

Health and Safety Objections – During Construction

All Chapter information references the EIS which can be found at: <https://www.planningportal.nsw.gov.au/major-projects/project/10451>. Go to EIS (73).

Contents

Background

1. Construction Health and Safety

1.1 Dust

1.2 Contaminated Soil and Spoil

1.3 Trucks and Diesel Emissions

1.4 Noise (this is huge please refer to Chapter 10 and App G for specific information as this is only a sample of overall noise impacts)

1.5 Mental Health/ Stress

Background – Timing of Construction Work - Appendix G: Noise and Vibration (Part 1)

Background – predicted timing of works (please note that the program is not set until contractors are allocated and can change) Ref: Appendix G

The Program Predicted Program of Works Overall:

Table 5-1 –Western Harbour Tunnel and Warringah Freeway Upgrade project – indicative program and timeline

Construction activity	Indicative construction timeframe																											
	2020				2021				2022				2023				2024				2025				2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Western Harbour Tunnel and Warringah Freeway Upgrade early works and site establishment																												
Construction of the Warringah Freeway Upgrade component																												
Construction of driven tunnels																												
Fabrication, preparation for and installation of immersed tube tunnels																												
Tunnel fitout and finishing																												
Construction of operational facilities																												
Testing and commissioning																												
Site clean-up and demobilisation																												

What’s going on Around Cammeray

Table 5-119 – Concurrent construction works near the Cammeray Golf Course construction support sites

Project	2019	2020	2021	2022	2023	2024	2025
Cammeray Golf Course construction support sites (CGC)							
Warringah Freeway Upgrade surface road works (WFU)							
Other major infrastructure projects							
Cammeray Golf Course construction support site as part of the Beaches Link and Gore Hill Freeway Connection project (CGC-BL) ¹							
Warringah Freeway surface road works (WFU2H) as part of the Beaches Link and Gore Hill Freeway Connection project (WFU2H-BL) ¹							

Notes: 1. Indicative programs have been assumed for the Beaches Link and Gore Hill Freeway Connection project

What’s going on at the Main Golf Club Site

Table 5-108 – Cammeray Golf Course construction support sites – indicative program and timeline

Stage	Representative activity	Reference	Indicative construction timeframe																			
			2021				2022				2023				2024				2025			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Site establishment	1. Early works	CGC_01																				
	2. Establish site	CGC_02																				
Acoustic shed and surface level shaft and tunnel excavation	3. Acoustic shed and surface level shaft and tunnel excavation	CGC_03																				
Surface work support	4. Support Warringah Freeway Upgrade	CGC_04																				
Tunnel construction (decline, ventilation and mainline tunnels) and rock crushing	5. Tunnelling	CGC_05																				
Tunnel fitout	6. Tunnel fitout	CGC_06																				
Permanent motorway facilities construction	7. Remove spoil shed, construct motorway facilities building	CGC_07																				
Fitout of motorway facilities and ventilation outlet	8. Motorway facilities building fitout and ventilation outlet	CGC_08																				
Tunnel commission and site rehabilitation	9. Restore site	CGC_09																				

When the “Minor Sites” (WFU0A)/Surface Works/ Bridges etc will happen

Table 5-126 – Warringah Freeway Upgrade surface road works – indicative program and timeline

Zone	Major works areas	Reference	Indicative construction timeframe																							
			2020				2021				2022				2023				2024				2025			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
	Minor construction support sites	WFU0A																								
Zone 1	Ridge Street shared user bridge	WFU1A																								
	Berry Street entry on ramp works	WFU1B																								
	Alfred Street north and Mount Street interchange modification and grade separation works	WFU1C																								
	Warringah Freeway northbound widening	WFU1D																								
	Falcon Street interchange upgrade	WFU1E																								
	High Street interchange upgrade	WFU1F																								
	Warringah Freeway southbound widening	WFU1G																								
	Western Harbour Tunnel Falcon Street off ramp cut and cover	WFU3J																								
Zone 2	Falcon Street to Miller Street construction works	WFU2H																								
Zone 3	Miller Street to Willoughby Road construction works	WFU3I																								
	Western Harbour Tunnel motorway control centre	WFU3K																								

What's going on at Berry's Bay, Waverton

Table 5-89 – Berrys Bay construction support site – indicative program and timeline

Stage	Construction activity	Reference	Indicative construction timeframe																			
			2021				2022				2023				2024				2025			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Site establishment	1. Early works	BRY_01	█	█	█	█																
	2. Establish site	BRY_02	█	█	█	█																
	3. Establishment of construction facilities	BRY_03	█	█	█	█																
Acoustic shed and surface level tunnel access construction	4. Piling for acoustic sheds	BRY_04	█	█	█	█																
	5. Surface level decline construction	BRY_05					█	█	█	█												
	6. Acoustic shed construction	BRY_06					█	█	█	█												
Tunnel construction (access decline and mainline tunnels)	7. Tunnelling	BRY_07									█	█	█	█								
Tunnel fitout	8. Tunnel fitout	BRY_08													█	█	█	█	█	█	█	█
Tunnel commission and site rehabilitation	9. Restore site	BRY_09																	█	█	█	█

Note Berry's Bay will be heavily impacted also by Yurulbin works across the Harbour

Table 5-100 – Concurrent construction works near the Berrys Bay construction support site

Project	2021	2022	2023	2024	2025
Sydney Harbour Crossing		█	█	█	█
Berrys Bay construction support site	█	█	█	█	█
Yurulbin Point construction support site	█	█	█	█	█

Table 5-127 – Proposed key construction activities and construction hours across the works areas and assessed works activities – Warringah Freeway Upgrade surface road works

Zone/ Works Area / Assessment Scenario Reference	Number of assessed works areas	Road work	Concrete barriers and traffic controls	Demolition (rock hammering)	Pavement/road modification works	Paving/grubbing/road works (inc. road seal)	Resurfacing works	Road furniture installation/modification	Earthworks	Cleaning & grubbing works	Earthwork	Pile banking	Piling - bored	Rock drilling	Rock trimming	Shotcrete	Structures	Concrete formwork and reinforcement	Concrete pour	Erection of structural steelwork	Erection/removal of large items	Noise barrier installations	Services/Utilities	Utilities modification works	Support Activities	Deliveries	Deliveries (oversize)	Mobilisation/mobilisation & site setup	Spill handling	Support site general activities
Worst-case SWL ¹			105	121	120	120	118	114		116	119	122	108	95	116	109		104	116	117	110	118		120		98	110	108	104	105
Typical case SWL ¹			99	109	110	109	112	107		112	116	113	108	95	116	109		104	112	111	110	111		110		98	110	108	104	100
Minor construction support sites	WFU0A	12																												
Zone 1	Ridge Street shared user bridge	WFU1A	2	O	O		D			D					D				O	O	O							O	D	O
	Berry Street entry on ramp works	WFU1B	3	D	DO	D		D		D	DO		D								D				D		O	D	O	
	Alfred St Nth to Mount Street interchange	WFU1C	6			DO	DO			DO	D								O		DO			DO	DO	O	D			
	Warringah Freeway northbound widening	WFU1D	1	O	D		DO	D		D	D													D				D		
	Falcon Street Interchange	WFU1E	6	O	O	DO	D	DO	O		DO							DO	O	O				DO	O	O	D	O		
	High Street Interchange	WFU1F	4	DO		D	D	D	O		D		DO					DO	O	D	DO			D	D	O	D			
	Warringah Freeway southbound widening	WFU1G	5	DO	D	O	O	DO	D	O	D	D	D			D		D	O		D			D	O	O	D	O		
	Western Harbour Tunnel Falcon Street off ramp cut and cover	WFU3J	2		D	DO	O	DO	DO	D	D		D					D					D		D	DO	D	D		
Zone 2	Tunnel structure works	WFU2H	9	O	D		D	O	D		D	D	D		D			D	O					D			O	D		
	Ernest Street bridge	WFU2H	2	DO	D		O	D	D		D		D					D	O		O			D	O	O	D			
Zone 3	Miller Street to Willoughby Road construction works	WFU3I	5	O	DO		D	D	DO	O	DO							D	O		D			D	O	O	D	DO		
	Western Harbour Tunnel motorway control centre	WFU3K	1															D	D	D	D			DO	D	DO	D	D		

Notes: 1. The activity SWL includes the adjustments for quantity of equipment assumed operating, equipment usage factor, and penalties for annoying characteristics in accordance with the ICNG. Refer to Appendix F for a description of the assumed equipment/plant that are operating.

1. Construction Health and Safety

1.1 Dust Impacts

Information from EIS

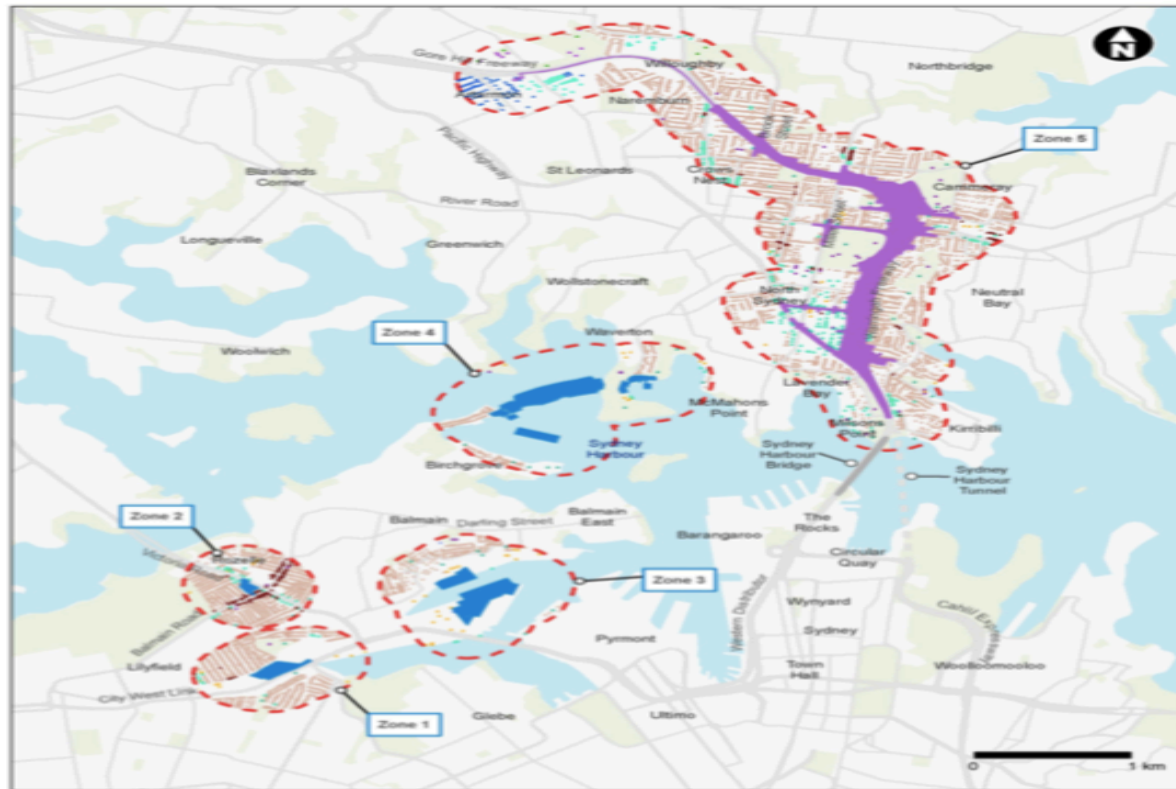


Figure 12-4 Construction dust screening assessment – receivers near the project footprint

Objection Points

Objection: The dust impacts are assessed as high risk across the Warringah Freeway project a location which covers the area of many school and pre-school communities. The Warringah Freeway was built through historic areas where schools already existed and since this time the government has chosen to build more schools in this location. The health impacts to children of breathing in air high in particulate matter (that may be contaminated) is well documented in literature.

Mitigation: The Chief Health Office should be asked to reassess dust related health outcomes with reference to the risk assessment completed showing dust risks are high on the North Shore, soil contamination in the area has been identified, potentially contaminated spoil at Cammeray Golf Club site and the significant underestimation of educational receivers in the area.

Dust Risk Assessment:

Zone	Activity	Step 2A: Potential for dust emissions	Step 2B: Sensitivity of area - Dust settlement	Step 2B: Sensitivity of area - Human health	Step 2B: Sensitivity of area - Ecological	Step 2C: Risk of dust impacts - Dust settlement	Step 2C: Risk of dust impacts - Human health	Step 2C: Risk of dust impacts - Ecological
Zone 4 (WHT4,5,6,7)	Demolition	Small	Medium	Medium	High	Low	Low	Medium
	Earthworks	Medium	Medium	Medium	High	Medium	Medium	Medium
	Construction	Small	Medium	Medium	High	Low	Low	Low
	Track-out	Medium	Medium	Medium	High	Low	Low	Medium
Zone 5 (WHT8-11 WFU1-9)	Demolition	Large	High	High	High	High	High	High
	Earthworks	Large	High	High	High	High	High	High
	Construction	Large	High	High	High	High	High	High
	Track-out	Large	High	High	High	High	High	High

Objection Points: The area has been highly sensitive to dust impacts with potentially between 5894 to 32,155 people impacted. The health risks are also high. Given that it is impossible to fully mitigate dust risks and that dust may be contaminated this is a major concern. There are 26 schools along the project corridor which stand to be impacted many of whom’s catchments run across the project footprint. Recent tunnelling projects have had significant issues with dust control despite mitigation measures being in place.

Mitigation: This is far too much risk to try to mitigate in a school and residential area – other options should be explored.

Chapter 12: Air Quality 12-23

Table 7-6 Results of sensitivity to dust settlement effects

Zone	Activity	Receptor sensitivity	Number of receptors by distance from assessment zone boundary (m)				Sensitivity of area
			<20	20-50	50-100	100-350	
Zone 1 (WHT1)	Demolition	N/A	N/A	N/A	N/A	N/A	N/A
	Earthworks	High	0	113	228	3066	High
	Construction	High	0	113	228	3066	High
	Track-out	High	0	113	N/A	N/A	High
Zone 2 (WHT2)	Demolition	High	36	171	523	3739	High
	Earthworks	High	36	171	523	3739	High
	Construction	High	36	171	523	3739	High
	Track-out	High	36	171	N/A	N/A	High
Zone 3 (WHT3)	Demolition	N/A	N/A	N/A	N/A	N/A	N/A
	Earthworks	High	20	30	46	2800	High
	Construction	N/A	N/A	N/A	N/A	N/A	N/A
	Track-out	High	20	30	N/A	N/A	High
Zone 4 (WHT4,5,6,7)	Demolition	High	9	82	155	1057	Medium
	Earthworks	High	9	82	155	1057	Medium
	Construction	High	9	82	155	1057	Medium
	Track-out	High	9	82	N/A	N/A	Medium
Zone 5 (WHT8-11, WFU1-9)	Demolition	High	5894	8637	10,635	32,155	High
	Earthworks	High	5894	8637	10,635	32,155	High
	Construction	High	5894	8637	10,635	32,155	High
	Track-out	High	5894	8637	N/A	N/A	High

<https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSI-8863%2120200116T053331.656%20GMT>

Inaccurate Data

Table 7-5 Number of receptors assumed for each location type

Land-use category	Number of receptors
Commercial	5
Local Centre	5
Mixed Use	3
Aged Care	100
Childcare	30
Community Education	100
Medical	10
Place of Worship	10
Industrial	10
General Residential	3
Low Density Residential	3
Medium Density residential	5
High Density Residential	50
Recreational	20
Hospital	1000

Objection: The number of receptors at each location type for the dust risk assessment has been substantially underestimated. Education receptors have been estimated as only 100 where each school has 5-10 times that many students ie) Cammeray Public 950, Cammeraygal 720, Anzac Park 700 approx. We estimate a minimum of 10,000 children as receptors across impacted schools in North Sydney and Willoughby. It is not clear whether these assumptions have been carried forward across the whole air quality risk assessment and we would recommend strongly that the DPIE looks into this as it would have a significant impact on the accuracy of the risk assessment.

Action Needed: The risk assessment should have to be re-done and re-exhibited for the air quality analysis. Given the high level of concern about air quality in the community and the risks to children it is essential that this is clarified before project approval and not as a Condition.

Spoil Transported through streets

Table 3-9 Indicative waste and spoil material quantities

Type	Disposal or import location	Distance (kilometres)	Total (tonnes)
Terrestrial activities			
Disposal – spoil excavation and crushed rock removal/top soil removal	Penrith Lakes, NSW	66	5,031,000
Disposal – aggregates/ crushed rock and concrete	Camelia, NSW	30	3,941,173
Disposal – construction waste (from building and other demolition)	Camelia, NSW	30	100,200
Import of spoil	Western Sydney, NSW	50	8850
Import of aggregates	Bombo, NSW	123	18,400
Dredged material spoil			
Dredged material unsuitable for offshore disposal	Kemps Creek	52	228,000
Dredged material suitable for offshore disposal	Offshore	10	1,219,200

Waste Management. 24-10

Chapter 24: Resource Use and

Objection: A very large amount of spoil will be transported with 6000+ vehicle movements per day from multiple points across the route from Rozelle to Willoughby. Whilst the direction of transport and the approximate destinations are documented in the EIS the route taken from site is not clear. The Harbour crossings have restrictions regarding the transport of dangerous goods and so it is likely that contaminated spoil would need to be transported via local streets. A large number of sporting activities occur across all local parks but particularly, at Cammeray Oval and St Leonards Park, on Friday afternoons and Saturday mornings. Children walk from schools and dusty activities and transport of spoil should not be permitted at these times. It is well recognised that children are the most susceptible to dust impacts and when engaging in physical activity take on a higher dose. Transport should also be restricted on Saturday mornings and Friday afternoon's due to the high traffic loads and children moving to and from sporting activities. With 26 schools along the route and other schools joining for sport the numbers of children who may be impacted is very significant.

Spoil and waste management

The project is estimated to generate about 2.1 million cubic metres of spoil, about 760,000 cubic metres of dredged material suitable for disposal at the designated offshore disposal site and about 140,000 cubic metres of material not suitable for offshore disposal. Spoil generation and dredged material from each construction support site is provided in Chapter 24 (Resource use and waste management).

Mitigation: A construction transport plan should be developed with each local council ie) Balmain, North Sydney and Willoughby and key P&C Representatives to map restricted streets and routes which should form Conditions of Approval. Spoil trucks should not be permitted to enter school zones and transport hours should be restricted so NO spoil vehicles transport during the hours of 7.30-9am and 2.30-4pm on school days and none on local roads on Friday afternoons and Saturday Mornings.

EIS Chapter 6-91

Table 24-7 Indicative stockpile locations and volumes – outside of acoustic sheds

Location	Indicative stockpile volume
Western Harbour Tunnel	
Victoria Road (WHT2)	500 cubic metres
White Bay (WHT3)	10,000 cubic metres
Berry Street North (WHT8)	750 cubic metres
Cammeray Golf Course (WHT10)	4500 cubic metres
Waltham Street (WHT11)	250 cubic metres
Warringah Freeway Upgrade	
Warringah Freeway	750 cubic metres
Falcon Street	500 cubic metres

Chapter 24: Resource Use and Waste Management. 24-11

Dust emissions containing contaminants

There is the potential for dust emissions to contain contaminants mobilised through the disturbance of contaminated soils, and other hazardous materials (such as asbestos fibres or organic matter) during demolition of buildings and other structures. These issues would be considered on a site-by-site basis, and would be adequately managed through standard air quality mitigation and management measures.

Areas identified as containing contaminated soils and other hazardous substances, which may be disturbed during construction include:

- Rozelle Rail Yards, Rozelle
- Birchgrove peninsula, Birchgrove
- Balls Head peninsula
- **Warringah Freeway, North Sydney to Cammeray**
- Waltham Street, Artarmon.

These areas are described in more detail in Chapter 16 (Geology, soils and groundwater).

Objection: Given that the Cammeray Golf Course site has been identified as having potential contaminated spoil and that there are many schools in the local area which is highly residential - spoil should not be allowed to be stored outside the shed. The site is next to a major sports field used by all local schools at Cammeray Oval. The Tennis club and Golf Course is also used for school sport which generally occurs on Friday afternoon.

Mitigation: No spoil should be allowed to be stored outside the sheds but especially at the Cammeray Golf Course Site. Strict dust mitigation and inspection should be mandated as part of the Conditions of Approval. An independent inspector should be employed to work between sites to ensure the highest level of dust mitigation i.e. truck wash down, securing of flaps, wheel inspection, storage and transport etc

<p>Stockpiling and Runoff from site</p> <p>“Spoil from tunnelling works would be transported from the tunnel face to the surface using dump trucks. Where required, tunnel spoil stockpiles would be largely contained within acoustic sheds. This would also minimise the potential for impacts from runoff and sedimentation associated with stockpiling.”</p> <p>Chapter 24: Resource Use and Waste Management. 24-10</p>	<p>Objection: As above and Soil contamination has been found across the area including lead contamination. Runoff is a concern for the community in terms of parks being contaminated. Given the Golf Course disperses water which runs down via several fresh-water catchments this has the potential to contaminate Primrose and Tunks Park – Parks which are again used by 1000’s of children and residents weekly.</p> <p>Mitigation: Reconsider the route of the project. The area being excavated in around the Warringah Freeway are historic areas which previously housed farms, industries and tips and have left a contamination legacy. Given the residential and educational nature of the area this presents significant risk. Sites that have had contamination identified should not be permitted to stockpile as a condition of approval.</p>
<p>Contractors have failed to manage dust on other projects:</p> <p>http://www.wendybacon.com/2018/haberfield-school-children-cop-westconnex-dust-storm</p>	<p>Objection: Experience with the WestConnex project demonstrated that dust is not always well managed by contractors. Given the large number of support sites and the open nature of construction on the Warringah Freeway this is a significant concern ad probability. The EIS confirms that dust cannot always be well managed.</p>
<p>Management of impacts</p> <p>Dust</p> <p>Details of the construction assessment are outlined in Section 7.1. Step 3 of the construction assessment involved determining mitigation measures for each of the four activities in Step 2. This was based on the risk of dust impacts identified in Step 2C and the outcomes are shown in Table 9-1. All mitigation measures are highly recommended. Most of the recommended measures are routinely employed as ‘good practice’ on construction sites.</p> <p>Construction environmental management documentation would contain details of the site-specific mitigation measures to be applied. Additional guidance on the control of dust at construction sites in NSW is provided as part of the NSW EPA Local Government Air Quality Toolkit²⁸. Detailed guidance is also available from the UK (GLA, 2006) and the United States (Countess Environmental, 2006). For precise requirements, reference should be made to the Baseline Conditions of Approval for the project.</p>	<p>Objection: As already stated</p> <p>Mitigation: These recommendations in Appendix H: Table 9-1 should all be applied as Conditions of Approval and independent site inspections on a daily basis should be undertaken. A hotline specifically for schools should be set up to report any exceedances separate to the public hotline due to the large number of schools in the area. An alternative sports field for all the schools and sporting groups that use Cammeray Oval should be provided by the proponent for the duration of the project. Our sports fields are already at capacity as are our school playgrounds.</p>

Table 9-1 Recommended mitigation measures for construction dust

Mitigation measure	
1	<p>Standard construction air quality mitigation and management measures would be detailed in construction management documentation and implemented during construction, such as:</p> <ul style="list-style-type: none"> • Reasonable and feasible dust suppression and/or management measures, including the use of water carts, dust sweepers, sprinklers, dust screens, site exit controls (eg wheel washing systems and rumble grids), stabilisation of exposed areas or stockpiles, and surface treatments • Selection of construction equipment and/or materials handling techniques that minimise the potential for dust generation • Management measures to minimise dust generation during the transfer, handling and on site storage of spoil and construction materials (such as sand, aggregates or fine materials) (eg the covering of vehicle loads) • Adjustment or management of dust generating activities during unfavourable weather conditions, where possible • Minimisation of exposed areas during construction • Internal project communication protocols to ensure dust-generating activities in the same area are coordinated and mitigated to manage cumulative dust impacts of the project <p>• Site inspections will be carried out to monitor compliance with implemented measures.</p>
2	<p>Dust and air quality complaints will be managed in accordance with the overarching complaints handling process for the project. Appropriate corrective actions would be taken to reduce emissions in a timely manner.</p>
3	<p>Liaison and coordination measures will be put in place with the proponents of other major construction projects within 500 metres of the project, to minimise and manage potential cumulative construction dust impacts. Measures may include scheduling of construction activities and construction deliveries, coordinated monitoring and data sharing, cooperation in the event of cumulative dust complaints, and coordination of engagement with potentially affected receivers.</p>

1.2 Contamination

Potential Landfill Site has not been identified

“Potential impacts from runoff and sedimentation would be further minimised through the implementation of the environmental management measures described in Chapter 17 (Hydrodynamics and water quality).

Potential impacts related to leachate (ie contaminated liquid that drains from a landfill or stockpile) are considered to be unlikely during construction as the project does not involve the **excavation or disturbance of landfill areas**. Stockpiles would be managed appropriately to avoid potential impacts associated with runoff, sedimentation and leachate.”

Chapter 24: Resource Use and Waste Management. 24-11

Waverton Park (AEI6) [W8]

Contaminated fill materials have been reported within Waverton Park, however no groundwater samples have been taken to date. It is possible that the contamination reported in respect to fill material could represent a contamination source to groundwater beneath the site. If considerable organic content (eg timber, paper, green waste) is present within infill materials, this could generate landfill gas. This area poses a high contamination risk to construction given that contamination is known within fill material which could impact upon groundwater. Groundwater could be exposed during construction of the tunnel and/or construction could create preferential pathways for groundwater contamination and landfill gas (if present).

Warringah Freeway, North Sydney to Cammeray (AEI7) [W9 to W18]

The unsealed areas adjacent to the Warringah Freeway (including St Leonards Park) represent a potential source of contamination (namely lead, hydrocarbons, pesticides, PCBs and asbestos) associated with the current and historical deposition of particulates from large volume traffic flows using the Warringah Freeway. Asbestos and PAH compounds have been detected in soil samples collected from some locations at concentrations exceeding open space and commercial/industrial guidelines protective of human health. These areas pose a moderate to high contamination risk to construction given that contamination is known and potentially present within soil which is likely to be excavated and exposed during construction of surface works, the pedestrian bridge and the following construction support sites: Berry Street north (WHT8), Ridge Street north (WHT9), Cammeray Golf Course (WHT10 and WFU8), High Street south (WFU2), High Street north (WFU3), Arthur Street east (WFU4), Berry Street east (WFU5), Ridge Street east (WFU6), Merlin Street (WFU7), and Rosalind Street east (WFU9).

Chapter 16:Geology soil and groundwater

Objection: The community is of the understanding that the Golf Course was filled with landfill however this is not recognised in the report

Action Required: Further investigation and risk assessment is required and these chapters re-issued for consultation and assessment.

<p>Extent of Contamination is not fully known</p> <p>“The contamination assessment identified nine locations within or adjacent to the construction footprint of the project that are considered to be potential areas of environmental interest. These locations, and types of potential contaminated material, are provided in Chapter 16 (Geology, soils and groundwater). Further investigations of these sites are required to quantify the exposure risk. These investigations would be carried out prior to construction activities so that contamination (if present) can be adequately planned for and appropriately managed.”</p> <p>Chapter 24: Resource Use and Waste Management. 24-12</p>	<p>Objection: It is not acceptable to select 12 construction support sites in and around residential areas and school zones without fully understanding the contamination risks. Sites should not be selected if contaminated due to the risks of disturbance and related health and environmental issues. Full investigation is needed before project approval can proceed.</p> <p>Action: We call on the DPIE to require Transport for NSW to undertake a full risk assessment of the project corridor and provide a report as part of this submission for public exhibition and further consultation. Children’s Health should not be negotiable.</p>
<p>Health Impact Assessment</p> <p>“Construction air quality management measures would be implemented to cover all construction stages of the project. These measures include site management, use of water carts to minimise dust, monitoring, preparing and maintaining the construction sites, maintenance and controls on vehicles and machinery and construction. Section 9.1 of the Technical working paper: Air quality provides additional details on the dust management measures proposed. “</p> <p>Appendix I Health Impact Assessment</p>	<p>Objection: These vague assertions are vastly inadequate given the known risks to children of PM and that contamination of both spoil and soil has been identified within the project footprint.</p> <p>Mitigation: The Chief Health Office should be asked to re-assess dust related health outcomes with reference to the risk assessment completed showing dust risks are high on the North Shore, soil contamination in the area has been identified, potentially contaminated spoil at Cammeray Golf Club site and the significant underestimation of educational receivers on the area.</p>

9. Risk management

The following table details strategies for the management of potential environmental (soil erosion, ASS, soil salinity) and contamination risks identified associated with the construction and operation (where applicable) of the project.

Table 9-1 Summary of potential groundwater impacts during construction and operation and associated environmental management measures

Impact	Mitigation and environmental management measure
Design and Operation	
Contamination – groundwater	If contamination risks to the tunnel are established, appropriate design (eg tanking) and/or management (eg treatment) would be implemented to remove or suitably reduce the associated risk.
Construction	
Soil erosion and sedimentation	Erosion and sediment measures will be implemented at all work sites in accordance with the principles and requirements in <i>Managing Urban Stormwater – Soils and Construction, Volume 1</i> (Landcom, 2004) and <i>Volume 2D</i> (NSW Department of Environment, Climate Change and Water 2008), commonly referred to as the <i>Blue Book</i> .
Impacts from disturbance of acid sulfate soils	Prior to ground disturbance in high risk acid sulfate areas at Birchgrove Park, Rozelle Rail Yards, Sydney Harbour (tunnel crossing, White Bay and Berrys Bay) and Whites Creek, testing will be carried out to determine the presence of acid sulfate soils. If acid sulfate soils are encountered, they would be managed in accordance with the <i>Acid Sulfate Soil Manual</i> (Acid Sulfate Soil Management Advisory Committee, 1998).
Contamination – soils	Based on the information reviewed, a number of moderate to high risk potential AEs have been identified. Where extensive investigations have not been carried out (all high to moderate risk sites with the exception of the Rozelle Rail Yards site), potentially contaminated areas directly affected by the project will be investigated and managed in accordance with the requirements of guidance endorsed under section 105 of the <i>Contaminated Land Management Act 1997</i> .
Contamination – sediments	Where sediments require excavation and removal to facilitate construction, there are several potential options for the disposal of sediments. These include: <ul style="list-style-type: none"> Offshore disposal – A permit for the offshore disposal of suitable dredged material has been submitted to the Commonwealth Department of the Environment and Energy. The appropriateness of offshore disposal would need to be assessed in accordance with the Commonwealth of Australia (2009) NAGD Landfill disposal – Sediments not suitable for offshore disposal and requiring disposal to landfill, would be assessed in accordance with the <i>Waste Classification Guidelines</i> (NSW EPA, 2014). Landfill disposal is likely to be appropriate for both clean and contaminated sediments. Sediments to be disposed to landfill (ie not suitable for offshore disposal), are likely to require some initial treatment at an onshore transfer point to reduce water content (ie achieve a spadable condition), reduce odours and neutralisation of ASS (if present) before transport to a suitable licensed landfill facility.

Western Harbour Tunnel and Warringah Freeway Upgrade

Technical working paper: Contamination

95

Impact	Mitigation and environmental management measure
	Additional investigations would be required to determine the extent (laterally and vertically) and separation of clean and contaminated sediments to facilitate disposal. Appropriate management measures would be developed to remove or suitably reduce the contamination risks from sediments during construction activities. Where sediments are disturbed as part of construction activities, sediment transport and distribution within the water column would need to be appropriately managed so as not to cause harm to benthic and marine ecosystems and/or adversely reduce water quality.
Contamination – groundwater	To further quantify the risk from groundwater contamination to construction and/or operation of the project (including dewatering), further investigations are required at the following sites: <ul style="list-style-type: none"> Rozelle Railyards Easton Park at Lilyfield Waverton Park. If contamination risks to the tunnel are established, appropriate design (eg tanking) and/or management (eg treatment) measures would be implemented to remove or suitably reduce the associated risk.
Contamination – ground gas	No ground gas investigations are known to have been carried out to assess potential gas issues associated with the historical infilling of Easton Park, Rozelle Rail Yards and Waverton Park. Ground gas investigations would be carried out in these areas to assess the potential presence or absence of gas which could affect construction and/or operation of the project. Ground gas investigations would be carried out (where applicable) in accordance with the following guidance: <ul style="list-style-type: none"> <i>Guideline for the Assessment and Management of Sites Impacted by Hazardous Ground Gases</i> (NSW EPA, 2012) <i>Assessing Risks Posed by Hazardous Ground Gases to Buildings Report</i> (C665) (Wilson et al., 2007).
Operation	
Contamination – ground gas	If ground gas risks to the operation of the project (namely tunnels, subsurface and enclosed structures) are established, appropriate design (eg tanking, gas drainage) and/or management (eg ventilation) measures would be implemented to remove or suitably reduce the associated risk.

Appendix M: Contamination (page 95-96)

Objections: Many areas of risk have been identified within the EIS I. Appendix M with unclear mitigations listed.

Mitigation: The full scoping of contaminants, acid sulphate soils and soil erosion risks and risks to ground water should be completed prior to approval. This information should be made available to the community in the form of additional consultation. Given the high number of children in the area choice of support sites should be made on the basis of limiting risks.

Table 23-3 Indicative dangerous goods and hazardous substances transported to construction support sites

Material	Australian Dangerous Goods Code class	Transport frequency	Transport quantity	Assessment against Applying SEPP 33 transport thresholds	Construction support site destination
Explosives	1.1	As required, if blasting is carried out	As required	Not subject to the Applying SEPP 33 thresholds if not transported with Class 3 dangerous goods.	<ul style="list-style-type: none"> • Rozelle Rail Yards (WHT1) • Victoria Road (WHT2) • Berrys Bay (WHT7) • Cammeray Golf Course (WHT10).
Diesel ¹	C1 ² , 3 PG III ³	Daily	1500 litres	Not subject to the Applying SEPP 33 thresholds if not transported with Class 3 dangerous goods. Refuelling at cofferdam sites would be carried out by fit-for-purpose refuelling barge.	All construction support sites.
Petrol ¹	C1 ² , 3 PG III ³	Weekly	50 litres	Not subject to the Applying SEPP 33 thresholds if not transported with Class 3 dangerous goods. Refuelling at cofferdam sites would be carried out by fit-for-purpose refuelling barge.	All construction support sites.
Lubricating and hydraulic oils and grease	C2	Weekly	40 litres	Not subject to the Applying SEPP 33 thresholds if not transported with Class 3 dangerous goods.	All construction support sites.
Industrial grade acetylene	2.1	Monthly	410 litres ⁴	Transport quantities would not trigger the Applying SEPP 33 thresholds.	All construction support sites.
Industrial grade oxygen	2.2	Monthly	410 litres ⁴	Not subject to Applying SEPP 33 transport thresholds.	All construction support sites.

Dangerous Goods

A large schedule of dangerous goods (sample here only) is expected to be used at both the main and smaller construction sites. The EIS lists the risk of chemical spills as a major risk. There are also concerns about the number of trucks shipping these goods around schools.

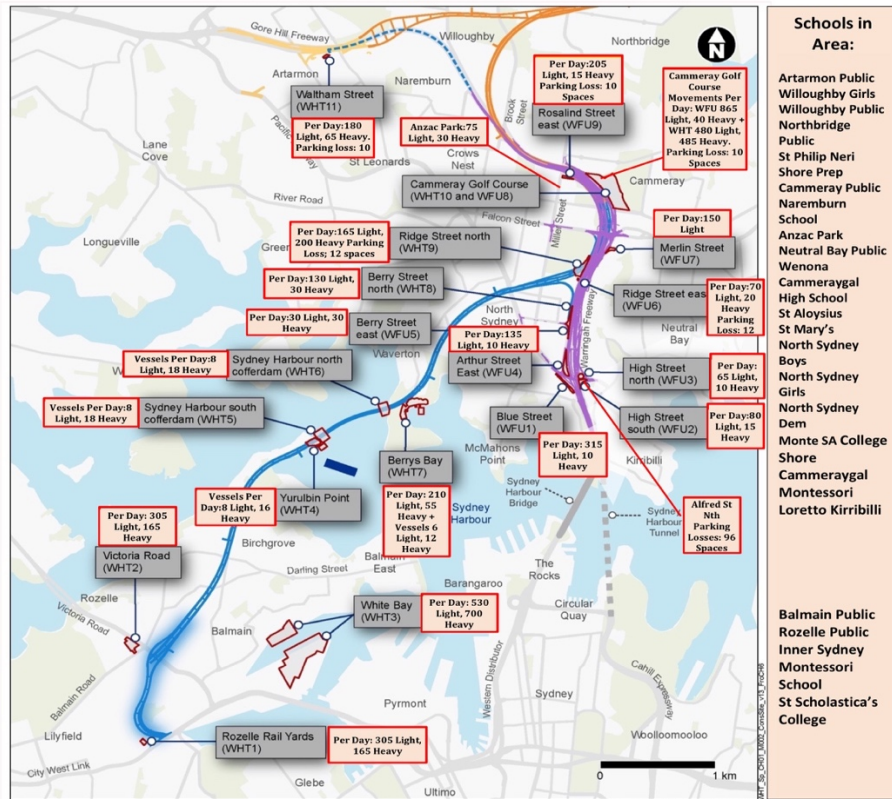
Chapter 23 - Hazards and risks

1.3 Health and Safety Risks – Trucks and Diesel

Western Harbour Tunnel and Warringah Freeway Upgrade Construction Sites and Vehicle Movements

EIS Exhibition Closes 30th March

Total Construction Vehicles Movements Daily = 6343* (peak 2021-2024)
Total Known Parking Space Losses = 150 (does not include construction worker parking)



WHTWFUSTTCTV.2

Above map is an extract from the Western Harbour Tunnel and Warringah Freeway EIS. Figure 6-1 Overview of the Construction Support Sites. Truck movement and parking information has been added from Appendix F. All EIS information is available at <https://www.planningportal.nsw.gov.au/major-projects/project/10451>. This is not an exhaustive list of construction and traffic impacts, please also complete your own research as this is intended as a guide only.

Daily Construction Vehicle Movements

North Sydney CBD Blue St- 10 Heavy, 315 light; High St South – 15 Heavy, 80 light; High St North – 10 Heavy, 65 light; Arthur St East – 10 Heavy, 135 light; Berry St North- 130 Heavy, 30 light; Berry St East- 30 Heavy, 30 light;

Total = 860 movements per day.

Schools Impacted: Shore, Loretto, Monte, Cammeraygal Jnr, North Sydney Dem, North Sydney Girls.

North Sydney to Willoughby Residential: Cammeray Golf Course 485 heavy, 480 light; Cammeray Golf Course Freeway Upgrade 40 Heavy, 865 light; Merlin St – 150 Light; Ridge St East – 20 heavy, 70 light; Ridge St North – 200 Heavy, 165 Light; Anzac Park – 30 Heavy, 75 Light; Rosalind St East- 15 Heavy, 205 Light; Waltham Street – 65 Heavy, 180 Light.

Total= 3045 movements per day.

Schools impacted: Anzac Park, Neutral Bay Public, Cammeray Public, Cammeraygal, Wenona, St Mary's, Marist, North Syd Boys.

Waverton: Berry's Bay – 55 heavy /210 light, Berry's Bay – 6 small boats, 6 spoil barges and 6 barges per day.

Total = 283 movements per day

Objections: This is far too many vehicle movements in a school zone

Mitigation: Reconsider the project route and/ method of addressing congestion such as public transport alternatives. If this project goes ahead far stricter than usual conditions should be applied given the high proportion of children in the area.

Table 3-16 Greenhouse gas emissions from diesel fuel consumption during construction

Construction support site/component (site ID)	Total fuel consumption (kL)	Greenhouse gas emissions (t CO ₂ e)		
		Scope 1	Scope 3	Total
Rozelle Rail Yards (WHT1)	1000	2708	139	2847
White Bay (WHT3)	2527	6847	351	7198
Victoria Road (WHT2)	778	2108	108	2216
Yurulbin Park (WHT4)	1479	4009	206	4215
The crossing of Sydney Harbour	178	482	25	507
Berrys Bay (WHT7)	821	2224	114	2338
Cammeray Golf Course (WFU8/WHT10)	1341	3634	186	3820
Surface works	5328	14,437	740	15,177
Barge movements (materials and personnel)	1321	3581	184	3765
Total	14,773	40,030	2053	42,083

Appendix X: Page 34

Objection: Chapter X gives an indication of the CO2 emissions from diesel at each location. This is an indication that a diesel toxicity level will be present around these sites and along transport corridors at high levels. The surface works in particular are very concerning with a total of 15,177 t CO2e. Given that many schools border the Warringah Freeway and diesel fumes are likely to travel some distance from the road corridor this is a significant concern for residents, parks and schools in close proximity. It is not clear if this has been factored into the air quality analysis however the fact that diesel is a known carcinogen and research has found that it stunts lung development in children.

<https://www.europeanlung.org/en/news-and-events/news/study-shows-the-impact-of-diesel-pollution-on-the-growth-of-children's-lungs>

<https://www.abc.net.au/news/2012-06-13/diesel-fumes-carcinogenic/4068414nogen>

Mitigation: Diesel trucks should not be permitted within school zones and measures should be put in place to reduce diesel emissions.

Based on NSW Emissions Inventory:

- Non- exhaust processes were the largest source of road transport PM₁₀ (71 per cent) and PM_{2.5} (57 per cent). This is a larger proportion than in, say, most European countries, as there are relatively few diesel cars in Australia. It is also a cause for concern, as there are currently no controls for non- exhaust particles (and no legislation), and emissions would increase in line with projected traffic growth. **Heavy-duty diesel vehicles are disproportionate contributors to NO_x and particulate matter emissions** due to their inherent combustion characteristics, high operating mass (and hence high fuel usage) and level of emission control technology (NSW EPA, 2012b).

Page 55

The EIS states that a 15% increase in heavy vehicles is expected due to building the tunnels. There is a clear link to pollution and diesel is classified as a Class 1 Carcinogen by WHO

1.4 Noise

Example
Noise Management Levels Quoted in EIS. This is what they should be under.

Table 3-4 – Noise management levels at other noise-sensitive land uses

Land use ¹	Where objective applies	Noise management level $L_{Aeq}(15\text{ min})^2$
Classrooms at schools, and other educational institutions	Internal noise level	45 dB(A) ^{3,9}
Hospital wards and operating theatres	Internal noise level	45 dB(A) ⁴
Places of worship	Internal noise level	45 dB(A) ³

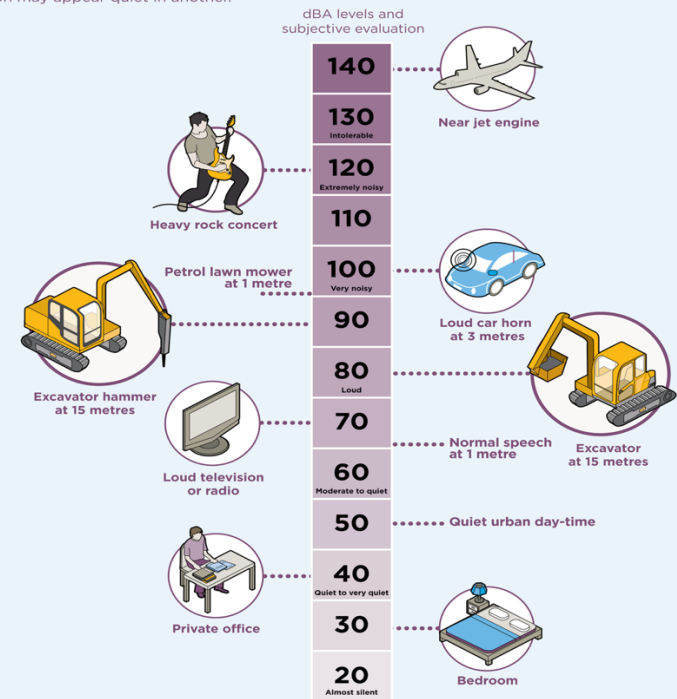
Childcare centre	External noise level	50 dB(A) ⁸
Active recreation areas (eg. sports fields/activities which generate their own noise and are generally less sensitive to external noise)	External noise level	65 dB(A)
Passive recreation areas (eg. area used for low intensity and low noise producing activities which could be impacted by external noise such as reading or meditation)	External noise level	60 dB(A)
Community centres	Depends on the intended use of the centre. ⁵	Refer to the 'maximum' internal levels in AS/NZS 2107 for specific uses. ⁵
Commercial premises (including offices and retail outlets) ^{5,6}	External noise level	70 dB(A) ^{6,7}
Industrial premises	External noise level	75 dB(A) ⁷
Special noise and/or vibration-sensitive (eg. laboratories, recording studios)	Depends on the intended use	Refer to the 'maximum' internal levels in AS/NZS 2107 for specific uses.

Chapter 10

Comment
Background. This is what various

Noise level comparisons

People's perception of noise is strongly influenced by their environment. A noise level that is perceived as loud in one situation may appear quiet in another.



Note:
 • A change of 1 dB or 2 dB in the level of a sound is difficult for most people to detect.
 • A 3 dB to 5 dB change corresponds to a small but noticeable change in loudness.
 • A 10 dB change corresponds to an approximate doubling or halving in loudness.

Chapter 10: Construction Noise and Vibration

Noise pollution in Europe

Noise pollution is a growing environmental concern caused by a varied number of sources. The adverse effects of noise pollution can be found in the well-being of exposed human populations, in the health and distribution of wildlife, as well as in the abilities of our children to learn at school.



Noise levels from road traffic that are greater than 55 dB L_{den} affect an estimated **125 million people – one in four Europeans.**



 **> 55dB L_{den}**



Annoyance



20 000 000

Almost 20 million Europeans are annoyed by environmental noise.

Sleep disturbance



8 000 000

At least 8 million Europeans suffer sleep disturbance due to environmental noise.

Health impacts



43 000

Noise pollution causes 43 000 hospital admissions in Europe per year.

Premature deaths



10 000

Noise pollution causes hypertension and cardiovascular disease, leading to an estimated 10 000 premature deaths annually in Europe.

Source: EEA report 'Noise in Europe 2014' | eea.europa.eu/noise

Noise has very real impacts not just on our lifestyles but on our health

Noise and vibration assessment methodology (section 4)

Construction

Across the Western Harbour Tunnel and Warringah Freeway Upgrade project, the construction works with the potential for noise and vibration impacts have been separated into two major categories:

- **Construction support sites** are fixed construction support sites located along the project length and would be established for a large proportion of the project duration. Within these support sites, the louder construction activities occur predominantly during standard construction hours, with support for 24-hour tunnelling taking place within acoustic sheds. Access decline tunnel, shaft or ventilation tunnel construction is also assessed as part of construction support sites
- **Surface road upgrades** where construction locations vary along the corridor and where works occur at each location for shorter periods of time. For **surface road upgrades**, large portions of the construction work need to occur during road closures. As road closures for major arterial roads must occur outside the peak traffic period, a large amount of out of hours construction works (OOHW) would be needed during the evenings and nights.

The Noise Analysis is split into several sections:

- 1) Construction Support Sites
- 2) Cammeray Golf Course Site
- 3) Surface Road Works
- 4) Harbour Works
- 5) Rock Hammering
- 6) Mainline Tunnelling
- 7) Coinciding Works

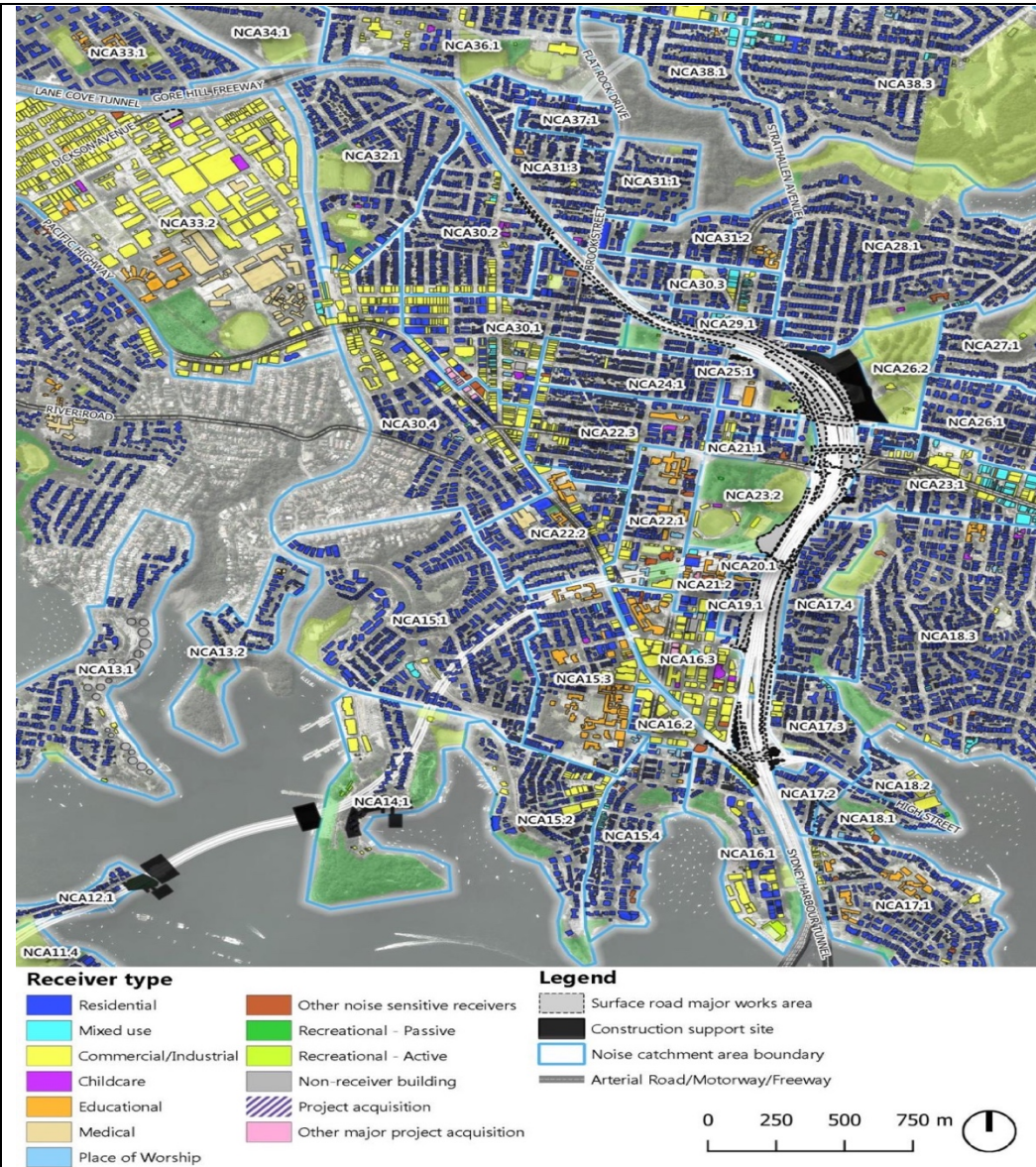


Image from App G - Noise and vibration (part 1), page 298

How Noise has been Predicted

NCA's are locations at which noise levels have been predicted

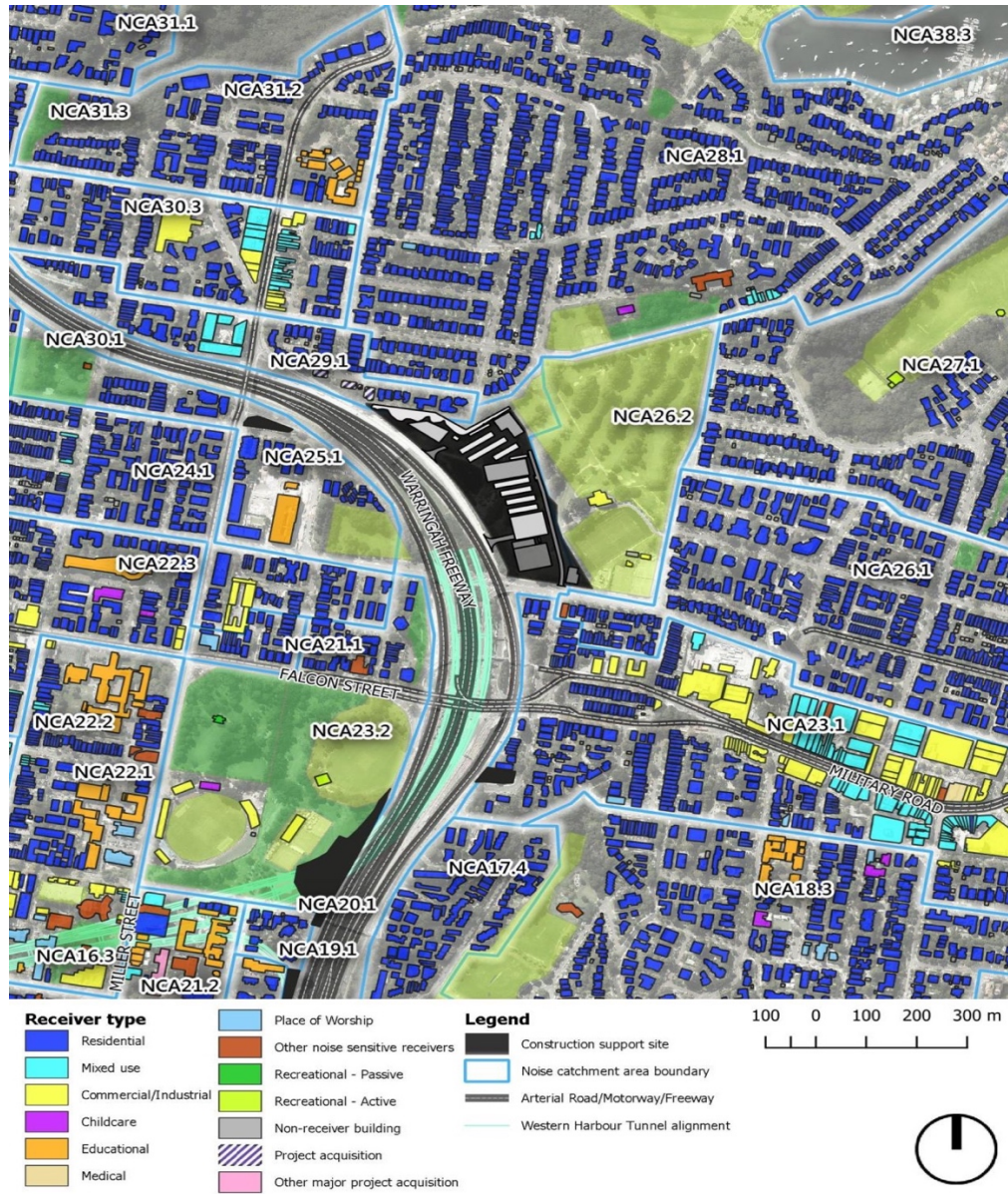
To read the following tables and maps you will need to know your NCA number. There is a huge amount of information to go through and we cannot provide all here. Please jot down the NCA numbers at your Home, School, Workplace, Sporting Field etc and go to Appendix G Here: <https://www.planningportal.nsw.gov.au/major-projects/project/10451> Enter in via EIS (73) and scroll toward bottom of table of contents to find it.

We suggest you the do a Control F and enter your NCA numbers to see how you will be impacted specifically across a range of coinciding works which are reported separately.

Objection: The information in the EIS relating to Noise is unnecessarily complex and does not enable a fair assessment of noise risks for individual receivers. Noise impacts are split up by work site and construction method and the documents state that more work needs to be done to determine noise impacts. Given the open nature of the Freeway, the Residential and Educational nature (26 schools along the alignment) it is critical that cumulative risks are known.

Action: Cumulative Noise Exceedances for all noise events should be displayed for each school and major sports field (i.e.) Cammeray Oval, St Leonard Park, Bicentennial Reserve in the area. The EIS should be reissued for consultation with this information contained for further consultation with community.

Close up view of NCA's at Cammeray



Find the NCA's that will impact you.

Schools are in Orange.
See below for more detail.

Cammeray to Willoughby Noise Impacts – Sample Only

Construction Support Site Noise Contours

Miller St to Willoughby Rd Works – Out of Hours

(Includes Crows Nest, Cammeray, Naremburn, Northbridge, Artarmon)

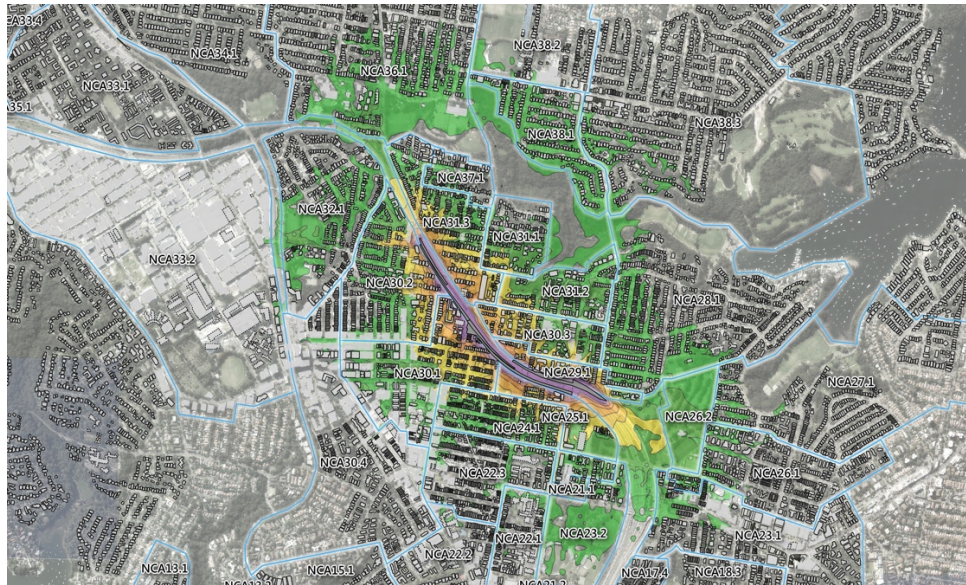


Image from App G - Noise and vibration (part 1), page 815.png

Objection: The surface works between Miller St and Willoughby Rd will generate substantial amounts of noise Out of Hours in a residential zone. Parks impacted will be Bicentennial Reserve, Flat Rock Gully, Tunks Park and Shore Oval. Given these parks are all used heavily for children’s sport noise impacts are a concern from a health and safety perspective (i.e. ability to coach/ manage kids safely. There is a high proportion of children and elderly residents living in the area who will be more impacted by out of hours noise. The health risks associated with long term noise exposure is well documented in the scientific literature. It is not clear how noise will be further impacted by coinciding works such as the planned Gore Hill extension and Beaches Link, Channel 9 site redevelopment and the planned Willoughby Leisure Centre redevelopment. Given the high noise levels in this area it is likely that any coinciding works would further exacerbate noise issues and place the area into noise well above limits.

Mitigation: Reconsider the route of the project due to the excessive cumulative risks. Should the project be allowed to go ahead at the existing alignment all the recommended risk mitigations listed in Appendix G: Page 780-782 should be applied with the highest rigour given the number of sensitive receivers. In addition, it should be a condition of approval that no further work on Gore Hill Extension or Beaches Link be undertaken until this work is complete. Additional noise barriers along the project footprint at this location and attenuation for residents and sensitive receivers should be a Condition of Approval. Noisy works should not be allowed to be scheduled during Friday afternoon and Saturday morning sport times as a condition of approval. A Schedule of coinciding works should be developed with Willoughby Council and compliance should be a Condition of Approval to avoid excessive noise from coinciding works. A construction transport plan across Willoughby should also be developed in conjunction with Willoughby Council to establish allowable truck movements, to identify local streets and transit corridors (esp. for children) and minimise noise from construction vehicles after hours. Trucks should not be allowed to use local streets where a high proportion of families and young children live such as Brook St, Small St and around school zones (i.e. 40 km/hr zones) and streets containing early childhood centres as a Condition of Approval.

Please go to Appendix G for more information as we can’t provide a full analysis here.

Table 5-206 – Highest noise level envelope – Number of residential buildings over the noise management level

Assessment reference	Typical / worst-case activity noise intensity	Highly noise affected	Day (standard hours)				Day (outside standard hours)				Evening				Night				Sleep Disturbance	
			> 75 dB(A)	1 - 10 dB(A)	11 - 20 dB(A)	> 20 dB(A)	1 - 5 dB(A)	6 - 15 dB(A)	16 - 25 dB(A)	> 25 dB(A)	1 - 5 dB(A)	6 - 15 dB(A)	16 - 25 dB(A)	> 25 dB(A)	1 - 5 dB(A)	6 - 15 dB(A)	16 - 25 dB(A)	> 25 dB(A)	Screening level (L _{min})	Awakening (L _{min})
WFU3_01	Typical	2	7	0	0	10	7	0	0	22	17	2	0	354	224	39	7	455	60	
	Worst-case	17	63	9	2	91	52	7	1	204	115	22	2	1853	1009	276	56	702	103	
WFU3_02	Typical	10	18	7	0	20	18	7	0	24	23	8	0	340	213	35	25	418	107	
	Worst-case	60	71	27	6	68	55	25	3	212	91	28	8	1748	1042	271	68	630	144	
WFU3_03	Typical	2	15	0	0	17	15	0	0	28	17	2	0	369	272	44	15	402	68	
	Worst-case	24	47	15	0	30	23	2	0	51	32	7	0	499	511	78	25	590	102	
WFU3_04	Typical	7	9	0	0	10	9	0	0	15	10	1	0	413	220	20	3	411	64	
	Worst-case	29	95	10	1	264	95	10	1	410	201	15	1	1574	1721	372	41	1745	289	
WFU3_05	Typical	0	3	0	0	3	2	0	0	16	6	0	0	139	83	13	2	160	19	
	Worst-case	5	29	3	0	44	34	3	0	98	71	11	0	1949	960	121	31	961	95	

- Notes
1. 'Typical' and 'Worst-case' case noise assessment scenarios are explained in Table 5-14 and demonstrated in Figure 10.
 2. Highest noise envelope
 3. Refer to the "Required out of hours work" table in the section "Construction hours and durations" of this assessment section for an indication of the duration and how often these noise impacts are expected to occur.
 4. An indicative program and timeline is provided at the beginning of this section to provide an indication of the duration of these construction works and the associated construction noise impacts.

No. of residents impacted by Miller St to Willoughby Rd Works will be significant

Warringah Freeway Surface Works Site, Surface Works and Tunneling Impacts (Includes Neutral Bay, Crows Nest, Cammeray, North Sydney)

Highest noise level envelope - Typical
WFU2H - Zone 2 (Falcon Street to Miller Street) Out of hours works

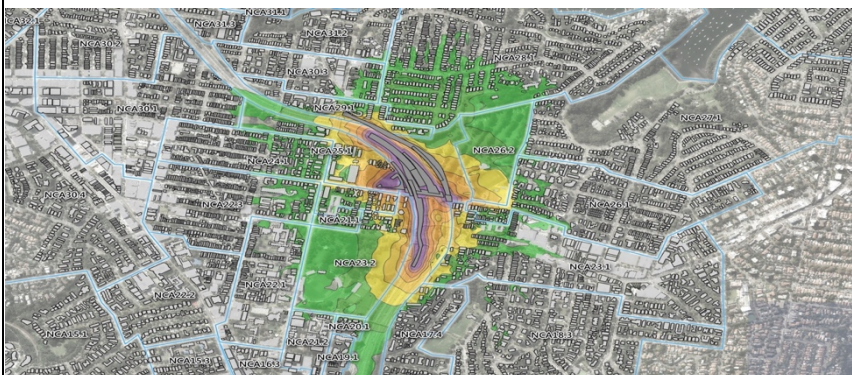


Image from App G - Noise and vibration (part 1), page 814

Warringah Freeway Surface Works

Sensitive Receivers Impacted:

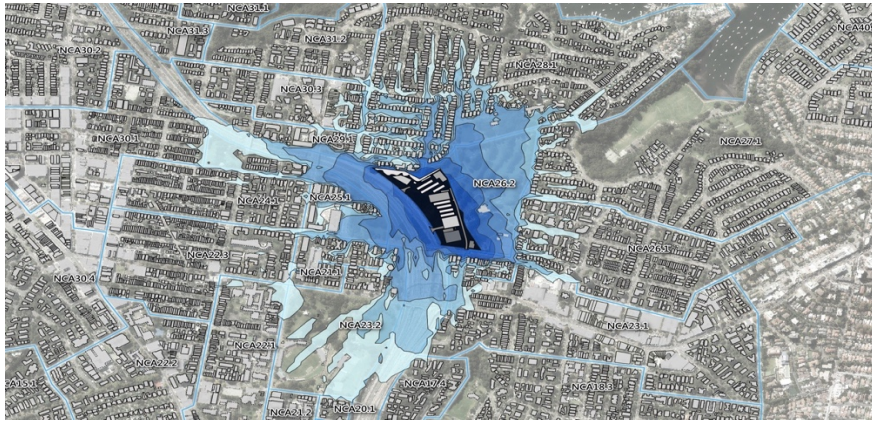
- 31.2 – Cammeray Public School – 950 pupils
- 26.2 – Cammeray Park/ Tennis Club/ Golf Course – used by several schools in the area
- 25.1 – Anzac Park Primary School – 700 pupils
- 28.1 – KU Kindergarten/ Green Park – used by schools
- 23.2 – St Leonards Park used by residents and many schools
- 22.1 – Marist Brothers, St Mary's, North Sydney Boys
- 22.3 – Cammeraygal Snr Campus – 720 pupils
- 21.2 – Wenona (use St Leonards Park)
- 18.3 – Neutral Bay (use Cammeray Park)

School Catchments: Cammeray Public, Anzac Park, Neutral Bay and Cammeraygal Catchments are heavily impacted. This is a concern for out of hours work as large numbers of children live across the areas most impacted and will experience sleep disturbances

Objection: Significant Sensitive Receivers are located at the following locations within this Map Area and will be impacted by increased noise levels from coinciding works.

North Sydney to Cammeray Noise Impacts – Sample Only

Cammeray Golf Course (WHT10 & WFU8/CGC) Construction noise contour
Standard hours - Site establishment (CGC_02)



Cammeray Golf Course

Schools and Key School Resources Impacted:

26.2 – Cammeray Park/ Tennis Club/ Golf Course – used by several schools in the area

25.1 – Anzac Park Primary School – 700 pupils

28.1 – KU Kindergarten/ Green Park – used by schools

23.2 – St Leonards Park used by residents and many schools

School Catchments: Cammeray Public, Anzac Park, Neutral Bay and Cammeraygal Catchments are heavily impacted. This is a concern for out of hours work as large numbers of children live across the areas most impacted and will experience sleep disturbances

Objection: Site Establishment at the Cammeray Golf Course will be very noisy reaching levels of 60-75 db. Noise will impact two key parks including St Leonards Park and Cammeray Park used by schools/clubs.

Mitigation: Noisy activities should not be scheduled on Friday afternoons and Saturday Morning to allow children the opportunity to play sport otherwise alternative playing fields should be provided.

Standard construction hours

The highest predicted levels would occur during early works (Stage 1), site establishment (Stage 2) and site restoration (Stage 8):

- Up to 12 receiver buildings in NCA 26.1 are predicted to be highly noise affected (>75 dB(A)) during the short period of site establishment (CGC_02) works which would occur during standard construction hours only. This would be caused by construction of vehicle access points to the site and vegetation clearing near Ernest Street
- Up to 17 receiver buildings in NCA 28.1 are predicted to be noise affected (ie. > NML) during early works (CGC_01) such as utility modifications/relocations
- Up to 242 receiver buildings in NCAs 23.1, 23.2, 24.1, 25.1, 26.1, 27.1, 28.1 and 29.1 are predicted to be noise affected (above NML) during site establishment (CGC_02) works which would occur during standard construction hours. This is largely caused by vegetation clearing, earthworks, and demolition with rock hammers
- Up to 17 receiver buildings in NCA 28.1 are predicted to be noise affected (ie. > NML) during site restoration (CGC_09) works during standard construction hours. This would be largely caused by rehabilitation works near Warringa Road.

Cammeray Golf Course

Not only residential receivers are impacted but also parks, schools, churches etc

Many Buildings around Cammeray will experience high levels of noise during site establishment and operations. Cammeray Park will experience impacts 10dB and 18dB above limits. Trucks going to and from the site will cause sleep disturbances across 57 buildings.

The Cammeray Gold Course site noise assessment is separate to the minor site and Warringah Freeway assessment so there are likely to be cumulative impacts.

5.8.2.5 Non-residential

The predicted noise levels for non-residential receiver buildings are presented in [Table 5.8.2.1](#). The receiver buildings predicted to exceed the NMLs are summarised in [Table 5.8.2.2](#). The predicted noise levels are intended to be conservative and represent reasonable worst-case impacts during the project.

After all feasible and reasonable mitigation measures are applied, the greatest number of noise affected other sensitive receiver buildings impacted would be during site establishment works (Stage 2) at the Cammeray Golf Course construction support sites. The other sensitive receiver buildings identified to be noise affected are as follows:

- One childcare receiver building in NCA 22.3 would be noise affected by up to 2 dB(A)
- One childcare receiver building in NCA 23.2 would be noise affected by up to 3 dB(A)
- One childcare receiver building in NCA 28.1 would be noise affected by up to 14 dB(A)
- One educational receiver building in NCA 22.1 would be noise affected by up to 1 dB(A)
- One educational receiver building in NCA 22.3 would be noise affected by up to 1 dB(A)
- One educational receiver building in NCA 25.1 would be noise affected by up to 2 dB(A)
- One educational receiver building in NCA 25.1 would be noise affected by up to 12 dB(A)
- Up to four recreational receivers in NCAs 25.1, 26.2 and 28.1 are predicted to be noise affected by up to 10 dB(A), including Cammeray Park, tennis courts and Cammeray Golf Club
- One recreational receiver in NCA 26.2 is predicted to be noise affected by up to 18 dB(A) in Cammeray Park
- One place of worship in NCA 28.1 would be noise affected by up to 5 dB(A)
- One other sensitive receiver building (hotel) in NCA 26.1 would be noise affected by up to 2 dB(A).

During surface work support and tunnel fitout (CGC_04+CGC_06), heavy vehicle movements occasionally accessing the site could result in high instantaneous noise impacts during arrival or departure. Moreover, occasional clangs and bangs may occur from general site activities in laydown areas, and maximum noise level events could occur from occasional heavy vehicle movements into and out of the site from the Warringah Freeway. Up to 57 receiver buildings are predicted to potentially be exposed to maximum noise levels above the sleep disturbance screening level (up to L_{Amax} 70 dB(A)). Two receiver buildings could potentially experience noise levels above the awakening reaction noise level.

Support Sites: Ridge St (Falcon St Off Ramp)

Highest noise level envelope - Typical
WFU3J - Western Harbour Tunnel Falcon Street off ramp cut and cover (Ridge Street north (WHT9)) Out of hours works

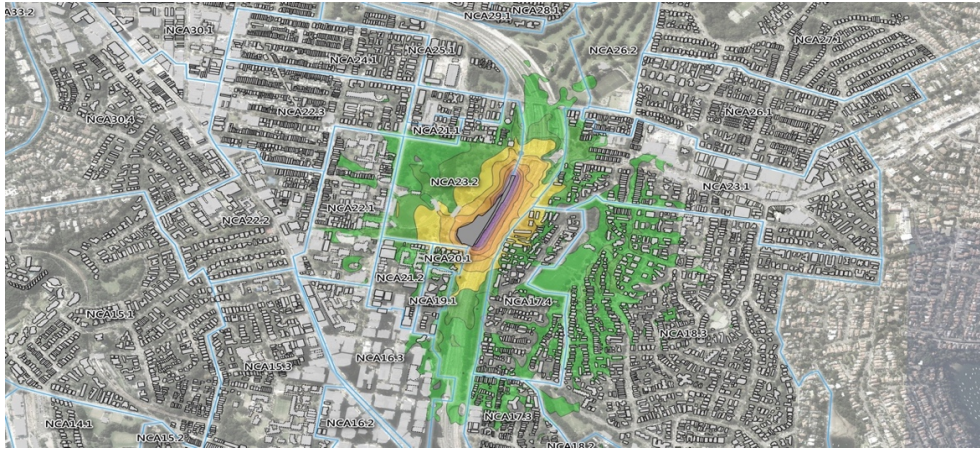


Image from App

G - Noise and vibration (part 1), page 816.png

Ridge St Ramp

Objection: There are 12 support sites along the route all of which generate noise in addition to the Cammeray Golf Course, Transportation Noise, Mainline Tunnelling Noise, Rock Hammering, Blasting Noise and considerable Surface Works. It is not clear from the documents what the cumulative impacts will be at any one location and the documents state that more work is needed in that regard.

Action: Reconsider the route given the high risk to sensitive receivers and cumulative noise impacts generated by plugging the tunnels into the Warringah Freeway. The proponent should be required demonstrating cumulative impacts at key sensitive receiver locations especially at schools and parks which will be the most impacted. This should be reissued for consultation with the community before any approvals are given. It is impossible to fully and adequately risk assess noise impacts with the current documentation.

Other Modification Works: Earnest St Bridge (Out of Hours)

Out of Hours Exceedances at: Earnest Street bridge modification work (WFU2H_01 to 02)

During OOHW, the key activity that has been assessed is road resurfacing works and results are as follows:

- For all works areas that have been assessed considering the one with the highest number of noise affected receiver buildings, during the night period up to 280 to 460 receiver buildings are predicted to exceed the NMLs during typical road resurfacing works. However, during periods of worst-case construction activities around 1050 to 1230 receiver buildings are predicted to exceed NMLs
- For all works areas that have been assessed considering the one with the highest number of noise affected receiver buildings, in the worst-case, up to three receiver buildings are predicted to exceed the NML by more than 25 dB(A) which would be considered highly intrusive.

The highest 'typical' noise levels predicted for all stages assessed within the major works areas are presented as noise contour envelopes in Appendix H.2 to give an indication of the likely extent of noise levels at nearby receiver locations. Table 5-128 provides a key to the cell shading and text formatting used to explain the results in each NCA in terms of compliance with the NMLs during standard construction hours and for OOHW. Colours and formatting

Earnest St Bridge

The "Other Modifications" along the Warringah Freeway will create additional noise impacts

A very large number of receiver buildings will be impacted by the Earnest St Bridge Works

are based on the highest predicted value, with ranges to show the potential variation in construction noise impacts.

Appendix Noise Page 383

Page 310 - Alfred and Mount St Works

- One recreational receiver in NCA 26.2 is predicted to be noise affected by up to 18 dB(A) in Cammeray Park
- Up to eight childcare centre receivers located in NCA 16.2, 16.3, 18.3, 22.3, and 23.2. Of these, two are predicted to exceed the NMLs by up to 5-9 dB(A) during typical works, which are predicted to increase to 15-20 dB(A) during the worst-case works
- Up to two school receivers, where one has buildings located in NCA 19.1 and 21.2 and could exceed the NML by up to 15 dB(A) during the worst-case works; the second school receiver is in NCA 15.3 and has marginal exceedance of 1 dB(A)

Alfred and Mount St Works

Summary of Surface Wrks Noise at Support Sites – Minor Support Sites

Minor Support Site - Summary

A large number of residences will be impacted day and night

Table 5-130 – Warringah Freeway Upgrade surface road works and Western Harbour Tunnel minor construction support sites – construction noise assessment

Minor construction support site	Typical / worst-case activity noise intensity	Predicted construction noise level at nearest receiver building dB(A)		Number of residential receiver buildings predicted over the noise management level for all NCAs ¹				Sleep disturbance - Awakening (L _{max})	Indicative noise mitigation measures assumed for the assessment
		Standard hours	OOHW (Night)	Day (standard hours)	Day (outside standard hours)	Evening	Night		
Blue Street (WFU1)	Typical	62	54	6	0	6	6	0	-
	Worst-case	64	59	6	6	6	9	6	-
High Street south (WFU2)	Typical	60	51	0	0	0	1	5	Temporary noise barrier along the south-west boundary
	Worst-case	61	56	0	0	0	20	21	Temporary noise barrier north and west boundary
High Street north (WFU3)	Typical	68	60	6	0	1	35	39	Temporary noise barrier north and west boundary
	Worst-case	70	65	14	14	22	57	51	-
Arthur Street east (WFU4)	Typical	72	64	0	0	0	1	2	-
	Worst-case	74	69	1	1	3	13	9	-
Berry Street east (WFU5)	Typical	66	57	0	0	0	1	3	-
	Worst-case	67	62	0	0	0	10	7	-
Berry Street north (WHT8)	Typical	74	66	15	6	6	24	25	-
	Worst-case	76	71	18	18	22	31	28	-
Ridge Street east (WFU6)	Typical	75	67	4	3	3	5	8	-
	Worst-case	77	72	4	4	4	15	13	-
Ridge Street north (WHT9)	Typical	63	55	1	0	0	3	5	As shown in Figure 5-28. Minimum five metres temporary noise barrier along southern boundary, and three metres temporary noise barrier along western boundary.
	Worst-case	65	60	3	3	3	18	15	Temporary noise barrier along the southern and eastern boundary
Merlin Street (WFU7)	Typical	75	67	1	1	1	17	19	Temporary noise barrier along the southern and eastern boundary
	Worst-case	77	71	1	1	5	34	33	Temporary noise barrier along the western and northern boundary
Jeaffreson Jackson Reserve construction area ²	Typical	73	65	1	0	5	29	27	Temporary noise barrier along the southern and eastern boundary
	Worst-case	75	70	3	3	10	72	44	Temporary noise barrier along the southern boundary
Merlin Street (north) construction area ²	Typical	75	67	1	1	2	23	17	Temporary noise barrier along the southern boundary
	Worst-case	77	72	1	2	10	59	24	Temporary noise barrier along the southern boundary
Rosalind Street east (WFU9)	Typical	69	60	1	0	0	25	17	-
	Worst-case	70	65	2	1	7	96	25	-

Notes: 1. Figure 5-18 presents the locations of all support locations, and locations of the surrounding NCAs. The NMLs for these NCAs are included in Appendix B.2.
 2. The construction activities at Jeaffreson Jackson Reserve and Merlin Street, north of Falcon Street, to support construction work at the Falcon Street shared user bridge have also been included in the assessment of minor construction support sites, even though construction support sites would not be fully established at these locations.

Residential Receivers Over Noise Management Levels -WFU

Warringah Freeway Upgrade at Sites

Table 10-25 Number of residential receiver buildings over the noise management levels during construction (reasonable worst case noise intensity scenario)

Location	Daytime (standard)	Daytime (outside standard)	Evening	Night	Sleep disturbance, awakening (L_{Amax}) ¹
Blue Street (WFU1)	6	6	6	9	6
High Street south (WFU2)	0	0	0	20	21
High Street north (WFU3)	14	14	22	57	51
Arthur Street east (WFU4)	1	1	3	13	9
Berry Street east (WFU5)	0	0	0	10	7
Berry Street north (WHT8) ²	18	18	22	31	28
Ridge Street east (WFU6)	4	4	4	15	13
Ridge Street north (WHT9) ²	3	3	3	18	15
Merlin Street (WFU7)	1	1	5	34	33

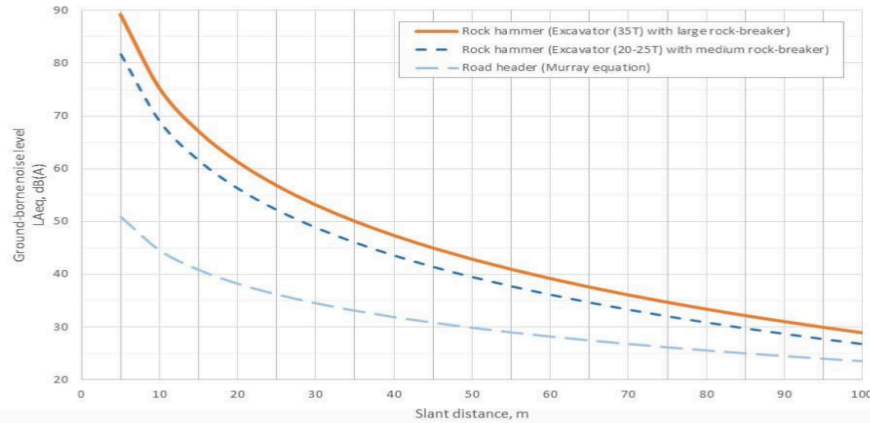
Location	Daytime (standard)	Daytime (outside standard)	Evening	Night	Sleep disturbance, awakening (L_{Amax}) ¹
Jeaffreson Jackson Reserve construction area ³	3	3	10	72	44
Merlin Street north construction area ³	1	2	10	59	24
Rosalind Street east (WFU9)	2	1	7	96	25

Note 1: L_{Amax} is the maximum A-weighted sound pressure level measured over a given period.
 Note 2: Berry Street north construction support site and Ridge Street north construction support site are Western Harbour Tunnel sites. These sites have been assessed in this section because they would support various activities within or near the Warringah Freeway corridor.
 Note 3: These are two small areas supporting the Falcon Street shared user bridge works. There are no formalised construction support sites.

Objection: 434 Residential building will experience night-time noise exceedances about the Noise Management Levels of these 183 Residential Buildings will experience sleep disturbance to awakening point as a result of surface works on the Warringah Freeway. Buildings do not represent the number of people in a densified area so the numbers of people impacted is likely to be very high. Given that these sites and the work undertaken on the Warringah Freeway crosses the catchment areas of Neutral Bay Public, North Sydney Demonstration School, Anzac Park, Cammeray Public and Cammeray gal High School this is likely to represent a large number of children. Other children in the area also attend North Sydney Boys/ Girls and Private Schools along the route. The risks to children's health and the poor learning outcomes associated with long term noise exposure and sleep disturbance is well documented.

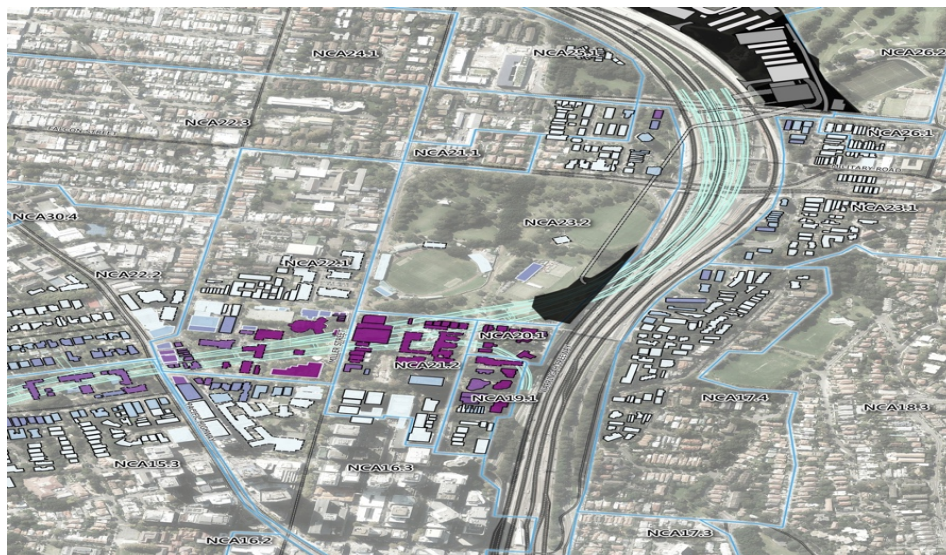
Action: Reconsider the route away from the Warringah Freeway and schools/ residential areas with a high proportion of children.

Figure 4-13 – Indicative ground-borne noise levels from tunnelling



This Graph gives an idea as to what ground-born noise could be predicted at various locations with the various forms of tunnelling predicted.

North Sydney – Mid Section Predicted Main Line Tunneling Impact



Rock Hammering – Major impacts to Wenona and surrounds

Schools and Key School Resources Impacted:

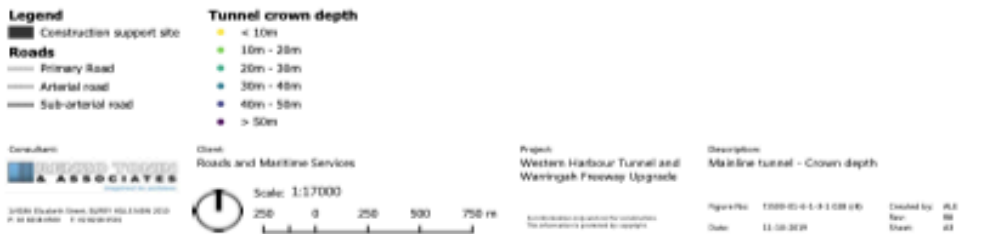
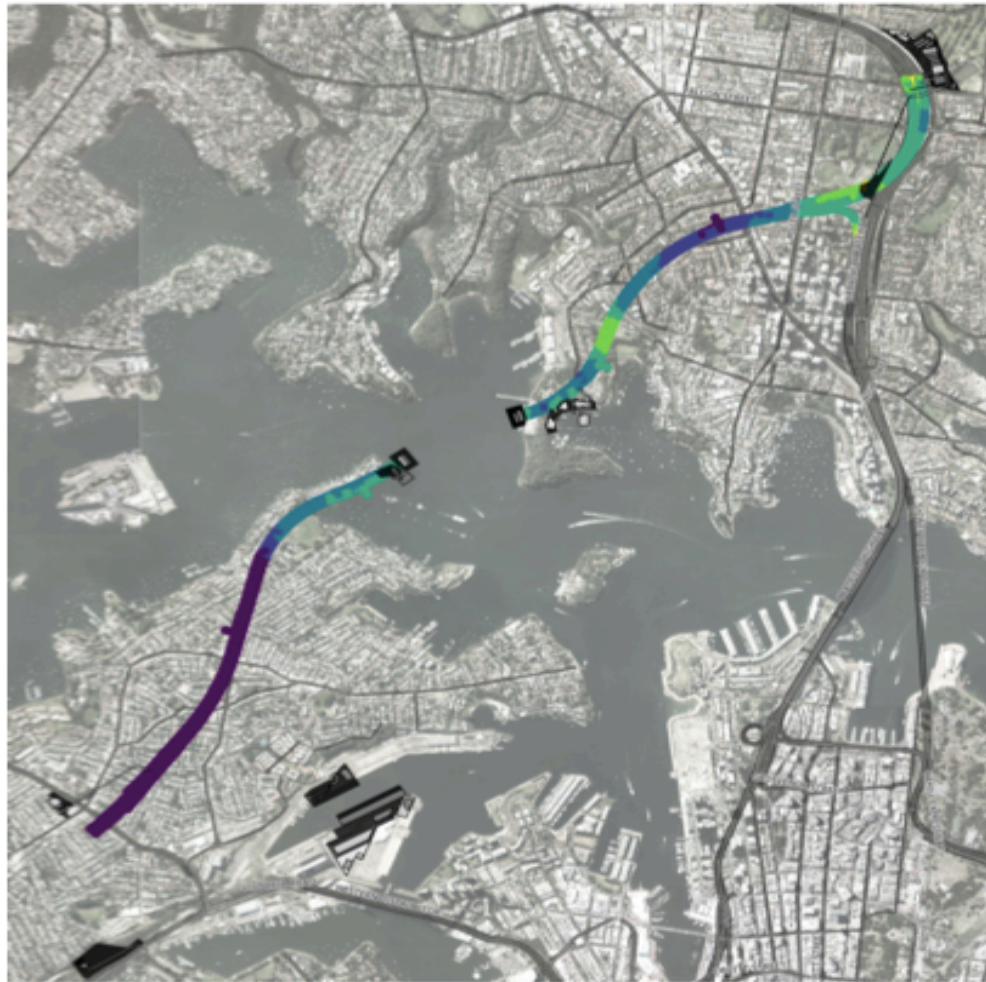
- 21.2 – Wenona/ Independent Theatre/ Stanton Library
- 23.2 – St Leonards Park

Objection: The Area will also be heavily impacted during Rock Hammering with several buildings, including Wenona, subject to ground born levels above 50dB. Given classrooms are supposed to reach an internal noise limit of 40dB and breadth of coinciding works it is unlikely that this will be able to be achieved at Wenona.

Action/ Mitigation: The route should be re-considered to avoid the highest density of schools in Australia. The cumulative impacts of re-constructing the Warringah Freeway and tunnelling activities and the risk to children are severe. The Warringah Freeway should as a minimum be bypassed and but preferably the Dee Why to Chatswood Rail corridor should be considered. An alternative Public Transport Feasibility study should be provide and compared across all risks including noise.

“Up to 258 receiver buildings are predicted to be exposed to construction vibration levels above the human comfort criteria (refer to Section 10.4.4) from the operation of rock-hammers. For these receivers, standard and additional mitigation measures from the *Construction Noise and Vibration Guideline* would be implemented, which may include notification and respite.” Appendix G

Tunnel Depths



Tunnel Depths

Dark Purple areas will experience sound >50 dB. The greatest noise will come from Rock Hammering, Surface Works and Works around Harbour however.

- <20 - yellow
- 20-30 - green
- 30-40 - aqua
- 40-50 - dark blue
- >50 - purple

Waverton/ Harbour Noise Impacts

Coinciding Works at Construction Support Sites - Harbour Sydney Harbour Crossing –Standard hours - Build cofferdam - Impact Pilling - Sydney Harbour north cofferdam (SHC_01)

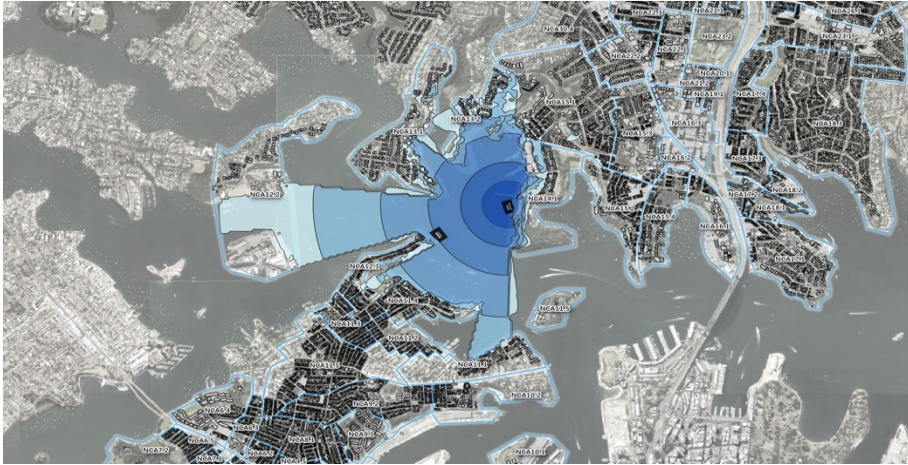


Image from App G - Noise and vibration (part 1), page 794.png

Yulumbin Point Early Works - Standard hours - Early works (YRB_01)

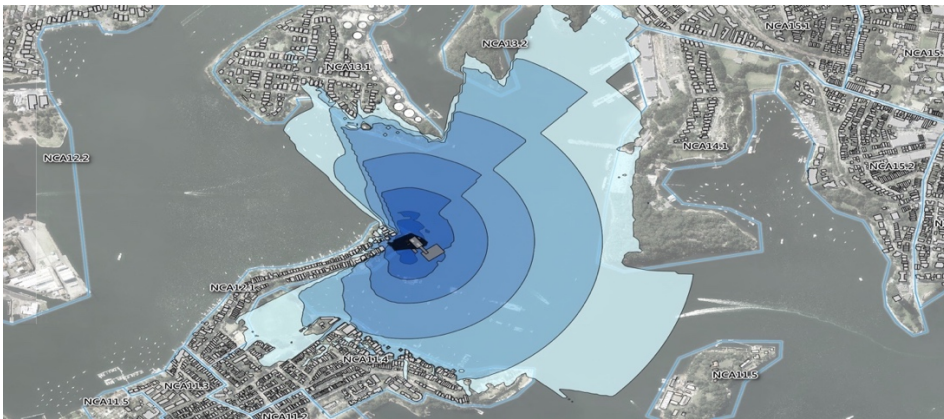


Image from App G - Noise and vibration (part 1), page 791 Yurulbin Pt

Objection: Significant Noise impacts will be experienced at Waverton and coinciding works will have a far-reaching impact as sound travels across the harbour from each support site. Please see Appendix G: for more detail. The choice of an immersed tube construction creates much of the noise due to the need to build coffer dams and dredge the harbour. Other options would require more foreshore area to build but would create far less noise and environmental impact during construction. The Metro tunnel is not an immersed tube tunnel

Mitigation: Reconsider the immersed tube tunnel design and look at alternative public transport options which will not require this scope of noisy works.

Residential Receivers at Waverton

Stage activity	Highly noise affected (L _{Aeq} ¹)				Day (standard construction hours) (L _{Aeq})				Day (out of hours) (L _{Aeq})				Evening (L _{Aeq})				Night (L _{Aeq})				Sleep disturbance (L _{Amax} ²)	
	>75 dB(A) ³	1-10 dB(A)	11-20 dB(A)	>20dB(A)	1-5 dB(A)	6-15 dB(A)	16-25 dB(A)	>25dB(A)	1-5 dB(A)	6-15 dB(A)	16-25 dB(A)	>25dB(A)	1-5 dB(A)	6-15 dB(A)	16-25 dB(A)	>25dB(A)	1-5 dB(A)	6-15 dB(A)	16-25 dB(A)	>25dB(A)	Screening	Awakening
Immerse elements	0	1	0	0	18	1	0	0	22	3	0	0	119	19	0	0	102	7				

Note 1: L_{Aeq} is the A-weighted equivalent noise level. It is the summation of noise events and integrated over a selected period of time.

Note 2: L_{Amax} is the maximum A-weighted sound pressure level measured over a given period.

Note 3: dB(A) stands for A-weighted decibel, a unit used to measure noise. Refer to Figure 10-1 for a comparison of dB(A) for various activities.

Table 10-16 Number of residential receiver buildings over the noise management levels during construction at Sydney Harbour (reasonable worst case noise intensity scenario)

Stage activity	Highly noise affected (L _{Aeq} ¹)				Day (out of hours) (L _{Aeq})				Evening (L _{Aeq})				Night (L _{Aeq})				Sleep disturbance (L _{Amax} ²)	
	>75 dB(A) ³	1-10 dB(A)	11-20 dB(A)	>20dB(A)	1-5 dB(A)	6-15 dB(A)	16-25 dB(A)	>25dB(A)	1-5 dB(A)	6-15 dB(A)	16-25 dB(A)	>25dB(A)	1-5 dB(A)	6-15 dB(A)	16-25 dB(A)	>25dB(A)	Screening	Awakening
Build Sydney Harbour north cofferdam	0	416	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Build Sydney Harbour south cofferdam	6	505	34	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Objection: The noise considerations at Waverton are considerable. 109 residential buildings will be sleep disturbed at the immersed elements stage. 545 will be experience day-time exceedances above Noise Limits when the Southern Cofferdam is built

Cumulative Noise Impacts

10.7.4 Cumulative airborne construction noise

The construction timeframe for the construction sites and major work areas associated with the Warringah Freeway Upgrade overlaps with:

- The Cammeray Golf Course construction support site
- The Gore Hill Freeway Connection surface road works, and the construction support site at Punch Street which are part of the Beaches Link and Gore Hill Freeway Connection project
- Crows Nest Station and Victoria Cross Station works which are part of the Sydney Metro City and Southwest project.

Sensitive Receivers Impacted overall by noise exceedances:

- 31.2 – Cammeray Public School
- 26.2 – Cammeray Park/ Tennis Club/ Golf Course – used by several schools in the area
- 25.1 – Anzac Park Primary School – 700 pupils
- 28.1 – KU Kindergarten/ Green Park – used by schools
- 23.2 – St Leonards Park used by residents and many schools
- 22.1 – Marist Brothers, St Mary's, North Sydney Boys
- 22.3 – Cammeraygal Snr Campus
- 21.2 – Wenona (use St Leonards Park)
- 18.3 – Neutral Bay (use Cammeray Park)

When construction works are carried out in more than one major works area at the same time and the works are predicted to exceed the noise management level in the same NCA, there is potential for cumulative noise impact in that NCA.

During standard construction hours, NCAs 15.4, 16.3, 17.3, 17.4, 19.1, 20.1, 23.1, 23.2, 24.1, 25.1, 28.1, 29.1, 30.1, 30.2 and 33.2 have overlapping impacts which would be considered during further construction planning.

During out of hours work, numerous NCAs have overlapping impacts which would be considered during further construction planning.

Appendix F Traffic and Transport

School Catchments: Cammeray Public, Anzac Park, Neutral Bay and Cammeraygal Catchments are heavily impacted. This is a concern for out of hours work as large numbers of children live across the areas most impacted and will experience sleep disturbances

Areas needing further assessment due to cumulative impacts are:

- 15.4 Berry's Bay
- 16.3 North Sydney – Berry St/ Monte
- 17.3 East side of Warringah Freeway/Neutral Bay
- 17.4 Neutral Bay along Freeway near Forsyth Park
- 19.1 Expressway in front of Wenona
- 20.1 Expressway in front of Wenona
- 23.1 Neutral Bay Shops
- 23.2 St Leonards Park used by residents and many schools
- 24.1 Block Behind Anzac Park
- 25.1 Anzac Park Primary School – 700 pupils
- 28.1 KU Kindergarten/ Green Park – used by schools
- 29.1 Morden St Cammeray along expressway
- 30.1 Crows Nest/ Cemetery Park
- 30.2 Naremburn Shops
- 33.2 Artarmon

1.5 Mental Health/ Stress

<p>Limited Access to Clean Green Space</p> <p><i>Changes in public open space</i></p> <p>The following public open space areas would be temporarily impacted during construction:</p> <ul style="list-style-type: none"> • Yurulbin Park, Birchgrove • Rose Avenue Reserve, Neutral Bay • St Leonards Park, North Sydney • ANZAC Park, North Sydney • Cammeray Golf Course • Merlin Street Reserve. <p>The majority of open space used for construction of the project would not be required to operate the project and would be rehabilitated and returned to an equivalent state as soon as practicable at the completion of construction. The project would not impact on the long term viability of these areas as public open space.</p> <p>The more substantial changes in public open space as a result of the operation of the project would be at Cammeray Golf Course, where about 25,000 m² adjacent to the Warringah Freeway would be required for shared permanent operational facilities for both the Western Harbour Tunnel and Warringah Freeway project and the Beaches Link and Gore Hill Freeway Connection project. Change at this site would be managed to enable its ongoing operation as a nine-hole golf course, with minor amendments to the configuration of holes and their associated pars.</p>	<p style="text-align: center;">Reference</p> <p>Objection: During construction access and the experience of our green spaces will be limited due to construction. This however also extends after construction as over 7Ha are lost to permanent facilities and Green Park, Cammeray Park/ Tennis Courts/ Gold Club, St Leonards Park and others across the area will receive higher doses of pollution from unfiltered stacks according to the air quality analysis in the EIS. Green space and access to exercise is key to mental health. The health impacts of pollution are increased when respiratory rates increase so the project has an overall negative impact on our physical and mental health</p> <p>Mitigation: Consider an alternate route away from densified residential areas and schools with limited park access.</p>
<p>Substratum Acquisition</p> <p>This substratum acquisition would consist of a stratum acquisition envelope around the tunnels, including any associated ground support area that may be required. In some circumstances, the introduction of the tunnels has the potential to limit development above the tunnels. For example, depending on the depth of the tunnels from the surface, the ability to construct basement levels in buildings above the tunnels may be restricted. However, this is generally only the case where the tunnel depth is shallow, near tunnel portals. Tunnel portal locations are described in Chapter 5 (Project description). Otherwise, substratum acquisition should not affect the future use of property at the surface. Subject to council regulations and approvals, landowners would generally be able to:</p> <ul style="list-style-type: none"> • Carry out improvements, such as installing a swimming pool • Dig deeper foundations for a new building or second storey additions. <p style="color: red;">Where substratum acquisition is required, Transport for NSW would contact owners of affected properties. Transport for NSW has the authority to acquire the subsurface land, under the <i>Roads Act 1993</i> (NSW). The <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW) provides that compensation is not payable for substratum acquisition of land or easements, unless specific circumstances as detailed in that Act apply. Appendix C of the <i>Roads and Maritime</i></p>	<p>Objection: Chapter 20 mentions substratum acquisition as being needed however there is no detail on who is likely to be acquired. Other tunnel projects have had properties substratum acquired 50 Metres either side of the tunnel route. The documents state that there is uncertain geology and so changes may be made. There is no payment for substratum acquisition and Inner west residents have reported buyers are more reluctant to buy. Given the density of the area many hundreds of buildings will be impacted along the route. This creates stress for homeowners who are already under increased stressed financial pressure at the time.</p>

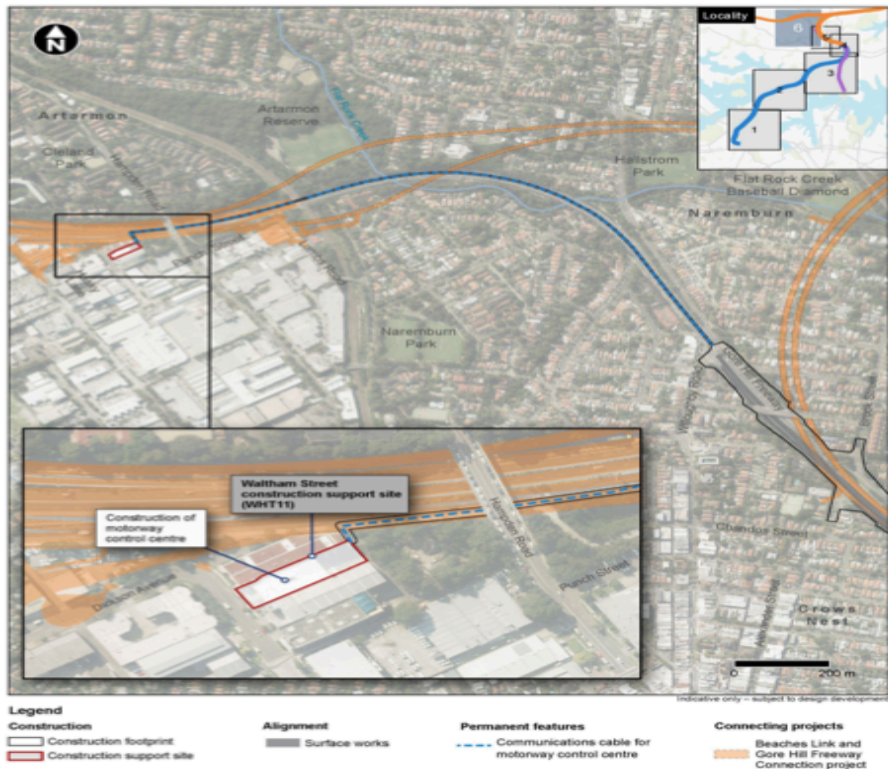


Figure 6-25 Overview of construction activities and construction footprint (map 6)

Chapter 6: Construction Works

Inclusion of Gore Hill Extension without full Risk Assessment

Objection: Uncertainty and vague/ incomplete details cause residents unnecessary stress. The Gore Hill extension project and Beaches Link is mentioned in several sections of the EIS HOWEVER risks are not assessed across all risk categories.

Mitigation: Under NO circumstances should the Gore Hill extension or Beaches Link be included as a Condition of Approval or in any other way as part of this project. Given the heritage of the area, toxicity of soils identified, no. of children across these area and the risks to environment these aspects of the project need a full and proper assessment and consultation. This extension should not be included in the conditions of approval.

Construction Fatigue

Table 5-119 – Concurrent construction works near the Cammeray Golf Course construction support sites

Project	2019	2020	2021	2022	2023	2024	2025
Cammeray Golf Course construction support sites (CGC)			■	■	■	■	■
Warringah Freeway Upgrade surface road works (WFU)			■	■	■	■	■
Other major infrastructure projects							
Cammeray Golf Course construction support site as part of the Beaches Link and Gore Hill Freeway Connection project (CGC-BL) ¹						■	■
Warringah Freeway surface road works (WFU2H) as part of the Beaches Link and Gore Hill Freeway Connection project (WFU2H-BL) ¹						■	■

Notes: 1. Indicative programs have been assumed for the Beaches Link and Gore Hill Freeway Connection project

Objection: The EIS mentions that construction fatigue is likely. There is a huge volume of work over a long period (5-6years) planned for a congested residential area. Children and families regularly transverse across the area and commuters move through it for work. Given the traffic delays, noise and dust impacts and number of trucks on the road construction fatigue is likely to be a serious concern.

Mitigation: Consider an alternate route away from the highest density of sensitive receptors and congestion

Missing or vague information about the project

- Contaminated Dust: “These issues would be considered on a site-by- site basis And would be adequately managed through standard air quality mitigation and management measures.” “Construction environmental management documentation would contain details of the site-specific mitigation measures to be applied”. Given the risks to children this should be fully assessed.
- Contaminated Sites: Further investigations of these sites are required to quantify the exposure risk.
- Acid Sulphate Soils will be tested...this is a condition of the SEARS and should be done and notified to community
- “During out of hours work, numerous NCAs have overlapping impacts which would be considered during further construction planning.” Program of works is yet to be determined to stage the works
- Chapter 6 Controlled underground blasting **may** also be used to improve the efficiency of excavation activities and shorten the overall excavation program. Areas likely to require controlled blasting would be confirmed during detailed construction planning. [p6-13]
- Chapter 6 (6-91) “The final destination(s) for excess spoil from construction of the project **would be confirmed** prior to construction commencing”. This indicates that the route for spoil removal is unknown which has the potential to significantly impact local areas. CONDITION: Spoil removal to be limited to Warringah Expressway and Pacific Hwy and Harbour between hours of 9.30-2.30pm
- Chapter 6: Further construction traffic planning would be carried out to address potential impacts on local and collector roads as a result of signposted detour routes (refer to Chapter 8 (Construction traffic and transport)).
- Chapter 6: The plant and equipment listed (Chapter 6 Table 6-39) **are likely** to be used during construction of the project. The final list of plant and equipment required for each construction activity would **depend on the final construction methodology developed by the construction contractor**. [p6-88]
- Chapter 6: “Should timeframes for the Beaches Link component of the Beaches Link and Gore Hill Freeway Connection project be advanced, some elements of the Beaches Link component may be delivered as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project to safeguard delivery of either surface connections or tunnel-to-tunnel connections, maximise construction efficiency and minimise ongoing disruption in particular areas”.
- Chapter 9.1.1 The North Sydney Integrated Transport Program **is currently being developed** to guide transport planning and investment in the North Sydney CBD and interconnected areas over the next 20 years and beyond. In addition, there are a number of strategies covering cycling, walking, buses from 2013 which are relevant – note that the data which is being relied upon will be a decade old and this should form part of the project given impacts.
- Chapter 13: Human Health. Potentially **contaminated sites** (see Ch 16) **will have** a remediation Action Plan developed
- Chapter 13: The impacts of increased traffic demand and delays in the North Sydney area would be further minimised through the North Sydney Integrated Transport Program, which is being developed by Transport for NSW
- Chapter 16: Geological faults (a fracture within rock where displacement may have occurred), which are typically found within the Hawkesbury Sandstone. The presence of geological faults is associated with increased groundwater inflows. The nearest major fault zone to the project is the Luna Park Fault zone, which is inferred to run parallel to the project in Cammeray.
- Chapter 19: Table 19-7 Pre-clearing surveys **will be** carried out

Other Stress Factors

COVID-19 has resulted in many groups and families being unable to read the EIS documents. The community submitted a letter from 5 schools and 15 community representative organisations requesting a suspension due to the stress consulting while a crisis was occurring but that was not been granted. Community and P&C Meetings had to be cancelled, community members have reported problems with the internet and we have not been able to visit Libraries where hard copies of the complex documents are stored.

The threat of property damage due to draw down and vibration. We live in an historic area where buildings and heritage could be impacted.

<ul style="list-style-type: none">• Chapter 20: Where substratum acquisition is required, Transport for NSW would contact owners of affected properties.• Appendix S Table 19-17 Pre-clearing surveys for microbat roosts will be carried out on the wharf structures to be demolished at Yurulbin Point and Berrys Bay• Appendix S; A stop work procedure will be developed to address marine mammal or reptile activity.• Appendix G: The predictions and subsequent assessment are based on typical geology for the area, comprising Sydney sandstone with a varying depth of shale above. However due to localised geological anomalies, foundation-to-footing interaction and the large range and variety of structures that exist (e.g. construction type, dimensions, materials, quality of construction, footing conditions etc.), actual groundborne noise and vibration levels may vary from what has been predicted	
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