

UNDER

the Resource Management Act 1991
[“RMA”]

IN THE MATTER

of an application for a Private Plan
Change [Proposed [Private] Plan Change
40: Wallaceville] to the Upper Hutt City
District Plan made by Wallaceville
Developments Limited

STATEMENT OF EVIDENCE OF MALCOLM HUNT [NOISE AND VIBRATION]

Introduction

- 1 My full name is **Malcolm James Hunt**. I am the Principal of Malcolm Hunt Associates, an environmental consultancy firm specialising in environmental noise.
- 2 I hold a Bachelor of Science Degree from Victoria University and a Master of Mechanical Engineering Degree specialising in Acoustics from the University of Canterbury where I completed a thesis dissertation on acoustics.
- 3 I hold other qualifications with respect to the Environmental Health Officer Qualification Regulations 1975, and I also hold a Royal Society of Health Diploma in Noise Control.
- 4 I am a ‘Full Member’ of the New Zealand Acoustics Society, with a requirement of Full Membership being that I satisfy the Society’s requirements in regards to the level of professional qualifications I hold as well as experience and continuing professional development.
- 5 I have held the past position of Vice President of the New Zealand Acoustical Society and Elected Committee Member of the Society. I am a Full Member of the New Zealand Institute of Environmental Health. I have been a member of various national and international acoustic standards committees, and expert working groups regarding environmental acoustics, including transportation noise. I have been on a number of past New Zealand Standards committees for acoustics, including the past New Zealand Standards committees reviewing NZS6801 and NZS6802 [covering the measurement and assessment of environmental noise].
- 6 In 2010 I was awarded a *Meritorious Award* by Standards New Zealand for involvement in development of New Zealand Acoustic Standards. I have acted as a noise expert in many Resource Consent Hearings, District Plan Hearings, Environment Court, High Court Hearings and Boards of Inquiry.
- 7 I maintain certification under the ‘Making Good Decisions’ programme for Resource Management Act [RMA] Practitioners which qualifies me to undertake a role as a Commissioner assisting Consent Authorities with RMA decision-making processes.
- 8 I have around 30 years experience in the direct measurement, prediction and assessment of noise in the environment, including evaluation of noise from plan changes and related noise emission and immission related to such developments. I have been involved with the measurement, prediction and assessment of numerous developments including [but not limited to] projects in the fields of transportation noise [airports, heliports, road and rail] through to built environment and industrial noise.

Code Of Conduct

- 9 I advise that I am authorised to give this evidence on behalf of the Plan Change Requestor being Wallaceville Developments Limited ('WDL'). While I acknowledge this is a Local Government Hearing I confirm that I have read the 'Code of Conduct for Expert Witnesses' contained in the Environment Court Practice Note 2014. I agree to comply with this Code of Conduct. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

My Involvement

- 10 My involvement in this project commenced in 2014 when my firm was commissioned by the WDL to provide advice on a proposed Private Plan Change that seeks to rezone approximately 63 hectares of former Wallaceville Ag-Research site and a small part of the Trentham Racecourse property for residential and commercial purposes. The outcome of this work was to produce a technical noise assessment [Assessments of Environmental Noise Effects] prepared in accordance with the 4th Schedule to the RMA.
- 11 As part of the assessment works my firm undertook various detailed site visits and survey works of the site and surrounds. This work involved a baseline study of the existing environment including multiple noise surveys, sampling the surrounding area including measurements of road and rail noise levels found on the site and in the local area.
- 12 Once draft structure plan maps were available my firm prepared an *Assessment of Environmental Noise Effects* report which was submitted to Upper Hutt City Council as part of the Plan Change Request Application [¹], hereafter referred to as the *Noise AEE Report*.
- 13 Following the filing of the application and the closing of submissions to Council I attended a pre hearing meetings at which my *Assessment of Environmental Noise Effects* report was discussed. I have attended pre-hearing meetings with the Ministry of Primary Industries [MPI] and KiwiRail to discuss noise matters. The matters raised have resulted in amendments to the recommendations contained in the Noise AEE Report to improve the proposed acoustic insulation measures to address concerns raised. Below I discuss the matters agreed and the amendments to the proposed rules necessary to reflect the agreed position.
- 14 As part of preparing evidence for this hearing I have reviewed submissions received and the Upper Hutt City Council's Hearing Report² with regard to noise matters.

Summary Of Conclusions

- 15 Below I summarise the noise and vibration issues identified by submitters and provide comment on them. The matters raised are largely those already investigated and reported upon in the *Noise AEE Report* prepared by my firm and submitted within the documentation provided to Council and notified as part of the Plan Change. While I remain in support of the assessment set out within Noise AEE report including proposed amendments to the District Plan, some recommendations regarding acoustic insulation have been fine tuned as a result of comments received and information subsequently

¹ MHA AEE Noise Report Private Plan Change Wallaceville Upper Hutt. Report Rev 6.0 dated December 2014.

² Refer to Upper Hutt City Council Planning Report.

obtained, the aim being to improve the effectiveness of mitigation methods proposed in certain areas.

- 16 I consider the noise mitigation measures I recommend be adopted within the Plan Change reasonably address issues raised in submissions, in particular the effects of the existing and reasonably foreseeable environment within which the Plan Change is proposed. With the amended mitigation measures in place, I consider the proposed noise and vibration provisions of the Plan Change will be effective in ensuring health and amenity are maintained, and any alleged potential reverse sensitivity noise and vibration effects (if any) minimised.

Scope

- 17 My evidence is set out as follows;
- Summary Of Technical Report
 - Noise Emission – Noise Emitted From Plan Change Sites
 - Noise Immission – Noise Emitted From Adjacent Activities
 - Vibration
 - Matters Raised By Submitters
 - Council’s s.42A Report
 - Summary & Recommendations

Summary of Technical Report

- 18 The Noise AEE Report describes a survey of ambient sound levels undertaken at a range of sites in the area during two months in 2014 at FOUR sites including continuous logging at some sites over 7 days, plus attended measurements to assess in detail levels of noise generated by rail sources passing along the Wairarapa Line during daytime and night time. Refer Figure A1, page 34 of the Noise AEE Report for a location of measurement sites.
- 19 The results showed that apart from intermittent mainly daytime train noise events and some local traffic noise, the Plan Change area was free from any other significant noise such as from sites zoned Business Industrial in the area, the designated NZDF site, and Trentham Racecourse, none of which raised any on-going noise concerns for the reasons set out in the report. Overall, the noise survey confirmed that currently the site contains few noise sources and has an ambient sound climate eminently suited for the development of sensitive land uses such as residential activities.
- 20 The *Noise AEE Report* investigated emissions of noise arising from the proposed range of activities provided for within the Plan Change. The report concluded such noise would generally be within the scope of ambient sound levels currently found in the area, except vehicles and people sound will be more widely found. Noise effects likely occur within the Plan Change area due to the proposed re-zoning were assessed as less than minor and unlikely to result in adverse noise effects for any sensitive receiver site near the Plan Change area.
- 21 In terms of noise received to the Plan Change area from external adjoining sources, the report considers noise received from Business Commercial Sites, effects of the Alexander Road Business Industrial Zone, the National Centre for Biosecurity and Infectious Disease Centre, noise from other Special Activity sites and from road and rail noise
- 22 Mitigation methods are described within the *Noise AEE Report* including the use of no-complaint covenants. Section 6.0 of the report sets out the recommended mitigation methods separately for the Business Commercial Zone and the proposed Residential

Zone. Acoustic barriers/fences, setbacks and acoustic insulation of certain room types in residential buildings (where necessary) are the mitigation measures recommended in the report to be adopted within the District Plan on the basis that, in combination, these measures will ensure the adequate protection of the environment, and the health and amenity of people specifically. The report concludes that the recommendations are considered adequate to address reverse sensitivity concerns from all assessed external noise sources. Below, the recommendations set out in the *Noise AEE Report* are slightly amended to enhance the degree of recommended mitigation. This is to address new information forthcoming on the likely future noise environment.

Noise Emission – Noise Emitted from Plan Change Sites

- 23 This category of potential effects will arise from activities proposed within the Plan Change area. These potential effects have been fully assessed within the *Noise AEE Report*. Noise emissions associated with the proposed new residential sites and activities in the proposed Business Commercial zone have been assessed based on the provisions of the Upper Hutt City District Plan ('the District Plan') and the relevant New Zealand noise standards. The assessment of noise from proposed non-residential activities has been identified on a basis that all new activities will comply (where relevant) with the Upper Hutt District Plan permitted activity noise standards.
- 24 My assessment has found the noise emission standards of the District Plan will be able to be fully complied with, taking into account the proposed Wallaceville Structure Plan layout and given the fact that residential uses proposed are in themselves not inherently noisy. More noise can be reasonably expected within the proposed Business Commercial Zone. To this end, I have proposed a ventilation rule be included in the Business Zone rules for the Wallaceville Structure Plan Area (Amendment number 40 in the District Plan Amendment Table) so that *habitable rooms* of apartments do not need to rely on open windows for ventilation.
- 25 According to my research, the reduction of outdoor noise provided to indoor habitable spaces by a typical New Zealand dwelling is around 25 dB based on informative studies which guide on the sound attenuation properties of New Zealand dwellings. An airport noise study^[3] quantifying levels of insulation provided by typical houses affected by airport noise, included measurements of 10 types of house construction to reflect typical designs used in New Zealand. The results indicated that noise level differences (D) are higher than expected by theory. With windows open for ventilation the average D_{open} is 18 dB. With the windows closed, the houses with aluminium window frames typically had a better acoustic performance ($D_{closed} = 31$ dB) than those with timber frames ($D_{closed} = 24$ dB).
- 26 The second report was commissioned by the former Building Industry Authority and involved testing the sound attenuation of the external envelope of six houses by G. Bellhouse, 2000 (unpublished). Overall with the window and doors closed, the overall A-weighted level difference obtained was between 23 and 28 dB for road traffic and between 24 and 27 dB for air traffic.
- 27 Thus, the provision of alternatives to window ventilation will mean occupiers can be provided with a suitable indoor environment that has potential for an elevated outdoor sound environment that could register up to L10 65 dBA. While outdoor levels of 65 dBA are not expected during night time hours (or on Sundays or public holidays) owing to the District Plan requiring lower sound levels (L10 45 dBA) during these times, providing fresh

3 *Housing NZ v Manukau City Council*, A143/01, 7 NZED 116

air ventilation will improve night time sleep protection above that found in habitable rooms where an open window is the only available means of providing fresh air.

- 28 Noise may be received by established activities and facilities adjacent to the Plan Change site from activities provided for within Plan Change. The *Noise AEE Report* indicates there will firstly only be limited noise from such sources as all activities are assumed to be operating in full compliance with District Plan noise provisions.
- 29 In addition, no adjacent sites have been found to be particularly sensitive to the effects of noise. There is sufficient buffering to existing sensitive receiver sites (i.e. existing residentially zoned sites) to ensure little or no adverse effects. The closest residential sites are those on the opposite side of Ward Street and dwellings adjacent to the western side of the Wairarapa rail corridor. These sites would not be likely to experience any noticeable noise effects given the presence of road traffic, the nature of the activities proposed and the boundary setback requirements already contained in the District Plan. The area is heavily bisected by road and rail transport corridors which run along three sides of the plan change area, with Trentham racecourse track on the fourth side. Thus, the existing environment has been found to be fully capable of assimilating noise generated by the mix of activities that will result from the land use activities provided for within the Plan Change area.
- 30 My assessment is that the plan change area is not likely to be a source of significant noise emission should the Plan Change be approved. No special mitigation measures are necessary in relation to additional methods to reduce noise emitted from proposed activities and received beyond the plan change area. Overall the noise emission standards of the Upper District Plan can be fully complied with by the proposed activities under the proposed development plan. No special mitigation measures are necessary in relation to noise emitted from activities proposed to be established on the re-developed site.

Noise Immission – Noise Emitted From Adjacent Activities

- 31 Adverse effects due to noise from adjacent activities, received within those parts of the Plan Change area where residential uses may occur have been a major focus of the assessments I have undertaken.
- 32 A major consideration within the Plan Change has been a focus on mitigating existing and foreseeable adverse effects associated with noise received from;
- 1) Traffic using Alexander Road,
 - 2) Rail activity on the Wairarapa Rail line; and
 - 3) Existing and potential future noise emissions associated with the MAF1 designation, referred as “Wallaceville Animal Research” adjacent to the northern portion of the Plan Change area.
- 33 The *Noise AEE Report* below describes the steps proposed to mitigate potential adverse noise and vibration effects associated with the above sources, when received within the Plan Change area.
- 34 The assessment is based on local and international noise guidelines, there being no New Zealand acoustic design standards provided within the District Plan or NZ Standards that set out mandatory requirements for addressing *reverse sensitivity* noise effects.
- 35 In terms of land use compatibility, the adverse effects of primary concern are the noise effects directly on the health and amenity of people in their places of sleep, rest

relaxation or enjoyment of outdoor areas. A further effect to be considered is the potential for reverse sensitivity effects on existing noise generators where new noise-sensitive development establishes in areas appreciably affected by noise and/or vibration. This concern was highlighted in the submissions from KiwiRail and the Ministry of Primary Industries.

- 36 While I acknowledge there is some potential for reverse sensitivity issues to arise if noise from existing facilities adversely affects newly established noise-sensitive activities, the risks need to be assessed in a way that is realistic and enforceable. I consider such risks are low if the level of noise emission from adjacent sites remain reasonable or where practical mitigation measures can be applied to ensure living environments are adequately protected from elevated outdoor sound levels.
- 37 As set out within the *Noise AEE Report*, recent noise surveys have found the existing MPI facilities not to be significant sources of environmental noise during daytime or night time. The future planned containment laboratory on the MAF1 designated site can, in my view can be designed to achieve residential noise standards on adjacent residentially zoned sites, although as I outline below, new information on the height of the proposed facility has meant the mitigation proposal has been re-visited to account for this.
- 38 The concerns of KiwiRail have been considered further. Mitigation measures recommended in the Noise AEE report were considered to adequately dealt with noise and vibration effects, to a reasonable degree in my view. However, following further consideration and discussions with KiwiRail, the Requestor has agreed to a compromise set of mitigation measures that I consider will provide a very good level of protection to indoor and outdoor areas from the potential adverse effects associated with noise and vibration from the Wairarapa Rail Line.
- 39 I consider these amended measures to deal effectively with both protecting human health and amenity experienced by people in the proposed living areas, whilst also dealing in a comprehensive manner with potential reverse sensitivity effects for established land uses in the area or the operators of the road or rail networks.
- 40 Overall, current and expected future noise from adjacent sites and related activities are not expected to give rise to any adverse noise effects when received within the proposed Plan Change area. The following recommended District Plan provisions will ensure the direct effects of environmental noise on people and the environment will be suitably addressed, including avoiding potential adverse reverse sensitivity noise effects as detailed in my report which include ventilation, acoustic insulation and acoustic fencing requirements.

Noise Matters Raised In Submissions

- 41 A number of submissions have been received both in support and opposition with many submissions both supporting and opposing various provisions. In some cases submissions do not provide a position but seek amendments. I have specifically reviewed the submissions pertaining to noise and vibration effects and have the following comments to make.

Submission of Ministry of Primary Industries “MPI”

- 42 The MPI submission does not oppose the development in principle but seeks amendments to address what MPI view as potential reverse sensitivity issues. The development adjoins the MPI National Centre for Infectious Diseases and Biosecurity campus. The submission of MPI states that they are not opposed to the plan change

request in principle but hold concerns about *potential* reserve sensitivity effects and wish to ensure that the plan change request appropriately avoids or mitigates such effects so that development on the Wallaceville site does not affect or compromise MPI's activities in any way.

- 43 I note that specifically MPI are seeking to amend proposed new Objective 4.3.5 to include references to potential *reverse sensitivity effects* and allow those effects to be considered by Council where standards are not met. In this case we have recommended suitable mitigation to ensure reasonable standards are attained in terms of noise and vibration effects. The amendments proposed to new Objective 4.3.5 are considered in further detail in the evidence of Ms Blick.
- 44 MPI are also seeking to amend Section 8.1 of Chapter 8.0 "Special Activity Zone" to include reference to the NCBID. As outlined in the evidence of Ms Blick, it is our understanding that MPI have submitted a draft alteration to the designation as, currently, the activity being carried out on the site does not fall within the scope of the existing MAFI designation description. In this draft alteration, MPI has requested that the designation include conditions on the designation that allow a noise limit of LAeq 55 dB to be received within any residentially zoned sites to the south of the rail corridor. This anticipated level of sound was also confirmed in an email from MPI's solicitor on 19 June 2015.
- 45 This exceeds a reasonable level of noise emission in my opinion because;
- (a) This is a 10 dB noise increase⁴ over the night time District Plan permitted activity noise standard for the underlying Special Activity zone and represents a potentially significant severely undermining the existing levels of noise amenity in the area. Only under special circumstances or for specific events are received sound levels above LAeq 45 dB usually recommended for residentially zoned sites. This is based on the guidance of NZS6802:2008 and publications of the World Health Organisation.
 - (b) I do not consider such a level of adverse noise effects is necessary if the 'best practicable option' under the circumstances is applied. In 2013 I assisted Nelson's well known Cawthron Institute with noise controls associated with new laboratories having functions related to marine and freshwater ecology, molecular studies, biosecurity and ecotoxicology activities. The facility is located in Halifax Street which is within a built-up residential area with many established houses. My experience has been that by selecting suitably sized equipment, which is located and operated appropriately, and by treating each source LAeq 45 dB within adjacent residential sites can be achieved. While this requires careful design, it is appropriate and practical was given the size and location of the chillers involved.
- 46 My assessment of noise from the new containment laboratory building was that, being located some 30 metres from the proposed residential zone boundary, the best practicable option was to design and implement mechanical plant and systems to ensure a limit of LAeq 45 dB was not exceeded at 30 metres (i.e. the MPI site's southern boundary), when measured and assessed in accordance with the relevant NZ Standards.
- 47 In addition, I have sought the advice of Senior Mechanical Engineer, Mr Neil Purdie, who advises that industry standard solutions will enable the proposed plant on the MPI

⁴ A 10 dB increase in a given sound is subjectively perceived as twice as loud and is very noticeable.

building to meet LAeq 45 dB at the Plan Change boundary. Mr Purdie's written advice is attached to my evidence as **Attachment B**.

- 48 I note that MPI have not specifically outlined the relief they are seeking in their submission. I have undertaken a re-assessment of potential noise effects within the proposed Business Commercial and Residential zone (Centres Overlay). Following disclosure from MPI as to the size and location of the proposed NCBID facility, I now propose that new residential zone standard **18.16A** ((ventilation in sleeping rooms) should refer to such rooms on any floor level rather than just sleeping rooms on the upper floors as notified. The proposed amendment is as follows:

18.16A Ventilation

Within the Wallaceville Structure Plan Area, where:

.....2. sleeping rooms and studies where openable windows are proposed ~~on upper levels of two or more storey~~ in dwellings proposed within 10m of a site designated as MAF1;

a positive supplementary source of fresh air ducted from outside is required at the time of fit-out. For the purposes of this requirement, a ~~bedroom~~ sleeping room is any room intended to be used for sleeping. The supplementary source of air is to achieve a minimum of 7.5 litres per second per person.

- 49 I am recommending this change as the height of the proposed building has been confirmed at up to 18 metres which will mean the site boundary fence (although effective for noise sources located closer to the ground) will have no effect for sources elevated atop the proposed facility. The ability to keep windows closed in these sleeping rooms means outdoor sound levels will be reduced by around 28 dB which will be more than adequate for sleep protection purposes.

- 50 The improved indoor acoustic environment provided by closing windows to exclude outdoor sounds in combination with the acoustic fence at the boundary (screening noise from activities near ground level) will provide for relatively high amenity within the proposed residential zone, based on the activities taking place on the MAF1 site being able to control the sound levels to the following limits which I consider reasonable and attainable;

Daytime sound levels received at MAF1 site boundary with Plan Change area:

*Measured 1.2m above ground level = LAeq(15 min) **65 dB***

*Measured 5 m above ground level = LAeq(15 min) **55 dB***

Night time sound levels received at MAF1 site boundary with Plan Change area:

*Measured 1.2m above ground level = LAeq(15 min) **55 dB** and LAFmax **80 dB***

*Measured 5 m above ground level = LAeq(15 min) **45 dB** and LAFmax **70 dB***

- 51 Additional changes to Rule 18.16A requiring fresh air ventilation in ground floor rooms with openable windows is not needed in the Business Commercial Zone ('Gateway Precinct') as Rule 20.14A requires all types of habitable rooms are be supplied with artificial ventilation where the building is provided with opening windows as a means of meeting the ventilation requirements of the NZ Building Code. Ventilation treatment is recommended to be applied to all habitable rooms within Gateway Precinct owing the possibility that a daytime sound levels of L10 65 dBA is permitted in the zone, which could be located within 1 to 2 metres of a living room. More likely, residential uses could establish upstairs at very close proximity to commercial activity located on the ground floor. At this close location potential adverse indoor noise effects could occur within sensitive rooms in the residence and these potential effects are proposed to be addressed (even though the issue is not addressed within existing District Plan provisions

that apply when establishing noise sensitive activities on sites already zoned Business Commercial).

- 52 Thus, the Noise AEE Report recommends ventilation requirements apply to all habitable
53 rooms in the Gateway Precinct owing to the close proximity of adjacent sites where
compliant permitted uses may emit up to L10 65 dBA during daytime. The effects of
distance from the site boundary, and the effect of the boundary fence itself reduces the
potential for similar adverse daytime noise effects to be caused by activities on the MAF1
site. Sounds from that site meeting the 'reasonable level' outlined above would result in
sound levels in habitable rooms to 45 dBA or less which is compatible with daytime
indoor activities.
- 54 The added acoustic protection of ventilation treatment has therefore only been
recommended to sleeping rooms and rooms used as a study within the proposed
Residential Zone to address the potential for adverse noise effects during night time,
which is the more sensitive time when complaints of noise annoyance often arise. The
proposed mitigation for sleeping rooms is somewhat precautionary as it goes beyond
what would normally be needed where a District Plan night time noise limit of L10 45
dBA /LAFMax 65 dBA applies.
- 55 While I recommend the mitigation be improved upon to take account of the elevated
noise sources proposed on the MAF1 site, the overall design of mitigation still assumes
noise from activities taking place under the MAF1 designation would be reasonably
capped, based on the residential zoning being in place at the time the new facility is
constructed.

Submission of KiwiRail

- 56 The KiwiRail submission raises concern relating to potential reverse sensitivity effects
arising from residential uses adjoining the rail corridor. I have been involved in
discussions with KiwiRail regarding appropriate mitigation measures that would be
appropriate to the rail noise and vibration effects that are likely to occur in the
foreseeable future which includes dual tracking where currently there is only a single
track.
- 57 The provisions agreed with KiwiRail are set out as follows (also including the change I
recommend above to address ventilation applying to noise from the MAF1 site);

18.16A Ventilation

Within the Wallaceville Structure Plan Area, where:

- 1. sleeping rooms and studies where openable windows are proposed in dwellings within 20m of the Alexander Road boundary or ~~12m-50 m~~ of the rail corridor (designation TZR1); or*
- 2. sleeping rooms and studies where openable windows are proposed ~~on upper levels of two or more storey~~ in dwellings proposed within 10m of a site designated as MAF1;*

a positive supplementary source of fresh air ducted from outside is required at the time of fit-out. For the purposes of this requirement, a bedroom is any room intended to be used for sleeping. The supplementary source of air is to achieve a minimum of 7.5 litres per second per person.

18.16B Noise Insulation

Within the Wallaceville Structure Plan Area, where:

1. any sleeping room or study within 12m of the Alexander Road boundary; or
2. any sleeping room or study ~~on upper levels of two or more storey~~ within any dwellings within ~~12m~~ **30m** of a site utilised for railway purposes (Designation TZR1);

shall be protected from noise arising from outside the building by ensuring the external sound insulation level achieves the following minimum performance standard:

$$D_{nT,w} + C_{tr} > 30 \text{ dB}$$

$$D_{2m,nT,w} + C_{tr} > 35$$

Compliance with this rule shall be achieved by either:

1. Constructing the building in accordance with the minimum requirements set out in [the attached **Construction Schedule**]; or
2. Providing to Council's satisfaction a certificate from an experienced acoustic expert stating that the external sound insulation level of the proposed sleeping room or study will achieve the minimum performance standard of $D_{2m,nT,w} + C_{tr} > 35$.

58 I attach a **Construction Schedule** suitable for application to typical generic New Zealand building designs (new or altered buildings) which, when complied with, will ensure the external sound insulation level of the proposed building will achieve the minimum performance standard of $D_{2m,nT,w} + C_{tr} > 35$.

59 Taken as a whole, the above acoustic design precautions will be effective in mitigating potential adverse noise effects associated with potential noise effects associated with activities that may take place within the neighbouring TRZ1 and MAF1 designated sites.

Submission of Welholm Developments Limited

60 The Welhorn Submission [adjoining the Summerset Retirement Village] does not provide a position of support or opposition but seeks amendments. In regards to noise the submission notes concern for potential temporary construction noise effects during construction on residents.

61 The submitter has sought relief in the form of a 1.8m high wooden fencing on land adjoining Welholm's boundary before construction commences. I note that the submitter has almost completed construction of a 1.8 m high close boarded fence along the Welholm's boundary. However, my assessment is that without any fencing the activity can comply with the construction noise limits set out in the District Plan and therefore do not consider such a fence is a necessary component of the Plan Change.

Wellington Racing Club [Inc] and RACE Inc

62 The Wellington Racing Club Submission [adjoining land owner to the west] supports the development and agrees that the Plan Change will result in appropriate environmental outcomes. I agree.

New Zealand Defence Force [NZDF]

63 The NZDF [land owner of Trentham Army Camp to the west] was neutral and did not oppose the plan change. Subsequently NZDF withdrew its submission as I understand WDL and NZDF have agreed to a states that they have an agreement in principle

regarding a 'no complaints covenant' in favour of NZDF to be registered on the certificate of title which would be brought forward onto all new titles resulting from subdivision. I consider this outcome to be ideal from a noise effects management perspective (even though I do not consider there would be reasonable grounds to complain regarding activities undertaken on the NZDF site).

Heretaunga Pistol Club

64 A late submission was received from Heretaunga Pistol Club who operate from the historic Trentham Rifle Range Reserve. The Trentham Rifle Range Reserve consists of four shooting ranges – the Allen Range, Sommerville Range (NZDF), Collins Range (Heretaunga Pistol Club Range), and Seddon Range (National Rifle Association). The Heretaunga Pistol Club facilities include a 10 metre indoor range and an outdoor range (with firing at 25m, 50m and 100m distances). I am aware various shooting activities including competitions have taken place on the site for many years. Concern is raised in the submission regarding reverse sensitivity.

65 I have investigated noise from shooting carried out in the wider area including activities undertaken by the Heretaunga Pistol Club on the Trentham Rifle Range Reserve. I note that my firm's *Noise AEE Report* notes the buffer distances involved to the land proposed to be zoned for residential use. The report stated that noise from these activities was "*not expected to give rise to any adverse noise effects with received within the proposed Wallaceville residential subdivision*" [Refer to Page 20, *Noise AEE MHA Report*]. This is based on the seemingly satisfactory compatibility of the Club's existing activities with the nearby residential properties located off Pinehill Crescent which are less than a kilometre from the Pistol Club facilities at Trentham. I remain of the view that future residents would, if able to detect such sounds, not be concerned as this type of sound is known to occur in the area and does so on an infrequent, daytime basis.

Response to Council Hearing Report

66 I have reviewed the Upper Hutt City Council's Hearing Report prepared by Felicity Boyd, Policy Planner, Upper Hutt City Council. I note Section 4.4 under the title "Noise" of the Planning Report discusses noise.

67 Paragraph 4.4.16 of the Planners report advises that Council's functions include the duty to consider any potential adverse noise effects when considering land for rezoning, especially where rezoning would result in new residential activities. The Planner states that should future activities be subject to adverse noise effects, it will be Council's responsibility to address these issues meaning that there is a need to fully understand potential noise effects and devise a policy framework which avoids, remedies and/or mitigates these effects.

68 Paragraph 4.4.17 of the Planners report concludes "*The submissions received indicate unresolved disagreement between MPI, KiwiRail and WDL regarding the noise effects and the measures proposed to mitigate these. There is also uncertainty around the rifle range.*"

69 I have noted above that with the upgraded noise mitigation proposals now proposed, KiwiRail are no longer concerned about reverse sensitivity noise effects. Paragraph 4.4.17 of her summary Ms Boyd recommends that clarity is provided from MPI on the relief sought is required along with recommending amendment of objective 4.3.5 to reflect MPI's suggested changes.

- 70 Information above information has been provided to confirm that noise from the Heretaunga Pistol Club is not likely to have adverse effects for future residents on the Plan Change site . The noise effects were found not be significant when I advised Upper Hutt City Council planning section regarding noise effects associated Plan Change 26 (2013). In fact, both myself for Council and Mr Bill Wood (the expert for the plan change requestor) agreed the only environmental sounds likely to have the potential to cause adverse effects were from traffic using Alexander Road and from permitted activities within the existing Business Commercial zone. On this basis, it can be concluded both experts considered distant sounds of firing would not be likely to represent a significant adverse effect for occupants of future residential sites, located at a similar distance to the range as the closest proposed Wallaceville sites requested by WDL to be zoned residential.
- 71 Overall, owing to the nature of the activity and distances involved, the Planner can be assured there are not likely to be reverse sensitivity issues associated with the activities of the Heretaunga Pistol Club .

Conclusions And Recommendations

- 72 In the evidence above I have set out the basis of my noise assessment and recommendation for managing the relevant environmental noise effects associated with the proposed Wallaceville Private Plan Change to Upper Hutt City Council.
- 73 The assessment above is in line with the earlier assessment set out in the Noise AEE Report I authored. That report set out recommended amendments to the District Plan to ensure noise effects remain reasonable at all times. These recommendations were based on the results of ambient sound levels monitoring and information provided at the time regarding noise levels from existing activities and those could be reasonably foreseen.
- 74 As I note above, since preparing the Noise AEE Report I have been involved in discussions with two submitters who hold concerns regarding reverse sensitivity noise effects. In the above evidence I have outlined how the original mitigation recommendations have now been upgraded based on information received more recently and considering the matters raised in submissions. The amended recommendations now equate to a noise mitigation approach that I consider goes far beyond the minimum necessary to ensure compatibility in noise terms between the various sites.
- 75 In noise terms, I consider that granting approval for the Plan Change request by adopting the recommendations of Council's planner (also including the amendments outline above and in the evidence of Ms Blick), represents the best practicable option under the circumstances and would be entirely consistent with the purpose and principles of the Resource Management Act in my opinion.



Malcolm James Hunt

ATTACHMENT A

Noise Insulation Construction Schedule

(this schedule describes the minimum requirements necessary to achieve an external sound insulation level of $D_{2m,nT,w} + C_{tr} > 35$)

Building Element	<u>Minimum</u> Construction Requirement
<u>External Walls</u>	<p>External cladding with a surface mass not less than 23 kg/m^2, ex 100 x 50 timber framing at 600 mm centres, Fibrous thermal insulation, Internal lining of one layer 13 mm thick high density Gypsum board (minimum 12 kg/m^2).</p> <p>Or: Any wall construction utilising at least 50 mm thick concrete, Secondary timber strapping or wall framing not less than 50 mm thick lined with at least 10 mm thick gypsum board, and, Fibrous thermal insulation</p> <p><u>Combined superficial density:</u> Minimum not less than 35 kg/m^2 being the combined mass of external and internal linings excluding structural elements (e.g. window frames or wall studs) with no less than 12 kg/m^2 on each side of structural elements.</p>
<u>Glazed Areas</u>	<p>4/12/4 thermal double glazing, with 6 mm thick secondary pane at least 75 mm from the outer glazing</p> <p>Windows to be new aluminium frames with fixed panes or opening sashes with full compression seals.</p> <p>NOTE: Rooms with glazed areas in external walls greater than 35% of <u>floor area</u> of the room will require a specialist acoustic report to show conformance with the insulation rule.</p>
Pitched <u>Roof</u> (all roofs other than skillion roofs)	<p>Profiled longrun steel or tiles, with minimum steel thickness of 0.4 mm, Timber trusses at minimum 800 mm centres, Fibrous thermal insulation, Ceiling lining of one layer 13 mm thick high density Gypsum board (minimum 12 kg/m^2).</p>
Skillion roof	<p>Profiled long-run steel or tiles, with minimum steel thickness of 0.4 mm, Timber framing at minimum 600 centres, Fibrous thermal insulation, Ceiling lining of two layers 13mm thick high density Gypsum board (minimum 12 kg/m^2 each</p>
External <u>Door</u> in outside walls	<p>Solid core door (min 25 kg/m^2) with compression seals (where the door is exposed to exterior noise).</p>

Notes:

- The table refers to common specifications for timber size. Nominal specifications may in some cases be slightly less than the common specifications stated in the schedule for timber size.
- In determining the insulating performance of roof/ceiling arrangements, roof spaces are assumed to have no more than the casual ventilation typical of the jointing capping and guttering detail used in normal construction.

ATTACHMENT B

**Mr Purdie's advice re; Control Of Noise From
Mechanical Services Plant**

23 June 2015

Wallaceville Developments Limited

c/- Mr Brendon Hogan
Principal Planner
Gillies Group
7 Gibbons Street
Upper Hutt



Attention: Brendon Hogan

Dear Sir

**MPI NATIONAL BIOSECURITY FACILITY
66WARD ST WALLACEVILLE UPPER HUTT
HG REF:**

In response to your request for an expert opinion on the engineering to achieve the acoustic criteria on the south boundary of the National Containment Laboratory for the Ministry of Primary Industry to be located on Ward St, Wallaceville.

I have reviewed the elevations, site plan and aerial photograph of the site.

I understand that the target noise level on the boundary should be 45 dB Leq.

1.1 QUALIFICATIONS

I hold an Honours degree in Mechanical Engineering from the University of Auckland, awarded to me in 1984.

Professional memberships

IPENZ;

Auckland Council Producer Statement Author #1620.

NZ Health Design Council

1.2 EXPERIENCE

A brief summary of my recent professional experience is set out below:

April 2015 to present Team leader Building Services Harrison Grierson

2012 to 2015 – Services Manager, Hampton Jones Property Consultancy;

1999 to 2012 - Head of Mechanical Building Services,

Aurecon NZ Limited, Auckland;

1996 to 1999 - Associate, George Floth, Sydney, New South Wales, Australia.

As a building services engineer, I have had 28 years' experience specifying and designing building services systems, smoke hazard management systems and fire protection systems in New Zealand, Australia and Southeast Asia in accordance to achieve both internal and external noise criteria required to meet accepted international standards and planning criteria set by territorial authorities.

I have 20 years' experience designing 24 hour operation laboratories and healthcare facilities in accordance with the NZ, Australian and UK standards and codes.

I was responsible for the Manaaki Whenua Landcare Research Tamaki Campus facility which includes biosecurity laboratories constructed in 2004.

I was responsible for redevelopments of the North Shore Hospital campus from 2001 to 2012.

I was responsible for redevelopments of the Waitakere Hospital campus from 2002 to 2005.

1.3 SYSTEM COMPLIANCE

The design and specification of building services plant and machinery to achieve both internal and external noise criteria is a fundamental part of the building services engineers' scope of service. Commonly the building will be located on a site in general proximity boundaries at which District Plan or NZ Standard noise limits apply. Sometimes this requires the external noise levels to comply at the boundary of the building footprint.

It is noted that this building is approximately 30 metres from the residential boundary. We understand the relevant criteria would be the night time limit recommended within NZS6802:2008 "Acoustics – Environmental Noise" of LAeq 45 dB or similar. Meeting this limit at the stated distance means sounds measured at the building can be significantly higher taking into account the distance to the boundary unlike the common situation where the boundary criteria is required to be met at the building exterior.

I can offer no technical reason for a competent building services engineer working in conjunction with an acoustic consultant would fail to achieve the boundary noise criteria in this development.

It would be expected and recommended that a project of this level of complexity would also be peer reviewed as a part of the building consent approval process by an independent expert to establish compliance.

1.4 OBSERVATIONS

The Mount Albert Plant and Food Research facility on Mt Albert Road in Auckland is located in a residential area

The AsureQuality laboratory facility on Boundary Road Auckland is located in a residential area.

Manaaki Whenua Landcare Research in Auckland is located adjacent to a residential area.

1.5 TECHNICAL OBSERVATIONS

The building services design should be based on the selection of plant to achieve the boundary noise criteria.

Equipment selections should include low noise enhancements and silencers available from the manufacturers

Equipment selections should include control systems and speed drives allowing reduced noise levels at night while maintaining the functionality of the services.

Tonal components require review as a part of the design to ensure that no particular frequency causes nuisance through perceived noise levels.

Plant discharges and air intakes and louvres and screens should be designed to achieve noise criteria through the use of silencers, care with discharge velocities and acoustic louvres

Additional enhancements include cladding of equipment, the addition of engineered silencers, plantroom enclosures and control methodologies to improve night-time noise level reduction.

All of which are industry standard solutions and expected of the building services engineer in the design and specification of this project.

1.6 CONCLUSION

There appears to be no technical reason for the National Containment laboratory not to achieve the night time noise criteria of NZS6802:2008 on the south boundary.

Yours sincerely

Harrison Grierson Consultants Limited



Neil Purdie

BE Mech Hons MIPENZ

NHP