		0.26	36	0.09
NCA	11	Residential	45	40	35		0.26	36	0.09
NCA	12	Residential	45	40	35		0.26	36	0.09
NCA	14	Residential	45	40	35		0.26	36	0.09
NCA	17	Residential	45	40	35		0.26	36	0.09
NCA	17	Residential	45	40	35		0.26	36	0.09
NCA	17	Residential	45	40	35		0.26	36	0.09
NCA	11	Residential	45	40	35		0.26	36	0.09
NCA	12	Residential	45	40	35		0.26	36	0.09
NCA	12	Commercial/Business	50	50	50		0.8	36	0.09
NCA	11	Place of Worship	45	45	45		0.8	36	0.09
NCA	17	Garage	70	70	70		1.6	36	0.09
NCA	12	Residential	45	40	35		0.26	36	0.09
NCA	12	Residential	45	40	35		0.26	36	0.09
0	NCA	19	Recreational/Open Space	65	65	65	1.6	36	0.09
NCA	17	Residential	45	40	35		0.26	36	0.09
NCA	14	Garage	70	70	70		1.6	36	0.09
NCA	17	Residential	45	40	35		0.26	36	0.09
NCA	11	Residential	45	40	35		0.26	36	0.09
NCA	15	Residential	45	40	35		0.26	36	0.09
NCA	17	Residential	45	40	35		0.26	36	0.09
NCA	11	Residential	45	40	35		0.26	36	0.09
NCA	17	Residential	45	40	35		0.26	36	0.09
NCA	17	Residential	45	40	35		0.26	36	0.09
NCA	11	Residential	45	40	35		0.26	36	0.09
NCA	10	Residential	45	40	35		0.26	36	0.09
NCA	12	Residential	45	40	35		0.26	36	0.09
NCA	12	Residential	45	40	35		0.26	36	0.09
0	NCA	19	Education	45	45	45	0.8	36	0.09
NCA	14	Residential	45	40	35		0.26	36	0.09
NCA	12	Residential	45	40	35		0.26	36	0.09
NCA	11	Residential	45	40	35		0.26	36	0.09
NCA	14	Residential	45	40	35		0.26	36	0.09
NCA	14	Residential	45	40	35		0.26	36	0.09
NCA	11	Place of Worship	45	45	45		0.8	36	0.08
NCA	17	Residential	45	40	35		0.26	36	0.08
NCA	17	Residential	45	40	35		0.26	36	0.08
NCA	12	Residential	45	40	35		0.26	36	0.08
NCA	17	Garage	70	70	70		1.6	36	0.08
NCA	11	Garage	70	70	70		1.6	36	0.08
NCA	12	Garage	70	70	70		1.6	36	0.08
NCA	11	Garage	70	70	70		1.6	35	0.08
NCA	17	Residential	45	40	35		0.26	35	0.08
NCA	15	Residential	45	40	35		0.26	35	0.08
NCA	12	Commercial/Business	50	50	50		0.8	35	0.08
NCA	14	Residential	45	40	35		0.26	35	0.08
NCA	17	Residential	45	40	35		0.26	35	0.08
NCA	17	Residential	45	40	35		0.26	35	0.08
NCA	10	Residential	45	40	35		0.26	35	0.08
NCA	12	Residential	45	40	35		0.26	35	0.08
NCA	17	Residential	45	40	35		0.26	35	0.08
NCA	12	Residential	45	40	35		0.26	35	0.08
NCA	11	Residential	45	40	35		0.26	35	0.08
NCA	17	Residential	45	40	35		0.26	35	0.08
NCA	14	Residential	45	40	35		0.26	35	0.08
NCA	17	Residential	45	40	35		0.26	35	0.08
NCA	12	Residential	45	40	35		0.26	35	0.08
NCA	11	Residential	45	40	35		0.26	35	0.08
NCA	15	Residential	45	40	35		0.26	35	0.08
NCA	12	Residential	45	40	35		0.26	35	0.08
NCA	12	Residential	45	40	35		0.26	35	0.08
NCA	17	Residential	45	40	35		0.26	35	0.08
NCA	12	Residential	45	40	35		0.26	35	0.08
NCA	10	Residential	45	40	35		0.26	35	0.08
NCA	19	Recreational/Open Space	65	65	65		1.6	35	0.08
NCA	14	Residential	45	40	35		0.26	35	0.08
NCA	17	Residential	45	40	35		0.26	35	0.08
NCA	12	Residential	45	40	35		0.26	35	0.08
NCA	12	Commercial/Business	50	50	50		0.8	35	0.08
NCA	15	Residential	45	40	35		0.26	35	0.08
NCA	12	Residential	45	40	35		0.26	35	0.08
NCA	11	Residential	45	40	35		0.26	35	0.08
NCA	17	Residential	45	40	35		0.26	35	0.08
NCA	12	Residential	45	40	35		0.26	35	0.08
NCA	11	Residential	45	40	35		0.26	35	0.08
NCA	17	Residential	45	40	35		0.26	35	0.08
NCA	11	Residential	45	40	35		0.26	35	0.08
NCA	15	Residential	45	40	35		0.26	35	0.08
NCA	11	Residential	45	40	35		0.26	35	0.08
NCA	14	Residential	45	40	35		0.26	35	0.07
NCA	13	Commercial/Business	50	50	50		0.8	35	0.07
NCA	12	Residential	45	40	35		0.26	35	0.07
NCA	12	Residential	45	40	35		0.26	35	0.07
NCA	12	Residential	45	40	35		0.26	35	0.07
NCA	17	Residential	45	40	35		0.26	35	0.07
NCA	14	Residential	45	40	35		0.26	35	0.07
NCA	11	Garage	70	70	70		1.6	35	0.07
NCA	17	Residential	45	40	35		0.26	35	0.07
NCA	12	Residential	45	40	35		0.26	35	0.07
NCA	17	Residential	45	40	35		0.26	35	0.07
NCA	12	Residential	45	40	35		0.26	35	0.07
NCA	14	Residential	45	40	35		0.26	35	0.07
NCA	15	Residential	45	40	35		0.26	35	0.07
NCA	17	Residential	45	40	35		0.26	35	0.07
NCA	11	Residential	45	40	35		0.26	35	0.07
NCA	14	Residential	45	40	35		0.26	35	0.07
NCA	12	Residential	45	40	35		0.26	35	0.07
NCA	11	Residential	45	40	35		0.26	35	0.07
NCA	12	Residential	45	40	35		0.26	35	0.07
NCA	12	Residential	45	40	35		0.26	35	0.07

	NCA_11	Residential		45	40	35		0.26		29	0.03
	NCA_20	Education		45	45	45		0.8		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_19	Education		45	45	45		0.8		29	0.03
	NCA_12	Commercial/Business		50	50	50		0.8		29	0.03
	NCA_10	Residential		45	40	35		0.26		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_10	Garage		70	70	70		1.6		29	0.03
	NCA_21	Residential		45	40	35		0.26		29	0.03
	NCA_11	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_15	Residential		45	40	35		0.26		29	0.03
	NCA_13	Residential		45	40	35		0.26		29	0.03
	NCA_21	Commercial/Business		50	50	50		0.8		29	0.03
	NCA_14	Garage		70	70	70		1.6		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_10	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_10	Garage		70	70	70		1.6		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_10	Garage		70	70	70		1.6		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_11	Residential		45	40	35		0.26		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_15	Education		45	45	45		0.8		29	0.03
	NCA_12	Commercial/Business		50	50	50		0.8		29	0.03
	NCA_19	Education		45	45	45		0.8		29	0.03
	NCA_11	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_17		0	55	55	55		1.6		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_12	Garage		70	70	70		1.6		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_20	Education		45	45	45		0.8		29	0.03
	NCA_12	Garage		70	70	70		1.6		29	0.03
	NCA_21	Residential		45	40	35		0.26		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_15	Residential		45	40	35		0.26		29	0.03
	NCA_12	Commercial/Business		50	50	50		0.8		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_19	Education		45	45	45		0.8		29	0.03
	NCA_10	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_12	Garage		70	70	70		1.6		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03
	NCA_21	Commercial/Business		50	50	50		0.8		29	0.03
	NCA_14	Garage		70	70	70		1.6		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03
	NCA_15	Education		45	45	45		0.8		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_12	Commercial/Business		50	50	50		0.8		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_21	Residential		45	40	35		0.26		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_20	Business/Residential		45	40	35		0.26		29	0.03
	NCA_19	Education		45	45	45		0.8		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_11	Residential		45	40	35		0.26		29	0.03
	NCA_21	Residential		45	40	35		0.26		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_13	Residential		45	40	35		0.26		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_19	Recreational/Open Space		65	65	65		1.6		29	0.03
	NCA_10	Residential		45	40	35		0.26		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_21	Residential		45	40	35		0.26		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_14	Residential		45	40	35		0.26		29	0.03
	NCA_21	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_12	Education		45	45	45		0.8		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_19	Education		45	45	45		0.8		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_11	Residential		45	40	35		0.26		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_11	Residential		45	40	35		0.26		29	0.03
	NCA_12	Residential		45	40	35		0.26		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03
	NCA_20	Residential		45	40	35		0.26		29	0.03
	NCA_17	Residential		45	40	35		0.26		29	0.03

	NCA 20	Residential		45	40	35		0.26	29	0.03
	NCA 10	Residential		45	40	35		0.26	29	0.03
	NCA 17	Residential		45	40	35		0.26	29	0.03
	NCA 19		0	55	55	55		1.6	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 08	Commercial/Business		50	50	50		0.8	29	0.03
	NCA 17	Residential		45	40	35		0.26	29	0.03
	NCA 17	Residential		45	40	35		0.26	29	0.03
	NCA 20	Residential		45	40	35		0.26	29	0.03
	NCA 12	Commercial/Business		50	50	50		0.8	29	0.03
	NCA 20	Residential		45	40	35		0.26	29	0.03
	NCA 13	Residential		45	40	35		0.26	29	0.03
	NCA 14	Residential		45	40	35		0.26	29	0.03
	NCA 17	Residential		45	40	35		0.26	29	0.03
	NCA 19	Education		45	45	45		0.8	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 15	Residential		45	40	35		0.26	29	0.03
	NCA 14	Residential		45	40	35		0.26	29	0.03
	NCA 15	Residential		45	40	35		0.26	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 17	Residential		45	40	35		0.26	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 15	Residential		45	40	35		0.26	29	0.03
	NCA 20	Business/Residential		45	40	35		0.26	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 11	Garage		70	70	70		1.6	29	0.03
0	NCA 19	NONE		55	55	55		1.6	29	0.03
	NCA 12	Garage		70	70	70		1.6	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 20	Residential		45	40	35		0.26	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 14	Residential		45	40	35		0.26	29	0.03
	NCA 11	Residential		45	40	35		0.26	29	0.03
	NCA 20	Residential		45	40	35		0.26	29	0.03
	NCA 11	Residential		45	40	35		0.26	29	0.03
	NCA 12	Education		45	45	45		0.8	29	0.03
	NCA 20	Residential		45	40	35		0.26	29	0.03
	NCA 10	Residential		45	40	35		0.26	29	0.03
	NCA 14	Residential		45	40	35		0.26	29	0.03
	NCA 21	Residential		45	40	35		0.26	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 14	Residential		45	40	35		0.26	29	0.03
	NCA 12	Residential		45	40	35		0.26	29	0.03
	NCA 10	Residential		45	40	35		0.26	29	0.03
	NCA 12	Garage		70	70	70		1.6	29	0.03
	NCA 15	Residential		45	40	35		0.26	29	0.03
	NCA 20	Residential		45	40	35		0.26	28	0.03
	NCA 17	Residential		45	40	35		0.26	28	0.03
	NCA 20	Residential		45	40	35		0.26	28	0.03
	NCA 11	Garage		70	70	70		1.6	28	0.03
	NCA 11	Garage		70	70	70		1.6	28	0.03
0	NCA 12	Recreational/Open Space		65	65	65		1.6	28	0.03
	NCA 14	Residential		45	40	35		0.26	28	0.03
	NCA 17	Residential		45	40	35		0.26	28	0.03
	NCA 15	Education		45	45	45		0.8	28	0.03
	NCA 17	Residential		45	40	35		0.26	28	0.03
	NCA 20	Residential		45	40	35		0.26	28	0.03
	NCA 12	Garage		70	70	70		1.6	28	0.03
	NCA 10	Commercial/Business		50	50	50		0.8	28	0.03
	NCA 17	Residential		45	40	35		0.26	28	0.03
	NCA 20	Residential		45	40	35		0.26	28	0.03
	NCA 12	Residential		45	40	35		0.26	28	0.03
	NCA 12	Residential		45	40	35		0.26	28	0.03
	NCA 12	Residential		45	40	35		0.26	28	0.03
	NCA 12	Residential		45	40	35		0.26	28	0.03
	NCA 21	Residential		45	40	35		0.26	28	0.03
	NCA 12	Residential		45	40	35		0.26	28	0.03
	NCA 11	Residential		45	40	35		0.26	28	0.03
	NCA 14	Residential		45	40	35		0.26	28	0.03
	NCA 14	Residential		45	40	35		0.26	28	0.03
	NCA 14	Residential		45	40	35		0.26	28	0.03
	NCA 14	Residential		45	40	35		0.26	28	0.03
	NCA 11	Garage		70	70	70		1.6	28	0.03
	NCA 11	Residential		45	40	35		0.26	28	0.03
	NCA 17	Residential		45	40	35		0.26	28	0.03
	NCA 13	Residential		45	40	35		0.26	28	0.03
	NCA 14	Residential		45	40	35		0.26	28	0.03
	NCA 11	Residential		45	40	35		0.26	28	0.03
	NCA 12	Commercial/Business		50	50	50		0.8	28	0.03
	NCA 17	Residential		45	40	35		0.26	28	0.03
	NCA 14	Residential		45	40	35		0.26	28	0.03
	NCA 12	Commercial/Business		50	50	50		0.8	28	0.03
	NCA 17	Residential		45	40	35		0.26	28	0.03
	NCA 14	Residential		45	40	35		0.26	28	0.03
	NCA 12	Residential		45	40	35		0.26	28	0.03
	NCA 14	Residential		45	40	35		0.26	28	0.03
	NCA 12	Residential		45	40	35		0.26	28	0.03
	NCA 10	Residential		45	40	35		0.26	28	0.03
	NCA 14	Residential		45	40	35		0.26	28	0.03
	NCA 20	Residential		45	40	35		0.26	28	0.03
	NCA 12	Garage		70	70	70		1.6	28	0.03
	NCA 12	Residential		45	40	35		0.26	28	0.03
	NCA 12	Residential		45	40	35		0.26	28	0.03
	NCA 14	Garage		70	70	70		1.6	28	0.03
	NCA 20	Community Use		45	45	45		0.8	28	0.03
	NCA 11	Residential		45	40	35		0.26	28	0.03
	NCA 20	Residential		45	40	35		0.26	28	0.03
	NCA 14	Garage		70	70	70		1.6	28	0.03
	NCA 14	Garage		70	70	70		1.6	28	0.03
	NCA 11	Residential		45	40	35		0.26	28	0.03
	NCA 12	Residential		45	40	35		0.26	28	0.03
	NCA 17	Residential		45	40	35		0.26	28	0.03
	NCA 12	Garage		70	70	70		1.6	28	0.03

	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 19	Education	45	45	45	0.8	28	0.03
	NCA 14	Residential	45	40	35	0.26	28	0.03
0	NCA 09	Recreational/Open Space	65	65	65	1.6	28	0.03
	NCA 20	Residential	45	40	35	0.26	28	0.03
	NCA 14	Garage	70	70	70	1.6	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 19	Education	45	45	45	0.8	28	0.03
	NCA 14	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 15	Residential	45	40	35	0.26	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 13	Residential	45	40	35	0.26	28	0.03
	NCA 11	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 14	Residential	45	40	35	0.26	28	0.03
	NCA 20	Residential	45	40	35	0.26	28	0.03
	NCA 11	Residential	45	40	35	0.26	28	0.03
	NCA 21	Residential	45	40	35	0.26	28	0.03
	NCA 20	Residential	45	40	35	0.26	28	0.03
	NCA 10	Residential	45	40	35	0.26	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 11	Residential	45	40	35	0.26	28	0.03
	NCA 11	Residential	45	40	35	0.26	28	0.03
	NCA 19	Education	45	45	45	0.8	28	0.03
	NCA 19	Education	45	45	45	0.8	28	0.03
	NCA 12	Garage	70	70	70	1.6	28	0.03
	NCA 12	Garage	70	70	70	1.6	28	0.03
	NCA 12	Garage	70	70	70	1.6	28	0.03
	NCA 12	Garage	70	70	70	1.6	28	0.03
	NCA 14	Residential	45	40	35	0.26	28	0.03
	NCA 20	Residential	45	40	35	0.26	28	0.03
	NCA 19	Education	45	45	45	0.8	28	0.03
	NCA 19	Education	45	45	45	0.8	28	0.03
	NCA 10	Residential	45	40	35	0.26	28	0.03
	NCA 21	Residential	45	40	35	0.26	28	0.03
	NCA 20	Residential	45	40	35	0.26	28	0.03
	NCA 20	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 15	Residential	45	40	35	0.26	28	0.03
	NCA 21	Commercial/Business	50	50	50	0.8	28	0.03
	NCA 14	Garage	70	70	70	1.6	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 20	Residential	45	40	35	0.26	28	0.03
	NCA 19	Education	45	45	45	0.8	28	0.03
	NCA 12	Commercial/Business	50	50	50	0.8	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 14	Garage	70	70	70	1.6	28	0.03
	NCA 12	Education	45	45	45	0.8	28	0.03
	NCA 20	Residential	45	40	35	0.26	28	0.03
	NCA 15	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 13	Commercial/Business	50	50	50	0.8	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 14	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 12	Commercial/Business	50	50	50	0.8	28	0.03
	NCA 14	Residential	45	40	35	0.26	28	0.03
	NCA 13	Residential	45	40	35	0.26	28	0.03
	NCA 11	Residential	45	40	35	0.26	28	0.03
	NCA 20	Residential	45	40	35	0.26	28	0.03
	NCA 11	Residential	45	40	35	0.26	28	0.03
	NCA 15	Residential	45	40	35	0.26	28	0.03
	NCA 21	Residential	45	40	35	0.26	28	0.03
	NCA 11	Residential	45	40	35	0.26	28	0.03
	NCA 21	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 20	Commercial/Business	50	50	50	0.8	28	0.03
	NCA 14	Residential	45	40	35	0.26	28	0.03
	NCA 10	Residential	45	40	35	0.26	28	0.03
	NCA 19	Education	45	45	45	0.8	28	0.03
	NCA 14	Residential	45	40	35	0.26	28	0.03
	NCA 10	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 10	Residential	45	40	35	0.26	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 12	Commercial/Business	50	50	50	0.8	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 11	Garage	70	70	70	1.6	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 21	Residential	45	40	35	0.26	28	0.03
	NCA 12	Commercial/Business	50	50	50	0.8	28	0.03
	NCA 12	Residential	45	40	35	0.26	28	0.03
	NCA 12	Garage	70	70	70	1.6	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 10	Residential	45	40	35	0.26	28	0.03
	NCA 14	Residential	45	40	35	0.26	28	0.03
	NCA 15	Residential	45	40	35	0.26	28	0.03
	NCA 14	Garage	70	70	70	1.6	28	0.03
	NCA 12	Garage	70	70	70	1.6	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 12	Garage	70	70	70	1.6	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 17	Residential	45	40	35	0.26	28	0.03
	NCA 14	Residential	45	40	35	0.26	28	0.03
	NCA 11	Residential	45	40	35	0.26	28	0.03

NCA 21	Commercial/Business	50	50	50	0.8	28	0.02
NCA 11	Residential	45	40	35	0.26	28	0.02
NCA 17	Residential	45	40	35	0.26	28	0.02
NCA 14	Residential	45	40	35	0.26	28	0.02
NCA 10	Residential	45	40	35	0.26	28	0.02
NCA 14	Residential	45	40	35	0.26	28	0.02
NCA 20	Residential	45	40	35	0.26	28	0.02
NCA 12	Commercial/Business	50	50	50	0.8	28	0.02
NCA 14	Residential	45	40	35	0.26	28	0.02
NCA 12	Residential	45	40	35	0.26	28	0.02
NCA 14	Residential	45	40	35	0.26	28	0.02
NCA 12	Residential	45	40	35	0.26	28	0.02
NCA 11	Residential	45	40	35	0.26	28	0.02
NCA 11	Residential	45	40	35	0.26	28	0.02
NCA 11	Residential	45	40	35	0.26	28	0.02
NCA 12	Residential	45	40	35	0.26	28	0.02
NCA 12	Residential	45	40	35	0.26	28	0.02
NCA 15	Residential	45	40	35	0.26	28	0.02
NCA 12	Garage	70	70	70	1.6	28	0.02
NCA 15	Residential	45	40	35	0.26	28	0.02
NCA 11	Residential	45	40	35	0.26	28	0.02
NCA 17	Residential	45	40	35	0.26	28	0.02
NCA 08	Commercial/Business	50	50	50	0.8	28	0.02
NCA 21	Commercial/Business	50	50	50	0.8	28	0.02
NCA 11	Residential	45	40	35	0.26	28	0.02
NCA 12	Residential	45	40	35	0.26	28	0.02
NCA 15	Education	45	45	45	0.8	28	0.02
NCA 12	Residential	45	40	35	0.26	28	0.02
NCA 12	Commercial/Business	50	50	50	0.8	28	0.02
NCA 12	Garage	70	70	70	1.6	28	0.02
NCA 14	Residential	45	40	35	0.26	27	0.02
NCA 11	Garage	70	70	70	1.6	27	0.02
NCA 17	Garage	70	70	70	1.6	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 15	Residential	45	40	35	0.26	27	0.02
NCA 17	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 08	Commercial/Business	50	50	50	0.8	27	0.02
NCA 11	Residential	45	40	35	0.26	27	0.02
NCA 12	Commercial/Business	50	50	50	0.8	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 15	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 11	Residential	45	40	35	0.26	27	0.02
NCA 17	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 14	Residential	45	40	35	0.26	27	0.02
NCA 12	Garage	70	70	70	1.6	27	0.02
NCA 11	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 11	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 11	Garage	70	70	70	1.6	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 21	Residential	45	40	35	0.26	27	0.02
NCA 14	Residential	45	40	35	0.26	27	0.02
NCA 15	Education	45	45	45	0.8	27	0.02
NCA 14	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 14	Residential	45	40	35	0.26	27	0.02
NCA 14	Residential	45	40	35	0.26	27	0.02
NCA 20	Residential	45	40	35	0.26	27	0.02
NCA 20	Commercial/Business	50	50	50	0.8	27	0.02
NCA 20	Commercial/Business	50	50	50	0.8	27	0.02
NCA 11	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 20	Residential	45	40	35	0.26	27	0.02
NCA 12	Garage	70	70	70	1.6	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 20	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 13	Garage	70	70	70	1.6	27	0.02
NCA 20	Residential	45	40	35	0.26	27	0.02
NCA 20	Commercial/Residential	45	40	35	0.26	27	0.02
NCA 21	Residential	45	40	35	0.26	27	0.02
NCA 20	Residential	45	40	35	0.26	27	0.02
NCA 20	Residential	45	40	35	0.26	27	0.02
NCA 15	Residential	45	40	35	0.26	27	0.02
NCA 10	Residential	45	40	35	0.26	27	0.02
NCA 17	Residential	45	40	35	0.26	27	0.02
NCA 08	Commercial/Residential	45	40	35	0.26	27	0.02
NCA 17	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 11	Garage	70	70	70	1.6	27	0.02
NCA 17	Residential	45	40	35	0.26	27	0.02
NCA 17	Residential	45	40	35	0.26	27	0.02
NCA 17	Residential	45	40	35	0.26	27	0.02
NCA 17	Garage	70	70	70	1.6	27	0.02
NCA 12	Commercial/Business	50	50	50	0.8	27	0.02
NCA 17	Residential	45	40	35	0.26	27	0.02
NCA 11	Residential	45	40	35	0.26	27	0.02
NCA 13	Residential	45	40	35	0.26	27	0.02
NCA 15	Residential	45	40	35	0.26	27	0.02
NCA 12	Garage	70	70	70	1.6	27	0.02
NCA 11	Garage	70	70	70	1.6	27	0.02
NCA 14	Garage	70	70	70	1.6	27	0.02
NCA 12	Garage	70	70	70	1.6	27	0.02
NCA 12	Residential	45	40	35	0.26	27	0.02
NCA 14	Residential	45	40	35	0.26	27	0.02
NCA 15	Residential	45	40	35	0.26	27	0.02

	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 20	Childcare	45	45	45	0.8	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 11	Garage	70	70	70	1.6	27	0.02
	NCA 21	Residential	45	40	35	0.26	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 11	Garage	70	70	70	1.6	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 21	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 12	Garage	70	70	70	1.6	27	0.02
	NCA 14	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 10	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 08	Recreational/Open Space	65	65	65	1.6	27	0.02
	NCA 12	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 12	Garage	70	70	70	1.6	27	0.02
	NCA 15	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 14	Education	45	45	45	0.8	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 14	Garage	70	70	70	1.6	27	0.02
	NCA 10	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 12	Garage	70	70	70	1.6	27	0.02
	NCA 14	Residential	45	40	35	0.26	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 13	Commercial/Business	50	50	50	0.8	27	0.02
0	NCA 19	Education	45	45	45	0.8	27	0.02
	NCA 19	Childcare	45	45	45	0.8	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 17	Garage	70	70	70	1.6	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 15	Garage	70	70	70	1.6	27	0.02
	NCA 17	Garage	70	70	70	1.6	27	0.02
	NCA 21	Residential	45	40	35	0.26	27	0.02
	NCA 12	Garage	70	70	70	1.6	27	0.02
	NCA 15	Education	45	45	45	0.8	27	0.02
	NCA 21	Residential	45	40	35	0.26	27	0.02
	NCA 15	Residential	45	40	35	0.26	27	0.02
0	NCA 19	Education	45	45	45	0.8	27	0.02
	NCA 14	Education	45	45	45	0.8	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 14	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 21	Residential	45	40	35	0.26	27	0.02
	NCA 20	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 14	Garage	70	70	70	1.6	27	0.02
	NCA 20	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 12	Garage	70	70	70	1.6	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 10	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 21	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 12	Garage	70	70	70	1.6	27	0.02
	NCA 15	Garage	70	70	70	1.6	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 21	Residential	45	40	35	0.26	27	0.02
	NCA 14	Residential	45	40	35	0.26	27	0.02
	NCA 13	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 14	Residential	45	40	35	0.26	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 13	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 14	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 12	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 21	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 12	Garage	70	70	70	1.6	27	0.02
	NCA 10	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 14	Garage	70	70	70	1.6	27	0.02

	NCA 20	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 12	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 11	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 17	Garage	70	70	70	1.6	27	0.02
	NCA 15	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 12	Garage	70	70	70	1.6	27	0.02
	NCA 12	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 14	Education	45	45	45	0.8	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 15	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 17	Residential	45	40	35	0.26	27	0.02
	NCA 20	Residential	45	40	35	0.26	27	0.02
	NCA 12	Commercial/Business	50	50	50	0.8	27	0.02
	NCA 20	Place of Worship	45	45	45	0.8	27	0.02
	NCA 12	Residential	45	40	35	0.26	27	0.02
	NCA 12	Garage	70	70	70	1.6	26	0.02
	NCA 17	Residential	45	40	35	0.26	26	0.02
	NCA 15	Garage	70	70	70	1.6	26	0.02
	NCA 14	Residential	45	40	35	0.26	26	0.02
	NCA 11	Garage	70	70	70	1.6	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 15	Garage	70	70	70	1.6	26	0.02
	NCA 15	Residential	45	40	35	0.26	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 20	Commercial/Business	50	50	50	0.8	26	0.02
	NCA 21	Residential	45	40	35	0.26	26	0.02
	NCA 20	Residential	45	40	35	0.26	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 12	Residential	45	40	35	0.26	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 15	Residential	45	40	35	0.26	26	0.02
	NCA 13	Residential	45	40	35	0.26	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 17	Residential	45	40	35	0.26	26	0.02
	NCA 10	Recreational/Open Space	65	65	65	1.6	26	0.02
	NCA 20	Commercial/Business	50	50	50	0.8	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 12	Commercial/Business	50	50	50	0.8	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 17	Residential	45	40	35	0.26	26	0.02
	NCA 13	Residential	45	40	35	0.26	26	0.02
	NCA 12	Residential	45	40	35	0.26	26	0.02
	NCA 20	Residential	45	40	35	0.26	26	0.02
	NCA 21	Residential	45	40	35	0.26	26	0.02
	NCA 12	Residential	45	40	35	0.26	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 15	Residential	45	40	35	0.26	26	0.02
	NCA 13	Residential	45	40	35	0.26	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 17	Residential	45	40	35	0.26	26	0.02
	NCA 10	Recreational/Open Space	65	65	65	1.6	26	0.02
	NCA 20	Commercial/Business	50	50	50	0.8	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 12	Commercial/Business	50	50	50	0.8	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 17	Residential	45	40	35	0.26	26	0.02
	NCA 13	Residential	45	40	35	0.26	26	0.02
	NCA 12	Residential	45	40	35	0.26	26	0.02
	NCA 20	Residential	45	40	35	0.26	26	0.02
	NCA 21	Residential	45	40	35	0.26	26	0.02
	NCA 12	Residential	45	40	35	0.26	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 15	Residential	45	40	35	0.26	26	0.02
	NCA 13	Residential	45	40	35	0.26	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 17	Residential	45	40	35	0.26	26	0.02
	NCA 10	Recreational/Open Space	65	65	65	1.6	26	0.02
	NCA 20	Commercial/Business	50	50	50	0.8	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 12	Commercial/Business	50	50	50	0.8	26	0.02
	NCA 11	Residential	45	40	35	0.26	26	0.02
	NCA 17	Residential	45	40	35	0.26	26	0.02
	NCA 13	Residential	45	40	35	0.26	26	0.02
	NCA 12	Residential	45	40	35	0.26	26	0.02
	NCA 21	Residential	45	40	35	0.26	26	0.02
	NCA 17	Residential	45	40	35	0.26	26	0.02
	NCA 19	Recreational/Open Space	65	65	65	1.6	26	0.02

NCA 12	Residential	45	40	35	0.26	25	0.01
NCA 20	Residential	45	40	35	0.26	25	0.01
NCA 12	Residential	45	40	35	0.26	25	0.01
NCA 20	Residential	45	40	35	0.26	25	0.01
NCA 14	Residential	45	40	35	0.26	25	0.01
NCA 15	Residential	45	40	35	0.26	25	0.01
NCA 20	Residential	45	40	35	0.26	25	0.01
NCA 14	Garage	70	70	70	1.6	25	0.01
NCA 11	Residential	45	40	35	0.26	25	0.01
NCA 17	Residential	45	40	35	0.26	25	0.01
NCA 13	Garage	70	70	70	1.6	25	0.01
NCA 20	Residential	45	40	35	0.26	25	0.01
NCA 20	Residential	45	40	35	0.26	25	0.01
NCA 14	Residential	45	40	35	0.26	25	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 11	Residential	45	40	35	0.26	24	0.01
NCA 14	Garage	70	70	70	1.6	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 15	Residential	45	40	35	0.26	24	0.01
NCA 12	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 17	Residential	45	40	35	0.26	24	0.01
NCA 12	Residential	45	40	35	0.26	24	0.01
NCA 12	Garage	70	70	70	1.6	24	0.01
NCA 11	Residential	45	40	35	0.26	24	0.01
NCA 21	Commercial/Business	50	50	50	0.8	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 11	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 21	Residential	45	40	35	0.26	24	0.01
NCA 12	Commercial/Business	50	50	50	0.8	24	0.01
NCA 10	Garage	70	70	70	1.6	24	0.01
NCA 12	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Commercial/Business	50	50	50	0.8	24	0.01
NCA 11	Residential	45	40	35	0.26	24	0.01
NCA 12	Garage	70	70	70	1.6	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 13	Commercial/Business	50	50	50	0.8	24	0.01
NCA 11	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 10	Garage	70	70	70	1.6	24	0.01
NCA 14	Garage	70	70	70	1.6	24	0.01
NCA 15	Garage	70	70	70	1.6	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 12	Residential	45	40	35	0.26	24	0.01
NCA 11	Residential	45	40	35	0.26	24	0.01
NCA 21	Residential	45	40	35	0.26	24	0.01
NCA 19	Education	45	45	45	0.8	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 17	Residential	45	40	35	0.26	24	0.01
NCA 12	Commercial/Business	50	50	50	0.8	24	0.01
NCA 21	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 17	Garage	70	70	70	1.6	24	0.01
NCA 15	Residential	45	40	35	0.26	24	0.01
NCA 13	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 14	Garage	70	70	70	1.6	24	0.01
NCA 21	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 11	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 15	Residential	45	40	35	0.26	24	0.01
NCA 12	Garage	70	70	70	1.6	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 21	Industrial/Utilities	55	55	55	1.6	24	0.01
NCA 12	Residential	45	40	35	0.26	24	0.01
NCA 13	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 12	Commercial/Business	50	50	50	0.8	24	0.01
NCA 12	Commercial/Business	50	50	50	0.8	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 17	Residential	45	40	35	0.26	24	0.01
NCA 15	Education	45	45	45	0.8	24	0.01
NCA 12	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 12	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 17	Garage	70	70	70	1.6	24	0.01
NCA 12	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 11	Garage	70	70	70	1.6	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 12	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 11	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 10	Residential	45	40	35	0.26	24	0.01
NCA 15	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 20	Residential	45	40	35	0.26	24	0.01
NCA 12	Residential	45	40	35	0.26	24	0.01

NCA	20	Hotel	50	50	50		0.8	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	21	Residential	45	40	35		0.26	24	0.01
NCA	10	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	15	Residential	45	40	35		0.26	24	0.01
NCA	21	0	55	55	55		1.6	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	17	Residential	45	40	35		0.26	24	0.01
NCA	11	Residential	45	40	35		0.26	24	0.01
NCA	12	Residential	45	40	35		0.26	24	0.01
NCA	11	Residential	45	40	35		0.26	24	0.01
NCA	14	Residential	45	40	35		0.26	24	0.01
NCA	14	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	12	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	17	Residential	45	40	35		0.26	24	0.01
NCA	21	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	15	Garage	70	70	70		1.6	24	0.01
NCA	15	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	12	Commercial/Business	50	50	50		0.8	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	15	Residential	45	40	35		0.26	24	0.01
NCA	12	Residential	45	40	35		0.26	24	0.01
NCA	17	Garage	70	70	70		1.6	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	14	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	15	Residential	45	40	35		0.26	24	0.01
NCA	11	Residential	45	40	35		0.26	24	0.01
NCA	14	Garage	70	70	70		1.6	24	0.01
NCA	11	Residential	45	40	35		0.26	24	0.01
NCA	12	Residential	45	40	35		0.26	24	0.01
NCA	12	Residential	45	40	35		0.26	24	0.01
NCA	20	Residential	45	40	35		0.26	24	0.01
NCA	14	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	12	Commercial/Business	50	50	50		0.8	23	0.01
NCA	15	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	15	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	12	Garage	70	70	70		1.6	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	14	Residential	45	40	35		0.26	23	0.01
0	NCA	19	Education	45	45	45	0.8	23	0.01
NCA	14	Residential	45	40	35		0.26	23	0.01
NCA	12	Residential	45	40	35		0.26	23	0.01
NCA	14	Residential	45	40	35		0.26	23	0.01
NCA	15	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	12	Residential	45	40	35		0.26	23	0.01
NCA	14	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	15	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	11	Garage	70	70	70		1.6	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	20	Commercial/Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	15	Residential	45	40	35		0.26	23	0.01
NCA	12	Commercial/Business	50	50	50		0.8	23	0.01
NCA	20	Garage	70	70	70		1.6	23	0.01
NCA	20	Garage	70	70	70		1.6	23	0.01
NCA	14	Residential	45	40	35		0.26	23	0.01
NCA	13	Commercial/Business	50	50	50		0.8	23	0.01
NCA	14	Residential	45	40	35		0.26	23	0.01
NCA	20	Commercial/Business	50	50	50		0.8	23	0.01
NCA	20	Commercial/Business	50	50	50		0.8	23	0.01
NCA	20	Commercial/Business	50	50	50		0.8	23	0.01
NCA	11	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	14	Residential	45	40	35		0.26	23	0.01
NCA	11	Residential	45	40	35		0.26	23	0.01
NCA	20	Commercial/Business	50	50	50		0.8	23	0.01
NCA	11	Garage	70	70	70		1.6	23	0.01
NCA	15	Residential	45	40	35		0.26	23	0.01
NCA	20	Commercial/Residential	45	40	35		0.26	23	0.01
NCA	12	Residential	45	40	35		0.26	23	0.01
NCA	20	Commercial/Residential	45	40	35		0.26	23	0.01
NCA	20	Commercial/Residential	45	40	35		0.26	23	0.01
NCA	11	Garage	70	70	70		1.6	23	0.01
NCA	15	Residential	45	40	35		0.26	23	0.01
NCA	20	Residential	45	40	35		0.26	23	0.01
NCA	12	Recreational/Open Space	65	65	65		1.6	23	0.01

NCA 15	Residential	45	40	35		0.26	21	0.01
NCA 14	Residential	45	40	35		0.26	21	0.01
NCA 15	Residential	45	40	35		0.26	21	0.01
NCA 12	Residential	45	40	35		0.26	21	0.01
NCA 11	Commercial/Residential	45	40	35		0.26	21	0.01
NCA 12	Garage	70	70	70		1.6	21	0.01
NCA 11	Garage	70	70	70		1.6	21	0.01
NCA 12	Residential	45	40	35		0.26	21	0.01
NCA 15	Residential	45	40	35		0.26	21	0.01
NCA 14	Residential	45	40	35		0.26	21	0.01
NCA 11	Commercial/Business	50	50	50		0.8	21	0.01
NCA 15	Garage	70	70	70		1.6	21	0.01
NCA 15	Residential	45	40	35		0.26	21	0.01
NCA 11	Residential	45	40	35		0.26	21	0.01
NCA 15	Residential	45	40	35		0.26	21	0.01
NCA 11	Commercial/Residential	45	40	35		0.26	21	0.01
NCA 10	Education	45	45	45		0.8	21	0.01
NCA 13	Commercial/Business	50	50	50		0.8	21	0.01
NCA 14	Garage	70	70	70		1.6	20	0.01
NCA 12	Residential	45	40	35		0.26	20	0.01
NCA 14	Residential	45	40	35		0.26	20	0.01
NCA 15	Residential	45	40	35		0.26	20	0.01
NCA 11	Commercial/Residential	45	40	35		0.26	20	0.01
NCA 12	Residential	45	40	35		0.26	20	0.01
NCA 12	Residential	45	40	35		0.26	20	0.01
NCA 11	Commercial/Business	50	50	50		0.8	20	0.01
NCA 12	Garage	70	70	70		1.6	20	0.01
NCA 11	Residential	45	40	35		0.26	20	0.01
NCA 11	Residential	45	40	35		0.26	20	0.01
NCA 11	Residential	45	40	35		0.26	20	0.00
NCA 12	Residential	45	40	35		0.26	20	0.00
NCA 11	Residential	45	40	35		0.26	20	0.00
NCA 13	Commercial/Business	50	50	50		0.8	20	0.00
NCA 11	Commercial/Residential	45	40	35		0.26	20	0.00
NCA 14	Residential	45	40	35		0.26	20	0.00
NCA 15	Garage	70	70	70		1.6	20	0.00
NCA 12	Residential	45	40	35		0.26	20	0.00
NCA 11	Residential	45	40	35		0.26	20	0.00
NCA 11	Commercial/Business	50	50	50		0.8	20	0.00
NCA 12	Garage	70	70	70		1.6	20	0.00
NCA 12	Garage	70	70	70		1.6	20	0.00
NCA 10	Transport/Infrastructure	55	55	55		1.6	20	0.00
NCA 11	Residential	45	40	35		0.26	20	0.00
NCA 13	Commercial/Business	50	50	50		0.8	20	0.00
NCA 14	Place of Worship	45	45	45		0.8	20	0.00
NCA 11	Commercial/Residential	45	40	35		0.26	20	0.00
NCA 12	Residential	45	40	35		0.26	20	0.00
NCA 12	Residential	45	40	35		0.26	20	0.00
NCA 13	Commercial/Business	50	50	50		0.8	20	0.00
NCA 11	Garage	70	70	70		1.6	20	0.00
NCA 15	Residential	45	40	35		0.26	20	0.00
NCA 11	Residential	45	40	35		0.26	20	0.00
NCA 11	Residential	45	40	35		0.26	20	0.00
NCA 08	Commercial/Business	50	50	50		0.8	20	0.00
NCA 15	Residential	45	40	35		0.26	20	0.00
NCA 11	Commercial/Residential	45	40	35		0.26	20	0.00
NCA 15	Residential	45	40	35		0.26	20	0.00
NCA 14	Commercial/Residential	45	40	35		0.26	20	0.00
NCA 11	Residential	45	40	35		0.26	20	0.00
NCA 11	Garage	70	70	70		1.6	20	0.00
NCA 12	Residential	45	40	35		0.26	20	0.00
NCA 10	Education	45	45	45		0.8	20	0.00
NCA 12	Commercial/Residential	45	40	35		0.26	20	0.00
NCA 10	Education	45	45	45		0.8	20	0.00
NCA 15	Residential	45	40	35		0.26	20	0.00
NCA 11	Garage	70	70	70		1.6	20	0.00
NCA 15	Residential	45	40	35		0.26	19	0.00
NCA 15	Residential	45	40	35		0.26	19	0.00
NCA 12	Residential	45	40	35		0.26	19	0.00
NCA 14	Place of Worship	45	45	45		0.8	19	0.00
NCA 15	Residential	45	40	35		0.26	19	0.00
NCA 11	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 11	Residential	45	40	35		0.26	19	0.00
NCA 15	Residential	45	40	35		0.26	19	0.00
NCA 11	Residential	45	40	35		0.26	19	0.00
NCA 14	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 10	Education	45	45	45		0.8	19	0.00
NCA 14	Place of Worship	45	45	45		0.8	19	0.00
NCA 13	Commercial/Business	50	50	50		0.8	19	0.00
NCA 11	Garage	70	70	70		1.6	19	0.00
NCA 15	Residential	45	40	35		0.26	19	0.00
NCA 12	Residential	45	40	35		0.26	19	0.00
NCA 14	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 12	Residential	45	40	35		0.26	19	0.00
NCA 12	Residential	45	40	35		0.26	19	0.00
NCA 12	Residential	45	40	35		0.26	19	0.00
NCA 10	Education	45	45	45		0.8	19	0.00
NCA 15	Residential	45	40	35		0.26	19	0.00
NCA 14	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 11	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 13	Residential	45	40	35		0.26	19	0.00
NCA 12	Residential	45	40	35		0.26	19	0.00
NCA 14	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 11	Residential	45	40	35		0.26	19	0.00
NCA 13	Commercial/Business	50	50	50		0.8	19	0.00
NCA 11	Residential	45	40	35		0.26	19	0.00
NCA 11	Garage	70	70	70		1.6	19	0.00
NCA 14	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 12	Residential	45	40	35		0.26	19	0.00
NCA 12	Residential	45	40	35		0.26	19	0.00
NCA 12	Residential	45	40	35		0.26	19	0.00
NCA 15	Place of Worship	45	45	45		0.8	19	0.00
NCA 15	Garage	70	70	70		1.6	19	0.00
NCA 12	Garage	70	70	70		1.6	19	0.00
NCA 11	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 11	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 11	Garage	70	70	70		1.6	19	0.00

NCA 14	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 15	Commercial/Business	50	50	50		0.8	19	0.00
NCA 14	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 12	Residential	45	40	35		0.26	19	0.00
NCA 14	Medical	#N/A	#N/A	#N/A		#N/A	19	0.00
NCA 11	Residential	45	40	35		0.26	19	0.00
NCA 15	Commercial/Residential	45	40	35		0.26	19	0.00
NCA 11	Residential	45	40	35		0.26	18	0.00
NCA 12	Residential	45	40	35		0.26	18	0.00
NCA 14	Commercial/Residential	45	40	35		0.26	18	0.00
NCA 15	Commercial/Residential	45	40	35		0.26	18	0.00
NCA 12	Commercial/Business	50	50	50		0.8	18	0.00
NCA 15	Commercial/Residential	45	40	35		0.26	18	0.00
NCA 12	Residential	45	40	35		0.26	18	0.00
NCA 15	Garage	70	70	70		1.6	18	0.00
NCA 11	Garage	70	70	70		1.6	18	0.00
NCA 15	Commercial/Business	50	50	50		0.8	18	0.00
NCA 11	Residential	45	40	35		0.26	18	0.00
NCA 12	Garage	70	70	70		1.6	18	0.00
NCA 11	Residential	45	40	35		0.26	18	0.00
NCA 15	Commercial/Business	50	50	50		0.8	18	0.00
NCA 15	Commercial/Residential	45	40	35		0.26	18	0.00
NCA 15	Commercial/Business	50	50	50		0.8	18	0.00
NCA 15	Commercial/Business	50	50	50		0.8	18	0.00
NCA 15	Garage	70	70	70		1.6	18	0.00
NCA 11	Commercial/Residential	45	40	35		0.26	18	0.00
NCA 11	Garage	70	70	70		1.6	18	0.00
NCA 13	Residential	45	40	35		0.26	18	0.00
NCA 12	Garage	70	70	70		1.6	18	0.00
NCA 11	Residential	45	40	35		0.26	18	0.00
NCA 15	Commercial/Residential	45	40	35		0.26	18	0.00
NCA 15	Commercial/Residential	45	40	35		0.26	18	0.00
NCA 13	Residential	45	40	35		0.26	18	0.00
NCA 11	Residential	45	40	35		0.26	18	0.00
NCA 11	Residential	45	40	35		0.26	18	0.00
NCA 10	Education	45	45	45		0.8	18	0.00
NCA 12	Residential	45	40	35		0.26	18	0.00
NCA 13	Garage	70	70	70		1.6	18	0.00
NCA 12	Garage	70	70	70		1.6	18	0.00
NCA 12	Residential	45	40	35		0.26	18	0.00
NCA 13	Residential	45	40	35		0.26	18	0.00
NCA 12	Commercial/Business	50	50	50		0.8	18	0.00
NCA 12	Commercial/Residential	45	40	35		0.26	18	0.00
NCA 12	Residential	45	40	35		0.26	17	0.00
NCA 12	Commercial/Residential	45	40	35		0.26	17	0.00
NCA 12	Commercial/Residential	45	40	35		0.26	17	0.00
NCA 13	Commercial/Residential	45	40	35		0.26	17	0.00
NCA 12	Residential	45	40	35		0.26	17	0.00
NCA 12	Commercial/Residential	45	40	35		0.26	17	0.00
NCA 12	Residential	45	40	35		0.26	17	0.00
NCA 12	Commercial/Residential	45	40	35		0.26	17	0.00
NCA 12	Commercial/Residential	45	40	35		0.26	17	0.00
NCA 12	Commercial/Business	50	50	50		0.8	17	0.00
NCA 12	Residential	45	40	35		0.26	17	0.00
NCA 12	Residential	45	40	35		0.26	17	0.00
NCA 12	Residential	45	40	35		0.26	16	0.00
NCA 12	Residential	45	40	35		0.26	16	0.00