

IN THE MATTER of the Resource Management Act
AND 1991

IN THE MATTER of a Private Plan Change to the
Matamata Piako District Plan under
Schedule 1 of the RMA by Rings
Scenic Tours Limited, to introduce
new objectives, policies and rules,
primarily through a Development
Concept Plan, to enable the ongoing
operation and growth of tourism
activities at the Hobbiton Movie Set
within an appropriate framework.

STATEMENT IN RESPONSE TO EVIDENCE BY NEVIL IAN HEGLEY
9 April 2019

1 Introduction

1.1 My name is NEVIL IAN HEGLEY. I have the following experience and qualifications relevant to the evidence I shall give:

- (a) I have specialised in environmental and industrial acoustic engineering for more than 40 years;
- (b) I have an MSc from Southampton University where I undertook research in acoustics in 1975/76;
- (c) I am a Member of the Institution of Professional Engineers New

Zealand, the Institution of Civil Engineers London and the Acoustical Society of America;

- (d) I have appeared on the majority of the Standards sub-committees dealing with sound issues since 1977 and I was the Chairman of both the 1984 and 1999 versions of the Construction Noise Standard NZS6803;
- (e) In 2010 I received the Meritorious Award by Standards New Zealand for outstanding commitment to the development of New Zealand Acoustic Standards; and
- (f) I have been involved with the acoustic assessment of more than 35 outdoor concert/music venues from the Bay of Islands to Wellington and the monitoring of more than 250 events ranging from 1,500 to over 40,000 people.

1.2 I have read the Code of Conduct for Expert Witnesses as contained in the Environment Court Consolidated Practice Note (2011) and I agree to comply with it as if this hearing was before the Environment Court. My qualifications as an expert are set out above. I confirm that the issues addressed in this brief of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

1.3 This evidence is in response to the evidence presented during the course of the hearing and addresses any changes to my original recommendations and reasons for recommending conditions related to noise where there is a difference between my recommendations and the applicant's proposal. There was agreement with the applicant on the majority of the noise related conditions. Some changes are recommended where the noise levels can be controlled to a more realistic level for residents while retaining the levels sought by the applicant for visitors to the proposed Hobbiton events.

2 Daytime hours and levels

- 2.1 The applicant has sought to extend the daytime hours when a level of 50dB L_{Aeq} is adopted from 7:00am – 8:00pm to 7:00am – 10:00pm. That is, an increase of 10dB for an additional 2 hours compared to the current community expectations. As a guide, an increase of 10dB is an apparent doubling of the noise.
- 2.2 The applicant has stated that some District Plans have less restrictive levels, some the same level and some have different time restraints. The applicant has not suggested there have been any problems with compliance with the current limits and hours of operation or the current controls limiting activities undertaken on site. The only reason given for the proposed change to the hours is that some District Plans have 10:00pm as the time period for the transition between the day and night time limits and both NZS6802 and the WHO Guidelines support a 10pm transition period.
- 2.3 NZS6802:2008 Acoustics – Environmental Noise recommends 10pm as an example for the transition between daytime and night time. I assume this relates to clause 8.1.3 and 8.3.2¹ of NZS6802 where it states:

C8.1.3

... The following is an example of a residential noise limit in the form of a land use resource consent condition which contains these elements. Different noise limits will be required for other types of land use.

'The consent holder shall ensure that all activities on the site measured in accordance with the provisions of NZS 6801:2008 Acoustics – Measurement of environmental sound, and assessed in accordance with the provisions of NZS 6802:2008 Acoustics - Environmental noise shall not exceed the following noise limits at any point within any residential site or at any point within the notional boundary of a rural dwelling, other than a dwelling on the site to which this consent applies, during the following time frames:

*Monday to Saturday 7am to 10pm.....w dB $L_{Aeq(15min)}$
 Sunday and public holidays 7am to 7pm.....x dB $L_{Aeq(15min)}$*

*Monday to Saturday 10pm to 7am the following day, and Sunday and public holidays 7pm to 7am the following day....
 y dB $L_{Aeq(15min)}$*

Daily 10pm to 7am the following day..... z dB L_{AFmax}

¹ See Attachment A for a full copy of these clauses

and

8.3.2

Unless otherwise specified, prescribed time frames shall be as follows:
Either:

<i>Daytime</i>	<i>0700 h - 2200 h</i>
<i>Night-time</i>	<i>2200 h - 0700 h the following day</i>

Or:

<i>Daytime</i>	<i>0700 h-1900 h</i>
<i>Evening</i>	<i>1900 h-2200 h</i>
<i>Night-time</i>	<i>2200 h - 0700 h the following day</i>

2.4 Further, the applicant has submitted a level of 50dB $L_{Aeq(15min)}$ as a reasonable level to adopt up until 10pm, as this level is reflected in the recommendations of NZS6802.

2.5 This comment is supported in clause 8.6.2² of NZS6802 to the extent the local authority may choose to adopt any time for the transition to the night time controls on condition that a minimum of 8 hours is provided for sleep where it states [emphasis added]:

As a guideline for the reasonable protection of health and amenity associated with use of land for residential purposes, the noise limits in table 3 should generally not be exceeded at any point within the boundary of a residential site, for example, at any point within the notional boundary of a rural dwelling.

Table 3 - Guideline residential upper noise limits

<i>Daytime⁽¹⁾</i>	<i>55dB $L_{Aeq(15 min)}$</i>
<i>Evening^(1,2)</i>	<i>50dB $L_{Aeq(15 min)}$</i>
<i>Night-time⁽¹⁾</i>	<i>45 dB $L_{Aeq(15 min)}$</i>
<i>Night-time⁽¹⁾ L_{max}</i>	<i>75 dB L_{AFmax}</i>
<p>NOTE-</p> <p>(1) <i><u>The definition of times of day are a matter for the relevant local authority</u> and should recognize that a period of not less than 8 hours needs to be provided for sleep to ensure at least the minimum acceptable degree of health protection.</i></p> <p>(2) <i>Inclusion of an evening period and its hours of application are a matter for the relevant local authority.</i></p> <p>(3) <i>This clause is not framed as a consent condition, rule or national environmental standard and should not be quoted for those purposes. See C8.1.3 for suggested format of consent conditions, rules or national environmental standards.</i></p>	

² See Attachment B for a full copy of this clause

2.6 Clause 1.3³ of NZS6802 states [emphasis added]:

APPLICABILITY OF THE GUIDELINE NOISE LIMITS

Nothing in this Standard should prevent a local authority from specifying noise limits which are more stringent than the guideline limits in section 8. A greater degree of protection may be more appropriate than provided by the guideline values, when local conditions and community expectations are taken into account. This Standard shall not be used to justify changes to noise limits in consent conditions, rules or national environmental standards that have been set to ensure a high degree of protection against noise.

C1.3 The degree of protection will depend upon the nature of the area under consideration. A residential area in a quiet environment can reasonably expect a higher degree of protection than a residential area in an already relatively noisy environment.

2.7 The Matamata Piako District Council has made a decision in the Operative District Plan that a level of 50dB between 7am – 8pm and 40dB between 8pm – 7am in the rural zone is appropriate to provide a reasonable noise environment for the residents. There has not been any suggestion by the applicant that these conditions have had, or will have, any adverse effect on the operation of Hobbiton.

2.8 In the event the level is increased from the current community expectation of 40dB to 50dB between 8pm – 10pm this will affect the existing noise environment and the expectations of the residents. An assessment of these effects has not been made and no benefits to Hobbiton have been presented so it is not agreed it is necessary or desirable to alter the current position of Council. This takes into account the change from L_{10} as adopted in the Operative District Plan to L_{Aeq} which allows a relaxation of approximately 3dB to the level that must be complied with.

2.9 It is therefore recommended the Council's proposed condition 9 as set out in the s42A Hearing report, Appendix B should be adopted. That is:

- a) *The noise level from site activities other than the exclusions listed in DCP Performance Standards 1.1.9 b), c) and d) below, as measured at ~~or~~ any point within the notional boundary of any rural dwelling located outside the Hobbiton Movie Set Development Concept Plan (DCP) area and existing at [insert date of plan change notification] shall not exceed the following:*

7.00am to 8.00 <u>10.00pm</u>	50dB L_{Aeq}
8.00 <u>10.00pm to 7.00am</u>	40dB L_{Aeq} and 70dB $L_{AeqAFmax}$

³ See Attachment C for a copy of this clause

3 Movies

- 3.1 The applicant has sought a level of 55dB L_{Aeq} until 11pm for 12 movie events.
- 3.2 As stated in evidence presented by Russell Alexander the noise can be reduced to the neighbours by using a low level system (a number of 'quieter' speakers compared with fewer 'noisier' speakers). I agree this is an appropriate and practical option to reduce noise to the neighbours.
- 3.3 I note Mr Bell-Booth has not included averaging in his analysis⁴. NZS6802 allows averaging⁵ and as the use of NZS6802 is recommended (proposed condition 9(j) of the S42A report) any averaging of the noise should be included in the analysis. This means the predicted 55dB L_{Aeq} for movies equates to 50dB L_{Aeq} when assessed in accordance with the proposed conditions.
- 3.4 It is practical to achieve a further 10dB reduction with either a low level system, as described by Russell Alexander and/or high cut-off speakers to give a level of 40dB L_{Aeq} if Hobbiton wish to continue until 11:00pm. This is considered to be a practical option although it does require a more expensive sound system than currently proposed⁶.
- 3.5 The design option as set out above allows the level of noise within the crowd to be kept at the current design level while reducing the noise for residents.
- 3.6 The assessment also needs to keep in mind that there will be vehicles leaving after the movie and, as submitted by the residents, this will have an effect on the existing noise environment for the neighbours.
- 3.7 The recommendation is to retain the noise condition as set out in 9(c) of the S42A Report, which states:

c) Up to 12 themed outdoor movie screening events that exceed the noise levels in Performance Standard 1.1.9 a) above are permitted to

⁴ Paragraph 5.0 of his noise assessment report dated 3 July 2017

⁵ Clause 6.4.1 of NZS6802. The exact requirements are shown in Appendix D attached.

⁶ Section 4.1.1 of the Hobbiton DCP Acoustic Assessment prepared by Marshall Day Acoustics dated 3 July 2017

~~11.00-10.30pm during daylight savings time and to 10.00pm at all other times in any calendar year, with no more than two events (outdoor movie screening or outdoor amplified music/concert events) in a seven-day period, and no more than three events in a calendar month. The events shall not exceed 55dB L_{Aeq}⁷ when measured at any point within the notional boundary of any rural dwelling located outside the DCP area and existing at [insert date of plan change notification].~~

- 3.8 The condition as proposed does not change the level of noise sought by the applicant and received by the movie patrons. In the event Hobbiton wish to extend the movie time to 11:00pm there is the option of controlling the noise by a further 10dB L_{Aeq} by using more speakers at a lower level and/or high cut-off speakers to give a level of 40dB L_{Aeq}. With this in mind a further condition to provide for this scenario could be added to the current condition 9(c) stating:

Alternatively, if the themed outdoor movie screening events do not exceed 40dB L_{Aeq} when measured at any point within the notional boundary of any rural dwelling located outside the DCP area and existing at [insert date of plan change notification] they are permitted to 11.00pm during daylight savings time.

4 Concerts

- 4.1 The applicant is seeking a level of 65dB L_{Aeq} from concerts and has given examples of concert noise in section 7.1.3 of the original noise assessment. All of these examples are for large concerts at stadiums. This application is for a remote rural area.
- 4.2 The levels adopted by the applicant appear to have been taken from concerts such as the Corrs, Foo Fighters, Roger Waters, etc⁸. These concerts do not reflect the concerts being proposed for the subject site of “up to 1,000 patrons”. As an example, the Foo Fighters played at Mt Smart Stadium on Saturday 3 February 2018 and the Corrs at North Harbour Stadium in October 2001. Both of these concerts played to crowds in excess of 15,000. This is totally different to the 1,000 crowd proposed at Hobbiton.
- 4.3 Some festivals I have been involved with where the crowd size is between

⁷ The level has been reduced to 50dB L_{Aeq} to take into account the averaging provisions of NZS6802, which was not included in the original assessment.

⁸ MDA response to RFI dated 24 February 2019 top of page 2

1,500 and 5,000, the level has been controlled to 90 – 93dB L_{Aeq} at the mixing desk where there were close neighbours. For a crowd size of up to 1,000 patrons a level of 90dB as measured at 30m would be reasonable, as the distance to the rear of the crowd from the stage would be less than for the larger crowds. These levels are without using any special speakers.

- 4.4 Again, I note Mr Bell-Booth has not included averaging in his analysis as adopted by NZS6802. This means the predicted level of 65dB L_{Aeq} sought by the applicant is 60dB L_{Aeq} when assessed in accordance with the proposed conditions. That is, the recommended limit of 60dB L_{Aeq} will be achieved without any changes to the proposal.
- 4.5 If speakers with a good cut-off are used a reduction of 10 - 15dB could be achieved without reducing the level for patrons at the concert. I did discuss this with James Bell-Booth prior to the hearing and his only concern was that the proposed speakers are more expensive than the current speakers.
- 4.6 Conservatively, a reduction of 10dB L_{Aeq} could be relatively easily achieved from the concerts without reducing the noise for the patrons to give a level of 50dB L_{Aeq} for the neighbours. The lower level of 50dB L_{Aeq} may be adopted when taking into account the submissions presented by the neighbours should the Commissioners agree with the neighbours and the fact the lower level could be achieved by the applicant. This would also satisfy section 16 of the RMA which states that the best practicable option must be adopted to minimise the noise.
- 4.7 If that is the case the level as set out in the proposed condition 9(d) of the S42A report could be dropped to 50dB L_{Aeq} .
- 4.8 A reduction in the duration of the concerts finishing by 10:30pm rather than 11:00pm is recommended.
- 4.9 It is not clear why end time of 11:00pm has been suggested by the applicant. Typically the main act prefers the evening to be dark before they go on stage and the main act is unlikely to continue for more than 90 minutes. Thus, the main act can leave going on stage until 9:00pm. In the summer it will be dark before the main act takes to the stage so the concert

could finish by 10:30pm.

- 4.10 While some venues in stadiums do continue until 11:00pm a finish time of 10:30pm is more common. Examples where concerts have finished earlier include Western Springs, which must finish by 10:00pm Sunday to Thursday and 11:00pm on Fridays and Saturdays for up to 6 “High special noise events” with eight other permitted concert events all finishing by 10:00pm. All concerts at Mt Smart must finish by 10:30pm, even where they comply with a level of 55dB L_{Aeq} .
- 4.11 Examples of smaller venues include concerts at the Thames Racecourse which has a finish time of 10:00pm, Alexandra Park in Auckland has a finish time of 10:30pm and Yarrow Stadium in New Plymouth where the higher noise levels must finish by 10:00pm. These events are all held in stadium areas, not rural zones.
- 4.12 Taking the above into account the recommendation is to adopt condition 9(d) as set out in the S42A report (subject to the option to reduce the level in (ii) from 60dB L_{Aeq} to 50dB L_{Aeq} as set out above) which is:

Up to 6 themed outdoor amplified music /concert events that exceed the noise levels in Performance Standard 1.1.9 a) above are permitted in any calendar year, with no more than two events (outdoor movie screening or outdoor amplified music/concert events) in a seven-day period, and no more than three events in a calendar month. The events shall:

- i) Not exceed six hours duration (excluding sound testing and balancing on the day of the event);*
- ii) Not exceed ~~65~~60dB L_{Aeq} as measured at any point within the notional boundary of any rural dwelling located outside the DCP area and existing at [insert date of plan change notification]; and*
- iii) End by ~~11.00~~10.30pm during daylight savings, and by 10.00pm at all other times of the year;*

5 Monitoring

- 5.1 There was some discussion regarding a monitoring condition. A recent example of a rule requiring monitoring is in the Auckland Unitary Plan, Operative in Part in Chapter I where Rule 1415.6.4(8)⁹, Glenbrook Steel Mill Precinct requires “...the Glenbrook Steel Mill must regularly monitor the

night time noise level generated by its operations. This monitoring must be at intervals of no greater than three months, and from the specified monitoring locations. All monitoring information must be forwarded to Council.”

- 5.2 It is important if control of amplified music is to be achieved for concerts that monitoring is undertaken. It is therefore recommended condition 9(h), as set out in the S42A report should be adopted. This condition states:

- h) *Monitoring of sound levels during the first occurrence of each event type listed in Performance Standards 1.1.9c) and d) above shall be carried out at any point within the notional boundary of the closest neighbouring dwelling to that event, and in response to any complaints of these event types should they arise. Monitoring shall be undertaken at five minute intervals throughout the event (including any sound testing) by a person qualified to undertake noise measurements. If the noise limits are not complied with, the following similar type of event shall be monitored and the noise management plan updated if required and the updated version certified by Council, until compliance is achieved. In each case a ~~A~~ *report of the monitoring results shall be submitted to Council within 10 working days of the event(s).**
- i) *If consent is not given to monitor within the notional boundary of the closest neighbour the noise shall be monitored at a representative location and the method adopted to determine compliance with the noise limits included in the report to the Council.*
- j) *All Sound levels shall be measured and assessed in accordance with the requirements of NZS 6801:2008 “Acoustics – Measurement of Environmental Sound” and New Zealand Standard NZS 6802:2008 “Acoustics – Environmental Noise”.*

6 Fireworks

- 6.1 The two potential concerns regarding fireworks are the effects of the noise on residents and the effects on livestock. In addition, the adverse effect from the noise of fireworks on dogs, including farm dogs is well recognised.
- 6.2 To control noise from fireworks the type of fireworks should be restricted as proposed in condition 14(a) of the S42A report. In addition, guidance may be taken from Mr Bell-Booth’s evidence on behalf of the applicant where in paragraph 5.2.2 he states “...*the only possible causes of disturbance for animals will be impulsive type noises such as blasting and pile driving. To ensure that any such effects of these activities are minimised, my firm*

⁹ See Attachment E for a copy of this rule

typically recommends that noise levels are reduced to the criteria suggested for human exposure”.

6.3 Fireworks fall into the category of impulsive type noise so it is suggested Mr Bell-Booth’s recommendation should be adopted as a new condition. This will minimise any adverse effects from fireworks although it will not remove the potential concerns with respect to dogs. The effects can be further controlled by including the condition to advise the neighbours of the date and time when these events may occur.

6.4 It is recommended that condition 14(a) be retained as set out in the S42A report with the addition of a new condition (e) to include the applicant’s recommended level of 70dB L_{AFmax} , that is:

- a) *For events involving fireworks displays, written notice shall be provided to the Matamata-Piako District Council and the occupiers of all properties located within a 3km radius of the precinct where the fireworks display is being held ~~a minimum of seven days prior to the event~~. The written notice shall be provided a minimum of 14 days prior to the event and include the following details:*
 - *The date and approximate time of the planned fireworks display; and*
 - *The name and mobile phone number of a contact person who will be available to respond to any enquires prior to, during and after the event.*
- b) *No fireworks displays shall be held between 1 August and 31 October in any calendar year ~~unless otherwise approved by resource consent~~.*
- c) *All fireworks displays shall be limited to the use of fireworks that meet classification 1.3G, 1.4G and 1.4S under the Hazardous Substances and New Organisms (HSNO) Act and corresponding regulations; purchased from a New Zealand retailer in accordance with the Code of Practice for Retail Fireworks, 2008.*
- ~~b)~~d) *Receipts demonstrating compliance with the standards in c) above shall be kept and supplied to Council as part of the Site Management and Monitoring Plan and upon request.*
- e) *The noise from fireworks must not exceed 40dB L_{Aeq} and 70dB L_{AFmax} at any point within the notional boundary of any rural dwelling located outside the Hobbiton Movie Set Development Concept Plan (DCP) area and existing at [insert date of plan change notification].*



Nevil Hegley
9 April 2019

Attachment A. Copy of Clause 8.1.3 and 8.3.2 of NZS6802

NZS 6802:2008

8 GUIDELINES FOR SETTING NOISE LIMITS

8.1 GENERAL

8.1.1 This section is a guideline for drafting consent conditions, rules or national environmental standards relating to noise.

8.1.2 Limits are normally set on the basis of compatibility with human activities and land use and the protection of community health and/or amenity. Noise limits may depend on many factors such as the time of day, the activities to be protected, the type of noise source, and other factors. The results of sound level surveys, planning expectations, or the need for protection of a particular type of amenity, can guide the setting of noise limits.

C8.1.2 In certain environments such as remote wilderness areas, significant 'natural' sound sources (such as a river) might not cause disturbance but even relatively quiet 'man-made' sound sources might cause disturbance. In these environments other management controls in addition to or instead of numerical noise limits may be appropriate when setting rules. Such controls are outside the scope of this Standard.

8.1.3 Noise limits need to include a number of basic elements which specify where, when, and how, sound is to be measured and assessed. These elements are as follows:

- (a) The activity or zone to be regulated and any exceptions;
- (b) Noise descriptors;
- (c) Noise limits appropriate for the type of activity to be protected (including reference time interval);
- (d) The location at which the noise limit is to be measured;
- (e) Time frames when noise limits apply; and
- (f) Reference to Standards for measurement and assessment methods.

C8.1.3 The absence of any of the key elements in a rule is likely to mean that the application of the rule is less certain. These elements are described in more detail in 8.2, 8.3, and 8.4.

The following is an example of a residential noise limit in the form of a land use resource consent condition which contains these elements. Different noise limits will be required for other types of land use.

'The consent holder shall ensure that all activities on the site measured in accordance with the provisions of NZS 6801:2008 Acoustics – Measurement of environmental sound, and assessed in accordance with the provisions of NZS 6802:2008 Acoustics – Environmental noise shall not exceed the following noise limits at any point within any residential site or at any point within the notional boundary of a rural dwelling, other than a dwelling on the site to which this consent applies, during the following time frames:

Monday to Saturday 7am to 10pmw dB L_{Aeq} (15 min)

Sunday and public holidays 7am to 7pm.....x dB L_{Aeq} (15 min)

Monday to Saturday 10pm to 7am the following day, and
Sunday and public holidays 7pm to 7am the following dayy dB $L_{Aeq(15\text{ min})}$

Daily 10pm to 7am the following day.....z dB L_{AFmax}

These noise limits shall not apply to construction noise which shall be assessed in accordance with NZS 6803:1999 Acoustics – Construction noise.

In this example 'w', 'x', 'y', and 'z' are the numerical noise limits set by the local authority.

8.2 NOISE DESCRIPTORS

- 8.2.1 Where sleep protection is required, a L_{max} (L_{AFmax}) noise limit should be set in addition to a LEQ ($L_{Aeq(t)}$) noise limit. L_{max} limits **should only be set for night-time hours**. Where night-time LEQ limits are combined with daytime LEQ limits for Saturdays, Sundays or public holidays, any L_{max} limit should specifically apply to night-time hours only.
- 8.2.2 The reference time interval (t) should be stipulated in minutes for any noise limit applicable to a specific site for example, $L_{Aeq(15\text{ min})}$. The default value for (t) shall be 15 minutes.

8.3 TIMES OF APPLICATION

- 8.3.1 Times for application of noise limits (prescribed time frames) that is, hours, days, should be clearly specified. If compliance monitoring is required, the number, circumstances, and frequency of monitoring sessions should be specified.
- 8.3.2 Unless otherwise specified, prescribed time frames shall be as follows:

Either:

Daytime	0700 h – 2200 h
Night-time	2200 h – 0700 h the following day

Or:

Daytime	0700 h – 1900 h
Evening	1900 h – 2200 h
Night-time	2200 h – 0700 h the following day

- 8.3.3 A consent condition could specify that an activity may occur for a defined duration, but with some flexibility as to the start and finish times. In this instance the prescribed time frame used to assess any duration adjustment as described in 6.4 shall be the permitted daily operating period rather than the time frame within which such daily operating hours are limited.

Attachment B. Copy of Clause 8.6.2 of NZS6802

NZS 6802:2008

8.5 METEOROLOGICAL CONDITIONS

Meteorological conditions suitable for sound measurement are described in section 7 of NZS 6801.

8.6 GUIDELINES FOR THE PROTECTION OF HEALTH AND AMENITY

- 8.6.1 Guideline noise limits can be useful to users of this Standard especially where there are no applicable noise limits specified by local authorities. The guideline limits indicate generally acceptable noise limits, but communities may wish to make these more or less stringent to suit their particular circumstances.
- 8.6.2 As a guideline for the reasonable protection of health and amenity associated with use of land for residential purposes, the noise limits in table 3 should generally not be exceeded at any point within the boundary of a residential site, for example, at any point within the notional boundary of a rural dwelling.

Table 3 – Guideline residential upper noise limits

Daytime ⁽¹⁾	55 dB $L_{Aeq(15\text{ min})}$
Evening ^(1,2)	50 dB $L_{Aeq(15\text{ min})}$
Night-time ⁽¹⁾	45 dB $L_{Aeq(15\text{ min})}$
Night-time ⁽¹⁾ L_{max}	75 dB L_{AFmax}
NOTE –	
(1)	The definition of times of day are a matter for the relevant local authority and should recognise that a period of not less than 8 hours needs to be provided for sleep to ensure at least the minimum acceptable degree of health protection.
(2)	Inclusion of an evening period and its hours of application are a matter for the relevant local authority.
(3)	This clause is not framed as a consent condition, rule or national environmental standard and should not be quoted for those purposes. See C8.1.3 for suggested format of consent conditions, rules or national environmental standards.

C8.6.2 *The recommended daytime limit of 55 dB $L_{Aeq(15\text{ min})}$ is consistent with the guideline values for community noise in specific environments published by the World Health Organization. The World Health Organization identifies that during the daytime, few people are seriously annoyed by activities with levels below 55 dB L_{Aeq} . The night-time limit recommended should not exceed 45 dB $L_{Aeq(15\text{ min})}$ outside dwellings so that people can sleep with windows open for ventilation and achieve the desirable indoor 30 to 35 dB $L_{Aeq(15\text{ min})}$ level as a design level to protect against sleep disturbance.*

- 8.6.3 Authorities may set more stringent outdoor noise limits to afford more protection to residential and noise sensitive activities but this should only be after an assessment has been made of the expected health and amenity benefits of the increased levels of protection alongside the possible restrictions placed on affected activities. As a minimum, information on the current and future ambient sound levels should be taken into account. There are practical difficulties when attempting to assess the compliance of low sound levels within high noise environments.

Attachment C. Copy of Clause 1.3 of NZS6802

NZS 6802:2008

1.3 APPLICABILITY OF THE GUIDELINE NOISE LIMITS

Nothing in this Standard should prevent a local authority from specifying noise limits which are more stringent than the guideline limits in section 8. A greater degree of protection may be more appropriate than provided by the guideline values, when local conditions and community expectations are taken into account. This Standard shall not be used to justify changes to noise limits in consent conditions, rules or national environmental standards that have been set to ensure a high degree of protection against noise.

C1.3 The degree of protection will depend upon the nature of the area under consideration. A residential area in a quiet environment can reasonably expect a higher degree of protection than a residential area in an already relatively noisy environment.

2 INTERPRETATION

2.1 TERMINOLOGY

For the purposes of this Standard, the word 'shall' refers to requirements that are mandatory for compliance with this Standard, while the word 'should' refers to practices that are advised or recommended.

The terms 'Normative' and 'Informative' have been used in this Standard to define the application of the Appendix to which they apply. A 'Normative' Appendix is an integral part of a Standard, whereas an 'Informative' Appendix is only for information and guidance. Informative provisions do not form part of the mandatory requirements of the Standard.

Clauses prefixed by 'C' are comments on the corresponding clauses and are intended only as helpful guidance. The Standard can be complied with if the comment is ignored.

2.2 RESIDENTIAL ACTIVITY

References in this Standard to residential activities may be taken to include not only permanent residence, but also residence in hospitals, rest-homes, and such similar noise-sensitive places.

C2.2 Determining the locations where noise immissions from a sound source are to be predicted or measured will depend on many factors. See 8.4 for further guidance.

2.3 NOISE

Noise may be considered as sound which serves little or no purpose for the exposed persons and is commonly described as 'unwanted sound'. If a person's attention is unwillingly attracted to the noise it can become distracting and annoying and if this persists it will provoke a negative reaction. However, low or controlled levels of noise are not necessarily unreasonable.

2.4 TIME INTERVAL

For consistency with international Standards, the term 'time interval' in this Standard has a specific meaning as the period between the start and finish of a measurement (or reference period). In this Standard 'interval' does not refer to the gap between two separate measurements.

Attachment D. Copy of Clause 6.4.1 of NZS6802

NZS 6802:2008

6.3 SPECIAL AUDIBLE CHARACTERISTICS

- 6.3.1 Where the sound being assessed has a distinctive character which may affect its subjective acceptability (for example, it is noticeably impulsive or tonal), the representative sound level shall be adjusted to take this into account. The adjustment shall be determined in accordance with the provisions of Appendix B.

C6.3.1 The intrusiveness of a sound is not just a function of its sound pressure level. It is also affected by its character. Sound that has special audible characteristics, such as tonality or impulsiveness, is likely to cause adverse community response at lower sound levels, than sound without such characteristics. These factors should be considered and where necessary taken into account when deriving a rating level. The methods used in this Standard are similar to those used in the 1999 edition of this Standard, but more advanced than earlier editions.

6.4 DURATION

- 6.4.1 If a sound is not present all of the time it is likely to create lesser annoyance than the same sound if it were continuously present. In this Standard, an adjustment to representative sound levels of up to 5 dB shall be used to take this into account. However, because of the importance of protecting sleep, no adjustment is allowed during a prescribed time frame defined in a consent condition, rule or national environmental standard as night-time (for example, 2200 h to 0700 h the following day).

C6.4.1 In this Standard a duration adjustment is required if the sound under investigation is intermittent during the prescribed time frame. The more the sound is present, the less the value of the duration adjustment. Continuous sound warrants no adjustment.

Sleep disturbance is related to both the level and number of intrusive events and therefore no duration adjustment is permitted at night.

- 6.4.2 In some exceptional circumstances where a local authority has determined that sleep protection is essential during daytime hours in a locality, a duration adjustment may be prohibited for daytime hours as well as night-time hours.
- 6.4.3 The rating level shall be determined by subtracting a value of duration adjustment given in table 2 from the representative level. No duration adjustment is to be made at night.

Table 2 – Duration adjustments

Percentage duration of specific sound in the prescribed time frame	Adjustment value
Less than 80%	1 dB
Less than 60%	2 dB
Less than 50%	3 dB
Less than 40%	4 dB
Less than 30%	5 dB

Attachment E, Auckland Unitary Plan - Glenbrook Steel Mill Precinct

I415 Glenbrook Steel Mill Precinct

- (2) Earthworks in the coastal protection yard, which are unrelated to stormwater or wastewater infrastructure, must not exceed a total volume of 25m³ or a total area of 250m².
- (3) Any bare ground arising from earthworks, which is not proposed for further use or development, must be revegetated as soon as practicable.
- (4) Stormwater and wastewater discharge infrastructure is excluded from Standard I415.6.3(1).

I415.6.4. Noise

- (1) The noise (rating) level from any activity must not exceed the noise limits in Table I415.6.4.2 Noise standards.

Table I415.6.4.2: Noise standards

Time	Noise limit
7:00am to 10:00pm	55dB L _{Aeq}
10:00pm to 7:00am	45dB L _{Aeq} 75dB L _{AFmax}

- (2) All activities within the precinct must be conducted and managed to ensure that the average noise level at the six monitoring locations shown on the Glenbrook Steel Mill: Precinct plan does not exceed the stated limits.
- (3) Subject to Standards I415.6.4(4) to I415.6.4(6), the noise levels must be measured in accordance with the requirements of NZS6801:2008 and assessed in accordance with the requirements of NZS6802:2008.

Averaging of noise levels

- (4) Noise levels at any one monitoring location may exceed the stated limits only where this can be clearly attributed to meteorological conditions.
- (5) The measured noise level at any one monitoring location must not exceed the noise limit by more than 5 dBA.
- (6) For the purpose of calculating any one average noise level, measurements from the six monitoring locations must be taken consecutively over a continuous six hour period.
- (7) A correction of 2 dBA must be added to any measurements taken at Monitoring Stations 5 and 6.
- (8) Weather permitting, the operators of the Glenbrook Steel Mill must regularly monitor the night time noise level generated by its operations. This monitoring must be at intervals of no greater than three months, and from the specified monitoring locations. All monitoring information must be forwarded to Council.

I415.7. Assessment – controlled activities

There are no controlled activities in this precinct.