Transport for NSW

# Beaches Link and Gore Hill Freeway Connection

## Appendix I – Noise insulation program

November 2021

# Contents

# Glossary

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|---|---|
| **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 |
| **Building** | A building may be a sole-occupancy dwelling such as a house, or a multi-occupancy building such as a unit complex or an apartment block |
| **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 |
| **Construction Noise and Vibration Guideline** | Construction Noise and Vibration Guideline published by Roads and Maritime Services (now Transport for NSW) in 2016 |
| **Cumulative limit** | A total noise level that is 5 dB(A) or more above Transport for NSW's Noise Criteria Guideline (Roads and Maritime Services, 2015) 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 approximation to estimate a sound path from source to receiver |
| **Development Near Rail Corridors and Busy Roads – Interim Guideline** | Development Near Rail Corridors and Busy Roads – Interim Guideline published by the NSW Department of Planning (now Department of Planning, Industry, and Environment) in 2008 |
| **Environmental impact statement** | Beaches Link and Gore Hill Freeway Connection Environmental Impact Statement published in December 2020 |
| **Environmental Noise Management Manual** | Environmental Noise Management Manual published by Roads and Maritime Services (now Transport for NSW) in 2001 |
| **Façade** | The external face of a building |
| **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. |

| | |
|---|---|
| **Habitable room** | In accordance with the Building Code of Australia this is defined as areas of the home where people spend most of their time. This may include bedrooms, living room, lounge room, music room, television room, dining room, study, playroom, family room, home theatre, etc.<br>This does not include spaces of a specialised nature occupied neither frequently nor for extended periods, such as bathrooms, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes drying room, etc.<br>The status of kitchens as habitable rooms is assessed on a case by case basis. |
| **High activity out-of-hours work area** | An area where construction activities are likely to occur for an extended duration outside standard working hours. They are not defined by the intensity, frequency or duration of noise-generating activities. |
| **$L_{Aeq(period)}$** | 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 catchment area** | Noise catchment areas are areas where receivers have a similar land use and ambient noise environment. They are shown in Figure 10-2, Figure 10-3, Figure 10-4 and Figure 10-5 of the environmental impact statement. |
| **Noise Criteria Guideline** | Noise Criteria Guideline published by Roads and Maritime Services (now Transport for NSW) in 2015 |
| **Noise Mitigation Guideline** | Noise Mitigation Guideline published by Roads and Maritime Services (now Transport for NSW) in 2015 |
| **NSW Road Noise Policy** | NSW Road Noise Policy (RNP) published by the NSW Department of Environment, Climate Change and Water (now Environment Protection Authority) in 2011 |
| **Out-of-hours work** | Any construction activities required outside standard construction hours which are typically 7am to 6pm, Monday to Friday and 8am to 1pm on Saturdays |
| **Owners corporation** | The owners corporation of a strata scheme is responsible for maintenance, repair and overall management of the common property |
| **Program** | Noise Insulation Program (this document) for the Beaches Link and Gore Hill Freeway Connection project |
| **Project** | Beaches Link and Gore Hill Freeway Connection |
| **Property** | A property is a sole-occupancy dwelling, such as a house, apartment or unit |
| **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 |
| **Transport for NSW 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 Beaches Link and Gore Hill Freeway Connection (the project). The program involves the delivery of at-property noise treatment (referred to as noise treatment) to mitigate the impact of noise at eligible properties.

To help expedite the assessment and treatment of eligible properties, the project has taken a proactive approach in developing this document prior to planning approval for inclusion in the Beaches Link and Gore Hill Freeway Connection Submissions Report. Transport for NSW is the owner of this document which aims to ensure the delivery of noise treatment to eligible properties is equitable, transparent and focused on customer outcomes.

## 1.2 Background

The project involves the creation of a new motorway tunnel connection across Middle Harbour from the Western Harbour Tunnel and Warringah Freeway at Cammeray and Gore Hill Freeway at Artarmon, to the Burnt Bridge Creek Deviation at Balgowlah and Wakehurst Parkway at Killarney Heights.

During operation, the project is expected to reduce traffic noise for about 59 per cent of buildings near the project surface roads. Some parts of the community who live near the project's 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 program assesses two types of noise; operational traffic noise once the project is open and construction noise for those impacted by extended durations of out-of-hours-work. 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. While the eligibility criteria for treatment are different for operational and construction noise, the same types of treatments are used to mitigate both types of noise as part of this program. Due to the high number of identified properties and the overlap of construction and operational noise impacts from the project, this document describes the approach for providing noise treatment for both types of noise to be managed in accordance with this program.

The program is taking a proactive approach to ensure noise mitigation measures are implemented as soon as possible and is initially focused on delivering noise treatment to mitigate construction noise. While surface road construction would be carried out during standard work hours where possible, an extensive program of work would be required outside of these hours particularly at the Gore Hill Freeway, Artarmon and Burnt Bridge Creek Deviation and Sydney Road, Balgowlah. Noise impacts from the project are not limited to Artarmon and Balgowlah, however this program has been developed with a specific focus on these areas. Transport for NSW recognises the need to manage construction noise and fatigue for residential receivers in these areas who may be exposed to extensive programs of works during night time periods.

The program has been developed in accordance with the noise assessments carried out as part of the Beaches Link and Gore Hill Freeway Connection Environmental Impact Statement. The environmental impact statement is available to view on the Department of Planning, Industry and Environment's Major Projects Planning Portal.

Transport for NSW is managing and overseeing the delivery of the program from initial customer engagement through to installation so that the project maintains control over eligibility and treatment and prioritises customer outcomes.

For properties impacted by operational noise only, further review of the project's operational noise impacts will be carried out as part of the detailed design process and customers will be contacted at a later stage of the program.

## 1.3 Guidelines

A number of existing noise policies and guidelines have guided development of the program to ensure the outcomes of the program are equitable, transparent and customer-focused while also meeting the unique constraints of the project. These policies and guidelines include:

- Noise Mitigation Guideline (Roads and Maritime Services, 2015)
- Noise Criteria Guideline (Roads and Maritime Services, 2015)
- Construction Noise and Vibration Guideline (Roads and Maritime Services, 2016)
- Interim Construction Noise Guideline (NSW Department of Environment, Climate Change and Water, 2009)
- NSW Road Noise Policy (NSW Department of Environment, Climate Change and Water, 2011)
- Development Near Rail Corridors and Busy Roads – Interim Guideline (NSW Department of Planning, 2008)
- Environmental Noise Management Manual (Roads and Traffic Authority, 2001).

# 2 Accelerated assessments

The program forms an important part of Transport for NSW's overarching strategy to mitigate construction noise impacts on the local community. It involves the proactive assessment and installation of noise treatment at eligible properties to help minimise noise impacts to residents during construction. To facilitate the early implementation of the program, screening criteria have been developed to identify properties which qualify for noise treatment to reduce the impact of construction noise.

## 2.1 Assumptions about construction noise impacts

The project's environmental impact statement provides a conservative assessment of the predicted noise impacts during construction and further review and assessment of construction noise impacts will be carried out as the project progresses. Variables that contribute to the uncertainty of construction noise impacts in the early stages of the project include, but are not limited to:

- Detailed design of the road alignment not being finalised
- Detailed design of operational elements and structures not being finalised
- Work schedule, including the extent to which activities can be carried out during standard construction hours
- The plant and machinery to be used
- Traffic arrangements.

To enable the early implementation of the program before these details are confirmed, conservative assumptions have been made about construction noise impacts to determine which properties may qualify for noise treatment.

Information about the expected noise impacts during construction is outlined in Chapter 10 (Construction noise and vibration) of the environmental impact statement.

## 2.2 High activity out-of-hours work areas

Standard construction hours for road projects are typically 7am to 6pm, Monday to Friday and 8am to 1pm on Saturdays (subject to the Minister's Conditions of Approval). While the project would aim to carry out work during standard construction hours where possible, work would be needed outside these hours to maintain traffic capacity on the road network and for the safety of road users and construction workers. Any activities required outside these hours is referred to as out-of-hours work.

Three high activity out-of-hours work areas have been identified where construction activities are expected for an extended duration outside standard construction hours, including during the night time period. These areas are where major surface road activities will be carried out for the project and where extensive programs of out-of-hours work will be required.

High activity out-of-hours work areas have been identified at construction areas within the following surface work locations:

- Gore Hill Freeway, Artarmon
- Burnt Bridge Creek Deviation, Balgowlah
- Sydney Road, Balgowlah.

The high activity out-of-hours work areas are indicative and have been used to establish eligibility for noise treatment assessments before details of the final design, work methodology or construction staging are finalised. They are based on the design, construction methodology and program presented in the environmental impact statement.

Figure 1. High activity out-of-hours work area at Gore Hill Freeway, Artarmon

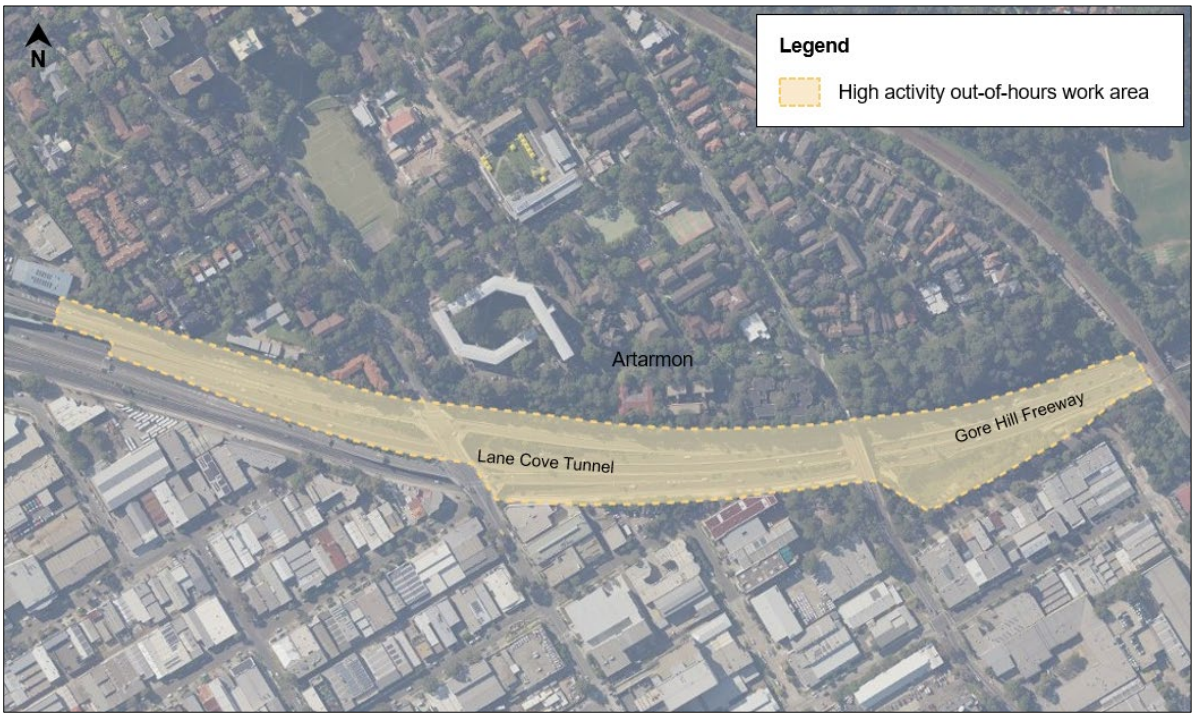
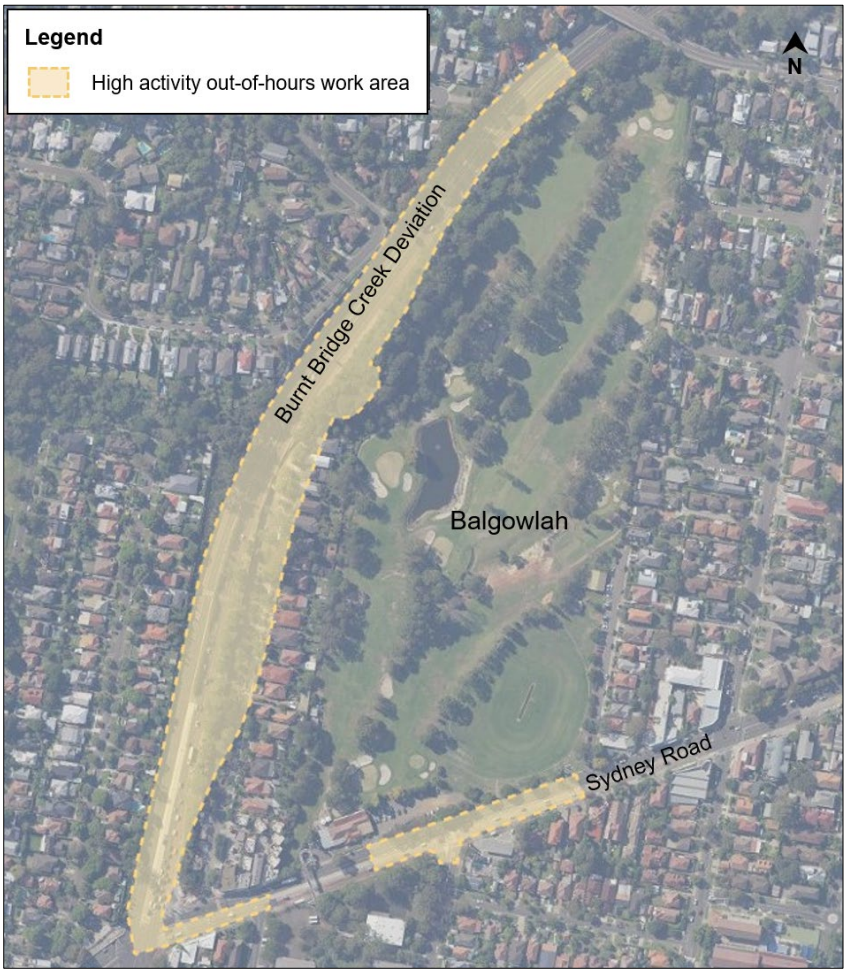


Figure 2. High activity out-of-hours work areas at Burnt Bridge Creek Deviation and Sydney Road, Balgowlah




## 2.3 Screening criteria

The following screening criteria were developed to determine if properties are eligible for consideration of treatment to mitigate construction noise:

- Is the property directly adjacent to and within 50 metres of a high activity out-of-hours work area?
- Does the property have direct line of sight to the high activity out-of-hours work area?

Transport for NSW has developed the above screening criteria in consideration of existing guidelines which apply to the management of construction noise.

Building façades which are directly exposed to construction work areas are predicted to experience higher noise levels compared to those which are shielded by other buildings or structures. In line with Australian Standard *AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites* (Standards Australia, 2010), the impact of construction noise would be significantly reduced where the receiver has no direct line of sight to the work area. 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, according to the Australian Standard.

Given the nature of linear construction work, the duration of exposure to construction noise would be reduced at a receiver location that has a restricted angle of view of a high activity OOHW area compared to a viewpoint at an unobstructed angle. For this reason, when assessing properties for noise treatment, the project team will also consider if the field of view to the high activity out-of-work area at least 45 degrees when observed from within the property.

## 2.4 Eligible buildings

The buildings listed in Annexure A have been identified as meeting the criteria for accelerated assessment as part of the program. They are eligible for further investigation only and as part of this process they may not be found to qualify for noise treatment.

For multi-dwelling buildings, not all properties at these addresses may be eligible for a noise treatment assessment depending on their position in the building and orientation to noise sources (the road). Further investigation including physical inspections may be required to establish where individual properties are situated within the building and if they meet the criteria outlined in Section 2.3.

The list of buildings in Annexure A is not exhaustive, and addresses may be added as the project progresses. At this stage of the program, buildings have only been identified if they meet the screening criteria and are expected to be impacted by construction noise from extensive programs of out-of-hours work.

# 3 Further review of noise impacts

The project will continue to assess the impact of noise on the local community as part of the ongoing design development and environmental assessment process. This will be done in accordance with the project's obligations outlined in the environmental impact statement, relevant NSW guidelines and the Minister's Conditions of Approval, should the project be approved.

## 3.1 Construction noise

The construction contractor/s appointed to build the project will be required to produce construction environmental management plans, including a construction noise and vibration management plan. These plans will outline ongoing verification and monitoring of construction noise mitigation, and the process and timing for the continual review of noise impacts and associated mitigation measures (including the production of construction noise and vibration impact statements).

Additional buildings may be identified as eligible for noise treatment assessments as the project's construction impacts are refined. Noise treatment would not preclude residents from other mitigation measures required to reduce the impact of construction noise, such as alternative accommodation.

## 3.2 Operational traffic noise

The operational noise impacts from the project will be subject to ongoing review and assessment as the project progresses and the detailed design is finalised. This will include determining appropriate measures to reduce the impact of operational noise in line with the Minister's Conditions of Approval and relevant noise guidelines.

As a first priority Transport for NSW aims to mitigate operational noise through the road design process using at-source measures such as quieter pavement surfaces or noise barriers and mounds. Where at-source measures have been exhausted or are not feasible and reasonable, noise treatment is used as the final measure to reduce noise impacts. Eligibility of properties for operational noise treatment is considered in line with relevant noise assessment guidelines to ensure noise mitigation is applied consistently and equitably across NSW.

### 3.2.1 Operational noise assessment process

Operational traffic noise levels for road projects are calculated using predictive noise modelling to assess the impact of traffic noise on local communities. Detailed information about the project's predictive traffic noise modelling and assessment process is outlined in Chapter 11 (Operational noise and vibration) of the environmental impact statement.

Appendix G (Technical working paper: Noise and vibration) outlines the predicted operational traffic noise levels at receiver buildings once the project is complete. This also outlines if the buildings have been identified for consideration of noise treatment to mitigate the impact of operational noise once the project is complete.

To determine eligibility for consideration of operational noise mitigation measures, the following triggers are applied:

- The predicted ‘Build’ noise level for the project exceeds the NSW Environment Protection Authority’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 NSW Environment Protection Authority’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.

There will be an overlap in properties which are identified in the environmental impact statement for consideration of operational noise treatment and those which qualify for noise treatment to mitigate construction noise as part of this program. At this stage of the program, only buildings which meet the criteria for accelerated noise treatment assessments to mitigate construction noise are identified in Annexure A.

If the project is approved, it is expected that the Minister’s Conditions of Approval will require the development of an Operational Noise Review consistent with other major road projects. The Operational Noise Review would confirm the operational noise impacts of the project and measures to manage these impacts. The Operational Noise Review would be developed during the detailed design phase and would include updated noise modelling based on the final design of the project. Any additional properties identified for consideration of noise treatment following the Operational Noise Review would be treated in accordance with the program.

### 3.2.2 Post-construction review

After the project is complete and open to traffic, a review would be carried out to measure the actual operational traffic noise levels and compare them to the predicted levels. If noise levels are greater than expected, consultation would be carried out with affected receivers and additional mitigation may be applied where feasible and reasonable. The findings of this review would be made publicly-available in a report. Property owners would be contacted if they became eligible for noise treatment or additional noise treatment as part of this process.

# 4 Roles and responsibilities

An overview of key roles and their responsibilities in the program is provided below.

Table 1. Overview of roles and responsibilities

| Role | Responsibilities |
|---|---|
| **Property owner** | • If they agree to participate in this program, the owner would engage with Transport for NSW and its delivery partners involved in implementing this program<br>• Provide access for noise treatment assessments, inspections and installation, where required<br>• Agree to the Scope of Work, Works Deed and Completion Certificate for their noise treatment package<br>• Communicate with property managers or tenants if required to facilitate access<br>• Ongoing maintenance of the treatments once installed (outside any applicable warranties) |
| **Owners corporations** | • Provide access for building inspections<br>• Advise what treatments will be permitted for the building<br>• Liaise with the project team and participate in meetings<br>• Agree to the Scope of Work and Works Deed for properties that require owners corporation consent<br>• Facilitate access to common property to allow treatments to be installed |
| **Transport for NSW Noise Insulation Program team** | • Overall implementation of the program<br>• Engaging delivery partners to implement the program including project managers and building contractors<br>• Making sure customer outcomes are prioritised and decisions are fair and equitable<br>• Liaising with property owners and owners corporations to resolve enquiries and complaints<br>• Reviewing Scopes of Work reports<br>• Escalation point for customer issues and complaints |
| **Transport for NSW Project Control Group** | • Oversight and management of contractor decisions for the management of noise<br>• Escalation point for resolving customer issues and disputes that were unable to be resolved by the project team |
| **Acoustic Specialist Project Managers** | • Point of contact for customers throughout the whole program process<br>• Carrying out noise treatment assessments and preparing the Scope of Work for eligible properties<br>• Management of specialist building contractors<br>• Escalating issues and enquiries to the Transport for NSW project team when required |

| Role | Responsibilities |
|---|---|
| **Building contractors** | • Carrying out a check measurement inspection of properties to confirm dimensions and constructability<br>• Installing treatments as per the Scope of Work<br>• Signing the Works Deed and Completion Certificate |
| **Construction contractor/s engaged to build the project** | • Provide information to Transport for NSW about expected noise impacts to the community as part of the project's ongoing environmental assessment and design development process |
| **Built heritage specialist** | • Reviewing the noise treatment proposed for all heritage properties<br>• Providing advice to ensure that any work carried out does not have an adverse impact on the heritage significance of a property and that all works meet the relevant statutory requirements |
| **Other technical specialists / subject matter experts** | • Building Code of Australia specialists – Provide advice to Transport for NSW about specific constraints with delivering treatments to Class 2 buildings<br>• Fire protection specialists – Provide advice to Transport for NSW on fire compliance for Class 2 buildings |
| **Local councils** | • Where required, agree to the proposed noise treatment for properties which are heritage-listed. |

# 5 Treatment

## 5.1 Overview

Noise treatment involves installing architectural acoustic measures which aim to reduce the impact of noise at properties. When assessing properties for noise treatment, every property is considered on a case by case basis. Properties are offered a bespoke treatment package depending on a number of factors, including:

- The predicted noise impacts from the project and the property's exposure and orientation to noise sources (i.e. the road)
- Existing condition and features of the property at the time of assessment
- If the eligible façades of the property have habitable rooms and how the rooms are configured
- Any potential constraints to installing treatment, such as safety, access or Building Code of Australia compliance.

This section provides an overview of the steps involved in the noise treatment process and outlines the types of treatments offered.

## 5.2 Noise treatment assessment

Noise treatment assessments will be carried out at eligible properties by the Acoustic Specialist Project Manager and the Building Contractor to determine which treatments can be provided. The assessment involves a physical inspection to record details about the property, including:

- Taking photos and measurements of existing architectural features such as windows, doors and vents
- Recording details of existing construction materials, glazing/door thickness, depth of reveals, fixtures and furnishings
- Assessing whether the field of view to the high activity out-of-hours work area is at least 45 degrees when observed from within the property
- Assessing building features such as access, building class and construction type
- Noting any potential constructability issues including the health and safety of workers and residents during installation and the presence of potentially hazardous materials.

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

Following the noise treatment assessment, a Scope of Work report will be prepared outlining Transport for NSW's proposed treatment solutions for the property.

## 5.3 Treatment options

Eligible properties will receive a tailored package of treatments. Noise treatment may only be required for certain façades of the property, such as the side/s facing the road.

Treatments are only applied to the eligible façades of 'habitable' rooms, such as bedrooms and living areas. This is in line with the NSW Road Noise Policy (DECCW, 2011) which applies to all road infrastructure projects in NSW. Rooms that are not considered habitable include garages, storage areas, bathrooms, laundries, toilets, balconies or pantries. Kitchens

will only be considered for treatment if they open to a habitable room (with no dividing door) or if they are used as a dining room. The status of habitable rooms will be determined at the time of the noise treatment assessment and noise treatment offers are unable to be amended if there are changes after the date of assessment.

All noise treatment selections will be discussed and agreed with each individual property owner and it is at their discretion if they wish to accept or decline any of the proposed noise treatments.

The below table provides a summary of the noise treatment types which may be offered to eligible properties to mitigate construction and operational noise. A table outlining further details of the treatments offered is provided in Annexure B.

Table 2. Overview of treatment types

| Treatment type | Description |
|---|---|
| **Secondary treatment for windows and doors** | Secondary treatment involves installing a secondary system within the reveal of an existing window or door to give a minimum 50 millimetre air gap. This is sometimes known as 'wide air gap double glazing'.<br>Secondary treatment provides the best noise reduction when compared to primary treatment. To ensure they are offered the highest level of treatment in terms of acoustic performance, eligible properties impacted by construction noise will be offered secondary treatment as a first priority.<br>If property owners decline secondary treatment, they will be required to agree to a disclaimer acknowledging Transport for NSW recommended secondary treatment for the best acoustic performance and is indemnified from any noise impact resulting from declining it. |
| **Primary treatment for windows and doors** | Primary treatment involves removing the existing window or door and installing a new window or door. Transport for NSW would aim to provide a like-for-like replacement of the existing element to maintain a consistent look and feel where possible.<br>Primary treatment provides less noise reduction compared to secondary treatment. However, it would still be expected to provide a noticeable noise reduction.<br>Primary treatment may not be feasible for all properties due to constraints such as access, safety and Building Code of Australia compliance. This will be determined as part of the noise treatment assessment process. If primary treatment is not feasible, property owners may choose secondary treatment as an alternative which would also provide better noise reduction. |
| **Window and door seals** | If existing window and door seals are unsatisfactory from an acoustic perspective, Transport for NSW would consider upgrading them to new acoustic rubber seals to improve the acoustic performance of existing windows and doors. |
| **Sealing vents** | Sealing existing wall vents is carried out to help reduce the transmission of noise into eligible habitable rooms. |

| Treatment type | Description |
|---|---|
| **Mechanical ventilation** | Mechanical ventilation is provided to maintain fresh air flow when doors and windows are closed. Mechanical ventilation can be offered for Class 1 buildings (i.e. single-dwelling detached houses).<br>Transport for NSW is currently investigating if mechanical ventilation can be installed in Class 2 (multi-occupancy) buildings while meeting the requirements of the Building Code of Australia. Until this review is complete, mechanical ventilation will not be offered for properties in Class 2 buildings.<br>If property owners accept mechanical ventilation as part of their treatment package, they would be responsible for ongoing maintenance costs such as electricity and maintenance (outside any applicable warranties).<br>Mechanical ventilation is the only solution considered to provide fresh air intake. Air-conditioning is not offered as part of the program. |
| **Other treatments assessed on a case by case basis** | Other treatment solutions which may be considered on a case by case basis and may include:<br>• Treatment for roofs including skylights and insulation if the noise source is proven to come through the roof<br>• Acoustic curtains for properties impacted by construction noise if no other noise treatments are feasible. |

The noise treatments described above are indicative only as they are subject to Transport for NSW's feasible and reasonable criteria and other limitations outlined in Section 6. Properties will generally not qualify for all noise treatments listed above. As part of the noise treatment assessment process, Transport for NSW may find there are no feasible and reasonable noise treatment options that can be provided for the property.

The level of noise reduction achieved differs for each property and depends on the treatments used and the existing construction and condition of the property. Transport for NSW does not carry out noise monitoring at properties to measure the effectiveness of treatments.

## 5.4 Cost and compensation

Property owners would not be required to provide any financial contribution as part of the program, other than being responsible for ongoing maintenance costs.

Noise treatment aims to mitigate the impact of noise for building occupants and is not intended to be a form of compensation against noise impacts. Therefore financial compensation would not be offered in lieu of noise treatment.

All noise treatment offers are reviewed by Transport for NSW to ensure they are consistent and equitable in line with our guidelines. Transport for NSW would not provide compensation to property owners if they choose to engage their own legal or other technical specialists to review their noise treatment offers.

## 5.5 Heritage-listed properties

The program has identified properties that qualify for a noise treatment assessment which are potentially heritage-listed. To ensure the program meets requirements for installing noise treatment at heritage properties, an independent heritage specialist will be engaged to:

- Assess the heritage status of the individual property
- Assess the proposed noise treatments
- Determine the program's regulatory requirements relating to the proposed treatments
- Advise if the program can install the proposed treatments, and if not, propose alternative treatments.

Once the program receives a detailed report from the heritage specialist addressing the above points, Transport for NSW will consult with relevant stakeholders including the local council to ensure the proposed noise treatments are in line with heritage requirements. Due to the complexities and additional steps required to deliver noise treatment to heritage-listed properties, the delivery of noise treatment may take longer when compared to a typical property.

# 6 Limitations

There are a number of potential constraints and limitations which may affect the noise treatments that can be offered. Some potential limitations to treating eligible properties may include access, health and safety for workers during installation, Building Code of Australia compliance and the age and condition of the property.

All treatment offers must meet Transport for NSW's feasible and reasonable assessment. Examples of why treatment may not be feasible include:

- Treatment is unable to be installed in compliance with current building standards and guidelines including the Building Code of Australia
- Treatment is unable to be installed due to the existing construction or condition of the property
- The property already has existing noise mitigation in place that meets Transport for NSW's requirements (i.e. if the property already has adequate window glazing)
- The property was previously provided with noise treatment on eligible façades as part of Transport for NSW's 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, tourism and visitor 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, Transport for NSW or its subcontractors or the resident
- Treatment would not provide a noticeable noise reduction
- 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.

A large number of properties have been identified in the project area which are in multi-dwelling (Class 2) buildings. Installation of noise treatment for these buildings can be complex due to constraints such as building height, access limitations and more stringent requirements under the Building Code of Australia. Transport for NSW will work closely with Owners Corporations of strata buildings to determine which noise treatments can be provided to eligible properties while meeting our feasible and reasonable assessment.

Noise treatment would not be provided for any new developments that are proposed after the project receives planning approval.

# 7 Process

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

Consultation with property owners and owners corporations takes place throughout each stage 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 Corporation[1]** | **Tenants** |
| 1. | Property identified 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 | ✓ | ✓ | | |
| 4. | Proposed noise treatment package prepared by acoustic specialist | ✓ | | | |
| 5. | Proposed noise treatment package reviewed by Transport for NSW | ✓ | | | |
| 6. | Scope of Work provided to property owner for agreement | ✓ | ✓ | ✓ | |
| 7. | Works Deed signed for work to proceed | ✓ | ✓ | ✓ | |
| 8. | Noise treatments installed by specialist builder | ✓ | ✓ | | |
| 9. | Completion Certificate signed confirming work is complete | ✓ | ✓ | ✓ | |

[1] If required for strata plan buildings

# 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 noise treatments can be implemented (if any), delivery timeframes and next steps
- Facilitate engagement with owners corporations of strata buildings to enable noise treatment to be provided for eligible properties
- Encourage uptake of assessments and noise treatment by property owners and owners corporations
- Provide a central point of contact with the project team
- Provide regular and targeted information to keep property owners and owners corporations informed during the process.

## 8.2 Key messages

The following key messages will be used during communication and engagement activities for the program:

- Transport for NSW will carry out noise treatment assessments at eligible properties to confirm if any of our noise treatments can reduce the impact of noise
- Due to the large number of properties potentially requiring noise treatment, the program will be delivered in stages. Properties which are expected to be impacted by construction noise will be prioritised so they receive their noise treatment as early as possible
- The noise treatment 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 specific noise treatment package depending on the age, construction and style of the property as well as the expected noise impact
- There will be no cost to property owners for noise treatment assessments or noise 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.

## 8.3 Stakeholders

Key stakeholders for the program include:

- Owners and residents of properties identified as potentially eligible for noise treatment
- Owners corporations for strata buildings

- Delivery partners engaged by Transport for NSW to implement the program, including project managers, building contractors and other specialists
- Transport for NSW project team
- Transport for NSW Project Control Group.

## 8.4 Engagement process

The installation of noise treatment is typically an extensive process which can take considerable time to negotiate and implement, particularly for strata buildings where owners corporation approval is required. It can take several months from the noise treatment assessment until noise treatments are installed.

Table 4 and Table 5 outline 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<br>(Letter 1) | Letter via mail | • Introduce the project and provide an overview of the program<br>• Advise some units in complex have been identified for a noise treatment assessment<br>• Offer a building inspection of common areas to assess features such as access and storage<br>• Provide project contact details |
| Reminder letter<br>(Letter 2)<br><br>*Two weeks after Letter 1* | Letter via mail | • Remind the owners corporation to book a building inspection<br>• Provide project contact details |
| Reminder letter<br>(Letter 3)<br><br>*One week after Letter 2* | Letter via mail | • Remind the owners corporation to book a building inspection<br>• 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<br>• 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 |

| Stage | Tools | Purpose |
|---|---|---|
| Meeting with key representatives of the owners corporation | In person at Transport for NSW's office or via video conference | • Facilitate a discussion between the project team and key decision-makers representing the owners corporation<br>• Explain the noise treatment process and answer any questions<br>• Advise what details are needed from the owners corporation to facilitate noise treatment<br>• Encourage the owners corporation to progress with noise treatment so eligible properties benefit from reduced noise as early as possible |
| Scope of Work | Scope of Work via email or mail | • Seek agreement on the proposed Scope of Work for eligible properties (if owners corporation approval is required) |
| Works Deed | Letter and Deed via email or mail | • Seek signature on the Works Deed for eligible properties (if owners corporation approval is required) |
| Completion certificate | Letter and Deed via email or mail | • Seek signature on the Completion Certificate for eligible properties (if owners corporation approval is required). |

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)<br><br>Or<br><br>Letter via mail for investment properties | • Introduce the project and provide an overview of the program<br>• Advise property has been identified as potentially eligible and offer to carry out a noise treatment assessment<br>• Provide project contact details. |
| Reminder letter (Letter 2)<br><br>*Two weeks after Letter 1* | Letter via mail | • Remind property owners to book a noise treatment assessment<br>• Provide project contact details |

| Stage | Tools | Purpose |
|---|---|---|
| Reminder letter (Letter 3)<br><br>*One week after Letter 2* | Door knock for owner occupied properties<br><br>Or<br><br>Letter via mail for investment properties | • Remind property owners to book a noise treatment assessment<br>• Advise the owner can contact the project at any point in the future if they would like to take up the noise treatment assessment offer<br>• Provide project contact details |
| Doorknock | Doorknock by project team representatives | • Reach property owners who have not yet responded to letters offering a noise treatment assessment<br>• If the property is tenanted, the tenant will be asked to pass on details to their landlord and/or property manager |
| Noise treatment assessment | Direct contact via phone and email | • Carry out a noise treatment 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 (customer's preference) | • Confirm the project will proceed with noise treatment and seek agreement from the property owner on their Scope of Work |
| Works Deed | Letter and Deed via email or mail (customer's preference) | • Confirm the project will proceed with noise treatment and seek signatures on the Deed to progress to installation<br>• Note: 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 noise treatment as per Scope of Work |
| Post-installation | Letter and Completion Certificate | • Owner to sign a Completion Certificate confirming noise 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 workmanship 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 noise treatment for future improvement. |

## 8.5 Engagement with owners corporations

For properties in strata buildings, engagement will be required with the owners corporation to enable treatment to be installed. Noise treatment would require permission from the owners

corporation where it affects common property and Transport for NSW will not be able to progress with noise treatment if their approval is not provided.

After the building inspection has been carried out, Transport for NSW will offer to meet with owners corporations and their representatives to discuss which noise treatments will be provided, agree the next steps and answer any outstanding questions and concerns.

To facilitate the noise treatment process, the following would be required from owners corporations:

- A nominated point of contact to engage with the program on behalf of the owners corporation, such as the strata manager
- Completion of forms including a building inspection booking form and treatment consent form
- Confirmation of which noise treatments are permissible for the building
- Confirmation of the owners corporation's approval process for Scope of Work and Works Deed documents
- Participation in meetings as required to resolve any outstanding issues
- Specific details about the building and potential constraints to noise treatment. This may include hazardous material registers, details of development applications and information about access for builders including lifts and stairs.

If the owners corporation is not responsive to communication attempts from the program team, property owners will be notified and encouraged to follow up directly with their owners corporation representatives. All reasonable attempts will be made by the program team to facilitate engagement with owners corporations to ensure eligible properties receive their noise treatment in a timely manner.

## 8.6 Outstanding offers

The project team will work with stakeholders to ensure noise 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. If property owners do not respond to letters offering a noise treatment assessment, the property will be doorknocked by project team representatives. If contact cannot be made with owners of investment properties, the program team will ask tenants to provide landlord and/or property manager contact details.

The program team will make at least three attempts at contacting property owners and owners corporations (via multiple communication channels where possible) before the program team will assume its responsibilities have been met.

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 Transport for NSW at any time to accept their offer and resume the process. For properties being treated for construction noise only, the offer of noise treatment will remain valid until the completion of out-of-hours work in the vicinity of their property.

## 8.7 Enquiries, complaints and escalation

The program teams contact details will be publicised in all communication materials for community members to submit enquiries and complaints. The program team contact details are as follows:

- **Phone**: 1800 312 772 (9am to 5pm, Monday to Friday)
- **Email**: nip@transport.nsw.gov.au
- **Mail**: Transport for NSW, Locked Bag 928, North Sydney NSW 2059

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 | Transport for NSW program team | Escalation point for matters that are unable to be resolved by the delivery partner. |
| 3 | Transport for NSW Project Control Group | Escalation point for matters that are unable to be resolved by the program team. |

## 8.8 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 will help Transport for NSW and agencies in developing noise mitigation for future projects. Responses would be recorded in line with Transport for NSW's privacy policy and would be used for internal review and evaluation purposes only.

## 8.9 Privacy and records

All correspondence will be recorded in line with Transport for NSW's privacy policy. All personal information collected as part of the program will be retained by Transport for NSW and this information will be shared with our delivery partners for communication and engagement purposes only. Transport for NSW 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 Transport for NSW's ability to provide noise treatment. Members of the public may request to access their personal information held by Transport for NSW at any time.

## 8.10 Health and safety during COVID-19

The COVID-19 pandemic is an unprecedented event that is currently impacting the way people work and their travel patterns, while creating uncertainty about the future, as discussed in Section 3.1 of the environmental impact statement. Significant uncertainty still exists about how long the impacts of COVID-19 will last. In response to the evolving Delta outbreak of COVID-19, areas of Greater Sydney and NSW have gone into lockdown in mid-2021 to manage the spread of the virus while the vaccination program is rolled out. Once vaccination targets have been met and rules have been eased, outbreaks could continue to

occur in 2021 and into the future, depending on the timing and efficacy of the vaccination program.

The safety of the community and workforce is Transport for NSW's highest priority. Infrastructure construction projects are generally considered essential to the economy and continue as planned across the state. Delivery of the program will continue with health and safety precautions in place, however property work may be paused at times if required, in response to COVID-19 rules and restrictions. The project team will consider methods to minimise face-to-face interaction where appropriate, such as virtual assessments and inspections.

Transport for NSW staff and delivery partners will use appropriate hygiene and physical distancing measures while implementing the program during COVID-19. Hot spots will be continually monitored and 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

Following the determination of the Beaches Link and Gore Hill Freeway Connection project, Transport for NSW will proactively carry out noise treatment assessments at properties which meet the screening criteria. Due to the volume of properties identified for noise treatment, the program will be delivered in stages and eligible property owners will be contacted progressively.

Should the project be approved, this document would be updated as required in line with the Minister's Conditions of Approval.

This document would be subject to ongoing review as part of the project's ongoing construction planning and detailed design process. Additional buildings will be added to Annexure A if they are identified for treatment under the program as the project progresses.

# Annexure A – Eligible buildings

The addresses listed below in Artarmon, Balgowlah and Seaforth may be eligible for accelerated noise treatment assessments as part of the program. The list is subject to change as part of the ongoing design refinement and assessment process.

For multi-dwelling buildings, only some properties may qualify for a noise treatment assessment depending on their position in the building. 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

| | | |
|---|---|---|
| 1 HAMPDEN ROAD ARTARMON | 14A BORONIA STREET NORTH BALGOWLAH | 2 HOPE STREET SEAFORTH |
| 10 HAMDPEN ROAD ARTARMON | 14B BORONIA STREET NORTH BALGOWLAH | 4 HOPE STREET SEAFORTH |
| 2 PARKES ROAD ARTARMON | 31 SERPENTINE CRESCENT NORTH BALGOWLAH | 6 HOPE STREET SEAFORTH |
| 3 PARKES ROAD ARTARMON | 33 SERPENTINE CRESCENT NORTH BALGOWLAH | 8 HOPE STREET SEAFORTH |
| 5-7 PARKES ROAD ARTARMON | 35 SERPENTINE CRESCENT NORTH BALGOWLAH | 10 HOPE STREET SEAFORTH |
| 9 PARKES ROAD ARTARMON | 37 SERPENTINE CRESCENT NORTH BALGOWLAH | 12 HOPE STREET SEAFORTH |
| 10-16 PARKES ROAD ARTARMON | 40 SERPENTINE CRESCENT NORTH BALGOWLAH | 14 HOPE STREET SEAFORTH |
| 11 PARKES ROAD ARTARMON | 42 SERPENTINE CRESCENT NORTH BALGOWLAH | 16 HOPE STREET SEAFORTH |
| 13 PARKES ROAD ARTARMON | 44 SERPENTINE CRESCENT NORTH BALGOWLAH | 18 HOPE STREET SEAFORTH |
| 13A PARKES ROAD ARTARMON | 46 SERPENTINE CRESCENT NORTH BALGOWLAH | 20 HOPE STREET SEAFORTH |
| 15 PARKES ROAD ARTARMON | 48 SERPENTINE CRESCENT NORTH BALGOWLAH | 22 HOPE STREET SEAFORTH |
| 15A PARKES ROAD ARTARMON | 52 SERPENTINE CRESCENT NORTH BALGOWLAH | 24 HOPE STREET SEAFORTH |
| 18-22 PARKES ROAD ARTARMON | 52A SERPENTINE CRESCENT NORTH BALGOWLAH | 26 HOPE STREET SEAFORTH |
| 12A MILNER ROAD ARTARMON | 59 SERPENTINE CRESCENT NORTH BALGOWLAH | 28 HOPE STREET SEAFORTH |
| 16-18 MILNER ROAD ARTARMON | 471 SYDNEY ROAD BALGOWLAH | 30 HOPE STREET SEAFORTH |
| 19-21 MILNER ROAD ARTARMON | 473 SYDNEY ROAD BALGOWLAH | 32 HOPE STREET SEAFORTH |
| 23-27 PARKES ROAD ARTARMON | 475 SYDNEY ROAD BALGOWLAH | 32A HOPE STREET SEAFORTH |
| 29-33 PARKES ROAD ARTARMON | 477 SYDNEY ROAD BALGOWLAH | 34 HOPE STREET SEAFORTH |
| 35-39 PARKES ROAD ARTARMON | 479 SYDNEY ROAD BALGOWLAH | 34A HOPE STREET SEAFORTH |
| 15 BARTON ROAD ARTARMON | 508 SYDNEY ROAD BALGOWLAH | 36 HOPE STREET SEAFORTH |
| 19 BARTON ROAD ARTARMON | 510 SYDNEY ROAD BALGOWLAH | 38 HOPE STREET SEAFORTH |
| 23 BARTON ROAD ARTARMON | 511 SYDNEY ROAD BALGOWLAH | 40 HOPE STREET SEAFORTH |
| 2 CLELAND ROAD ARTARMON | 512 SYDNEY ROAD BALGOWLAH | 42 HOPE STREET SEAFORTH |
| 108 RESERVE ROAD ARTARMON | 513 SYDNEY ROAD BALGOWLAH | 44 HOPE STREET SEAFORTH |

| | | |
|---|---|---|
| 7 BORONIA STREET NORTH BALGOWLAH | 514 SYDNEY ROAD BALGOWLAH | 46 HOPE STREET SEAFORTH |
| 10 BORONIA STREET NORTH BALGOWLAH | 521 SYDNEY ROAD BALGOWLAH | 48 HOPE STREET SEAFORTH |
| 12 BORONIA STREET NORTH BALGOWLAH | 2 DUDLEY STREET BALGOWLAH | 50 HOPE STREET SEAFORTH |
| 12B BORONIA STREET NORTH BALGOWLAH | 10 WHITTLE AVENUE BALGOWLAH | 52 HOPE STREET SEAFORTH |
| 12C BORONIA STREET NORTH BALGOWLAH | 36 MARETIMO STREET BALGOWLAH | |

# Annexure B – Noise treatment table

The below table outlines the noise treatments which will be offered to eligible properties as part of the program. The table does not relate to eligibility for noise treatment as this is determined according to the eligibility criteria outlined in Section 2.3. All noise treatments are subject to Transport for NSW's feasible and reasonable assessment and other limitations, such as Building Code of Australia compliance and restrictions for Class 2 buildings. Noise treatment will only be offered for the eligible façades of habitable rooms only.

The noise treatments outlined below will be offered for eligible, brick veneer or double brick buildings. Noise treatment for other structures (i.e. lightweight) will be considered on a case by case basis and in accordance with the feasible and reasonable assessment.

Table 8. Noise treatment table (brick veneer or double brick buildings)

| Treatment type[2] | Treatment category[3] | | | | |
|---|---|---|---|---|---|
| | Category 1<br>1-5 dB(A) exceedance | Category 2<br>6-8 dB(A) exceedance | Category 3<br>9-11 dB(A) exceedance | Category 4<br>>12 dB(A) exceedance | Construction noise |
| **Windows and sliding doors** | If window area is less than 20 per cent of the floor area of the room:<br>• Replace primary with 6.5mm laminated glass **OR**<br>• Install mechanical ventilation[4]<br>If window area is more than 20 per cent of the floor area of the room: | • Install secondary system with 6.38mm laminated glass[5] **OR**<br>• Replace primary with 8.5mm laminated glass (if secondary system is not feasible and reasonable) **OR**<br>• Install 10mm acrylic panel with gap maximised to suit existing (Class 1 buildings only[6]) | • Install secondary system with 6.38mm laminated glass[5] **OR**<br>• Replace primary with 10.5mm laminated glass (if secondary system is not feasible and reasonable) **OR**<br>• Install 10mm acrylic panel with gap maximised to suit (Class 1 buildings only[6]) | • Install secondary system with 10.38mm laminated glass[5] **OR**<br>• Replace primary with 10.5mm laminated glass[7] (if secondary system is not feasible and reasonable) | |

[2] Noise treatment is only recommended if it can provide a noticeable improvement in noise reduction (3 dBA or more) than the existing element.

[3] Categories 1-4 are based on exceedance of the project's target traffic noise criteria as outlined in the NSW Road Noise Policy.

[4] Fresh air mechanical ventilation (MV) is subject to Building Code of Australia compliance.

[5] Thickness of secondary window glazing may be altered to maximise overall noise performance of the secondary window system.

[6] Acrylic panels cannot be installed in Class 2 (multi-dwelling) buildings due to non-combustible requirements as per Building Code of Australia Part C1.9.

[7] For properties eligible for construction impact or Category 4, secondary treatment would be prioritised as this provides the best acoustic outcome. However primary replacement of doors and windows will be considered by Transport for NSW if secondary treatment is declined. In these cases a disclaimer must be accepted by the property owner.

| Treatment type[2] | Treatment category[3] | | | | |
|---|---|---|---|---|---|
| | Category 1<br>1-5 dB(A) exceedance | Category 2<br>6-8 dB(A) exceedance | Category 3<br>9-11 dB(A) exceedance | Category 4<br>>12 dB(A) exceedance | Construction noise |
| | • Replace primary with 6.5mm laminated glass **AND**<br>• Install mechanical ventilation[4] | | | | |
| **External timber entry doors** | New doors not applicable.<br>Install new seals as required. | Treat external entry timber doors:<br>• If existing door is hollow, replace with 40mm solid core door and new seals.<br>• If existing door is solid and less than 35mm, replace with 40mm solid core door and install new seals.<br>• If existing door is solid and more than 35mm, install new seals. | | | |
| **Seals** | • Install new seals for eligible windows and doors where feasible<br>• Seal eligible existing vents (function of existing vents to be assessed and offset as required) | | | | |
| **Mechanical ventilation** | As above depending on room floor area and window treatment. | Install mechanical ventilation[4] | | | |
| **Acoustic curtains** | Not applicable | | | | Provide acoustic curtains[8] |

[8] Acoustic curtains are only offered when no other noise treatment is deemed feasible and reasonable or owners declined any form of noise treatment to the windows or sliding doors which are eligible only under the construction impact category.