



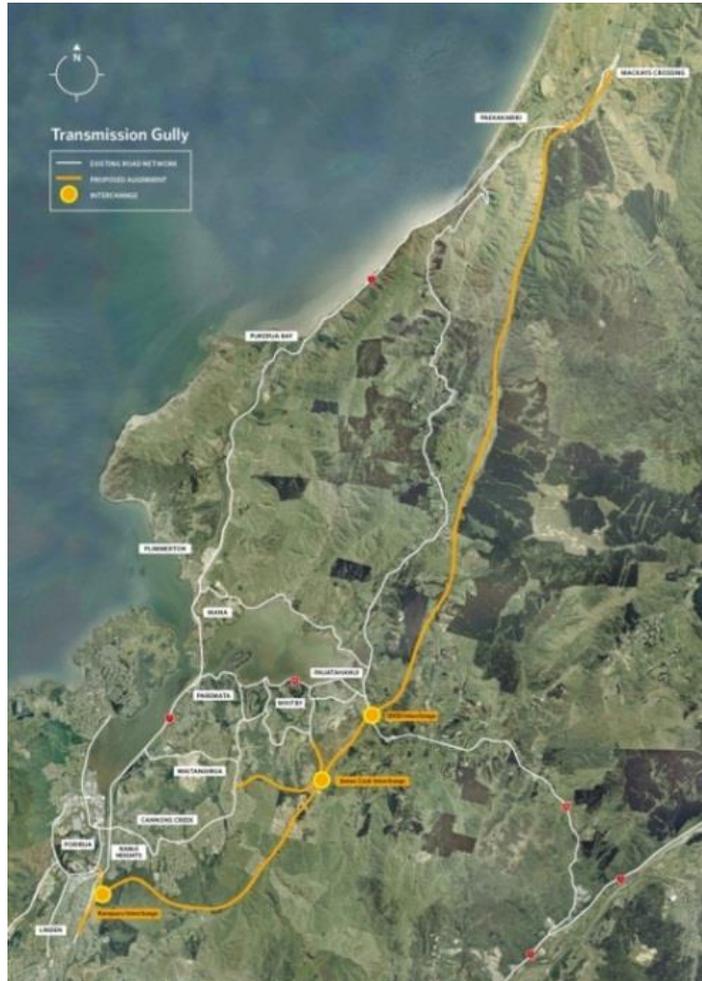
Transmission Gully and NZS 6806: 2010



NZTA POSITION July 2012

Introduction

The Transmission Gully project (TG) is a proposed new 27 km State highway providing an inland route between Wellington (Linden) and the Kapiti Coast (MacKays Crossing). The new proposed State highway (referred to as the “Main Alignment”) has been designed to expressway standards and will become part of State Highway 1 (SH1). The Project also includes new link roads connecting parts of Porirua with the Main Alignment. Responsibility for the development of the link roads lies with Porirua City Council. The majority of the Main Alignment is a new road passing through suburban fringe, rural residential and rural areas. Some of these areas are remote from current road-traffic and other significant sound sources, so in these areas the existing environment is dominated by natural sounds.



The Project has been subject to a long period of investigation and development¹. There were previous designations in place for the route, although they did not allow for an optimal alignment of the State highway. In 2011, notices of requirement (NoRs) for new replacement designations and applications for resource consent (together with an Assessment of Environmental Effects (AEE)²) were submitted to the Environmental Protection Authority (EPA), as part of the national consenting process under the Resource Management Act 1991 (RMA). A Board of Inquiry (Board) was appointed to determine the NoRs and resource consent applications. TG was the second NZ Transport Agency (NZTA) project to use this consenting process, following one year after the Waterview Connection Project (Waterview Project) in Auckland.

The operational road-traffic noise effects associated with the Project were assessed (by an NZTA appointed expert) NZS 6806³ between 2009 and 2011⁴. An acoustics expert appointed by the EPA reviewed the proposed assessment methodology and criteria prior to the assessment being undertaken, and that expert also observed the NZS 6806 noise mitigation workshop and conducted a completeness check of the final assessment report for the EPA⁴. The NZTA also engaged with an

acoustics expert who was advising a group of affected residents. However, no submitters called expert acoustics evidence, and the only acoustics evidence presented to the Board for a party was from the expert engaged by the NZTA^{5,6}.

Before the hearing the Board requested further evidence on specific issues relating to the noise assessment⁷. The NZTA’s acoustics expert submitted further evidence on these issues⁸. One of these issues was the applicability and implications of the Board of Inquiry’s decision on the Waterview Project⁹, which had raised several concerns with NZS 6806 (summarised in an NZTA position paper¹⁰). The Board also commissioned a Section 42A report by another acoustics expert¹¹, and that report was critical of NZS 6806 being used as the basis for the noise assessment¹². Further evidence was prepared on behalf of the NZTA responding to that criticism¹³, and the two acoustics experts conversed and prepared two conferencing statements^{14,15}. Both acoustics experts appeared before the Board and answered questions.

The Board’s final report and decision¹⁶ concluded that subject to the conditions proposed¹⁷ the residual operational road-traffic noise effects caused by the Project would be acceptable. However, in its report, the Board raised several issues with NZS 6806, some of which are reflected in the conditions imposed. A number of these concerns are similar to those raised by the Board that determined the Waterview Project, but there are also significant differences. Most of the concerns raised by the TG Board are not related to new issues introduced by NZS 6806, but rather relate to issues such as the use of the $L_{Aeq(24h)}$ parameter, that were also present in the previous assessment method: the Transit Guidelines¹⁸. This paper summarises the key issues raised by the TG Board with respect to NZS 6806.

While the Board raised these issues, it also accepted the key findings of the acoustics assessment for the Project. The designation conditions remain based on NZS 6806 and are only slightly modified from the NZTA’s proposed conditions.

Board of Inquiry’s concerns with NZS 6806

The Board had the following concerns about the use of NZS 6806 for TG:

1	NZS 6806 does not include all matters relevant to a decision under the RMA	The acoustics experts agreed that NZS 6806 provides a good method to determine the Best Practicable Option (BPO) for noise mitigation. The Board was concerned that the scope of NZS 6806 does not include all the matters that are relevant to a decision under the RMA. The Board considered that the appropriate test is whether, with the additional road-traffic noise, the health and amenity of the community will be maintained, and whether in the particular circumstances, the resulting operational noise level is acceptable. The inquiry is not simply whether the BPO for noise mitigation has been adopted (paras [589] – [592]). The acoustics experts agreed that an assessment requires this broader consideration. While this had occurred for TG, additional details ¹⁹ were provided to demonstrate this to the Board.
2	Night-time noise criteria should be separate to daytime criteria	The Board agreed with evidence from the acoustics experts that ideally road-traffic noise criteria should be in terms of separate daytime and night-time levels (para [593]). However, the Board also accepted that for typical traffic flows the $L_{Aeq(24h)}$ parameter used by NZS 6806 (and the previous Transit Guidelines) can be used to achieve compliance with a desired night-time level (para [603]). In discussing the appropriate day and night parameters the Board also discussed

	<p>appropriate values for noise criteria using those parameters (paras [594] – [614]). It concluded (para [615]) that Category A criteria will preserve adequate amenity in the wider environment. While the Board expressed some reservations over Category B criteria in terms of potential sleep disturbance it concluded that with the proposed noise mitigation measures, and taking account of the presence of the existing designation (including its conditions) and areas already affected by road-traffic noise, compliance with Category B would result in an acceptable noise environmental for this route.</p>
<p>3 Appropriate internal criteria might be exceeded for Category B PPFs by a new road</p>	<p>During the hearing the Board expressed concern that internal noise levels could exceed 40 dB $L_{Aeq(24h)}$ inside Category B Protected Premises and Facilities (PPFs), near the section of the Main Alignment classified as a new road under NZS 6806. The experts agreed that some of these PPFs would need building modifications to achieve appropriate internal noise levels to avoid sleep disturbance (para [585]). The Board determined that in this instance where there is a significant change from the existing external environment it is the NZTA's responsibility to make any modifications required. For example, the NZTA might need to install a ventilation system in a PPF so that windows can remain closed. The Board also raised issues with 'Category D', the 45 dB $L_{Aeq(24h)}$ threshold for building-modification in NZS 6806 and the distance threshold for PPFs from the road (para [587]).</p> <p>The Board did not consider that the NZTA could be required to provide betterment, such as through a designation condition requiring reduction of existing noise exposure from an altered road to within 40 dB $L_{Aeq(24h)}$.</p>

Board concern – 1

NZS 6806 does not include all matters relevant to a decision under the RMA

The Board quoted extensively from the Section 42A noise report which articulated concerns that an acoustics assessment needs to be broader than just applying NZS 6806 criteria. The Section 42A report author did not have background details of the acoustics assessment for the Project, and some key issues raised were subsequently addressed through the provision of background information.

The AEE for the Waterview Project included a substantial quantity of information appended to the noise assessment²⁰. The bulk of the detailed background data for the NZS 6806 assessment process was largely redundant in that instance, and may have been unhelpful in overloading the Waterview Project Board and other readers in the limited time available. Therefore, the acoustics assessment report for TG recorded the outcomes and reasoning of the NZS 6806 analysis, but deliberately did not include all background data. As a result of the expert conferencing, it was agreed that a summary table of predicted noise levels would be helpful to allow a wider review of noise effects, and this was provided to the Board.

There was no disagreement between experts that the potential effects of the Project needed to be considered in a wider context than just NZS 6806. As noted by the Board, not only does the BPO for

noise mitigation need to be determined, but also whether, in the particular circumstances, the resulting noise levels are acceptable. The criteria in NZS 6806 have been set as reasonable levels of road-traffic noise in different circumstances, but ultimately the levels also need to be considered in the specific environment. This had occurred through the acoustics assessment for TG, but was not immediately apparent to the Section 42A reviewer.

To address this issue for future projects it is recommended that:

- A table of predicted road-traffic noise levels should be included in the acoustics assessment report (included as part of a project's AEE) showing the existing, do-nothing, do-minimum and BPO scenarios for each PPF; and
- The potential effects of the noise levels with the BPO mitigation should be explicitly considered in the context of the existing environment, so that it can be determined whether those levels will be acceptable.

The NZTA will support the first of these recommendations by including an outline for a table of noise levels in report templates, which it provides to consultants. The NZTA will also check that a summary table has been included in assessment reports when they are internally reviewed, prior to lodgement with a consent authority/EPA.

The NZTA will develop and circulate advice to assist consultants to address the second issue. This will reference the categories of high, medium and low noise areas and the relative noise criteria that were used in the Transit Guidelines¹⁸.

This overall issue is similar to one of the concerns raised by the Board for the Waterview Project.

Board concern – 2

Night-time noise criteria should be separate to daytime criteria

It was agreed by the acoustics experts and accepted by the Board that road-traffic noise should be assessed as 'average' $L_{Aeq(t)}$ levels rather than short-term maximum levels, for example. The experts noted that ideally day and night criteria would be separately specified and the Board concluded that this would be appropriate. However, the Board accepted that for normal diurnal traffic patterns combined day and night ($L_{Aeq(24h)}$) criteria (which is used in NZS 6806) can be used to regulate night-time levels. Evidence presented on behalf of the NZTA^{10,13} set out the practical difficulties of adopting separate day and night levels without having appropriate modelling methods and criteria in place first.

The appropriate parameter to use for road-traffic noise was considered in depth by the committee which prepared NZS 6806, and the issue was canvassed in an open workshop at the New Zealand Acoustical Society conference in 2006. The $L_{Aeq(24h)}$ had already been in use in New Zealand for over a decade under the Transit Guidelines and there had been no issues arising. Experience in New Zealand has correlated subjective response to road-traffic noise in terms of the $L_{Aeq(24h)}$. Also, the $L_{Aeq(24h)}$ can be determined with a simple correction from the CRTN calculation method most commonly used in New Zealand, unlike separate day and night levels or the L_{dn} parameter. It was therefore decided to maintain the $L_{Aeq(24h)}$ in NZS 6806.

The NZTA considers that any change to the parameter used for road-traffic noise needs to be based on a robust analysis of evidence at a national level, rather than ad hoc criteria and methods being created

for individual projects. Ideally a review would be through a standardisation process, and would involve all relevant stakeholders, as was the case with NZS 6806.

While discussing the appropriate parameters for road-traffic noise, the TG Board also considered appropriate values for noise criteria using those parameters. This was both in terms of potential sleep disturbance and also in terms of wider environmental amenity. The Board concluded that Category A criteria will preserve adequate amenity in the wider environment. Although the Board expressed some reservations over Category B criteria with respect to potential sleep disturbance, it concluded that for this route and with the proposed noise mitigation measures the resulting noise environment would be acceptable under Category B. The presence of the existing designation and areas already affected by road-traffic noise informed this conclusion.

No changes for future projects are recommended as a result of these issues raised by the TG Board. However, the NZTA considers that Standards New Zealand may wish to consider reviewing alternative parameters for day and night-time noise criteria.

Board concern – 3

Appropriate internal criteria might be exceeded for Category B PPFs by a new road

The most significant concern raised by the Board appeared to be related to road-traffic noise levels inside PPFs, which are located by the section of the Main Alignment classified as a new road under NZS 6806. This primarily affects some PPFs on Flightys Road and Paekakariki Hill Road where the existing environment is dominated by natural sounds, but will become affected by road-traffic noise from the State highway. For most PPFs the Category A criterion (57 dB $L_{Aeq(24h)}$) will be achieved, and the Board accepted that this would result in appropriate amenity inside and outside. However, for those PPFs in Category B the Board was concerned that the external noise levels would generally increase by over 10 dB and the resultant internal noise levels could exceed 40 dB $L_{Aeq(24h)}$ (when windows facing the road were open for ventilation).

The acoustics experts agreed that some of these Category B PPFs would need to be modified to achieve appropriate internal noise levels to avoid sleep disturbance. The extent of modification would depend primarily on the location of bedrooms and the use of windows for ventilation. In some instances the modification might simply involve opening alternative windows for ventilation, but in other cases mechanical ventilation or other measures might be required. The Board decided that in this instance, where there is a significant change from the existing environment, it was the NZTA's responsibility to make any modifications required. This means that the NZTA is required to assess the sound insulation of each qualifying PPF, and then if the internal criterion is not achieved the NZTA is required to implement acoustic treatment. In most cases this would probably involve the installation of a ventilation system so that windows can be kept closed.

Unlike the Board for the Waterview Project, the TG Board did not specify that windows had to be closed when determining compliance with the internal criterion; rather windows have to be open as required for ventilation. Under the conditions for the Waterview Project the noise criterion is assessed with windows closed. This means that if windows need to be open to achieve adequate ventilation, the noise criterion might not be able to be met. In effect, at any particular time residents may have to choose between achieving the noise criteria and achieving adequate ventilation. The conditions TG require the

noise criterion and ventilation to be achieved at the same time, and may therefore result in the need to install mechanical ventilation, as discussed above.

The TG Board raised two related issues of 'Category D' and the 45 dB $L_{Aeq(24h)}$ threshold for building-modification in NZS 6806. In NZS 6806 there is a provision that where it is inconsistent with the BPO to comply with Categories A, B or C then the internal noise levels shall be mitigated to the extent practicable (i.e. this is Category D). This Category allows for instances where, for example, heritage or architectural features prevent installation of required noise mitigation measures. The Board rejected this Category and required that 40 dB $L_{Aeq(24h)}$ be achieved in all instances where building-modification is implemented. It is not clear what will happen if this proves not to be practicable at a PPF.

The second issue is the 45 dB $L_{Aeq(24h)}$ threshold for building-modification. This threshold is to prevent extensive noise mitigation being implemented for the sake of a small change in noise level. The Board rejected this threshold. The NZTA considers that this leaves the possibility of mitigation being required for an imperceptible or marginal change in noise level.

Another detail examined by the Board is the limitation in NZS 6806 that PPFs are only those properties within 100 or 200 metres from the road in urban and rural areas respectively. The Board determined that for the purposes of building-modification mitigation by a new road there should be no restriction on the distance that PPFs are from the road. The 100m and 200m distances are important when calculating benefit cost ratios (BCRs) under NZS 6806, as otherwise the results can be skewed simply by selecting a smaller or larger area encompassing fewer or more PPFs. The distances are also useful to focus attention on the most affected PPFs during the assessment of mitigation options. However, the Board correctly identified that when looking at resulting effects on individual PPFs the distances are arbitrary. In a densely built-up area the noise level at 100m from a state highway will be significantly less than at 100m from a similar state highway, which is located in an open area with no screening by intervening buildings. The NZTA agrees that the treatment of individual PPFs should be based on the noise level and not the distance from the road. For future assessments a 57 dB $L_{Aeq(24h)}$ contour (i.e. Category A for a new road) should be drawn and all PPFs within that contour should be considered. However, the 100m and 200m distances should remain for BCR calculations and mitigation options assessment.

For the Waterview Project the NZTA applied NZS 6806 to the altered section of SH16, which resulted in mitigation providing a reduction in existing noise levels. In its draft conditions the Waterview Project Board required the NZTA to further reduce noise levels as required to comply with 40 dB $L_{Aeq(24h)}$ inside PPFs. The final conditions for the Waterview Project limited this condition to PPFs experiencing a 3dB increase in noise and where levels would otherwise exceed 45 dB $L_{Aeq(24h)}$. Unlike the Waterview Project Board, the TG Board did not consider that the NZTA could be required to reduce existing road-traffic noise levels as this would be betterment (notwithstanding that the NZTA volunteered some mitigation in these situations as determined in accordance with NZS 6806). Therefore, the TG Board did not require building-modification for Category B PPFs which were located by the altered road sections of the Main Alignment, as those PPFs are already exposed to significant road-traffic noise.

In summary, in an area dominated by natural sounds with a significant change in amenity caused by a new road the Board determined that the NZTA should assess Category B PPFs as well as Category C PPFs and implement building-modification mitigation if required to achieve an internal level of 40 dB $L_{Aeq(24h)}$. For TG this is to be done irrespective of: the distance from the road; the fact that any exceedance over 40 dB $L_{Aeq(24h)}$ without mitigation may be slight; and any practical difficulties such as architectural features.

The NZTA considers that the decision of the TG Board presents a number of practical difficulties in the implementation of building-modification mitigation. A relatively sophisticated framework is presented in NZS 6806, which allows for some flexibility in the design of any mitigation to achieve a good

outcome, and to avoid unnecessary expense. However, the Board considered it paramount to have absolute certainty in the resulting internal noise levels. This is an area that the NZTA considers requires further investigation for future projects to find methods that:

- Account for small relative changes or exceedances of the criterion, and
- Allow for holistic design of acoustic treatment to PPFs, by applying a BPO approach.

Several Category C PPFs were identified for acoustic treatment during the acoustics assessment for TG, and as a result of the conditions imposed by the Board, a number of Category B PPFs will also be investigated for treatment by the new road section. Some properties near the route have been purchased by the Crown to accommodate the road and associated earthworks, as referenced in paragraph [552] of the Board's final report. None of those properties were purchased due to operational road-traffic noise effects or mitigation, but as they are owned by the Crown they will not be investigated for acoustic treatment.

For future projects where the NZTA offers acoustic treatment of PPFs it will be designed to achieve the internal noise criterion, at the same time as providing adequate ventilation. Any acoustic treatment, including ventilation systems, installed by the NZTA will be subject to formal agreements with building owners. The building owners will be required to accept responsibility and costs for the operation and ongoing maintenance of any acoustic treatment to their buildings.

Early engagement with the EPA

The NZTA sought to engage with the EPA and experts (including an acoustics expert) appointed by the EPA and other parties to resolve technical issues prior to the hearing. The Board subsequently appointed a different acoustics expert immediately before the hearing; and the NZTA acknowledges the Board's role to make inquiries in that manner. Unfortunately however, the timing in this instance resulted in some of the issues above causing greater concern than might have been the case if there had there been more time for the new expert to gain a full understanding of the Project and the assessment undertaken.

In future, project teams should bear in mind that the EPA's role in the process is primarily an administrative one. If required, the Board will commission a technical report under Section 42A of the RMA itself (through the EPA). In the case of TG, there was early engagement with an expert appointed by the EPA, agreement of the methodology and criteria, and extensive review reports commissioned by the EPA. Ultimately, these did not significantly assist the process with respect to the noise assessment for TG.

Designation conditions

The NZTA has developed model designation conditions that are in the NZTA's *Guide to assessing road-traffic noise using NZS 6806 for state highway asset improvement projects*²¹. The conditions imposed by the TG Board, shown in **Appendix 1**, are based on these model conditions with relatively minor amendments.

The NZTA identified some practical issues with the conditions appended to the Board's draft decision, but suggested changes were largely rejected by the Board in its final decision²². The main issues identified by the NZTA were:

- The conditions require investigation of Category B PPFs by new roads but not by altered roads. The NZTA suggested restructuring condition NZTA.76 to remove potential ambiguity as to how PPFs near to both a new and altered section of road should be treated. The Board rejected this suggestion.
- The Board imposed the requirement to investigate Category B PPFs by new roads primarily on the basis of concerns about sleep disturbance. The NZTA suggested a less stringent noise criterion of 45 dB $L_{Aeq(24h)}$ in other habitable spaces. The Board rejected this suggestion and specified 40 dB $L_{Aeq(24h)}$ in all habitable spaces.
- The conditions refer to the 'design year' but that term is not defined in the conditions. The NZTA suggested adding a definition of 'design year' to condition NZTA.71, but the Board considered this unnecessary.
- The conditions do not explicitly provide for the situation where a Category B or C PPF already complies with 40 dB $L_{Aeq(24h)}$ inside, but rather could be read as implying that treatment is needed regardless. The NZTA suggested amendments to conditions NZTA.77 and NZTA.78 to explicitly provide for this situation, but the Board considered these unnecessary.
- Condition NZTA.81B requires reporting of any 'corrective actions' following post-construction validation of the noise assessment. The NZTA suggested amendments to avoid ambiguity over what 'corrective actions' might entail, noting that there may be practical difficulties with some potential actions. The Board considered this unnecessary.
- Condition NZTA.81B refers to both a Noise Mitigation Plan to be produced pre-construction, and also a report to be produced post-construction. The NZTA suggested re-structuring the conditions to more clearly define these two separate documents. The Board considered this unnecessary.

As discussed above, the main changes made by the Board were to include the requirement for building-modification mitigation to Category B PPFs for sections of new road irrespective of their distance from the road (NZTA.76) and to require an internal level of 40 dB $L_{Aeq(24h)}$ in all instances (NZTA.78(b)). There was no requirement for closed windows as in the Waterview Project conditions²³.

The other significant change was the addition of conditions requiring validation of the noise assessment. For the Waterview Project a condition was added which required noise monitoring at a minimum number of locations for this purpose. For TG the validation was structured around a more comprehensive Noise Mitigation Plan (NZTA.81A and NZTA.81B). Such a plan would be included in NZTA contractual requirements, regardless of its inclusion as a designation condition. The main factor the Board accepted is that the Noise Mitigation Plan should verify the computer modelling, but is not intended to demonstrate precise compliance with a specific noise level at any particular location.

The noise mitigation and conditions for TG remain largely based on NZS 6806.

References

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www.epa.govt.nz/Publications/TGP%20Final%20Decision%20-%20Vol%202%20Schedule%20of%20Conditions%20-%2012%20June%202012.pdf
- 18 Transit NZ Guidelines for the Management of Road Traffic Noise – State Highway Improvements (1 December 1999). www.nzta.govt.nz/resources/planning-policy-manual/docs/planning-policy-manual-noise-guidelines-1999.pdf
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- 20 Waterview Connection Assessment of Operational Noise Effects (August 2010),
www.waterviewapplication.nzta.govt.nz/eBooks/G12/
- 21 Guide to assessing road-traffic noise using NZS 6806 for state highway asset improvement projects. www.acoustics.nzta.govt.nz
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Appendix 1

Transmission Gully Project, Wellington, Designation Conditions (June 2012)

Operational Noise	
NZTA.71	<p>For the purposes of Conditions NZTA.71 – NZTA.81 the following terms will have the following meanings:</p> <ul style="list-style-type: none"> (a) Acoustics Assessment – means the Acoustics Assessment report submitted as part of the AEE for this Project. (b) BPO – means Best Practicable Option. (c) Building-Modification Mitigation – has the same meaning as in NZS 6806:2010. (d) Habitable space – has the same meaning as in NZS 6806:2010. (e) Noise Criteria Categories – means the groups of preference for time-averaged sound levels established in accordance with NZS 6806:2010 when determining the BPO mitigation option, ie Category A – primary noise criterion, Category B – secondary noise criterion and Category C – internal noise criterion. (f) NZS 6806:2010 – means NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads. (g) PPFs – means the premises and facilities identified in green, yellow or red in the Acoustics Assessment and 75B Paremata-Haywards Road and 75E Paremata-Haywards Road. (h) Structural Mitigation – has the same meaning as in NZS 6806:2010 (i) New road – has the same meaning as in NZS 6806:2010 (j) Altered road – has the same meaning as in NZS 6806:2010
NZTA.72	<p>The Requiring Authority shall implement the road-traffic noise mitigation measures identified as the “Selected Options” in the Acoustics Assessment as part of the Project, in order to achieve the Noise Criteria Categories indicated in the Acoustics Assessment (“Identified Categories”), where practicable, subject to Conditions NZTA.73 – NZTA.81 below.</p>
NZTA.73	<p>The detailed design of the Structural Mitigation measures in the “Selected Options” (the “Detailed Mitigation Options”) shall be undertaken by a suitably qualified acoustics specialist prior to commencement of construction of the Project, and, subject to Condition NZTA.74, shall include, as a minimum, the following:</p> <ul style="list-style-type: none"> (a) Noise barriers with the location, length and height in general accordance with Table 12-22 of the Acoustics Assessment; and (b) Open graded porous asphalt or equivalent low-noise road surfaces in general accordance with Table 12-21 of the Acoustics Assessment.

Operational Noise

NZTA.74	<p>Where the design of the Detailed Mitigation Options identifies that it is not practicable to implement a particular Structural Mitigation measure in the location or of the length or height included in the “Selected Options” either:</p> <ul style="list-style-type: none"> (a) if the design of the Structural Mitigation measure could be changed and the measure would still achieve the same Identified Category or Category B at all relevant PPFs, and a suitably qualified or experienced planner, in consultation with a suitably qualified acoustics specialist, approved by the Council certifies to the Council that the changed Structural Mitigation would be consistent with adopting the BPO in accordance with NZS 6806:2010, the Detailed Mitigation Options may include the changed mitigation measure; or (b) if the changed design of the Structural Mitigation measure would change the Noise Criteria Category at any relevant PPF from Category A or B to Category C, but the Council confirms that the changed Structural Mitigation measure would be consistent with adopting BPO in accordance with NZS 6806:2010, the Detailed Mitigation Options may include the changed mitigation measure.
NZTA.75	<p>The Detailed Mitigation Options shall be implemented prior to completion of construction of the Project, with the exception of any low-noise road surfaces, which shall be implemented within 12 months of completion of construction of the Project.</p>
NZTA.76	<p>Prior to construction of the Project, a suitably qualified acoustics specialist shall identify those PPFs (“Qualifying Buildings”) which following implementation of all the Structural Mitigation measures included in the Detailed Mitigation Options (notwithstanding the distance from the road) are in:</p> <ul style="list-style-type: none"> a) Noise Criteria Category C by an altered road, and b) Noise Criteria Category B and C by a new road.
NZTA.76A	<ul style="list-style-type: none"> (a) Prior to commencement of construction of the Project in the vicinity of a Qualifying Building, the Requiring Authority shall write to the owner of each Qualifying Building seeking access to such building for the purpose of measuring internal noise levels and assessing the existing building envelope in relation to noise reduction performance. (b) If the owner of the Qualifying Building consents to the Requiring Authority request for access to the property within 12 months of the date of the Requiring Authority’s letter (sent pursuant to Condition NZTA.76(a)), then no more than six months prior to commencement of construction of the Project, the Requiring Authority shall instruct a suitably qualified acoustics specialist to visit the building to measure internal noise levels and assess the existing building envelope in relation to noise reduction performance.
NZTA.77	<p>Where a Qualifying Building is identified, the Requiring Authority shall be deemed to have complied with Condition NZTA.76 above where:</p> <ul style="list-style-type: none"> (a) The Requiring Authority (through its acoustics specialist) has visited the building; or (b) The owner of the Qualifying Building consented to the Requiring Authority’s request for access, but the Requiring Authority could not gain entry for some reason (such as entry

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	<p>being denied by a tenant); or</p> <p>(c) The owner of the Qualifying Building did not approve the Requiring Authority's access to the property within the time period set out in Condition NZTA.77(b) (including where the owner(s) did not respond to the Requiring Authority's letter (sent pursuant to Condition NZTA.76(a) within that period)); or</p> <p>(d) The owner of the Qualifying Building cannot, after reasonable enquiry, be found prior to completion of construction of the Project.</p> <p>If any of (b) to (d) above apply to a particular Qualifying Building, the Requiring Authority shall not be required to implement any Building-Modification Mitigation at that Qualifying Building.</p>
NZTA.78	<p>Subject to Condition NZTA.77, no more than six months after the assessment required under Condition NZTA.76(b), the Requiring Authority shall give written notice to the owner of each Qualifying Building:</p> <p>(a) Advising of the options available for Building-Modification Mitigation to the building; and</p> <p>(b) Advising that the owner has three months within which to decide and advise the Requiring Authority whether to accept Building-Modification Mitigation for the building to achieve an internal level of 40 dB $L_{Aeq(24h)}$, and if the Requiring Authority has advised the owner that more than one option for Building-Modification Mitigation is available, to advise the Requiring Authority which of those options the owner prefers.</p>
NZTA.79	<p>Once an agreement on Building-Modification Mitigation is reached between the Requiring Authority and the owner of an affected building, the mitigation shall be implemented in a reasonable and practical timeframe agreed between the Requiring Authority and the owner.</p>
NZTA.80	<p>Subject to Condition NZTA.77, where Building-Modification Mitigation is required, the Requiring Authority shall be deemed to have complied with Condition NZTA.79 above where:</p> <p>(a) The Requiring Authority has completed Building-Modification Mitigation to the Qualifying Building; or</p> <p>(b) The owner of the Qualifying Building did not accept the Requiring Authority's offer to implement Building-Modification Mitigation prior to the expiry of the timeframe stated in Condition NZTA.78(b) above (including where the owner did not respond to the Requiring Authority within that period); or</p> <p>(c) The owner of the Qualifying Building cannot, after reasonable enquiry, be found prior to completion of construction of the Project.</p>
NZTA.81	<p>The Requiring Authority shall manage and maintain the Detailed Mitigation Options to ensure that, to the extent practicable, those mitigation works retain their noise reduction performance.</p>
NZTA.81A	<p>A Noise Mitigation Plan shall be prepared by a suitably qualified acoustics specialist prior to commencement of construction including details of:</p>

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	<ul style="list-style-type: none">a) Detailed Mitigation Optionsb) Qualifying Buildingsc) Methods for post-construction validation of the noise assessment. This shall include:<ul style="list-style-type: none">i. Prior to opening: confirmation of the location of the as-built alignment in the noise model, visual inspection from the far-side carriageway of the relationship of PPFs to earthworks and noise barriers, verification of as-built noise barrier dimensions, and confirmation of as-built road surfaces,ii. 3 to 9 months after opening and checking the actual traffic volumes, andiii. Noise monitoring to validate the noise model to be undertaken within 6 months of the design road surfaces being laid.
NZTA.81B	<p>The Noise Mitigation Plan shall be provided to the Council prior to the commencement of construction.</p> <p>A report detailing the results and any corrective actions arising from the post-construction validation of the noise assessment shall be provided to the Council within one month of opening of the road.</p>