NSW GOVERNMENT

Transport for NSW

Western Harbour Tunnel and Warringah Freeway Upgrade

Noise Insulation Program

October 2020 | Transport for NSW

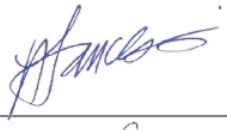
Contents

Document control

Approval and authorisation

Title	WHTWFU Noise Insulation Program
Reference	TfNSW 20.326 ISBN: 978-1-922463-25-8

Internal review

	Name	Position	Date	Authorised
Originator	Alex Major	Planning and Environment Coordinator	4 August 2020	
Review	Nick Francesconi	Director Environment Motorways	2 October 2020	
Authorised	Doug Parris	Program Director - WHTBL	2 October 2020	

Version control

Revision	Description	Date
01	Draft for DPIE review	4 August 2020
02	Updated following DPIE feedback	10 September 2020
03	For approval	24 September 2020
04	Final for publication	25 September 2020
05	Revision approved by Cara Inia	18 December 2020

Glossary

Acute noise impact	A-weighted equivalent continuous traffic noise level of 65 dB(A) or higher for the daytime period (7am to 10pm), or 60 dB(A) or higher for the night-time period (10pm to 7am).
Architectural features	The term given to windows, doors, vents and any other architectural feature covered in the program that may convey noise from outside to inside.
At-property noise treatment (noise treatment)	Refers to architectural acoustic treatments which aim to improve the sound-resistance of properties.
Class 2 buildings	Defined by the Building Code of Australia as a building containing two or more sole-occupancy units, each being a separate dwelling.
Cumulative limit	A total noise level that is 5 dB(A) or more above Transport's Noise Criteria Guideline criteria in the build year.
dB(A)	A-weighted decibels, an expression of the relative loudness of sound as perceived by the human ear.
Direct line of sight	While not a direct correlation, line of sight can be used as an approximate rule of thumb to estimate a sound path from source to receiver.
EPA	NSW Environment Protection Authority
Feasible and reasonable	The feasible test relates to whether a solution can be engineered and is practical to build or install, considering issues such as safety, access and maintenance. The reasonable test relates to the overall noise reduction achieved when compared to the social, economic or environmental benefits. A measure may be feasible to install, but it's unreasonable due to the low noise benefit and high cost.
High Activity Area	An area where construction activities are likely to occur; the definitive intensity, frequency and duration of noise generating activities cannot be determined ahead of the construction contract being awarded.
$L_{Aeq(period)}$	Equivalent continuous sound pressure level, the single number sound level that is equivalent in energy to the actual fluctuating sound level of a specific period.
Noise Mitigation Guideline (NMG)	Noise Mitigation Guideline (NMG) published by TfNSW in 2015
Program	Noise Insulation Program for the Western Harbour Tunnel and Warringah Freeway Upgrade
Project	Western Harbour Tunnel and Warringah Freeway Upgrade
Reasonable exposure	Exposed to at least 45 degree angle of any High Activity Areas from inside a building
Receiver	Occupant/s of a dwelling impacted by noise
TfNSW	Transport for NSW
TfNSW Project Control Group	Comprised of senior management from the Project. Responsible for making decisions regarding the Program and acting as the final escalation point for customer issues and complaints.

1 Overview

1.1 Purpose

This document describes the Noise Insulation Program (the Program) for the Western Harbour Tunnel and Warringah Freeway Upgrade (the Project). The Program involves the delivery of at-property noise treatment (referred to as noise treatment) to mitigate the impact of operational and construction noise at eligible properties.

Due to the large number of properties potentially eligible for noise treatment, the Project has taken a proactive approach in developing this document prior to planning approval. Transport for NSW (TfNSW) is the owner and user of this document to ensure the delivery of noise treatment is equitable, transparent and focused on customer outcomes.

The Program supports TfNSW's ongoing investigation into the expected environmental impacts of the Project and does not assume it will be approved. This document does not replace or supersede the Project's requirements outlined in existing guidelines or future Project documents, including the Minister's Conditions of Approval, Construction Environmental Management Plan, Operational Noise and Vibration Review and other documents.

1.2 Background

The Project involves the creation of a third crossing of Sydney Harbour connecting to the M4-M5 Link at Rozelle and the Warringah Freeway at Cammeray, creating a western bypass of the Sydney CBD.

The Project is expected to reduce traffic noise for more than 60 per cent of properties near our surface roads once complete. Some parts of the community who live near our permanent facilities and surface road upgrades may notice more noise as a result of an increase in traffic going in and out of the tunnels. Some properties will also experience construction noise while the Project is being built.

The Warringah Freeway corridor is located in a densely populated area with a significant footprint of multi-occupancy residential buildings. As one of Sydney's busiest roads, traffic noise from the freeway is a long-standing concern for many local residents. While overall traffic noise will reduce for many residents once the Project is complete, traffic noise exposure will still remain at an acute level for some properties close to the Warringah Freeway.

Noise impacts from the Project are not limited to the Warringah Freeway corridor, however the Program has been developed proactively with a specific focus on this area due to the high density of receivers potentially affected by operational and construction noise.

The Project is taking a proactive approach to help ensure noise mitigation measures are implemented as early as possible, including the delivery of noise treatment. Noise treatment involves upgrading windows, doors and seals at existing properties with the aim of improving sound insulation. TfNSW is managing the delivery of the Program from initial customer engagement through to installation to ensure the Project maintains control over eligibility and treatment and customer outcomes are prioritised.

Construction and operational noise impacts are typically assessed separately, and different eligibility criteria are used when assessing properties for noise treatment for each type of noise. Due to the high number of identified properties and the overlap of construction and operational noise impacts, this document describes the approach for providing noise treatment for both types of noise.

2 Operational noise

2.1 Overview

Operational noise refers to noise from road traffic associated with the day-to-day operation of the road. Compared to the existing configuration of the Warringah Freeway, construction of the Project is expected to reduce operational noise impacts for many properties. The Project's Environmental Impact Statement (EIS) shows an overall reduction in operational noise impacts for more than 60 per cent of properties at the year of the Project opening and ten years after opening when comparing it to the Project not being built.

Once the Project is complete, many properties will continue to experience acute traffic noise impacts well above the EPA's target traffic noise criteria. TfNSW will offer noise treatment to all properties that are predicted to remain over the cumulative limit of traffic noise or where the Project noise contribution is at an acute level, even when traffic noise is expected to reduce as a result of the Project.

2.2 Criteria for assessment

Traffic noise levels for road projects are calculated using predictive noise modelling. The aim of noise modelling is to proactively assess the impact of operational noise for local communities.

Eligibility of properties and the level of treatment are considered in line with relevant noise assessment guidelines to ensure noise mitigation is applied consistently and equitably across NSW. Detailed information about the predictive noise modelling and assessment process is outlined in the Project's EIS (Appendix G – Noise and Vibration Working Paper).

As part of the EIS assessment, the following triggers from TfNSW Noise Mitigation Guideline (2015) were applied in conjunction with EPA's NSW Road Noise Policy to determine eligibility for consideration of noise mitigation measures:

- The predicted 'Build' noise level exceeds the EPA's target criterion of $L_{Aeq(15hour)}$ 60 dB(A) for the daytime period (7am to 10pm) or $L_{Aeq(9hour)}$ 55 dB(A) for the night-time period (10pm to 7am) and the increase in traffic noise level attributed to the Project is greater than 2 dB(A)
- The predicted cumulative traffic noise level is 5 dB(A) or more above the EPA's noise criteria and the receiver is significantly influenced by Project road traffic noise, regardless of the change in noise between 'Build' and 'No Build' scenarios. The cumulative limit for a redeveloped road corridor is $L_{Aeq(15hour)}$ 65 dB(A) or higher for the daytime period, or $L_{Aeq(9hour)}$ 60 dB(A) or higher for the night-time period
- If the noise level contribution from the Project is acute at a residential receiver, the receiver qualifies for consideration of noise mitigation even if noise levels are dominated by traffic noise from another road.

The eligibility criteria is applied to every individual property before the noise reduction provided by mitigation measures is included.

Mitigation measures are generally used in combination as a holistic solution for reducing the impact of traffic noise on local communities. This includes measures at the source and in the path of noise sources as well as at the receiver location. However, where other noise mitigation measures such as quieter pavement and/or noise barriers are shown not to be feasible and reasonable or they do not sufficiently reduce noise levels, at-receiver noise treatment becomes the only mitigation option.

More information about the operational noise criteria and triggers for noise treatment is provided in Chapter 11 of the Project's EIS.

Operational noise treatment is not provided for properties which:

- Have commercial or non-conforming land uses
- Were previously provided with noise mitigation under the TfNSW Noise Abatement Program
- Have been built with noise mitigation to satisfy the requirements of the *State Environment Planning Policy (Infrastructure) 2007*.

Potentially eligible buildings

The Project's EIS identified buildings comprising individual dwellings which may be eligible for consideration of operational noise treatment.

A list of buildings where properties may be eligible for consideration of noise treatment is provided in Appendix A. This list has been updated from the EIS phase following additional modelling and assessment, and is subject to change as part of our ongoing design refinement and assessment process outlined in Section 2.3 below.

2.3 Further assessment

Should the Project be approved and after the detailed design is finalised, an Operational Noise and Vibration Review will be prepared which will provide updated noise modelling based on the updated design. This will incorporate any changes made to the design following the EIS phase. There may be changes to properties which are eligible for a noise treatment assessment as a result of the updated noise modelling.

A post-construction noise review will be carried out within a year of the Project opening to traffic to measure the actual traffic noise levels and assess them against the predicted noise performance and associated noise mitigation measures. If noise impacts are higher than expected and are not within 2 dB(A) of the modelling predictions, noise mitigation measures will be reviewed and additional measures may be investigated where feasible/reasonable and offered to affected properties.

3 Construction noise

3.1 Overview

The Noise Insulation Program (the Program) forms an important part of TfNSW's overall strategy to manage construction noise for the Project. The Project's approach to managing noise impacts during construction activities involve the proactive implementation of noise treatment to eligible properties where all other mitigation measures have been exhausted (see section 3.2 for further details).

The Program aims to use preliminary assumptions about construction noise impacts to prioritise the delivery of noise treatment at eligible properties.

Prior to Project approval, implementation of the Program for construction noise is limited to only completing noise treatment assessments and scoping. Treatments will be installed after approval for the Project has been granted.

3.2 Assumptions

Noise insulation programs for the delivery of noise treatment to mitigate environmental noise would generally be developed and implemented in response to the Minister's Conditions of Approval.

TfNSW has made conservative assumptions about the construction impacts of the Project to enable the early stages of the Program to be implemented before the Project is approved. These assumptions provide the opportunity to start the process of delivering noise treatment as early as possible for eligible properties.

There are multiple challenges in determining the 'real' impacts at individual receivers ahead of a construction contractor being appointed. Variables that contribute to the uncertainty of actual construction impacts ahead of the construction contract being awarded include, but are not limited to:

- Final design alignment
- Final design of individual elements and structures of the Project
- Whether work can be scheduled during standard construction hours
- The plant and machinery to be used during construction
- Detailed Project programming
- Traffic arrangements.

The Project's EIS made conservative assumptions to determine the theoretical typical and worst-case impacts for construction. Due to the overlap between properties eligible for operational noise treatment and those predicted to be in proximity to High Activity Areas during construction (as outlined in section 3.3 of this document), there is an opportunity to accelerate operational noise treatment to also contribute to managing construction noise impacts.

TfNSW is developing a Construction Noise Management Framework (CNMF) for the Project with the initial aim of minimising impacts to properties. The CNMF will outline the hierarchy of construction noise mitigation measures and discuss the influence of impact duration on the effectiveness of the mitigation method selected. As part of the CNMF, noise treatment is considered as the final step when all other mitigation measures have been exhausted.

More information about the Project's assumptions about construction noise and the hierarchy of mitigation measures will be available in the CNMF.

3.3 Criteria for assessment

High Activity Areas

TfNSW has identified a number of High Activity Areas where properties will be prioritised for assessment.

High Activity Areas are where construction activities are expected for an extended duration or where work will be required outside standard hours. They are based on the reference design, reference construction methodology and concept program.

The areas identified are indicative only at this stage, and are not defined by intensity, duration or frequency of noise-generating activities as these will be confirmed after the construction contract has been awarded.

The High Activity Areas have been used to establish eligibility for assessments before details about the final design, work methodology or construction staging are confirmed.

Screening criteria for noise treatment assessments

Ahead of the construction contract being awarded, proximity to a High Activity Area will be used to establish if a dwelling is eligible for further investigation.

Consideration will be given to individual property orientation within the building, where affected facades of habitable rooms are located in relation to the work area and whether there is a direct line of sight and reasonable exposure to the future High Activity Areas.

As noise diminishes with increasing distance, initial screening is limited to those properties with reasonable exposure and direct line of sight that are within 100 metres of a High Activity Area.

Initial screening criteria includes:

- Is the building adjacent to a High Activity Area?
- Is the property within 100 metres of a High Activity Area?
- Is there a direct line of sight between the property and a High Activity Area?
- Is the field of view of a High Activity Area (observed from within the property) greater than or equal to 45 degrees?

A distance-based approach has been adopted for the screening criteria in line with the CNVG. For receivers that have a direct line-of-site to a High Activity Area, the nominated distance of 100 metres from a High Activity Area corresponds to a noise level of 65 dB(A) ($L_{Aeq,15minute}$) during typical construction activities.

The impact of construction noise would be significantly reduced where the receiver has no direct line-of-sight to a High Activity Area. This is in line with Australian Standard *AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites* which states noise levels at a receiver location with no line-of-sight to a work area can be 5 to 15 dB(A) less compared to a receiver with direct line-of-sight.

Given the nature of linear construction work, the duration of exposure to construction noise levels above 65 dB(A) ($L_{Aeq,15minute}$) would be significantly reduced at a receiver location that has a restricted angle of view of a High Activity Area compared to a viewpoint at an unobstructed angle.

Potentially eligible buildings

The buildings listed in Appendix B have been selected from a preliminary study of buildings that are potentially affected by construction noise. The buildings identified are eligible for further investigation only and not all properties at these addresses will be eligible for an assessment. Further investigation including physical inspection is required to establish where individual properties are situated within the building.

Only properties that have a direct line of sight and reasonable exposure to High Activity Areas will be eligible for a noise treatment assessment, and the affected façade must be a habitable room facing the construction activities to be considered for noise treatment.

Following further investigation it may be determined a building or property on the list is not eligible for an assessment or treatment. Similarly, the list is not exhaustive, and properties may be added to the list. The actual treatment types, if applicable, cannot be determined until a noise treatment assessment has been carried out.

Further details on potential limitations to treatment are provided in Section 6.

3.4 Further assessment

The list of buildings identified in Appendix B is not exhaustive or final. The list is in addition to obligations on TfNSW, or its construction contractor, as outlined in the Minister's Conditions of Approval, relevant NSW guidelines and project-specific requirements.

As outlined in the CNMF, the impact of construction noise will continue to be assessed at individual properties. However, treated properties will need to reach a higher threshold before further action is taken to mitigate construction noise as the property is deemed to be more resistant to noise following the implementation of noise treatment.

The construction contractor appointed to build the Project will be required to produce environmental management plans including a Construction Noise and Vibration Management Plan. Verification and monitoring of construction noise mitigation will be ongoing, and the noise impacts and mitigation measures continually reviewed.

4 Roles and responsibilities

Table 1. Overview of roles and responsibilities

Role	Responsibilities
Property owner	• At the owner's discretion, engage with TfNSW and its delivery partners involved in implementing noise treatment • Provide access for noise treatment assessments, inspections and installation • Agree to the Scope of Work, Works Deed and Completion Certificate for their noise treatment package • Communicate with tenants if required to facilitate access • Ongoing maintenance of the treatments once installed (outside any applicable warranties).
Owners Corporations	• Provide access for building inspections • Agree to the Scope of Work and Works Deed for properties that require Owners Corporation consent.
TfNSW Project team	• Overall implementation of the Program • Engaging delivery partners to implement the Program including project managers and building contractors • Making sure customer outcomes are prioritised and decisions are fair and equitable • Reviewing Scopes of Work • Escalation point for customer issues and complaints.
TfNSW Project Control Group	• Oversight and management of contractor decisions for the management of noise • Escalation point for resolving customer issues and disputes that were unable to be resolved by the Project team • Investigation and addressing customer complaints relating to noise treatment.
Acoustic Specialist Project Managers	• Point of contact for customers throughout the whole process • Carrying out noise treatment assessments and preparing the Scope of Work for eligible properties • Management of specialist building contractors • Escalating issues and enquiries to the TfNSW Project team when required.
Specialist building contractors	• Carrying out a check measurement inspection of properties to confirm dimensions and constructability • Installing treatments as per the Scope of Work • Signing the Works Deed and Completion Certificate.
Construction contractor	• To be confirmed after the Project is approved and tender is awarded.

5 Treatment

5.1 Noise treatment assessment

As part of the process, a noise treatment assessment will be carried out at eligible properties by the Acoustic Specialist Project Manager. The assessment[1] involves a physical inspection of the property and will record details of the property, including:

- Construction of existing architectural features (such as windows, doors and vents) including construction materials, glazing/door thickness and depth of reveal
- Condition of existing architectural features including fixtures and finishings
- Sizes and dimensions of existing features
- Building features such as access, building class and construction type
- Constructability issues including the health and safety of the installation and the presence of any potential hazardous materials
- Compliance with relevant guidelines and standards.

The building contractor may attend the assessment to verify all constructability aspects of the proposed treatment are considered.

The assessment is a physical inspection of the property only and does not involve any noise monitoring.

5.2 Treatment options

Eligible properties will receive a tailored package of treatments based on the construction and condition of the property. Treatment will be at no cost to the receiver and/or property owner.

Noise treatment may only be required for certain aspects of the property, such as the side/s facing the road or construction site.

Treatments are only applied to the affected façade of 'habitable' rooms, such as bedrooms and living areas. This is in line the EPA's Road Noise Policy which applies to all road infrastructure projects in NSW. Rooms that are not considered habitable include garages, storage areas, bathrooms, laundries, toilets or pantries. This is consistent with the approach taken by Transport for NSW for its Noise Abatement Program and other road projects.

The below table provides an overview of the treatment types offered to eligible properties to mitigate operational and construction noise.

Where possible, any overlap in potential treatments for construction and operational noise will be considered to provide the best outcome for the receiver and minimise disruption to the individual. All treatment selections will be discussed and agreed with each individual property owner.

As outlined in the TfNSW Noise Mitigation Guideline, financial compensation will not be offered in lieu of noise treatment.

[1] The noise treatment assessment is a physical inspection of the property only and does not involve any noise monitoring

Table 2. Overview of treatment types

Noise treatment types in order of consideration			
	Operational noise	**Construction noise[2]**	**Operational and Construction noise**
1.	Primary[3] and secondary windows and doors[4]	Secondary[5] windows and doors	Secondary and primary windows and doors[6]
2.	Sealing windows, doors and voids	Sealing windows, doors and voids	Sealing windows, doors and voids
3.	Mechanical ventilation[7]	Acoustic curtains	Mechanical ventilation[7]
4.		Mechanical ventilation[7]	

The treatments described above are indicative only as they are subject to feasible and reasonable criteria. The treatment package offered may vary from those listed above in some cases, for example:

- If the building has multiple occupancies and presents constraints due to access, health, safety and Building Codes of Australia (BCA) requirements
- Secondary windows would generally provide greater acoustic benefit than primary replacements
- Mechanical ventilation may be unable to be installed safely or may not meet BCA requirements
- Treatments may not meet the feasible and reasonable criteria or there are additional limitations, as described in Section 6 below.

If the assessment of the property concludes that noise treatment options are not feasible and reasonable, TfNSW will work with property owners to determine the best outcome.

TfNSW will aim to achieve a noticeable noise reduction for eligible properties, however they cannot guarantee the noise reduction that can be achieved at any property.

[2] Construction noise treatments can generally be agreed by the property owner without Owners Corporation consent. Access arrangements and storage of materials may still require Owners Corporation involvement depending on the nature of the building.

[3] It is unlikely primary replacement of windows and doors would meet TfNSW feasible and reasonable criteria in Class 2 buildings due to access, health, safety and Building Codes of Australia (BCA) constraints.

[4] Dependant on predicted noise exceedance level.

[5] A primary door or window replacement may be considered. This will be done on a case-by-case basis.

[6] For properties eligible for operational and construction noise, secondary window and door upgrades would be prioritised as they generally provide greater acoustic benefit and can typically be installed without Owners Corporation approval, ensuring treatments are installed sooner.

[7] Mechanical ventilation will only be offered where it meets all BCA requirements and can be installed safely.

5.3 Properties impacted by operational and construction noise

A number of properties will be eligible for consideration of noise treatment for both operational and construction noise. In these cases we will work with property owners to develop a treatment package that provides the highest acoustic benefit in both circumstances.

Treatment options that can be implemented without requiring approval from Owners Corporations and strata management will be considered to help expedite treatment for properties eligible for both types of noise. For example, property owners may be given the option of secondary window glazing instead of primary window replacements as this can generally be installed without requiring Owners Corporation approval. This would not provide a disadvantage in terms of noise reduction as secondary window glazing generally provides a greater acoustic benefit.

6 Limitations

Some potential limitations to treating eligible properties may include access, health and safety for workers during installation, building code compliance and the age and condition of the property.

All treatment offers must meet the TfNSW feasible and reasonable assessment. Examples of why treatment may not be feasible include:

- TfNSW is unable to provide mitigation measures that meet current building standards and guidelines including the Building Code of Australia
- TfNSW is unable to install mitigation measures due to the existing construction or condition of the architectural features
- The property already has existing noise treatments in place
- The property was previously provided with noise mitigation under the TfNSW Noise Abatement Program or other projects
- There are limitations due to local planning controls
- The property has been built with noise mitigation to satisfy the requirements of the *State Environment Planning Policy (Infrastructure) 2007* (this will be assessed on a case by case basis)
- The property has commercial or non-conforming land uses.

Treatment may not be reasonable because:

- External or internal access to building elements is restricted
- Hazardous materials are present that could affect the installation or the resident
- The treatment is not cost effective for the noise reduction it achieves.

The above limitations will be considered by the Project in identifying suitable treatment options for eligible properties.

7 Process

The below table provides a summary of the steps involved in providing noise treatment.

Consultation with property owners and Owners Corporations takes place throughout the stages of the noise treatment process. For properties that are not occupied by the owner (such as investment properties), engagement with tenants is expected to be facilitated by the owner or property manager where required.

Communication and engagement is outlined in more detail in Section 8 of this document.

Table 3. Noise treatment process overview

	Step	Action required			
		Project team	**Property owner**	**Owners Corp[8]**	**Tenants**
1.	Property identified by TfNSW as eligible for a noise treatment assessment	✓			*Property owner responsible for facilitating engagement with tenants as required to enable property access.*
2.	Inspection of common areas of strata buildings (if required)	✓		✓	
3.	Noise treatment assessment carried out at the property by acoustic specialist	✓	✓		
4.	Proposed treatment package prepared by acoustic specialist	✓			
5.	Proposed treatment package reviewed by Transport for NSW	✓			
6.	*Scope of Work* signed by customer	✓	✓	✓	
8.	Final measure of property[9]	✓	✓		
7.	*Works Deed* signed for work to proceed	✓	✓	✓	
9.	Treatments installed by specialist builder	✓	✓		
10.	*Completion Certificate* signed confirming work is complete	✓	✓	✓	

[8] If required for strata plan buildings

[9] Final measure may be carried out during the noise treatment assessment

8 Communication and engagement approach

Communication and engagement with property owners plays an integral role in the delivery of noise treatment as part of the Program. This section provides an overview of the communication activities that will be carried out.

8.1 Objectives

The communication objectives for the Program are to:

- Inform property owners who are eligible for a noise treatment assessment and explain the process, including what treatments can be implemented (if any), delivery timeframes and next steps
- Encourage uptake of assessments and treatment by property owners
- Provide a central point of contact with the Project team
- Provide regular and targeted information to keep property owners informed during the process.

8.2 Key messages

The following key messages will be used during communication and engagement activities for the Program. These key messages apply to delivery of the Program before the Project is approved for construction.

- TfNSW will carry out noise treatment assessments at eligible properties to confirm if any of our treatments can reduce the impact of noise (operational or construction)
- The assessment typically takes around one hour and includes examining and taking photos of existing features of the property such as windows, doors and access
- Eligible properties will be offered a property-specific treatment package depending on the age, construction and style of the property
- In some instances, we may not be able to reduce noise through the standard treatment options. In these cases TfNSW will work with property owners to determine the best approach to minimise noise impacts
- There will be no cost to property owners for noise treatment assessments or treatment
- The process for providing noise treatment involves a number of steps. It can take several months from the initial noise treatment assessment until installation is complete
- For properties identified for treatment to reduce the impact of construction noise, treatment would be installed after the project is approved.

8.3 Stakeholders

Key stakeholders for the Program include:

- Owners and residents of properties identified as potentially eligible for noise treatment
- Delivery partners engaged by TfNSW to implement the Program, including project managers, building contractors and other specialists

- TfNSW Project Team
- TfNSW Project Control Group.

8.4 Engagement process

Noise treatment is typically an extensive process which can take some time to negotiate and implement, particularly for multi-dwelling buildings with Owners Corporations. It can take several months from the noise treatment assessment until treatments are installed.

The below table outlines the communication mechanisms that will be used to contact the stakeholders involved in the Program.

Table 4. Engagement process for Owners Corporations and strata managers

Stage	Tools	Purpose
Owners Corporations and strata managers		
First contact (Letter 1)	Letter via mail	• Introduce the Project and provide an overview of the Program • Advise some units in complex have been identified for a noise treatment assessment • Offer a building inspection of common areas to assess features such as access and storage • Provide Project contact details.
Reminder letter (Letter 2) *Two weeks after Letter 1*	Letter via mail	• Remind the Owners Corporation to book a building inspection • Provide Project contact details.
Reminder letter (Letter 3) *One week after Letter 2*	Letter via mail	• Remind the Owners Corporation to book a building inspection • Advise the Owners Corporation they can contact the Project at any point in the future if they would like to take up the inspection offer • Provide Project contact details.
Building inspection	Direct contact via phone and email	• Carry out an inspection of common areas at a time arranged with the Owners Corporation.

Table 5. Engagement process for property owners

Stage	Tools	Purpose
Property owners		
First contact (Letter 1)	Door knock for owner occupied properties (subject to Covid-19 health and safety precautions outlined in Section 8.9) Or Letter via mail for investment properties	• Introduce the Project and provide an overview of the Program • Advise property has been identified as potentially eligible and offer to carry out a noise treatment assessment • Provide Project contact details.
Reminder letter (Letter 2) *Two weeks after Letter 1*	Letter via mail	• Remind property owners to book an assessment • Provide Project contact details.
Reminder letter (Letter 3) *One week after Letter 2*	Door knock for owner occupied properties Or Letter via mail for investment properties	• Remind property owners to book an assessment • Advise the owner can contact the Project at any point in the future if they would like to take up the assessment offer • Provide Project contact details.
Noise treatment assessment	Direct contact via phone and email	• Carry out an assessment for the property at a time arranged with the owner.
Treatment package offer to eligible properties	Letter and Scope of Work via email or mail (customers preference)	• Confirm the Project will proceed with treatment and seek agreement from the property owner on their Scope of Work
Check measure (where required)	Direct contact via phone and email	• Carry out a check measure to confirm constructability and exact measurements of doors and windows with specialist builders.
Deed	Letter and Deed via email or mail (customers preference)	• Confirm the Project will proceed with treatment and signatures required on the Deed to progress to installation • Signatures required from all owners listed on the title of the property as well as Owners Corporation if in a strata title building.
Installation	Direct contact via phone and email	• Installation of property treatment as per scope of work.

Stage	Tools	Purpose
Post-installation	Letter and Completion Certificate	• Owner to sign a Completion Certificate confirming treatments have been installed by the builder.
Post-installation rectification (if required)	Direct contact via phone and email	• Where noise treatments are faulty or the installation is not satisfactory, rectification work will be carried out within six weeks, subject to property access.
Post-installation	Survey	• Seek feedback from property owners on the noise treatment process and effectiveness of treatment for future improvement.

8.5 Outstanding offers

The Project team will work with stakeholders to ensure treatment offers are agreed to as early as possible. Multiple attempts will be made to encourage eligible property owners to engage in the process above, and all communication attempts will be recorded.

The Project will make three successive attempts at contacting property owners / Owners Corporation before the Project will assume its responsibilities have been met. This includes:

- Noise treatment assessment offer
- Treatment offer (Scope of Work)
- Works Deed

If not accepted initially by the property owner, the offers of a noise treatment assessment, Scope of Work or Works Deed will remain open until the Project is operational. The owner can contact the Project at any time to accept their offer and resume the process.

A final contact attempt will be made at least six months before the Project is complete.

8.6 Enquiries, complaints and escalation

The Project's contact details will be publicised in all communication materials for community members to submit enquiries and complaints.

The below table identifies a series of escalation points should there be a dispute about eligibility for an assessment, eligibility for a treatment or the type of treatment being offered.

Table 6. Complaint escalation process

	Stakeholder	Role
1	Acoustic Specialist Project Managers	Day to day interaction with customers. Initial point of contact for enquiries and complaints relating to the Program.
2	TfNSW Project Team	Escalation point for matters that are unable to be resolved by the delivery partner.
3	TfNSW Project Control Group	Escalation point for matters that are unable to be resolved by the Project team.

8.7 Evaluation

To help understand the effectiveness of noise treatment during the construction phase of the Project, property owners will be invited to provide feedback via a survey. The survey results would help TfNSW and agencies in developing noise mitigation for future projects. Responses would be recorded in line with TfNSW's privacy policy and would be used for internal review and evaluation purposes only.

8.8 Privacy and records

All correspondence will be recorded in line with TfNSW's privacy policy. All personal information collected as part of the Program will be retained by TfNSW and this information will be shared with our delivery partners for communication and engagement purposes only. We will not disclose personal details to third parties unless authorised by law.

Providing personal information is voluntary, but if property owners do not consent to providing their details this may impact TfNSW's ability to provide noise treatment. Members of the public may request to access their personal information held by TfNSW at any time.

Every effort will be made to contact eligible properties to encourage uptake, and a record of all communication attempts will be maintained.

8.9 Health and safety during Covid-19

The safety of the community and our workforce is TfNSW's highest priority. Currently infrastructure construction projects are considered essential to the economy and will continue as planned across the state.

TfNSW staff and delivery partners are using appropriate hygiene and physical distancing measures while implementing the Program during Covid-19. Hot spots will be continually monitored and our procedures will be reassessed regularly in line with current health advice.

Property owners may choose to temporarily hold off on property work including assessments, inspections and installation, and can resume the process when they are comfortable to do so. The Project will work closely with property owners to keep them informed.

9 Next steps

TfNSW started implementing the Program in early 2020 following the public exhibition of the EIS. Due to the volume of properties identified for noise treatment, the Program is being delivered progressively and eligible property owners will be contacted in stages.

Appendix A – Operational noise eligible buildings

The buildings listed below along the Warringah Freeway corridor may be eligible for consideration of noise treatment. This list has been updated from the EIS following additional modelling and assessment, and is subject to change as part of our ongoing design refinement and assessment process. Properties in the wider Project area will be assessed as the Project progresses.

Properties meeting the criteria within the buildings listed below are only eligible for a noise treatment assessment and possible treatments cannot be determined until the property is assessed.

Table 7. Building addresses eligible for further investigation for operational noise

38 ALFRED STREET SOUTH	184 FALCON STREET	32 MERRENBURN AVENUE
70 ALFRED STREET SOUTH	185 FALCON STREET	14A MERRENBURN AVENUE
80 ALFRED STREET SOUTH	186 FALCON STREET	8A MERRENBURN AVENUE
102 ALFRED STREET SOUTH	188 FALCON STREET	1 METCALFE STREET
110 ALFRED STREET SOUTH	204 FALCON STREET	3 METCALFE STREET
118 ALFRED STREET SOUTH	206 FALCON STREET	5 METCALFE STREET
317 ALFRED STREET NORTH	208 FALCON STREET	7 METCALFE STREET
319 ALFRED STREET NORTH	210 FALCON STREET	9 METCALFE STREET
323 ALFRED STREET NORTH	212 FALCON STREET	11 METCALFE STREET
325 ALFRED STREET NORTH	214 FALCON STREET	13 METCALFE STREET
341 ALFRED STREET NORTH	216 FALCON STREET	15 METCALFE STREET
373 ALFRED STREET NORTH	185A FALCON STREET	1 MIDDLEMISS STREET
387 ALFRED STREET NORTH	238-246 FALCON STREET	2 MILITARY ROAD
393 ALFRED STREET NORTH	35 FITZROY STREET	4 MILITARY ROAD
433 ALFRED STREET NORTH	17 GLEN STREET	282 MILLER STREET
437 ALFRED STREET NORTH	30 GLEN STREET	285 MILLER STREET
439 ALFRED STREET NORTH	2 HAMPDEN STREET	296 MILLER STREET
441 ALFRED STREET NORTH	4 HAMPDEN STREET	298 MILLER STREET
263-269 ALFRED STREET NORTH	6 HAMPDEN STREET	300 MILLER STREET
339A ALFRED STREET NORTH	8 HAMPDEN STREET	302 MILLER STREET
1 AMHERST STREET	10 HAMPDEN STREET	304 MILLER STREET
11 AMHERST STREET	11 HAMPDEN STREET	306 MILLER STREET
45A AMHERST STREET	12 HAMPDEN STREET	308 MILLER STREET
33 ANZAC AVENUE	14 HAMPDEN STREET	312 MILLER STREET
6 ARMSTRONG STREET	15 HAMPDEN STREET	314 MILLER STREET
8 ARMSTRONG STREET	16 HAMPDEN STREET	316 MILLER STREET
10 ARMSTRONG STREET	17 HAMPDEN STREET	365 MILLER STREET
14 ARMSTRONG STREET	28 HIGH STREET	4 MOODIE STREET
13-21 ARMSTRONG STREET	30 HIGH STREET	20 MOODIE STREET
34 ARTHUR STREET	32 HIGH STREET	16A MOODIE STREET
36 ARTHUR STREET	36 HIGH STREET	15 MORDEN STREET
1 BARDSLEY GARDENS	38 HIGH STREET	1 PALMER STREET
7 BARDSLEY GARDENS	40 HIGH STREET	5 PALMER STREET

38 BELLEVUE STREET	42 HIGH STREET	2A PALMER STREET
88 BENT STREET	44 HIGH STREET	3B PALMER STREET
77 BERRY STREET	46 HIGH STREET	63 RIDGE STREET
88 BERRY STREET	48 HIGH STREET	81 RIDGE STREET
1 BRAY STREET	50 HIGH STREET	85 RIDGE STREET
2 BRAY STREET	52 HIGH STREET	87 RIDGE STREET
3 BRAY STREET	54 HIGH STREET	89 RIDGE STREET
5 BRAY STREET	26A HIGH STREET	93 RIDGE STREET
7 BRAY STREET	26B HIGH STREET	95 RIDGE STREET
9 BRAY STREET	49-51 HIGH STREET	59-61 RIDGE STREET
11 BRAY STREET	60 JEFFREYS STREET	95A RIDGE STREET
15 BRAY STREET	1 JENKINS LANE	39 ROSALIND STREET
11A BRAY STREET	3 JENKINS LANE	79 ROSALIND STREET
2 BROOK STREET	5 JENKINS LANE	81 ROSALIND STREET
4 BROOK STREET	7 JENKINS LANE	36-38 ROSALIND STREET
6 BROOK STREET	9 JENKINS LANE	40-44 ROSALIND STREET
7 BROOK STREET	16 JENKINS STREET	204 SEXTON PLACE
8 BROOK STREET	43 JENKINS STREET	208 SEXTON PLACE
9 BROOK STREET	57 JENKINS STREET	8 TARELLA PLACE
10 BROOK STREET	22-26 JENKINS STREET	48 UPPER PITT STREET
11 BROOK STREET	1 KURRABA ROAD	50 UPPER PITT STREET
18 BROOK STREET	2 KURRABA ROAD	138 WALKER STREET
1 CAMMERAY AVENUE	4 KURRABA ROAD	144 WALKER STREET
3 CAMMERAY AVENUE	55 LAVENDER STREET	171 WALKER STREET
7 CAMMERAY AVENUE	14 MASSEY STREET	173 WALKER STREET
9 CAMMERAY AVENUE	15 MASSEY STREET	175 WALKER STREET
11 CAMMERAY AVENUE	1 MATTHEW LANE	177 WALKER STREET
13 CAMMERAY AVENUE	3 MATTHEW LANE	179 WALKER STREET
146 CHANDOS STREET	1 MCDOUGALL STREET	185 WALKER STREET
168 CHANDOS STREET	2 MCDOUGALL STREET	197 WALKER STREET
170 CHANDOS STREET	4 MCDOUGALL STREET	199 WALKER STREET
172 CHANDOS STREET	6 MCDOUGALL STREET	205 WALKER STREET
174 CHANDOS STREET	1 MCINTOSH LANE	207 WALKER STREET
2 DIND STREET	45 MCLAREN STREET	209 WALKER STREET
18 DODDS STREET	4 MERLIN STREET	191-195 WALKER STREET
1 DONNELLY ROAD	12-14 MERLIN STREET	229 WEST STREET
3 DONNELLY ROAD	21 MERLIN STREET	231 WEST STREET
5 DONNELLY ROAD	74 MERLIN STREET	233 WEST STREET
1A DONNELLY ROAD	76 MERLIN STREET	235 WEST STREET
22-24 DONNELLY ROAD	10A MERLIN STREET	237 WEST STREET
24A DONNELLY ROAD	10B MERLIN STREET	274 WEST STREET
24B DONNELLY ROAD	8A MERLIN STREET	1 WHALING ROAD
31-33 DONNELLY ROAD	8B MERLIN STREET	2 WHALING ROAD
2 EATON STREET	8C MERLIN STREET	3 WHALING ROAD

12 EDWIN STREET	2 MERRENBURN AVENUE	5 WHALING ROAD
14 EDWIN STREET	4 MERRENBURN AVENUE	7 WHALING ROAD
1 ENNIS ROAD	6 MERRENBURN AVENUE	9 WHALING ROAD
231 ERNEST STREET	8 MERRENBURN AVENUE	11 WHALING ROAD
291 ERNEST STREET	9 MERRENBURN AVENUE	15 WHALING ROAD
297 ERNEST STREET	10 MERRENBURN AVENUE	50 WHALING ROAD
233-237 ERNEST STREET	11 MERRENBURN AVENUE	4A WHALING ROAD
243-245 ERNEST STREET	12 MERRENBURN AVENUE	207 WILLOUGHBY ROAD
247-249 ERNEST STREET	13 MERRENBURN AVENUE	6 WYAGDON STREET
293-295 ERNEST STREET	14 MERRENBURN AVENUE	7 WYAGDON STREET
152 FALCON STREET	15 MERRENBURN AVENUE	8 WYAGDON STREET
168 FALCON STREET	17 MERRENBURN AVENUE	9 WYAGDON STREET
170 FALCON STREET	19 MERRENBURN AVENUE	15 WYAGDON STREET
182 FALCON STREET		

Appendix B – Construction noise eligible buildings

Properties meeting the criteria within the buildings listed below are only eligible for a noise treatment assessment and possible treatments cannot be determined until the property is assessed. Further investigation may determine a building or property on the list is not eligible for an assessment or treatment. Similarly, the list is not exhaustive, and properties may be added to the list following engagement of the construction contractor.

Table 8. Building addresses eligible for further investigation for construction noise

317 ALFRED STREET NORTH	3 CAMMERAY AVENUE	8B MERLIN STREET
319 ALFRED STREET NORTH	7 CAMMERAY AVENUE	8C MERLIN STREET
323 ALFRED STREET NORTH	9 CAMMERAY AVENUE	365 MILLER STREET
325 ALFRED STREET NORTH	11 CAMMERAY AVENUE	16 MOODIE STREET
337 ALFRED STREET NORTH	13 CAMMERAY AVENUE	20 MOODIE STREET
341 ALFRED STREET NORTH	2 EATON STREET	16A MOODIE STREET
343 ALFRED STREET NORTH	297 ERNEST STREET	5 MORDEN STREET
345 ALFRED STREET NORTH	313 ERNEST STREET	7 MORDEN STREET
357 ALFRED STREET NORTH	317 ERNEST STREET	9 MORDEN STREET
359 ALFRED STREET NORTH	319 ERNEST STREET	11 MORDEN STREET
361 ALFRED STREET NORTH	321 ERNEST STREET	15 MORDEN STREET
369 ALFRED STREET NORTH	323 ERNEST STREET	85 RIDGE STREET
373 ALFRED STREET NORTH	325 ERNEST STREET	87 RIDGE STREET
387 ALFRED STREET NORTH	233-237 ERNEST STREET	89 RIDGE STREET
389 ALFRED STREET NORTH	243-245 ERNEST STREET	91 RIDGE STREET
393 ALFRED STREET NORTH	247-249 ERNEST STREET	93 RIDGE STREET
433 ALFRED STREET NORTH	293-295 ERNEST STREET	95 RIDGE STREET
437 ALFRED STREET NORTH	238-246 FALCON STREET	95A RIDGE STREET
439 ALFRED STREET NORTH	16 HAMPDEN STREET	77 ROSALIND STREET
441 ALFRED STREET NORTH	17 HAMPDEN STREET	79 ROSALIND STREET
263-269 ALFRED STREET NORTH	26A HIGH STREET	81 ROSALIND STREET
339A ALFRED STREET NORTH	26B HIGH STREET	40-44 ROSALIND STREET
11 AMHERST STREET	49-51 HIGH STREET	73-75 ROSALIND STREET
33 ANZAC AVENUE	1 KURRABA ROAD	171 WALKER STREET
38 BELLEVUE STREET	2 KURRABA ROAD	197 WALKER STREET
55 BELLEVUE STREET	3 KURRABA ROAD	191-195 WALKER STREET
2 BELLS AVENUE	4 KURRABA ROAD	6 WARRINGA ROAD
88 BERRY STREET	2 MCDOUGALL STREET	8 WARRINGA ROAD
1 BRAY STREET	4 MCDOUGALL STREET	10 WARRINGA ROAD
2 BRAY STREET	1 MCINTOSH LANE	1 WHALING ROAD
3 BRAY STREET	3 MERLIN STREET	2 WHALING ROAD
4 BRAY STREET	4 MERLIN STREET	3 WHALING ROAD
5 BRAY STREET	7 MERLIN STREET	5 WHALING ROAD
6 BRAY STREET	9 MERLIN STREET	4A WHALING ROAD
7 BRAY STREET	76 MERLIN STREET	6 WYAGDON STREET

8 BRAY STREET	10A MERLIN STREET	7 WYAGDON STREET
9 BRAY STREET	10B MERLIN STREET	8 WYAGDON STREET
10 BRAY STREET	12-14 MERLIN STREET	9 WYAGDON STREET
1 CAMMERAY AVENUE	8A MERLIN STREET	15 WYAGDON STREET

October 2020
TfNSW 20.326
ISBN: 978-1-922463-25-8