



ASSESSMENT OF NOISE EFFECTS TO ACCOMPANY A REFERRAL APPLICATION

WAITIRI PROJECT
GIBBSTON VALLEY AND WAITIRI PENINSULAR

PREPARED FOR

Oaks Limited

DATE

21 May 2026

Assessment of noise effects prepared by Styles Group for Oaks Limited.

REVISION HISTORY

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Statement of experience

I am and have been the Director and Principal of Styles Group Acoustics and Vibration Consultants for 21 years. I am a Council Member of the Acoustical Society of New Zealand, and I am on the Board of Directors of the Australasian Association of Acoustical Consultants.

I have over 25 years' experience advising on the management of construction and operational noise and vibration effects. I have worked on a significant number of plan changes and resource consent applications for large-scale residential and mixed-use developments across New Zealand. I have extensive experience advising on the management of noise effects from a large range of rural, urban and infrastructure noise sources, and development of controls to improve the compatibility of residential development with potentially noisy activity.

I am a regular and experienced expert witness for Council, Environment Court, District Court, High Court and Board of Inquiry hearings. I confirm that, in my capacity as author of this report, have read and abide by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practice Note 2023.

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Executive summary

Styles Group has assessed the potential noise effects from the Waitiri Project (the **Project**) across multiple sites in the Gibbston Valley and Waitiri Peninsula.

This advice has been prepared to accompany a referral application under the Fast-track Approvals Act 2024.

This report sets out the key considerations for the appropriate management of operational and construction noise and vibration effects in accordance with the permitted noise standards prescribed by the Queenstown Lakes Proposed District Plan. We have also assessed whether the Project has the potential to introduce any new noise-related constraint on the existing noise-generating activities surrounding the development sites, including rural production activities.

Our assessment confirms the Project can be designed and constructed to achieve compliance with the noise standards for permitted activities and achieve a high level of compatibility with adjacent land use activities.

We have provided recommendations to be addressed by the substantive application to ensure that the Project demonstrates compliance with the noise standards for permitted activities and achieves a high level of compatibility with adjacent land use activities.

1.0 Introduction

Oaks Limited has engaged Styles Group to assess the noise effects from the Waitiri Project (the Project) across multiple sites in the Gibbston Valley and Waitiri Peninsula.

This advice includes:

- i. A preliminary assessment of the operational and construction noise and vibration effects from the Project, in accordance with the noise standards for permitted activities prescribed by the Queenstown Lakes Proposed District Plan (**PDP**).
- ii. An assessment of whether the potential to introduce any new noise-related constraint (or potential reverse sensitivity effect) on existing noise generating activities adjacent to the Project.
- iii. Recommendations to be addressed within the Substantive Application to ensure the Project is designed, constructed and operated in accordance with the noise standards for permitted activities and achieves a high level of noise-related compatibility with adjacent land use activities.

This report should be read in conjunction with the documentation submitted with the Referral application and plans. A glossary of acoustical terms used within this document is attached as Appendix A.

2.0 The Project

The Project site comprises five sites located in the Gibbston Valley and Waitiri Peninsula.

Figure 1 displays the location of each of the Project sites, including *Ara Tihi*, *Mānia*, *Taheke*, *Karapuken* and *Kurae*.

The Masterplans attached to the Referral application should be referred to for a full understanding of each Project site. The proposed land use activities for each of the Project sites are described in Sections 4.1- 4.5.

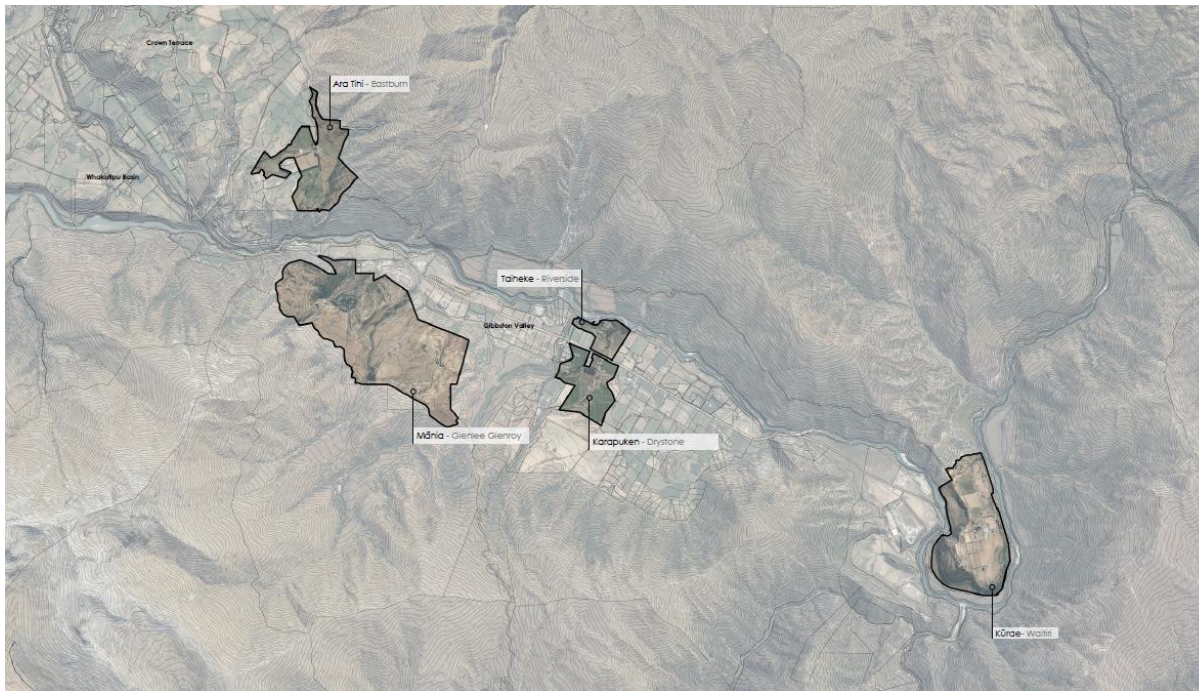


Figure 1 The Waitiri Development

3.0 Noise standards for permitted activities

The Project is located in several zones, including the Wakatipu Basin Rural Amenity Zone, the Rural Zone, Gibbston Valley Resort Zone and Gibbston Character Zone.

The relevant PDP noise standards are summarised below.

3.1 Operational noise limits for permitted activities

Rule 36.5.1 of the PDP prescribes the same permitted noise levels for noise generated and received (when measured and assessed at the notional boundary¹ of any residential unit) in the Wakatipu Basin Rural Amenity Zone, the Rural Zone, Gibbston Valley Resort Zone and Gibbston Character Zone.

The permitted noise limits are displayed in Table 1.

¹ Means a line 20m from any side of residential unit or the legal boundary whichever is closer to the residential unit.

Table 1 Noise levels permitted by Rule 36.5.1 of the PDP

Zone	Assessment location	Time	Noise limit
Wakatipu Basin Rural Amenity Zone	Any point within the notional boundary of a residential unit	8.00 am – 8.00 pm	50 dB L_{Aeq}
Rural Zone Gibbston Character Zone Gibbston Valley Resort Zone (AA1, AA2, AA4, AA7, PL, LMA and OSR Activity Areas).		8.00 pm – 8.00 am	40 dB L_{Aeq} 75 dB L_{AFmax}

3.1.1 Application of permitted noise standards

We understand that the maximum permitted noise levels for the Wakatipu Basin Rural Amenity Zone, Rural Zone, Gibbston Valley Resort Zone and Gibbston Character Zone are designed to manage the operational noise effects from the activities that are permitted in the zones. We understand that the Project seeks to enable land use activities that may not be permitted activities in the zone(s).

A comprehensive acoustic assessment will accompany the Substantive Application that sets out how the Project will be designed, constructed and operated to meet the noise limits for permitted activities. The permitted daytime noise levels of 50 dB $L_{Aeq(15min)}$ and nighttime noise levels of 40 dB $L_{Aeq(15min)}$ and 75 dB L_{AFmax} are designed to provide a good level of acoustic amenity to noise sensitive receivers. We consider that compliance with the noise standards for permitted activities will therefore deliver a very good level of amenity to receivers adjacent to the Project.

The substantive assessment will need to identify whether different or additional controls are required to ensure the Project is designed, constructed and operated to achieve a high level of compatibility with the level of noise amenity that is anticipated and provided for in the relevant zones. This might be required if the Project seeks to enable noise sources that may not be anticipated and provided for by the underlying zone provisions. This advice includes specific recommendations to ensure the Substantive Application delivers this outcome.

3.2 Noise sources that are permitted without a noise limit

Our assessment also takes into account the noise that is permitted by the following rules:

- Rule 36.4.1 permits the noise generated from vehicles on public roads or trains on railway lines (including at railway yards, railway sidings or stations).
- Rule 36.4.5 permits noise generated from farming² and forestry activities³, and bird scaring devices (other than sound from stationary motors and stationary equipment) in the Rural Zone, Gibbston Character Zone and the Gibbston Valley Resort Zone.

3.3 Construction noise and vibration

Rule 36.5.13 permits construction noise where it complies with the recommended upper limits in Tables 2 and 3 of NZS 6803:1999 *Acoustics – Construction noise* when measured and assessed at any point within any other site.

Rule 36.5.10 permits vibration from any activity where it does not exceed the guideline values given in *DIN 4150-3:1999 Effects of vibration* on structures at any buildings on any other site.

3.4 Noise effects from established rural activities

The Project seeks to enable noise sensitive activities on land near to established viticulture activities. We understand that frost fans and bird-scaring devices are often used by viticulture activities in the District.

The following rules are relevant to the noise effects that are permitted to be generated from bird scaring devices and frost fans.

3.4.1 Audible bird scaring devices

Rule 36.5.7 of the PDP prescribes a permitted noise limit for bird scaring devices of 65 dB L_{AE} at any point within the notional boundary of a residential unit (other than on the property in which the device is located).

The permitted standard also requires no audible events between sunset and sunrise the following day, and not earlier than 6.00 am; no more than 15 audible events in any 60-minute period; no more than three sound emissions within any 1-minute period; and no more than one device per 4 hectares of land.

3.4.2 Frost fans

Rule 36.5.9 of the PDP permits the noise from frost fans where the noise levels do not exceed 55 dB L_{Aeq(15min)} when measured and assessed at any point within the notional boundary of

² Means the use of land and buildings for the primary purpose of the production of vegetative matters and/or commercial livestock. Excludes residential activity, home occupations, factory farming and forestry activity. Means the use of lakes and rivers for access for farming activities.

³ Means the use of land primarily for the purpose of planting, tending, managing and harvesting of trees for timber or wood production in excess of 0.5ha in area.

Plantation Forestry is as defined by the Resource Management (National Environmental Standard for Plantation Forestry) Regulations 201

any residential unit (other than residential units on the same site as the activity) or any residential unit or visitor accommodation activity within the Gibbston Valley Resort Zone.

We have undertaken a comprehensive review of aerial photography to verify the location of frost fans near to the Project and to identify any potential for the Project to introduce a constraint on the operation of established frost fans.

4.0 Assessment of noise and vibration effects

We have reviewed the Masterplans for each of the Project Sites to identify the location of all potential noise generating activities and to confirm any measures that may be required to ensure that operational and construction noise levels from the Site comply with the permitted noise levels prescribed by the PDP and achieve a high level of compatibility with adjacent land use activities.

This section provides a high-level assessment of potential construction noise and vibration and operational noise effects for each of the Projects, an assessment of compatibility with surrounding land use, and preliminary recommendations that will be addressed by the substantive application.

4.1 Ara Tihi Eastburn

The Ara Tihi -Eastburn development is in the Rural Zone and Wakatipu Basin Rural Amenity Area. The Masterplan proposes the subdivision and development of land for rural living with areas of open space.

4.1.1 Construction noise and vibration

We expect that construction noise and vibration levels can be managed to achieve compliance with the permitted construction noise and vibration standards prescribed by the PDP at all adjacent sites. This assessment is based on our review of the Masterplan, the relatively straightforward nature of the construction activities and the separation distances to adjacent dwellings.

We recommend that the substantive application includes conditions to ensure construction noise and vibration effects are managed to comply with the permitted construction noise and vibration limits prescribed by the PDP.

4.1.2 Operational noise

The Project is located in the context of existing rural lots in the vicinity of Eastburn Road and Preservation Lane.

Operational noise from the rural lots is expected to be controlled by intermittent vehicle movements and noise from typical rural-residential activities. The noise from the Project is expected to be consistent with the character, timing and level of noise from established rural lifestyle lots adjacent to the Site. The proposed use of the site for rural living can readily

achieve compliance with the permitted noise standards for the underlying zoning arrangements. We consider that the Project can achieve a very good level of noise compatibility with adjacent land use activities.

4.1.3 Potential reverse sensitivity effects

Our preliminary review finds that the Project will integrate with established rural living surrounding the site. We have not identified the potential for the proposal to introduce a noise-related constraint on any land use activities surrounding the Site.

4.2 Mānia - Glenlee Glenroy

The Site is in the Rural Zone and Gibbston Character Zone of the PDP.

The Masterplan proposes the subdivision and development of land for rural living with areas of open space and a 9-hole golf course. A resort precinct will accommodate an existing lodge, and a proposed club house and community hub.

The key considerations for the management of noise effects from the Mānia Project are set out below.

4.2.1 Construction noise and vibration

Based on our review of the Masterplan and the location of adjacent receivers, we expect that construction noise and vibration levels can be managed to achieve compliance with the permitted construction noise and vibration standards prescribed by the PDP at all adjacent sites.

We recommend that the substantive application includes conditions to ensure construction noise and vibration effects are managed to comply with the permitted limits prescribed by the PDP.

4.2.2 Operational noise

The primary operational noise sources associated with the Project are expected to include:

- Vehicle noise associated with rural living and the golf course
- People noise associated with the golf course and activities associated with the Resort Precinct, including the operational noise from the club house and community hub.
- Maintenance activities, including mowing and grooming of the course using a variety of utility vehicles (tractors, mowers, rollers).
- Mechanical plant (HVAC) associated with the club house and community hub.

We have reviewed the location of potential noise generating activities and the proximity of notional boundaries on adjacent sites. We have not identified any constraints in terms of the

Project achieving compliance with the permitted noise standards for the underlying zoning based on the compliance distances available.

In the event that the Resort Precinct seeks to enable functions and events, the substantive application will confirm the proposed mechanisms that will be adopted to ensure that function and event noise will be reasonable for the receivers adjacent to the Site. This may include restrictions on the location, timing and level of amplified sound and management-based measures to control potential people noise. The substantive application will set out the measures that will be implemented to ensure that any noise from functions and events is not dominant or intrusive when observed from adjacent dwellings.

Overall, we expect that operational noise from the activities in the Resort Precinct can be managed to comply with the permitted noise standards for the underlying zoning. The substantive application will set out the measures that will be adopted to ensure noise effects from non-residential activities on the Site will be reasonable for receivers and also comply with the permitted operational noise standards for the underlying zoning arrangements.

4.2.3 Potential reverse sensitivity effects

We have reviewed the established land use activities adjacent to the Mānia Project to identify whether the proposal is likely to introduce any new noise-related constraints on existing noise-generating activities

The Project is near to State Highway 6 (**SH6**). We have not identified any concerns relating to road-traffic noise given the large separation distances (>200m) between the road corridor and future notional boundaries.

The Project is located on land to the rear of and above the site occupied by Gibbston Valley. The land use activities associated with Gibbston Valley include a winery, restaurant, lodge, spa and concerts and events. We have not identified the potential for any constraint on the operation of Gibbston Valley due to the significant separation distances between Gibbston Valley and future notional boundaries on the Site.

We have not identified any potential for the Project to introduce a constraint on frost fans associated with nearby vineyards. The closest frost fan we have identified is located on the vineyard to the east of Resta Road. The frost fan is over 600m from the closest notional boundary on the Site. The noise emissions from the frost fan will readily comply with the permitted noise standards prescribed by the PDP at all future notional boundaries within the Site.

4.3 Taiheke – Riverside

The Site is in the Gibbston Character Zone of the PDP.

The Masterplan proposes the subdivision and development of land for a range of residential lots (low to high density) along with large lot residential and rural living lots. The Masterplan also includes a lodge/ serviced apartments and a conference and facility centre.

The key considerations for the management of noise effects from the Taiheke Project are set out below.

4.3.1 Construction noise and vibration

Construction noise will be generated from the preliminary earthworks to prepare the Site for the future building platforms and civil works to prepare the Site for infrastructure, building platforms and road construction, followed by vertical construction of buildings.

The closest receivers are located at 2209 and 2177 Gibbston Highway. We expect that the highest construction noise levels at 2209 Gibbston Highway will arise from any upgrades to Rafters Road (if required). The highest construction noise levels at 2177 Gibbston Highway are likely to arise from the formation of the internal road network along the common boundary.

The PDP does not control the noise generated from vehicles (including construction vehicles) on public roads.

A construction noise and vibration assessment will be provided as part of the substantive application that will include an assessment of the proposed construction works in accordance with the recommended numerical limits and assessment procedures set out in NZS6803, along with details of any physical or operational mitigation that must be implemented to ensure compliance.

Based on our review of the Masterplan and the location of adjacent receivers, we expect that construction noise and vibration levels can be managed to achieve compliance with the permitted construction noise and vibration standards at all adjacent sites.

4.3.2 Operational noise

The primary operational noise sources associated with the Taiheke Project are expected to include:

- Vehicle movements associated with visitor accommodation, the conference and facility centre and residential activity.
- Noise from typical household activities, including play and social activities, lawnmowing and property maintenance.
- Operational noise associated with the conference and facility centre, including people noise and mechanical plant.

We have reviewed the location of potential noise generating activities and the proximity of notional boundaries on adjacent sites. The closest notional boundaries are well separated from the conference and facility centre by distances exceeding 300m. These are large separation distances that will significantly mitigate noise effects from the Site.

The substantive application will confirm the operational parameters for the conference and facility centre, including any measures that will be implemented to ensure that the proposal achieves a high level of compatibility with adjacent receivers. These measures may include

restrictions on the location, timing and level of the use of amplified sound (that may affect adjacent receivers) and any management-based measures to control people noise outdoors. These measures would be designed to ensure that typical operational noise from the conference and facility centre is not a dominant or intrusive feature of the noise environment when observed from beyond the Site.

The noise from residential activity on the rural-residential lots is expected to be controlled by intermittent vehicle movements and noise from typical household activities. The overall character, timing and duration of noise generated by residential activity is expected to be consistent with the timing, character and level of noise from the established rural lifestyle lots that are adjacent to the Site.

Overall, we have not identified any constraints in terms of the Taiheke Project achieving compliance with the permitted noise standards for the underlying zoning and a reasonable level of noise based on the compliance distances available.

4.3.3 Potential reverse sensitivity effects

We have reviewed the established land use activities adjacent to the Taiheke Project to identify whether the proposal is likely to introduce any new noise-related constraints on existing noise-generating activities.

The proposal seeks to enable residential dwellings adjacent to SH6. The closest dwellings will be separated from the edge of the nearest traffic lane by distances exceeding 40m. While the PDP does not contain any rules or standards that require dwellings to be acoustically treated from road-traffic noise from SH6, we recommend that the Substantive Application include an assessment of road-traffic noise.

From our preliminary review of the New Zealand's Transport Agencies road-traffic noise contours map, the 55dB $L_{Aeq(24hr)}$ is located approximately 100m from the centre of SH6. We recommend that the Substantive Application includes a more detailed assessment of the road traffic noise to determine whether the road-traffic noise level exceeds 55dB $L_{Aeq(24hr)}$ at the external façade of any proposed dwellings. If so, the Substantive Application should propose controls that will require acoustic treatment for dwellings to ensure an appropriate level of acoustic amenity and sleep protection indoors.

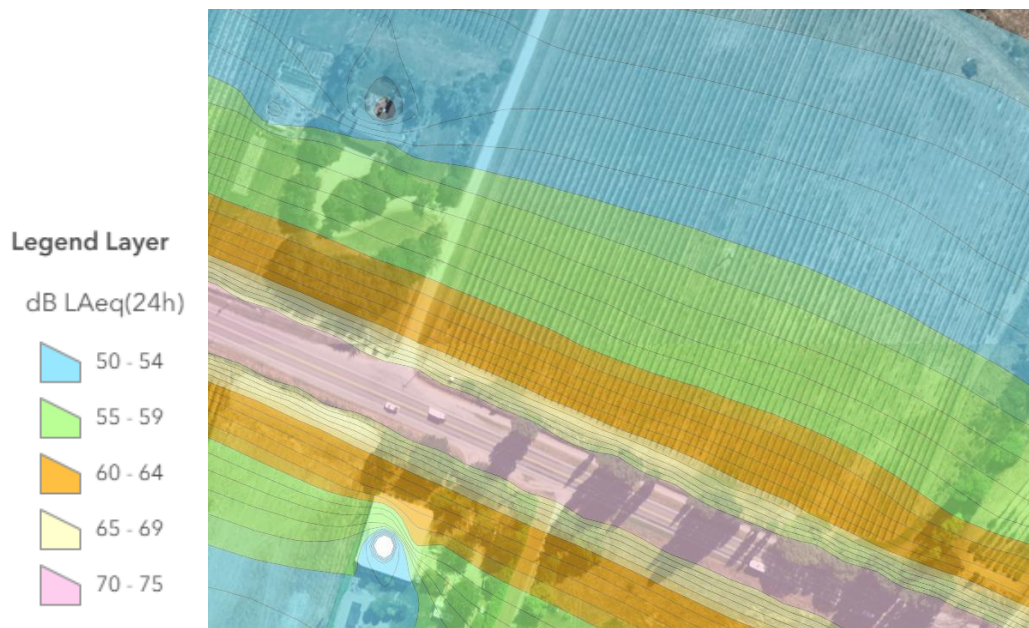


Figure 2 Road-traffic noise contours map (from the New Zealand Transport Agency⁴)

We have identified a frost fan on the adjacent vineyard at 2209 Gibbson Highway. The frost fan is separated from the closest notional boundaries on the Site by more than 125m. The substantive application will need to set out the results of noise modelling that will be used to confirm whether the frost fan can readily comply with the permitted noise standard at all future notional boundaries within the Site.

4.4 Karapuke - Drystone

The Site is in the Gibbston Character Zone of the PDP.

The Masterplan proposes the subdivision and development of land for a range of residential lots, a village precinct, school, areas of open space and will incorporate an existing vineyard.

The key considerations for the management of noise effects from the Karapuke Project are set out below.

4.4.1 Construction noise and vibration effects

Construction noise will be generated from the preliminary earthworks to prepare the Site for the future building platforms and civil works to prepare the Site for infrastructure, building platforms and road construction, followed by vertical construction of buildings.

⁴ <https://nzta.maps.arcgis.com/apps/mapviewer/index.html?webmap=2bc3449a7b32449fb5a085c6e38ff2bd>

Based on our review of the Masterplan and the location of adjacent receivers, we expect that construction noise and vibration levels can be managed to achieve compliance with the permitted construction noise and vibration standards prescribed by the PDP at all adjacent sites.

A detailed construction noise and vibration assessment will be provided as part of the substantive application that will include a detailed assessment of the proposed construction works in accordance with the recommended numerical limits and assessment procedures set out in NZS6803, along with details of any physical or operational mitigation that must be implemented to ensure compliance.

4.4.2 Operational noise effects

The primary operational noise sources associated with the Karapuke Project are expected to include:

- Vehicle movements associated with commercial activities in the village precinct, residential activity and the school.
- Noise from typical household activities, including play and social activities, lawnmowing and property maintenance.
- Noise from the use of the school for educational purposes, including outdoor recreation.
- Noise from viticulture activities, including the use of mobile machinery and the seasonal operation of the established frost fan.

We have reviewed the location of existing and potential noise generating activities and the proximity of notional boundaries on adjacent sites. The closest receivers and notional boundaries on adjacent sites include:

- The notional boundaries of dwellings on Coal Pit Road and 2210 and 2214 SH6, within 20-30m from the boundaries of the proposed Village
- The site occupied by Mount Edward Winery and Cellar Door, approximately 10m from the boundary of the proposed School.

Operational noise generated from commercial activities in the Village Centre will be controlled by the maximum permitted noise levels for the Gibbston Character Zone. The noise limits of 50 dB L_{Aeq} (daytime) and 40 dB L_{Aeq} and 75 dB L_{AFmax} (nighttime) are designed to deliver a very good level of acoustic amenity to dwellings in the zone.

The noise from residential activity on the residential lots is expected to be controlled by intermittent vehicle movements and noise from typical household activities. The overall character, timing and duration of noise generated by residential activity is expected to be consistent with the timing, character and level of noise from the established rural lifestyle lots that are adjacent to the Site.

We expect that a School can be designed in a way that achieves a reasonable level of noise for all receivers. The substantive application will need to confirm the methods and procedures that will ensure that operational noise levels from the School will be reasonable. Noise associated with educational facilities is typically controlled by the Ministry of Education's designation conditions (if the School is to be designated) or appropriate resource consent conditions.

4.4.3 Potential reverse sensitivity effects

The proposal is to enable residential lots within approximately 100m from the established frost fan on the vineyard (within the Site). We recommend that the assessment to inform the substantive application confirms that the frost fan can comply with the permitted noise standards at all future lots or than an appropriate mechanism is in place to ensure its operation is authorised.

We have not identified the potential for the School to introduce a noise-related constraint on any nearby activities. This finding takes into account the established notional boundaries along Coal Pit Road which represent the existing compliance locations for noise.

The Project area is adjacent to SH6. We do not have any concerns relating to road-traffic noise given the large separation distances to future residential lots. All dwellings are well separated from the highway by distances exceeding 140m.

4.5 Kūrae - Waitiri

The Site is in the Rural Zone and Gibbston Character Zone of the PDP.

The Masterplan proposes the subdivision and development of land for a range of residential and rural lots. The Masterplan also includes a nursery, solar farm and community hub.

The key considerations for the management of noise effects from the Kūrae Project are set out below.

4.5.1 Construction noise and vibration effects

We have not identified any constraints in terms of construction noise and vibration from the Project complying with the permitted noise limits at all adjacent receivers.

4.5.2 Operational noise effects

The primary operational noise sources associated with the Kūrae Project are expected to include:

- Vehicle movements associated with residential activity
- Noise from typical household activities, including play and social activities, lawnmowing and property maintenance.

- Noise from electromechanical plant (i.e. inverters and transformers) associated with the solar farm.

The Site occupies an elevated land platform that is surrounded by the Kawarau River on all boundaries except for its western boundary. We have not identified any potential for operational noise from the Site to affect any existing notional boundaries adjacent to the Site given the modest proposed noise sources and large separation distances.

Noise levels from the Site will be controlled by the maximum permitted noise levels for the Gibbston Character and Rural Zone that apply at any notional boundary. While there are no existing notional boundaries in close proximity to the Site, the noise limits of 50 dB L_{Aeq} (daytime) and 40 dB L_{Aeq} and 75 dB L_{AFmax} (nighttime) are designed to deliver a good level of acoustic amenity to any future potential notional boundary that may establish near to the Site in the future.

We expect that the proposed solar farm can be designed to achieve a very good level of amenity for receivers inside the Site.

4.5.3 Potential reverse sensitivity effects

The Project is adjacent to SH6. We do not have any concerns relating to road-traffic noise affecting future residential lots. This is due to the elevated topography of the Site in relation to the road corridor, and ample separation distances to future residential lots.

5.0 Summary

This assessment finds that the Project can be designed, constructed and operated to comply with the permitted activity noise standards for the Wakatipu Basin Rural Amenity Zone, Rural Zone, Gibbston Valley Resort Zone and Gibbston Character Zone of the Queenstown District. These noise limits are designed to deliver a good level of acoustic amenity to residential dwellings.

A comprehensive acoustic assessment will be provided as part of the Substantive Application that will demonstrate how the operational and construction noise levels will be managed to comply with the permitted noise standards *and* achieve a reasonable level of noise at all receivers.

The acoustic assessment will need to specifically address the following matters:

- Construction noise and vibration levels for all Project Sites to demonstrate that compliance with the noise standards for permitted activities can be achieved.
- An assessment of road traffic noise from SH6 to determine if any proposed activities sensitive to noise will need to be acoustically treated to ensure a reasonable level of indoor amenity and sleep protection.

- An assessment of the noise from frost fans close to activities sensitive to noise on the Project Sites to determine any potential reverse sensitivity effects and if so, the methods that will be used to manage them.
- An assessment of the noise from the proposed non-residential noise sources to determine what conditions of consent will be appropriate to manage the noise effects (including from the school and commercial activities such as the conference and facility centre, lodge and resort).

Our preliminary assessment is that the Project can be designed and managed to achieve compatibility between sites that will be created (inside the Project) and at neighbouring sites (outside the Project). We expect that some care will be required to achieve this for some of the matters identified above.