

Wellington City District Plan – Omnibus Plan Change

NOISE-S6 – Ventilation Requirements

Scope of Proposed Change

To replace NOISE-S6 (Ventilation requirements) in the 2024 District Plan with the standard proposed and recommended by the Independent Hearings Panel in Appendix 1 of the [Joint Witness Statement of Mechanical Ventilation Experts](#), with some minor amendments to the wording for clarity.

Background

NOISE-S6 (Ventilation requirements) went through a suite of changes through the Proposed District Plan hearing process.

In response to submissions the Council's reporting officer¹ (informed by Acoustic and Ventilation experts) recommended to amend NOISE-S6 (Ventilation), primarily in the following ways:

- Increasing the ventilation flow rate to 3 air changes / hour
 - o Compared to the New Zealand Building Code (NZBC) minimum in the notified version of the Proposed District Plan and the 2000 District Plan.
- Addition of requirement of cooling and heating to maintain indoor temperatures between 18 – 25 degrees Celsius.
 - o This had no equivalent in the 2000 District Plan.
- Noise limits for ventilation units servicing this requirement.
 - o This had no equivalent in the 2000 District Plan.

Through the evidence exchange process prior to Hearing Stream 5, there was contention between experts on the amendments recommended by the reporting officer. The Independent Hearings Panel (IHP) then directed expert witness conferencing, which was undertaken on 4 September 2023.

The expert conferencing covered five issues with the ventilation standard, with the outcomes listed below each issue. The joint witness statement, the issues it covers, and the agreed outcomes can be seen [here](#).

The outcomes for the standard as agreed by the experts are presented in a 'marked up' version, attached as Appendix 1 to the joint witness statement above.

In the IHP recommendation report on the noise chapter² and associated tracked changes version of the chapter³ the IHP agreed to the provision as recommended in the joint witness statement.

The IHP tracked chapter that was provided to the Council to make decisions on the Plan included an earlier version of the provision that did not reflect the outcomes from the joint witness statement. This means that the version that the Council made a decision on, which was accepted, does not reflect the outcomes agreed to by the experts in this matter. This version is now operative in the 2024 District Plan.

¹ [Section 42A Report - Noise](#)

² [IHP Report 5A: Noise](#)

³ [Appendix A to IHP report 5A: Noise chapter](#)

Issue

That NOISE-S6 in the operative 2024 District Plan does not reflect the intended iteration of the standard. Additionally, the operative standard lacks clarity in some places and has not adjusted the assessment criteria to reflect the changes to the content.

Assessment of Options

For the purposes of this evaluation, the following options have been considered:

- **Option 1:** Retaining the status quo.
- **Option 2:** Replacing NOISE-S6 with the version recommended by the Independent Hearings Panel.
- **Option 3:** Replacing NOISE-S6 with the version recommended by the Independent Hearings Panel, with minor amendments for clarity and consistency.

The options are assessed in the table below. The assessment is additional to information in the [Section 32 Report - Noise](#), the information provided during the hearings process ([here](#)) and is limited to the effect of the changes.

Option 1: Retain the status quo

This option would retain the version as it is in the 2024 District Plan.

The status quo does not reflect the recommendations of the IHP, and by extension does not reflect the recommendations of the mechanical ventilation experts who considered options for this standard (Noting that the IHP agreed with the experts). The Council adopted the recommendations of the IHP in relation to this matter, meaning the status quo does not give effect to the Council's decision on this matter.

Costs

- The status quo imposes a much higher ventilation flow rate (3 air changes per hour), which is proving difficult for new developments to meet because of capital costs. It will also increase energy consumption and operating costs for future residents.
- Because the experts agreed that this higher ventilation flow rate was not required, this is excessive regulation and an inefficient approach.
- This option is more expensive for development, as large HVAC systems are required.
- This option does not tie the temperature control to a local design weather condition. This could mean that the systems are not designed properly for Wellington climate.
- This option, due to the higher requirements, unnecessarily imposes higher operational costs and energy consumption for future residents.

Benefits

- This option will provide higher ventilation rates, which may lead to the environmental benefit of improved indoor amenity.

Effectiveness and efficiency

The status quo is ineffective at resolving the issue due to the issue being a mistake in process where the notified standard was meant to be replaced with another option agreed to following expert conferencing attended by noise experts representing submitters and the Council.

In terms of the effect of the change, the mechanical ventilation experts concluded that the notified standard require more than what is required to sufficiently ventilate habitable rooms. It is an inefficient way to achieve the objectives of the chapter.

Overall evaluation of Option 1

Option 1 will not resolve the issue and is not recommended.

Option 2: Replace NOISE-S6 with the version recommended by the Independent Hearings Panel

This option directly reflects the outcomes of the joint witness statement of experts on mechanical ventilation and their recommendations for the standard, and by extension the IHP who accepted the findings of the Joint Witness Statement. This option reflects the Council's decision to adopt the IHP recommendations in relation to this standard.

This version of the standard is provided at **Appendix 2**.

Costs:

- There are no identified environmental, economic, social or cultural costs for this option.

Benefits

- Option 2 allows an equivalent ventilation flow rate equivalent to that required in the NZBC, with a higher 'flush' rate of 1 air change per hour where the rooms do not have openable windows sufficient to meet the NZBC ventilation requirements. This brings it roughly in line with the approach from the 2000 District Plan and represents the recommendations from experts on mechanical ventilation.
- This will prove easier for applicants to meet, while also sufficiently ventilating rooms that need to meet NOISE-S4 and S5 insulation requirements.
- This option will only impose operational costs and energy consumption for future residents to the extent necessary to mitigate the effects of the insulation required under NOISE-S4 and NOISE-S5. The overall costs will be lower.
- This option would ensure that cooling and heating systems are designed with a 2.5% design weather condition for Wellington.

Effectiveness and efficiency

This option reflects the intentions of the IHP and resolve this aspect of the issue. In terms of the effect of the change itself, the amendments reflect a more efficient way to achieve the objectives of the chapter by only requiring ventilation flow rates that are necessary.

Overall evaluation of Option 2

While Option 2 will address the inconsistency between the IHP recommendation and the operative Plan provisions, it will retain some uncertain language in the drafting. Therefore, Option 2 is not recommended.

Option 3: Replace NOISE-S6 with the version recommended by the Independent Hearings Panel, with some minor amendments for clarity

This version sees the adoption of the standard recommended by the IHP, with additional amendments. The proposed changes are provided at **Appendix 1**.

The benefits and costs associated with Option 2 also apply to Option 3. In addition, the following benefits apply to this option:

- Increased clarity of language – some of the language used may have led to confusing application, leading to improved Plan user experience.
- The use of 'HVAC' instead of 'ventilation systems' will ensure, where used, that it is wide enough to capture ventilation, heating and cooling systems instead of just ventilation systems.
- This option ensures that the relevant assessment criteria apply to all HVAC systems, not just ventilation. When the temperature control was added, the assessment criteria was not amended to ensure that internal temperatures, heating and cooling systems were accounted for in resource consents.
- The economic benefit to developers will be reduced consenting and compliance costs.

Effectiveness and efficiency

This option reflects the intentions of the IHP, provides more clarity of language and ensures that the assessment criteria effectively account for the changes within the standard. Therefore, it is an effective way of resolving the issue.

Overall evaluation of Option 2

On the basis that this is the most effective way of resolving the issue, Option 3 is recommended.

Risk of acting/not acting

There is sufficient information to analyse the appropriateness of acting or not acting.

As the recommended changes address an error in process, a risk of not acting is legal challenge (judicial review). Additionally, as the status quo has more stringent requirements than the amended standard, there is a risk of requiring buildings to be over-engineered.

Conversely, there are no identifiable risks associated with acting in this case.

Consultation

Consultation was undertaken with the Council's Environmental Noise Team on two points:

- Drafting (no material changes to requirements)
- Decision on the noise measurement from HVAC units

Whilst no further consultation was undertaken with the mechanical ventilation experts involved in the expert witness conferencing, it is noted that the content of the recommended option was developed by these experts.

Through the clause 3 consultation process the Council received feedback on this provision from Kevin Collins of Design Network Architecture Limited (DNAL). This feedback is summarised below.

DNAL note that the temperature control should not be managed by the District Plan.

The requirement for temperature control is due to the requirement of buildings to provide acoustic insulation, which necessarily increases the ambient temperature of a bedroom. To mitigate this, there is a requirement for ventilation and temperature control above that required of the New Zealand Building Code. The District Plans temperature control is a response to the acoustic insulation requirements that go above and beyond the requirements of the New Zealand Building Code.

DNAL sought that the air flow rates required in NOISE-S6.2.a are reduced to the New Zealand Building Code minimum, because 3 air changes an hour struggles to meet the noise requirements of the units.

This change is included in the proposed amendments.

DNAL noted that the noise limits for ventilation units are hard to comply with, because manufacturers often measure at a different standard than what the plan requires. And that most systems operate at louder than 35dB at 1m when operating at the maximum duty required by the plan.

The decreased ventilation rate requirements should make the noise standard for the units easier to comply with, and the limit is only when used at their required rate,

DNAL noted that NOISE-S6.5 – Filter class requirements – should not be managed by the District Plan, and is covered by individual manufacturers maintenance requirements and warranties.

This subclause has been removed in the proposed amendments.

Recommended Option

Following the assessment above, Option 3 is the recommended option.

Recommended Changes

Option 3 is recommended. Refer to **Appendix 1** for the recommended amendments to NOISE-S6.

Note that the version of the standard provided at Appendix 2 is provided for information purposes and is not recommended.

Consequential Amendments

- References to NOISE-S5 have been removed as a consequence of the proposed changes to that provision to combine the content of NOISE-S4 and NOISE-S5. Refer to the Section 32 report on the acoustic insulation provisions for further detail.

Appendix 1 – NOISE-S6: RECOMMENDED Option 3 – IHP recommended version with additional amended language

NOISE-S6	Ventilation Requirements		
<p><u>All Zones</u></p> <p>High Noise Areas</p> <p>-</p> <p>Moderate Noise Areas</p>	<table border="1"> <tr> <td data-bbox="474 300 1559 1345"> <ol style="list-style-type: none"> The minimum external to internal noise reduction levels in NOISE-S4 and NOISE-S5 must be achieved at the same time as the ventilation requirements of the New Zealand Building Code. Minimum ventilation standards are set out below for habitable rooms classified into one of two possible categories as follows: <ol style="list-style-type: none"> Habitable rooms with <u>ventilation provisions openable windows sufficient in area</u> to meet the ventilation requirements of the New Zealand Building Code; and All other habitable rooms requiring to be acoustically insulated under NOISE-S4 and NOISE-S5. Where habitable rooms are provided with windows openable to the outside environment sufficient in area to meet the ventilation requirements of the New Zealand Building Code, and where these windows must remain closed to achieve compliance with NOISE-S4 and NOISE-S5 acoustic insulation standards, the room shall meet the following minimum requirements; <ol style="list-style-type: none"> The room is to be provided with a mechanical ventilation system <u>compliant with section 1.5 Mechanical Ventilation of the New Zealand Building Code G4/AS1 air flow rates adjustable by the occupant in increments up to a high air flow setting of at least three air changes per hour</u>; and The room is provided with cooling and heating that is controllable by the occupant and can maintain the inside temperature between 18°C and 25°C <u>when assessed using the NIWA 2.5% design weather condition for the applicable location</u>; and A <u>heating, ventilation and air conditioning ventilation</u> system installed in compliance with <u>NOISE-S6.2.a</u> and <u>NOISE-S6.2.b</u> must not generate an indoor noise level greater than 35dB LAeq (30s) when measured 1 metre from any <u>grille or diffuser outlet or inlet, when operating at the maximum required duty</u>. Excluding habitable rooms qualifying under <u>NOISE-S6.2 (2) above, i.e. where opening windows do not meet the ventilation requirements of the New Zealand Building Code, or are not provided</u>, minimum <u>heating, ventilation and air conditioning</u> system requirements for habitable rooms requiring to be acoustically insulated under NOISE-S4 and NOISE-S5 are set out as follows; <ol style="list-style-type: none"> The room is to be provided with a mechanical ventilation system with air flow rates adjustable by the occupant in increments up to a high air flow setting of at </td><td data-bbox="1559 300 2078 1345"> <p>Assessment criteria where the standard is infringed:</p> <ol style="list-style-type: none"> The ability to achieve acceptable indoor ventilation, <u>internal temperatures</u> and acoustic amenity; Any mitigation of the proposed ventilation noise <u>from heating, ventilation and air conditioning systems</u>, in accordance with a best practicable option approach; The ability to mitigate adverse effects through the imposition of conditions; In relation to a heritage building or a contributing building within a heritage area, the extent to which it is practicable to achieve ventilation to the required standard without detracting from identified heritage values </td></tr> </table>	<ol style="list-style-type: none"> The minimum external to internal noise reduction levels in NOISE-S4 and NOISE-S5 must be achieved at the same time as the ventilation requirements of the New Zealand Building Code. 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Where habitable rooms are provided with windows openable to the outside environment sufficient in area to meet the ventilation requirements of the New Zealand Building Code, and where these windows must remain closed to achieve compliance with NOISE-S4 and NOISE-S5 acoustic insulation standards, the room shall meet the following minimum requirements; <ol style="list-style-type: none"> The room is to be provided with a mechanical ventilation system <u>compliant with section 1.5 Mechanical Ventilation of the New Zealand Building Code G4/AS1 air flow rates adjustable by the occupant in increments up to a high air flow setting of at least three air changes per hour</u>; and The room is provided with cooling and heating that is controllable by the occupant and can maintain the inside temperature between 18°C and 25°C <u>when assessed using the NIWA 2.5% design weather condition for the applicable location</u>; and A <u>heating, ventilation and air conditioning ventilation</u> system installed in compliance with <u>NOISE-S6.2.a</u> and <u>NOISE-S6.2.b</u> must not generate an indoor noise level greater than 35dB LAeq (30s) when measured 1 metre from any <u>grille or diffuser outlet or inlet, when operating at the maximum required duty</u>. Excluding habitable rooms qualifying under <u>NOISE-S6.2 (2) above, i.e. where opening windows do not meet the ventilation requirements of the New Zealand Building Code, or are not provided</u>, minimum <u>heating, ventilation and air conditioning</u> system requirements for habitable rooms requiring to be acoustically insulated under NOISE-S4 and NOISE-S5 are set out as follows; <ol style="list-style-type: none"> The room is to be provided with a mechanical ventilation system with air flow rates adjustable by the occupant in increments up to a high air flow setting of at 	<p>Assessment criteria where the standard is infringed:</p> <ol style="list-style-type: none"> The ability to achieve acceptable indoor ventilation, <u>internal temperatures</u> and acoustic amenity; Any mitigation of the proposed ventilation noise <u>from heating, ventilation and air conditioning systems</u>, in accordance with a best practicable option approach; The ability to mitigate adverse effects through the imposition of conditions; In relation to a heritage building or a contributing building within a heritage area, the extent to which it is practicable to achieve ventilation to the required standard without detracting from identified heritage values
<ol style="list-style-type: none"> The minimum external to internal noise reduction levels in NOISE-S4 and NOISE-S5 must be achieved at the same time as the ventilation requirements of the New Zealand Building Code. Minimum ventilation standards are set out below for habitable rooms classified into one of two possible categories as follows: <ol style="list-style-type: none"> Habitable rooms with <u>ventilation provisions openable windows sufficient in area</u> to meet the ventilation requirements of the New Zealand Building Code; and All other habitable rooms requiring to be acoustically insulated under NOISE-S4 and NOISE-S5. Where habitable rooms are provided with windows openable to the outside environment sufficient in area to meet the ventilation requirements of the New Zealand Building Code, and where these windows must remain closed to achieve compliance with NOISE-S4 and NOISE-S5 acoustic insulation standards, the room shall meet the following minimum requirements; <ol style="list-style-type: none"> The room is to be provided with a mechanical ventilation system <u>compliant with section 1.5 Mechanical Ventilation of the New Zealand Building Code G4/AS1 air flow rates adjustable by the occupant in increments up to a high air flow setting of at least three air changes per hour</u>; and The room is provided with cooling and heating that is controllable by the occupant and can maintain the inside temperature between 18°C and 25°C <u>when assessed using the NIWA 2.5% design weather condition for the applicable location</u>; and A <u>heating, ventilation and air conditioning ventilation</u> system installed in compliance with <u>NOISE-S6.2.a</u> and <u>NOISE-S6.2.b</u> must not generate an indoor noise level greater than 35dB LAeq (30s) when measured 1 metre from any <u>grille or diffuser outlet or inlet, when operating at the maximum required duty</u>. Excluding habitable rooms qualifying under <u>NOISE-S6.2 (2) above, i.e. where opening windows do not meet the ventilation requirements of the New Zealand Building Code, or are not provided</u>, minimum <u>heating, ventilation and air conditioning</u> system requirements for habitable rooms requiring to be acoustically insulated under NOISE-S4 and NOISE-S5 are set out as follows; <ol style="list-style-type: none"> The room is to be provided with a mechanical ventilation system with air flow rates adjustable by the occupant in increments up to a high air flow setting of at 	<p>Assessment criteria where the standard is infringed:</p> <ol style="list-style-type: none"> The ability to achieve acceptable indoor ventilation, <u>internal temperatures</u> and acoustic amenity; Any mitigation of the proposed ventilation noise <u>from heating, ventilation and air conditioning systems</u>, in accordance with a best practicable option approach; The ability to mitigate adverse effects through the imposition of conditions; In relation to a heritage building or a contributing building within a heritage area, the extent to which it is practicable to achieve ventilation to the required standard without detracting from identified heritage values 		

	<p>least six air changes per hour, with relief provided for equivalent volumes of spill air; and</p> <p>b. The room is provided with cooling and heating that is controllable by the occupant and can maintain the inside temperature between 18°C and 25°C; and</p> <p>c. Any ventilation system installed in compliance with (a) and (b) above must not generate noise at levels greater than 35 dB LAeq (30s) when measured 1 metre from any grille or diffuser up to maximum flow rate of three air changes per hour.</p> <p>a. <u>Heating, ventilation, and air conditioning systems shall be compliant with sections NOISE-S6.2.a - c; and</u></p> <p>b. <u>The mechanical ventilation system referred to in NOISE-S6.2.a above shall be able to supply outside air at an adjustable rate from the NZBC G4 minimum ventilation rate up to 1 room air change per hour.</u></p> <p>4. <u>Confirmation of compliance with this standard will be required by a qualified professional. Alternative to 2) and 3), compliance with this standard must be achieved with a design certificate verified by a suitably qualified and experienced Engineer stating the design proposed will provide ventilation, internal space temperature controls and noise control that meets or exceeds the outcomes described in NOISE-S6.2 and NOISE-S6.3.</u></p> <p>5. Mechanical ventilation systems shall include Filter Class of at least ISO Coarse 70%, and the filter shall be readily serviceable.</p> <p>5. <u>Where ventilation ducting is built in and not serviceable, it shall be rigid. Ducting that is inaccessible shall be rigid, flexible ducting shall only be used where accessible.</u></p> <p>6. <u>Where ventilation ducting is built in and not serviceable, it shall be rigid. Any concealed equipment shall be provided access for servicing.</u></p> <p>Note: This standard applies in addition to, and does not affect the requirements of, the Building Act 2004.</p>	
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Appendix 2 – NOISE-S6: Option 2 – Not recommended: IHP version of the standard without additional amendments

NOISE-S6	Ventilation Requirements	
All Zones	<ol style="list-style-type: none"> 1. The minimum external to internal noise reduction levels in NOISE-S4 and NOISE-S5 must be achieved at the same time as the ventilation requirements of the New Zealand Building Code. Minimum ventilation standards are set out below for habitable rooms classified into one of two possible categories as follows: <ol style="list-style-type: none"> a. Habitable rooms with openable windows sufficient in area <u>ventilation provisions</u> to meet the ventilation requirements of the New Zealand Building Code; and b. All other habitable rooms requiring to be acoustically insulated under NOISE-S4 and NOISE-S5 2. Where habitable rooms are provided with windows openable to the outside environment sufficient in area to meet the ventilation requirements of the New Zealand Building Code, and where these windows must remain closed to achieve compliance with NOISE-S4 and NOISE-S5 acoustic insulation standards, the room shall meet the following minimum requirements; <ol style="list-style-type: none"> a. The room is to be provided with a mechanical ventilation system <u>compliant with section 1.5 Mechanical Ventilation of NZBC G4/AS1 with air flow rates adjustable by the occupant in increments up to a high air flow setting of at least three air changes per hour</u>; and b. The room is provided with cooling and heating that is controllable by the occupant and can maintain the inside temperature between 18°C and 25°C <u>when assessed using the NIWA 2.5% design weather condition for the applicable location</u>; and c. An HVAC ventilation system installed in compliance with (a) and (b) above must not generate noise at levels greater than 35 dB L_{Aeq} (30s) when measured 1 metre from any <u>inlet/outlet when operating at the maximum required duty grille or diffuser</u>. 3. Excluding habitable rooms qualifying under (2) above, <u>i.e. where opening windows do not meet the ventilation requirements of the New Zealand Building Code, or are not provided</u>, minimum ventilation system requirements for habitable rooms requiring to be acoustically insulated under NOISE-S4 and NOISE-S5 are set out as follows; <ol style="list-style-type: none"> a. <u>HVAC systems compliant with sections 2a-c above, and The room is to be provided with a mechanical ventilation system with air flow rates adjustable by the occupant in increments up to a high air flow setting of at least six air changes per hour, with relief provided for equivalent volumes of spill air; and</u> b. <u>The mechanical ventilation system referred to in 2a above shall be able to supply outside air at an adjustable rate from the NZBC G4 minimum ventilation rate up to 1 room air</u> 	<p>Assessment criteria where the standard is infringed:</p> <ol style="list-style-type: none"> 1. The ability to achieve acceptable indoor ventilation and acoustic amenity; 2. Any mitigation of the proposed ventilation noise, in accordance with a best practicable option approach; 3. The ability to mitigate adverse effects through the imposition of conditions; and 4. In relation to a heritage building or a contributing building within a heritage area, the extent to which it is practicable to achieve ventilation to the required standard without detracting from identified heritage values

	<p>change per hour. The room is provided with cooling and heating that is controllable by the occupant and can maintain the inside temperature between 18°C and 25°C; and</p> <p>c. Any ventilation system installed in compliance with (a) and (b) above must not generate noise at levels greater than 35 dB L_{Aeq} (30s) when measured 1 metre from any grille or diffuser up to maximum flow rate of three air changes per hour.</p> <p>4. <u>Alternatively, in lieu of sections 2 and 3 above, a design verified by a suitably qualified and experienced Engineer stating the design proposed will provide ventilation and internal space temperature controls to meet or exceed the outcomes described in parts 2 and 3. Confirmation of compliance with this standard will be required by a qualified professional.</u></p> <p>5. Mechanical ventilation systems shall include Filter Class of at least ISO Coarse 70%, and the filter shall be readily serviceable.</p> <p>6. <u>Ducting that is inaccessible shall be rigid, flexible ducting shall only be used where accessible. Where ventilation ducting is built in and not serviceable, it shall be rigid.</u></p> <p>7. <u>Any concealed equipment shall be provided access for servicing. Where ventilation ducting is serviceable, it may be flexible.</u></p> <p>Note: This standard applies in addition to, and does not affect the requirements of, the Building Act 2004.</p>	
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