

Section 42A Officer's Report

Hearing Stream 4: Other Zones

Subjects: Quarry Zone

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2 Introduction

2.1 Purpose of this report

- (1) This report is the Officer's Report for the Quarry Zone topic for *Hearing Stream 4: Other Zones* for the Proposed Lower Hutt District Plan (the PDP).
- (2) A separate report for submissions on the Open Space Zones, Hospital Zone, Marae Zone and Tertiary Education Zone has also been prepared for this hearing stream.
- (3) This report is prepared under section 42A of the Resource Management Act 1991 (the RMA) to:
 - a. Assist the Hearing Panel in making their recommendations on the submissions and further submissions on the Proposed Lower Hutt District Plan (the PDP), and
 - b. Provide submitters with information on how their submissions/further submissions have been evaluated by the reporting officer(s) for this hearing stream, and their recommendations to the Hearing Panel.
- (4) This report should be read in conjunction with the section 42A report for Hearing 1 (Opening).
- (5) The Hearing Panel may choose to accept or reject the conclusions and recommendations of these reports, or may come to different conclusions and make different recommendations, based on the information provided to them, including evidence provided to them by submitters.

2.2 Scope and structure

- (6) This report addresses submissions on:
 - QUARZ – Quarry Zone,
 - Quarry Amenity Protection Overlay and
 - QZPO – Quarry Zone Protection Overlay, an overlay in the General Rural Zone and the Rural Lifestyle Zone.
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2.3 Author

- (7) My full name is Sean Bellamy. I am an Intermediate Policy Planner in the Policy Planning team at Hutt City Council (the Council).
- (8) I hold the qualifications of a Master of Regional and Resource Planning from the University of Otago, and a Master of Earth Science from the University of Waikato. I am an intermediate member of the New Zealand Planning Institute.
- (9) I have approximately 13 years' experience in planning and resource management roles in local government, covering district plan reviews and resource consent processing. This experience includes processing resource consents applications for Dunedin City Council District and Hawkes Bay Regional Council and managing the review of the residential section of the Hastings District Plan.
- (10) I have been involved in the District Plan Review since 2022, including working on the General Rural Zone, Rural Lifestyle Zone, Quarry Zone, the Activities on the Surface Water, Signs, and Designations chapters and associated s32 reports.
- (11) Although this is a Council hearing, I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023. I have complied with the Code of Conduct when preparing my written report and I agree to comply with it when I give any oral evidence.
- (12) Other than where I state that I am relying on the advice of another person, this evidence is within my areas of expertise. I have not omitted to consider material facts known to us that might alter or detract from the opinions that I express.
- (13) Any data, information, facts, and assumptions I have considered in forming my opinions are set out in the part of the evidence in which I express my opinion. Where I have set out opinions in my evidence, I have given reasons for those opinions.

2.4 Supporting evidence

- (14) Other than the s32 evaluation report for these chapters, there are no additional supporting documents or evidence for this report.

2.5 Glossary and abbreviations

Term or abbreviation	Meaning
DoC	Department of Conservation
GRUZ	General Rural Zone
GRUZ-QZPO	General Rural Zone – Quarry Zone Protection Overlay
NES-DMRU	National Environmental Standard for Detached Minor Residential Units
NRP	Natural Resources Plan for the Wellington Regional Resource Plan
NRP Change 1	Proposed Change 1 to the Natural Resources Plan for the Wellington Regional Resource Plan
NPS-I	National Policy Statement for Infrastructure
ODP	Operative Lower Hutt District Plan
PDP	Proposed Lower Hutt District Plan
QUARZ	Quarry Zone
QZPO	Quarry Zone Protection Overlay
RLZ	Rural Lifestyle Zone
RMA	Resource Management Act 1991
RPS	Regional Policy Statement for the Wellington Region
RPS Change 1	Proposed Change 1 to the Regional Policy Statement for the Wellington Region
Winstone Aggregates	Winstone Aggregates Ltd

2.6 Procedural issues

(15) The following procedural issues are relevant to this hearing:

- Deferral of Winstone Aggregate’s requests to rezone land that is the subject of a proposed land exchange and fast track resource consent application to Hearing Stream #10. This deferral was signalled via the Panel’s Minute #5, dated 8 May 2026.

- Matters relating to district wide chapters that will be assessed within the relevant hearing stream.
- A pre-hearing meeting held between council officers and Winstone Aggregates.

(16) These are discussed in the sections below.

2.6.1 Deferral of matters relating to proposed land exchange and fast track resource consent application

(17) The Independent Hearing Panel has resolved to defer rezoning requests related to the land exchange and fast track consent to be part of the *Wrap up Hearing*, currently scheduled for December 2026. These matters are:

- a. The request to Rezone a 29.04 ha area of land that is proposed to be transferred to Winstone Aggregates to form the new overburden disposal area as the Quarry Zone with an Overburden Disposal Area overlay and associated definition (submission points 444.4, 444.5, 444.94);
- b. Rezoning various parcels of land that are proposed to be transferred to the Department of Conservation (DoC) to Natural Open Space Zone with a Quarry Zone Protection Overlay (QZPO) (submission points 444.95 and 444.108); and
- c. Consequential submission points, including the proposed inclusion of a definition and mapping of an Overburden Disposal Area Overlay (submission points 444.4 and 444.5) and rules for activities in the Overburden Disposal Area Overlay (444.11, 444.56 and 444.57).

(18) Other Winstone Aggregates submission points on separate PDP chapters, including Natural Hazards, Transport and Noise, will be considered in future hearings that address district-wide matters.

2.6.2 Prehearing meeting

(19) Tim Johnstone (Head of Planning) and I met with representatives of Winstone Aggregates on 26 May 2026 to discuss and clarify issues relating to their

submission points on the Quarry Zone, Quarry Zone Protection Overlay and related definitions.

- (20) The issues relate to changes to provisions within the Quarry Zone Protection Overlay, removal of overlays from the Quarry Zone, and changes to the standards in QUARZ chapter, including noise, vibration and maximum height standard.
- (21) While officers found these discussions helpful in understanding the context of the site and the submission, no joint position on any issue was sought between the representatives of the submitter and the reporting officer.

2.6.3 Relevance of the PDP exemption for the Quarry Zone chapter

- (22) As discussed in the s42A report for Hearing #1: Opening:
- The Resource Management (Consenting and Other System Changes) Amendment Act came into force on 20 August 2025.
 - The Amendment Act introduced new “Plan Stop” requirements.
 - For Hutt City Council and its PDP, these requirements effectively required Council to stop the PDP process and withdraw the plan unless an exemption was granted by the Minister for the Environment.
 - Council requested an exemption for specific parts of the PDP. This exemption was granted on 15 January 2026.
- (23) The QUARZ chapter contains provisions relating to retaining indigenous vegetation. These provisions include:
- QUARZ-P7,
 - QUARZ-S4, and the Quarry Activity Overlay, and
 - QUARZ-S5, and the Special Amenity Area Overlay.
- (24) These provisions specifically relate to the Quarry Zone and visual buffers between the Quarry Zone and nearby residential and open space and recreation zones, and are separate from provisions of the Ecosystems and Indigenous Biodiversity chapter, which have been withdrawn from the PDP.

2.6.4 Integration with the Operative District Plan

- (25) As parts of the PDP have been withdrawn, the PDP is no longer a complete replacement of the Operative District Plan (ODP). As a result, on the completion of the PDP process, the surviving parts of the PDP will need to integrate with the parts of the ODP that are being retained.
- (26) There are no integration issues relating to the Quarry Zone and Quarry Zone Protection Overlay provisions. The QUARZ chapter replaces the Extraction Activity Area Chapter in the ODP. The Quarry Zone Protection Overlay and associated provisions in the GRUZ and RLZ chapters replace Appendix Rural Residential 1, Appendix General Rural 2, and the associated provisions in the Rural Residential Activity Area and General Rural Activity Area chapters of the ODP.

2.6.5 Submissions on related provisions to be addressed through future hearings

- (27) The following district wide issues are relevant to activities in the Quarry Zone:
- Earthworks,
 - Infrastructure,
 - Light,
 - Natural hazards,
 - Noise,
 - Signs,
 - Transport, and
 - Wind.
- (28) Submissions relating to these issues will be addressed through relevant s42A reports in later hearing streams to allow those issues to be considered for all zones collectively.

3 QUARZ – Quarry Zone and Quarry Zone Protection Overlay

3.1 Chapter summary

- (29) The Quarry Zone includes two existing quarries that are on the Wellington Fault Scarp at Kelson and Haywards. The quarry sites are in close proximity to the suburbs of Taitā, Kelson, Haywards and Manor Park. The zone replaces the Extraction Activity Area of the Operative District Plan.
- (30) The Quarry Zone provides for quarrying activities, ancillary industrial activities and conservation activities, whilst restricting incompatible activities. The adverse effects of quarrying are managed through specific standards relating to hours of operation, vibration, spatial development controls to mitigate visual amenity effects and to protect adjacent sites, natural hazards, and requiring a quarry management plan to ensure appropriate management and rehabilitation of quarry sites.
- (31) Some effects of activities in the Zone are also managed through district wide chapters. These include effects relating to:
- Transport,
 - Contaminated land,
 - Hazardous substances,
 - Natural hazards,
 - Subdivision,
 - Earthworks,
 - Noise,
 - Light, and
 - Signs.

3.1.1 Quarry Zone Protection Overlay

- (32) The Quarry Zone Protection Overlay (QZPO) applies to areas to the west of the quarry site in Kelson, located within the Rural Lifestyle Zone (RLZ) and General Rural Zone (GRUZ). The PDP would address reverse sensitivity from development within the overlay by limiting increases in residential activity and other sensitive activities. The QZPO covers an area approximately 500m wide.
- (33) The provisions that relate to the QZPO are located in the RLZ and GRUZ chapters. The chapters each contain an objective, policy and rules that manage the reverse sensitivity associated with the development, alteration, addition to residential buildings, activities and residential accommodation within the QZPO. The provisions are in addition to the provisions of the relevant zones.

3.2 Statutory and policy context

- (34) The broader statutory considerations and national and regional direction for the Quarry Zone largely remains as set out in the s32 report for the chapter.
- (35) However, the National Policy Statement for Infrastructure 2005 (NPS-I) and National Environmental Standards for Detached Minor Residential Units 2025 (NES-DMRU), introduced since the preparation of that report, have some relevance and are discussed below.

3.2.1 National Policy Statement for Infrastructure 2025

- (36) The NPS-I includes quarrying activities in its definition of infrastructure supporting activity. The definition states:

***infrastructure supporting activities** mean activities that are not ancillary infrastructure activities but that are needed to directly support infrastructure activities, and may include quarrying activities*

- (37) Quarried materials are used in the construction, operation, maintenance, upgrade and removal of infrastructure and ancillary infrastructure activities.
- (38) As a result, Policy 5 of the NPS-I is relevant to the Quarry Zone:

Policy 5: Recognising and providing for infrastructure supporting activities

1. *Decision-makers must recognise and provide for the role of infrastructure supporting activities, including by:*
 - a. *recognising the importance of infrastructure supporting activities to enable the benefits of infrastructure activities to be realised;*
 - b. *recognising the operational need or functional need of some infrastructure supporting activities, including supporting quarrying activities to operate in, be located in, or traverse particular environments and locations; and*
 - c. *enabling the timely delivery of infrastructure supporting activities.*

3.2.2 National Environmental Standard for Detached Minor Residential Units 2025

- (39) The NES-DMRU provides for detached dwellings associated with a principal residential unit on a site as a permitted activity in rural zones. This is subject to conditions, including compliance with rules and standards of the district plan relating to reverse sensitivity, and health and safety.
- (40) Detached minor residential dwellings are therefore not a permitted activity within the QZPO which applies in the RLZ and GRUZ.

3.3 Submissions and further submissions

- (41) Four submissions address the QUARZ chapter and QZPO. Submissions/further submissions were received from:
- Aggregate and Quarry Association,
 - Enviro NZ,
 - Policy Planning Team of the Hutt City Council, and
 - Winstone Aggregates.
- (42) No further submissions relate to these matters.

3.4 Key resource management issues

- (43) The key resource management issues raised in submissions relate to:
- Changes to the management of effects within the Quarry Zone,
 - Changes to the management of reverse sensitivity on sites in the QZPO, and
 - Extension of the policies relating to reverse sensitivity an additional 500m beyond the QZPO.
- (44) These issues are discussed in the following sections of this report in relation to the specific submission points and provisions to which these issues relate.

3.5 Discussion of submissions and recommendations

- (45) This section is a discussion of the submission points on the Quarry Zone chapter and QZPO, with my recommendations on decisions requested by submitters.

3.5.1 Provisions not in dispute

- (46) Council only received submissions in support of the following provisions, with no changes sought:

Quarry Zone objectives and policies

- QUARZ-O1: Adverse effects (Winstone Aggregates 444.40)
- QUARZ-O2: Activities in the zone (Winstone Aggregates 444.41)
- QUARZ-P2: Enabled activities (Winstone Aggregates 444.44)
- QUARZ-P3: Recognition of the significance of aggregates and finite nature (Winstone Aggregates 444.45)

Quarry Zone rules and standards

- QUARZ-R1: Repair and maintenance of buildings and structures (Winstone Aggregates 444.50)
- QUARZ-R2: Demolition and removal of buildings and structures (Winstone Aggregates 444.51)

- QUARZ-R3: Construction of new buildings and structures and alterations and additions to existing buildings and structures (Winstone Aggregates 444.52)
- QUARZ-S7: Quarry Management Plan (Winstone Aggregates 444.74)

(47) For clarity, as these provisions are not in dispute, I recommend that these submission points be accepted, and that the related provisions be retained as notified.

3.5.2 General

3.5.2.1 Whole plan submissions relating to quarries

Submission

(48) Winstone Aggregates (444.109, 444.110 and 444.113) make general submission points relating to quarrying, although not specially on the Quarry Zone chapter. The submission points address:

- Updates to standards to be based on current best practice,
- Recognition that Quarry is a long and lawfully established activity,
- Quarrying as a significant regional mineral deposit that has no choice in location, and
- Quarrying results in progressive and constant changes in ground levels and topography, requires bespoke management.

Assessment

(49) These parts of Winstone Aggregates submission raise general issues for quarries and provide context for the parts of their submission that address specific provisions of the PDP.

(50) I do not recommend any amendments in response to these more general submission points. Where the submitter makes more provision-specific submission points, these are addressed elsewhere in this report, including with my recommendations on specific decisions requested.

Recommendation

(51) I recommend that the submission points of Winstone Aggregates (444.109, 444.110 and 444.113) are accepted to the extent that they are noted, but that no amendments are made in response to these points.

3.5.2.2 General support – Quarry Zone

Submission

- (52) Aggregate and Quarry Association (202.1) and Winstone Aggregates (444.39 and 444.98) generally support the use of the Quarry Zone and Quarry Zone chapter. I note the submitters make more specific submission points on specific aspects of the chapter elsewhere in their submissions.

Recommendation

- (53) I recommend that the general support of the Aggregate and Quarry Association (202.1) and Winstone Aggregates (444.39 and 444.98) be noted and the submission points be accepted (subject to amendments recommended in response to more specific submission points).

3.5.2.3 General support – Quarry Zone Protection Overlay

Submission

- (54) Aggregate and Quarry Association (202.9) and Winstone Aggregates (444.77 and 444.102) generally support the use of the Quarry Zone Protection Overlay. I note the submitters make more specific submission points on specific aspects of the overlay elsewhere in their submissions.

Recommendation

- (55) I recommend that the general support of the Aggregate and Quarry Association (202.9) and Winstone Aggregates (444.77 and 444.102) be noted and the submission points be accepted (subject to amendments recommended in response to more specific submission points).

3.5.3 Quarry Zone objectives and policies

3.5.3.1 QUARZ-O3: Adverse effects

Submission

- (56) Winstone Aggregates (444.42) requests an amendment to objective QUARZ-O3 to restrict the management of the adverse effects to the QZPO rather than the whole zone. The proposed amendment is:

Adverse effects of activities and development within the QUARZ are effectively managed within ~~the Zone~~ Quarry Zone Protection Overlay.

Assessment

(57) I consider it is appropriate for the PDP to manage the adverse effects of quarrying activities within the Quarry Zone, not just those that arise within the QZPO. The purpose of the QZPO is to manage reverse sensitivity resulting from sensitive activities. It is not to exclude the consideration of adverse effects of quarrying activities on the existing development and activities within the overlay. There are a number of effects that result from quarrying and ancillary activities that can extend beyond the Zone, including noise and vibration. These effects are not limited to the area within the QZPO, but include the adjacent Natural Open Space Zone and the nearby residential zones. These effects are not necessarily compatible with activities in adjacent zones without management.

(58) The submitter is concerned the proposed objective will restrict plans for, and future spatial expansion of, the quarry site in Kelson. I consider that future changes to the quarry, including any expansion of the quarry site in Kelson, needs to be considered on its own merits, and the management of adverse effects needs to be part of the consideration.

Recommendation

(59) I recommend the relief sought by Winstone Aggregates (444.42) be rejected.

3.5.3.2 QUARZ-P1: Enabled activities

Submission

(60) Winstone Aggregates (444.43) requests an amendment to policy QUARZ-P1 to remove conservation activities as activities to be enabled within the Quarry Zone. The proposed amendment is:

Enable the operation and development of quarrying activities ~~and conservation activities~~ within the Quarry Zone.

Assessment

(61) Winstone Aggregates states that conservation activities need not be included for the following reasons:

- Rehabilitation is specifically provided for in the PDP definition of quarrying activities,
- There is no need for conservation within the Quarry Zone as this demand is around the edges of the QZPO and the Quarry Amenity Protection Overlay which provide for the avoidance, remedying, and mitigation of adverse effects and the transition of land use from sensitive to non-sensitive, and
- Land that is subject to a QEII land covenant is proposed to be transferred to the Crown if the Winstone's fast track consent application for Belmont Regional Park is granted as part of a proposed land exchange.

(62) I do not think it is appropriate to remove "conservation activities" from the policy. I agree with the submitter that rehabilitation activities are covered under the definition of quarry activities and that the quarry site in Haywards may be entering the end of its life cycle. However, conservation activities are not analogous to rehabilitation and the policy provides for the ongoing maintenance of indigenous vegetation of land not subject to quarry activities.

(63) Policy GRUZ-P1 is part of a set of provisions that enables the quarry owner and operator to undertake conservation activities efficiently. Whilst the primary purpose of the Quarry Zone is to provide for quarrying, the zone currently includes land that is covered by QEII Covenants, and areas covered by overlays and rules that seek to maintain indigenous vegetation. While the submitter states that conservation activities will not need to be undertaken as the QEII land is to be exchanged as part of their fast track consent process, indigenous vegetation may need to be maintained as part of a visual buffer to mitigate the visual effects of the quarry on nearby residential and open space and recreation zones.

(64) In my view the provision does not require a quarry operator to undertake conservation activities. Rather, the policy is enabling and provides a simple, clear direction for the owners and operators of a quarry to maintain indigenous vegetation (and undertake other conservation activities such as pest control) if required without the need for a resource consent.

(65) While much of the Quarry Zone is unlikely to be used for conservation activities in the near future, it is appropriate for this activity to be provided for, noting that large areas within the zone have indigenous vegetation cover,

particularly the quarry site in Haywards or for the areas of quarry site in Kelson covered by QEII covenants.

- (66) The submitter states that conservation activities will not need to be undertaken as land with high ecological values is to be exchanged. However, Indigenous vegetation may need to be maintained as part of a visual buffer to mitigate the visual effects of the quarry on nearby residential and open space and recreation zones.

Recommendation

- (67) I recommend the relief sought by Winstone Aggregates (444.43) be rejected.

3.5.3.3 QUARZ-P5: Zone interfaces

Submission

- (68) Winstone Aggregates (444.46) requests an amendment to policy QUARZ-P5 as follows:

Require land use and development in the Quarry Zone to maintain reasonable amenity for adjoining zones outside of the Quarry Zone Protection Overlay, including through management of:

1. *Impacts on visual amenity,*
2. *Light and glare,*
3. *Traffic,*
4. *Noise,*
5. *Vibration, and*
6. *Dust.*

Assessment

- (69) The purpose of the QZPO is to protect quarrying activities from reverse sensitivity effects resulting from new land use. There is therefore an expectation that some effects of quarrying activities will be noticeable within the QZPO, and that new land uses sensitive to these effects seeking to establish within the QZPO will need to address reverse sensitivity effects as part of the resource consent process.
- (70) However, the QZPO does not allow for any effect of the quarry activities on sites in this area on an unconstrained basis, noting that there are existing

residential dwellings within the Overlay. There is therefore a need for the zone provisions to provide for consideration of the effects of activities within the Quarry Zone on sites adjoining the zone, not just those within the QZPO.

Recommendation

(71) I recommend the relief sought by Winstone Aggregates (444.46) be rejected.

3.5.3.4 QUARZ-P6: Vibration

Submission

(72) Winstone Aggregates (444.47) requests that policy QUARZ-P6 be amended as follows:

Enable the generation of vibration in the Quarry Zone where it:

1. *Is for quarrying activities or ancillary activities, and*
2. *Does not compromise people's health at the zone boundary.*

The reasons for this relief are that the policy does not specify the point of assessment (e.g. zone boundary or within the site) and that health and safety within the site is managed under the Health and Safety at Work Act 2015. The submitter considers the provision should clarify that health effects are assessed at the zone boundary to avoid overlap with workplace legislation.

Assessment

(73) I do not support the relief sought. The Quarry Zone provides for other activities, albeit through a resource consent process, that could conceivably take place within the zone, including ancillary quarry activities that may not be managed under the Health and Safety at Work Act 2015.

Recommendation

(74) I recommend the relief sought by Winstone Aggregates (444.47) be rejected.

3.5.3.5 QUARZ-P7: Retention of indigenous vegetation

Submission

(75) Winstone Aggregates (444.48 and 444.49) oppose policy QUARZ-P7 and request that the policy be removed or amended to align with ECO-R2 rule that permits vegetation removal.

Assessment

- (76) The submitter considers that amending the QUARZ-P7 would provide greater flexibility around the clearance of existing indigenous vegetation where there is an operational necessity for vegetation clearance in active quarry areas. ECO-R2 provided for the removal of indigenous vegetation without resource consent and the submitter considers that the policy should be amended to provide greater flexibility around the clearance of existing indigenous vegetation where there is an operational necessity of vegetation clearance in active quarry areas.
- (77) The submitter states that the QUARZ-P7 should be deleted because:
- It also does not specify where it shall be applied,
 - The retention of vegetation for visual amenity and screening purposes better relates to the Quarry Amenity Protection Overlay which is within the General Rural and Rural Lifestyle zones than within the Quarry Zone, and
 - There is a functional and operational need to remove vegetation within the Zone.
- (78) ECO-R2 and QUARZ-P7 relate to separate issues. The provisions in the ecosystems and indigenous biodiversity chapter relate to the maintenance of biological diversity and the intrinsic values of ecosystems. Policy QUARZ-P7 specifically relates to the mitigation of adverse effects of quarrying activities and ancillary activities on the visual amenity and amenity of surrounding area, which is appropriate. In addition, I note that ECO-R2 has been withdrawn as part of the plan stop process.
- (79) QUARZ-P7 explicitly relates to the Quarry Zone. It does not address activities in the QZPO which are in the General Rural Zone and Rural Lifestyle Zone. In my opinion, QUARZ-P7 provides direction for some mitigation of the effects on adjacent zones, and provides policy direction for rules and standards that relate to indigenous vegetation. In addition, while restrictions on development within the Quarry Zone Protection Overlay provide some mitigation of visual effects for areas in Kelson/Liverton to the west of the Belmont Quarry site, this does not mitigate effects of quarrying and ancillary activities on the residential zones to the east of the site.

- (80) The proposed land exchange and fast track resource consent would remove some of the land covered by indigenous vegetation. In addition, the use of indigenous vegetation to manage the effects of quarry activities on visual amenity of surrounding areas may still be required for the existing zones even if the land exchange and fast track consent process is completed.

Recommendation

- (81) I recommend the relief sought by Winstone Aggregates (444.48 and 444.49) be rejected.

3.5.4 Quarry Zone rules and standards

3.5.4.1 QUARZ-R4: Conservation Activities

Submission

- (82) Winstone Aggregates (444.53) requests rule QUARZ-R4 be amended to change the activities from *conservation activities* to *rehabilitation activities*.

QUARZ-R4: *Conservation Rehabilitation* Activities

Assessment

- (83) Rule QUARZ-R4 is enabling, and provides for the owner or operator of the site to maintain areas with ecological and indigenous vegetation values without the need for a resource consent. Removing the reference to 'conservation' in the rule would mean that resource consent would be required for conservation activities as a non-complying activity due to being an activity not otherwise provided for (under rule QUARZ-R8) unless the conservation activity is associated with rehabilitation.
- (84) Conservation activities differ from rehabilitation activities. Conservation provides for the maintenance of indigenous vegetation and ecosystems in areas that have not been quarried, whereas rehabilitation is a quarrying activity that relates to remediation following quarrying. Conservation activities may be required to maintain land covered by a QEII covenant or land subject to an overlay or rule on maintaining indigenous vegetation as a visual amenity buffer.
- (85) In my opinion it is appropriate to provide for conservation activities as a permitted activity, rather than constraining this rule specifically to rehabilitation activities. Rehabilitation activities are included within the

definition of 'quarrying activities' and are therefore already provided for as a permitted activity (subject to standards) under Rule QUARZ-R5, and a separate rule is unnecessary.

Recommendation

- (86) I recommend that the relief sought by Winstone Aggregates (444.53) be rejected.

3.5.4.2 QUARZ-R5: Quarrying activities

Submission

- (87) Winstone Aggregates (444.54) opposes Rule QUARZ-R5.1 in part. The submitter requests the removal of conditions listed in the rule as follows:

1. *Activity status: Permitted*

Where:

- a. *Compliance is achieved with:*

- i. *QUARZ-S2: Hours of operation,*
- ii. *QUARZ-S3: Vibration associated with blasting,*
- ~~iii. *QUARZ-S4: Quarry Setback Overlay,*~~
- ~~iv. *QUARZ-S5: Special Amenity Area Overlay,*~~
- ~~v. *QUARZ-S6: Natural hazards, and*~~
- vi. *QUARZ-S7: Quarry Management Plan.*

- (88) Winstone Aggregates (444.55) supports in part QUARZ-R5.2 (the restricted discretionary arm of the rule), and requests it be amended to a controlled activity.

Assessment

- (89) Winstone Aggregates effectively raise two issues:
- The standards that should apply for a permitted activity, and
 - The activity status for quarrying activities where those standards are not met.

(90) The request to delete references to standards in rule QUARZ-R5.1 is consequential to the submitter's requests for these standards be deleted from the chapter entirely (discussed in sections 3.5.4.8 **Error! Reference source not found.** to 3.5.4.10 of this report). Those submission points are assessed in the relevant sections, where I recommend that standard QUARZ-S4 be deleted and that standards QUARZ-S5 and QUARZ-S6 be retained. As a result, I recommend that the reference to QUARZ-S4 be removed from this rule.

(91) I disagree with the requested amendment to the activity status for Rule QUARZ-R5.2. I consider that restricted discretionary is the appropriate activity status. I acknowledge the submitter's argument that the lack of a controlled activity option could reduce certainty for operators, and that uncertainty can dissuade investment or innovation.

(92) I consider a controlled activity to be inappropriate as it would limit Council's ability to refuse an application for resource consent. Under s104A of the RMA a consent authority must grant an application for a controlled activity. The issue is that the environmental effects from a proposed quarrying activity may not be adequately avoided, remedied or mitigated in a resource consent.

Recommendation

(93) I recommend that submission point 444.54 of Winstone Aggregates be accepted in part, and that rule QUARZ-R5.1 be amended as follows:

1. *Activity status: Permitted*

Where:

a. *Compliance is achieved with:*

i. *QUARZ-S2: Hours of operation,*

ii. *QUARZ-S3: Vibration associated with blasting,*

~~iii. *QUARZ-S4: Quarry Setback Overlay,*~~

iv. *QUARZ-S5: Special Amenity Area Overlay,*

v. *QUARZ-S6: Natural hazards, and*

vi. QUARZ-S7: Quarry Management Plan.

- (94) I recommend that submission point 444.55 of Winstone Aggregates be rejected and that rule QUARZ-R5.2 be retained.

3.5.4.3 QUARZ-R7: Residential activity

Submission

- (95) Winstone Aggregates (444.59) supports rule QUARZ-R7 in part, but requests an amendment to preclude notification on the basis that living quarters on a quarry site will have no adverse effects on any person other than Winstone itself.

Assessment

- (96) I agree that living quarters within the Quarry Zone will have no adverse effect on any person other than the owner and operator of sites within the zone itself, therefore limited or public notification are not required.

Recommendation

- (97) I recommend the relief sought by Winstone Aggregates (444.59) be accepted.

3.5.4.4 QUARZ-R8: Activities not otherwise provided for

Submission

- (98) Winstone Aggregates (444.60) supports in part Rule QUARZ-R8 in part, but seeks an amendment that requires notification of Winstone Aggregates¹.

Assessment

- (99) I am unclear on the specific amendments being sought by the submitter. If the submitter is seeking a condition or note stating that the owner/operator of the quarry will be notified as part of any resource consent applications, I do not agree that this is appropriate.

- (100) I consider including a provision requiring limited notification of the quarry owner or operator would prejudice the notification decisions made during a

¹ The original submission point refers to 'QUARZ-R9' however this appears to be an error in the submission as this rule does not exist. Rule QUARZ-R8 is the only non-complying rule in the chapter and therefore the intent of the submission is sufficiently clear.

resource consent process, where it could be found that there is no increase in reverse sensitivity and that adverse effects are less than minor. While the inclusion of affected parties can improve resource consent processes and potentially allow for better assessments of effects, the determination of whether adverse effects are more than minor and who is an affected person is a matter for the consent authority under sections 95–95G of the RMA.

- (101) I note that the site is currently owned by the submitter. In this instance, use and development on the site by third parties can be controlled by the owner of the quarry.
- (102) Although Council can create rules requiring notification/non notification, it is limited under s77A RMA. This provides for rules requiring public notification or the preclusion of public notification or limited notification. There is no provision for requiring limited notification as per the submission.

Recommendation

- (103) I recommend the relief sought by Winstone Aggregates (444.59) be rejected.

3.5.4.5 QUARZ-S1: Height

Submission

- (104) Winstone Aggregates (444.61 and 444.62) requests the following amendments to standard QUARZ-S1:
- Excluding radio towers, cell towers, support structures and cement silos from the standard, and
 - Updating the vertical reference in the standard from *RL = MSL, 1949 Geodetic Datum* to *RL = MSL, 2016 Geodetic Datum*.
- (105) The submitter states (in 444.61) that the reference to MSL 1949 datum is outdated and could lead to errors in compliance calculations, surveyor confusion, and technical disputes.
- (106) The submitter states (in 444.62) that cement silos, radio towers and conveyor supports are common to quarry operations and, while tall, are often not visually intrusive due to topography. The rules should include function-based exemptions or acknowledge the context of quarrying activities.

Assessment

- (107) I disagree with the request for exemptions for radio towers, cell towers, support structures and cement silos. Whilst I agree that these structures are common to quarry operations and, while tall, are often not visually intrusive due to topography – the rule provides for 24m high structures located on the quarry floor. Structures taller than 12m or larger in other locations have the potential to have visual effects on the surrounding residential areas. In my opinion those structures should be assessed on a case-by-case basis, where the mitigating influence of the topography can be considered. The resource consent pathway is the most effective and efficient method for doing this.
- (108) The provision of bulk and location standards to manage the effects of buildings and structures is a standard approach to planning. In my opinion the standards associated with the Quarry Zone are very permissive, height being the only restriction. I note that the bulk and location standards are more permissive than those provided for telecommunications facilities under the NES-TF.
- (109) With regard to the vertical reference issue, I agree with the submitter that the 1949 MSL geodetic datum has been superseded by the 2016 MSL geodetic datum. Ultimately, the plan should be modified to reflect this. However, the issue is that change in datum changes the RL at the site and that any amendment should consider the effect of this change.
- (110) I would recommend a change to the datum if the submitter provided evidence to show the change in relative height between the datums in the location of the Quarry Zone, or if the change in RL is small enough for any visual effect to be negligible when viewed from outside the site.

Recommendation

- (111) I recommend accepting the relief sought by Winstone Aggregates (444.61) regarding updating the vertical reference and making the following amendment to QUARZ-S1.1:

For the purpose of this standard, RL = MSL, ~~1949~~ 2016 Geodetic Datum.

- (112) I recommend rejecting the relief sought by Winstone Aggregates (444.62) regarding the request for specific exemptions in standard QUARZ-S1.

3.5.4.6 QUARZ-S2: Hours of operation

Submission

- (113) Winstone Aggregates (444.63 and 444.64) supports standard QUARZ-S2 in part, but seeks amendments to:
- Exempt emergency activities from the standard, and
 - Delete the impacts on the transport network from the matters of discretion (matter of discretion 2).

Assessment

Exemption of emergency activities from the standard

- (114) With regard to including an exemption for emergency activities, I agree with this request. "Emergency activities" are not defined in the RMA, higher order planning documents or the PDP.
- (115) Section 341(2) of the RMA, provides guidance about the circumstances under which an activity may be carried out where ordinarily resource consent would be required. I consider that an emergency activity within the quarry zone can be understood in the context of RMA s341(2)(b), being a response to an imminent natural, or manmade hazard event, that is beyond the control of the quarry owner/operator, poses a serious risk to people or property and could not have been reasonably foreseen.
- (116) On this basis I agree that an exemption from the hours of operation standard should be provided for emergency activities. The nature of the Quarry Zone requires that quarry may need to respond quickly to an emergency. In this instance it provides certainty and flexibility to the management of hazards when the threat is imminent.

Deletion of the impacts on the transport network from the matters of discretion

- (117) I concur with the submitter statement that:

"Loading, unloading and movement of vehicles can occur at any time (24 hours/7 days). As such it would seem that under QUARZ-S2 (hours of operation) that the matter of discretion of the impact on the transport network resulting from a breach of the standard is redundant. Vehicles

can move onto and off the site (24 hours/7 days) so transport movements cannot breach the standard.”

- (118) I note that no provisions in the Transport chapter directly relate to the hours of operation of vehicles in the Quarry Zone.

Recommendation

- (119) I recommend accepting the relief sought by Winstone Aggregates (444.63) regarding an exemption for emergency works.
- (120) I recommend accepting the relief sought by Winstone Aggregates (444.64) regarding removal of the matter of discretion on the impacts on the transport network.

3.5.4.7 QUARZ-S3: Vibration associated with blasting

Submission

- (121) Winstone Aggregates (444.65, 444.66, 444.67, 444.68, 444.69 and 444.70) oppose standard QUARZ-S3 in part and seek amendments to include provision for the measurement of an overpressure limit at the façade of unoccupied buildings, and removal of the requirement to notify occupiers of neighbouring sites, keep records of blasting, and various monitoring requirements.
- (122) The amended standard that is requested (not directly stated in the submission but inferred from its content) is:

...

2. *Blast noise (airblast) created by the use of explosives when measured at the notational boundary 20 metres from occupied dwellings shall not exceed a peak overall sound pressure of 126 ~~120~~ dBC (133 ~~126~~ dBL).*

....

- ~~5.—Where blasting is irregular and the occupiers of neighbouring sites could be alarmed, they shall be advised of impending blasts at least one hour before any such blast.~~

~~6.—Monitoring to obtain records and data representative of the effects of blasting on the Quarry Management Area (shown on the District Plan maps) shall be carried out at such frequency to ensure there is sufficient data (at least 10 blasts) to ensure continued compliance with clauses 11 and 12 (below) and shall be maintained on an ongoing basis at a frequency of at least 1 in 20 blasts.~~

....

~~10.—Vibration from blasting shall be measured at appropriate monitoring points established between the closest dwelling and its nearest boundary in accordance with Appendix J4 2.2 of AS2187.2 2006.~~

11. When blasting, blasting vibration to comply with the guideline vibration values of DIN 4150–3:2016 Vibration in buildings – Part 3: Effects on structures when measured and assessed in accordance with that Standard at any building on any other site. ~~the maximum absolute value of the vector sum of three time-synchronised velocity components shall not exceed the guideline values for evaluating the effect of short-term vibration in AS2187.2 – 2006, Table J1.~~

~~12.—Evaluation of the effect of vibration on building occupants shall be also carried out in accordance with NZS/ISO 2631: 1997(E) Mechanical vibration and shock – Evaluation of human exposure to whole body vibration; Part 1: General requirements and Part 2: Continuous and shock induced vibration in buildings (1 to 80 Hz). The multiplying factor of the base curves to be used in evaluating satisfactory magnitudes will be 60, as defined in Table 2 of Annex A in ISO 2631: Part 2.~~

Assessment

- (123) The submission points are assessed in detail below. Each substandard is assessed separately.

(124) The requested amendments to standard QUARZ-S3 have been reviewed by Malcolm Hunt, Council's consultant Noise Engineer. His report is attached to this document in Appendix 4.

(125) The recommended decisions follow these assessments.

QUARZ-S3.2

(126) The requested change to QUARZ-S3.2 relates to standards for airblast provisions.

(127) In relation to the proposed amendments to QUARZ-S3.2, section 2.1 of Mr Hunt's report provides the following discussion on blast noise:

It is widely understood that airblast represents an undesirable and unavoidable output of blasting. While modern blast techniques considerably limit air blast, fly rock, etc due to quarry blasting, airblast or blast 'overpressure' does have potential to cause damage and annoyance under certain conditions. Air blast disturbances propagate as compression wave in air. The effect is influenced by numerous factors such as blast design, weather, field characteristics, and human response. It is therefore appropriate for QUARZ-S3 to contain limits for air blast to achieve the purpose of the district plan which includes ensuring that adverse effects beyond the site are managed appropriately (ref. QUARZ introduction).

QUARZ-S3.2 currently sets quarry blasting air blast limits in terms of peak overall sound pressure of 120 dBC and 126 dBL, as measured at the notational boundary 20 metres from occupied dwellings. That is, a limit of 'Cfrequency weighted' air blast of 120 dB peak value, with an additional limit of 126 dB peak 'unweighted' airblast pressure. As per comments below, any amendments to QUARZ-3.2 should address the inherent uncertainty that exists when two different peak value limits apply to the same blast event.

(128) This discussion is followed in Mr Hunt's report with a table that responds to the specific submission points, summarised in the recommendations of that report (section 3.0). In summary, the report:

- Supports use of a single measurement unit (LZpeak),

- Supports adoption of an appropriate airblast limit for unoccupied buildings (133 dB LZpeak) in addition to limit already proposed to protect occupied buildings (126 dB LZpeak).
- Does not support setting the airblast limit for unoccupied buildings to be measured “at the building façade” due to reflected pressure artificially increasing the measured value.
- To address the issue for unoccupied buildings, the report recommends that the location for assessing peak airblast limit for unoccupied buildings to be not less than 4 metres from the building façade, which is a location where reflected sound pressure would be considered negligible.

(129) I concur with Mr Hunt’s opinion and recommend the changes to QUARZ-S3.2 he has proposed (outlined in Attachment 1 of Mr Hunt’s report).²

QUARZ-S3.5

(130) Winstone Aggregates states that there are no measurable criteria in QUARZ-S3.5, and it is not stated how the occupiers should be notified, and compliance depends on their availability to be contacted. This standard is unclear and compliance with it is difficult.

(131) Mr Hunt agrees with the submitter that QUARZ-S3.5 would be difficult to enforce. However, he considers the issue should be addressed in a site-specific quarry management plan. Mr Hunt has suggested the inclusion of methods in QUARZ-S7.3 (Quarry Management Plan), as follows.

vii. Methods to be employed to provide prior advice to occupants of nearby sites of the timing of proposed quarry blasting including a description of properties to be advised, the proposed method of notification and the timing of such notification prior to planned blasting.

² I note that there is a typographical error in QUARZ-S3 of the PDP at this point, which has carried through to point 2(a) of to Mr Hunt’s recommended standard. For clarity, this should read (a) 126 dB LZpeak when measured at the notational boundary 20 metres from occupied dwellings.

(132) I have considered Mr Hunts assessment and suggested amendment. I agree with Mr Hunts' recommendation that the Quarry Management Plan be amended to include methods of notification.

(133) However, despite this recommendation from Mr Hunt, I consider existing standard QUARZ-S3.5 is still required to ensure that the effects of vibration on neighbouring properties are addressed. While the Quarry Management Plan can outline the notification process, I consider that the existing requirement to notify nearby neighbours should continue.

QUARZ-S3.6, QUARZ-S3.7, QUARZ-S3.8, QUARZ-S3.9 and QUARZ-S3.10

(134) Winstone Aggregates seek the deletion of QUARZ-S3.6 on the basis it sets unclear requirements for monitoring blasting within a Quarry Management Area which is not defined and requires monitoring to continue after sufficient data is available to ensure continued compliance, which is unnecessary.

(135) I agree with the submitter that the Quarry Management Area is not defined. This is administrative error in the PDP. This should refer to the QZPO (a continuation of the existing approach of the ODP). The monitoring required by the standard is intended to determine the effect of blasting on the properties within this overlay.

(136) The deletion of QUARZ-S3.6 would also require the deletion of QUARZ-S3.8, QUARZ-S3.9 and QUARZ-S3.10 as these provisions relate to the monitoring and blasting and vibration. Specifically:

- Clause 6 requires the quarry operator to obtain and maintain representative data of blasting,
- Clause 8 specifies details to be recorded,
- Clause 9 relates to notification of Council, and
- Clause 10 relates specifies location of the measurement.

(137) Mr Hunt recommends a consequential amendment to clause QUARZ-S3.7 to reflect the aims of QUARZ-S3.6, QUARZ-S3.8, and QUARZ-3.9 The proposed amendment is:

1. *Every blast shall be recorded, including:*
 - a. *The date and time of the blast,*
 - b. *Location of blast, and*
 - c. *Blast size and charge mass per delay.*

Blast records shall be made available to the Council on request

- (138) I concur with Mr Hunt's suggested amendments and recommend deleting GRUZ-S3.6, GRUZ-S3.8, GRUZ-S3.9 and GRUZ-S3.10, and amending QUARZ-S3.7 to require records to be made available on request.
- (139) I consider the proposed changes are the most efficient means of determining the effects of blasting.
- (140) The removal and modification removes the issue relating to the reliance on Appendix J4.2.2 of AS2187.2 2006 in Standard QUARZ-S3.10 identified by Winstone Aggregates. Mr Hunt advises:
- "It is agreed there are sometimes access issues which means access to prescribed monitoring locations is not always possible. The matters referred to within QUARZ- S3.10 regarding blast vibration monitoring locations are considered important but need to reflect the sensitivity of the receiving environment which varies for each quarry site. Implementing vibration monitoring taking into account the sensitivity of the receiving environment is best achieved within a site-specific Quarry Management Plan, a plan already required to be prepared for each quarry under QUARZ-S7. "*
- (141) The proposed amendment is:
- b) Details of vibration monitoring undertaken to assess continued compliance with QUARZ-3.11 and QUARZ-3.12 including:
 - i) Location of monitoring points.
 - ii) Distance from the blast to the monitoring points.
 - iii) Type and serial numbers of the monitoring instruments and transducers.
 - iv) Peak noise level (air blast).
 - v) Vibration velocity time history and absolute maximum vibration velocity for each of the three components.
 - vi) Frequency of vibration monitoring on an ongoing basis which shall not be less than a frequency of at least 1 in 20 blasts.
 - vii) Details of how vibration monitoring results will be logged and recorded so that they are made available to the Council on request.
-

QUARZ-S3.11

- (142) Winstone Aggregates seeks an amendment to QUARZ-S3.11 to require blasting vibration to comply with the guideline vibration values of *DIN 4150-3:2016 Vibration in buildings – Part 3: Effects on structures*, rather than *AS2187.2-2006, Table J1*. The submitter states that the *AS 2187.2:2006* table does not exist, that the guideline values in the AS Standard are provided for information and guidance only, and that they do not include values for structures that may be particularly sensitive to vibration. In the submitter’s opinion, *DIN 4150-3:2016* is a more appropriate standard.
- (143) Mr Hunt concurs with the submitter and states that the:
- “DIN standard is technically considered technically appropriate being internationally recognised standard which is in common use across New Zealand in district plan standards and consent conditions. The DIN standard sets out limits for different types of structures, including vibration limits designed to protect typical dwellings and very sensitive buildings such as heritage buildings and structures.”*
- (144) Mr Hunt recommends the following amendment to standard QUARZ-S3.11:
- 11. ~~In order to avoid damage to buildings blasting shall not exceed PPV vibration limits of the German Standard DIN 4150-3:2016 Structural Vibration – Part 3: Effects of Vibration on Structures when measured at the foundation for single storey buildings or in the plane of the highest floor of multi storey buildings. When blasting, the maximum absolute value of the vector sum of three time-synchronised velocity components shall not exceed the guideline values for evaluating the effect of short-term vibration in AS2187.2 – 2006, Table J1.~~*
- (145) The recommended change would also result in a consequential amendment to the second matter of discretion for Standard QUARZ-S3, also recommended by Mr Hunt:
2. Any relevant *DIN vibration standard or* Australian/New Zealand vibration standard for quarries.
- (146) I support Mr Hunt’s recommendations.

QUARZ-S3.12

(147) Winstone Aggregates seek deletion of clause 12 of standard QUARZ-S3. Mr Hunt advises that German Standard *DIN 4150-3:2016 "Structural Vibration – Part 3: Effects of Vibration on Structures"* is sufficient to protect building occupants as well as the building structure, but that it:

"is not intended to be used to avoid annoyance and other effects of building occupants from blasting vibration. While the vibration standard currently proposed within QUARZ-3.12 (NZS/ISO 2631:1997(E)) is out of date and not supported, a suitably protective vibration standard is proposed based on Appendix J, Table J4.5(A) of Australian Standard AS 2187-2:2006 Explosives – Storage and use, Part 2: Use of explosives which is specifically designed to protect occupants of buildings exposed to blasting vibration and is recommended to be adopted within QUARZ-3.12."

(148) I consider the proposed deletion of the clause 12 of QUARZ-S3, which requires evaluation of the effect on building occupants, is counter to the purpose of the RMA. Whilst I agree with the submitter that the existing standard is out of date, Mr Hunt has proposed an alternative that can be used implemented through the PDP.

Recommendation

(149) In summary, pulling the above evaluation together I recommend that:

- a) The submission points of Winstone Aggregates on standard QUARZ-S3 (444.65, 444.66, 444.67, 444.68, 444.69 and 444.70) be accepted in part, and
- b) Standard QUARZ-S3 be amended as follows:

QUARZ-S3: Vibration associated with blasting

1. *Blasting shall be carried out in accordance with the operating practice described in Appendix J. Section J5 of AS 2187 2 – 2006 Explosives – storage, transport and use. Part 2 Use of explosives.*
2. *Blast noise (airblast) created by the use of explosives shall not exceed:*

~~a. 126 dB L_{zpeak} when measured at the notational boundary 20 metres from occupied dwellings, shall not exceed a peak overall sound pressure of 120 dBC (126 dBL).~~

~~b. 133 dB L_{zpeak} when measured not less than 4 metres from unoccupied buildings building, in the direction of the blasting.~~

3. All blasting shall be restricted to between 10:00am and 4:00pm, Monday to Saturday (excluding public holidays) except where blasting is necessary for safety reasons.

4. Blasting shall be confined to two occasions per day except where necessary for safety reasons.

5. Where blasting is irregular and the occupiers of neighbouring sites could be alarmed, they shall be advised of impending blasts at least one hour before any such blast.

~~6. Monitoring to obtain records and data representative of the effects of blasting on the Quarry Management Area (shown on the District Plan maps) shall be carried out at such frequency to ensure there is sufficient data (at least 10 blasts) to ensure continued compliance with clauses 11 and 12 (below) and shall be maintained on an ongoing basis at a frequency of at least 1 in 20 blasts.~~

7. Every blast shall be recorded, including:

a. The date and time of the blast,

b. Location of blast, and

c. Blast size and charge mass per delay.

Blast records shall be made available to the Council on request.

~~8. Where vibration monitoring is carried out in accordance with 6 above, blasts shall be recorded with particular attention to details of:~~

~~a. Location of monitoring points,~~

~~b. Distance from the blast to the monitoring points,~~

- ~~c. Type and serial numbers of the monitoring instruments and transducers;~~
- ~~d. Peak noise level (air blast), and~~
- ~~e. Vibration velocity time history and absolute maximum vibration velocity for each of the three components.~~
- ~~9. The blast records and monitoring results shall be made available to the Council on request.~~
- ~~10. Vibration from blasting shall be measured at appropriate monitoring points established between the closest dwelling and its nearest boundary in accordance with Appendix J4 2.2 of AS2187.2-2006.~~
- ~~11. In order to avoid damage to buildings blasting shall not exceed PPV vibration limits of the German Standard DIN 4150-3:2016 Structural Vibration – Part 3: Effects of Vibration on Structures when measured at the foundation for single storey buildings or in the plane of the highest floor of multi storey buildings. When blasting, the maximum absolute value of the vector sum of three time-synchronised velocity components shall not exceed the guideline values for evaluating the effect of short-term vibration in AS2187.2 – 2006, Table J1.~~
- ~~12. Evaluation of the effect of vibration on building occupants shall be also carried out in accordance with NZS/ISO 2631: 1997(E) Mechanical vibration and shock – Evaluation of human exposure to whole body vibration; Part 1: General requirements and Part 2: Continuous and shock induced vibration in buildings (1 to 80 Hz). The multiplying factor of the base curves to be used in evaluating satisfactory magnitudes will be 60, as defined in Table 2 of Annex A in ISO 2631: Part 2. In order to protect occupants of buildings blasting shall not exceed PPV vibration limits of Appendix J, Table J4.5(A) of Australian Standard AS 2187-2:2006 Explosives – Storage and use, Part 2: Use of explosives.~~

c) Matter of discretion 2 of standard QUARZ-S3 be amended as follows:

2. Any relevant DIN vibration standard or Australian/New Zealand vibration standard for quarries.

d) Standard QUARZ-S7.3 be amended as follows:

3. As a minimum, the Quarry Management Plan must describe:

...

b. Planned measures to mitigate impacts of quarrying activities beyond the site, including:

...

vii. Methods to be employed to provide prior advice to occupants of nearby sites of the timing of proposed quarry blasting including a description of properties to be advised, the proposed method of notification and the timing of such notification prior to planned blasting.

c. Details of vibration monitoring undertaken to assess continued compliance with QUARZ-3.11 and QUARZ-3.12 including:

i. Location of monitoring points.

ii. Distance from the blast to the monitoring points.

iii. Type and serial numbers of the monitoring instruments and transducers.

iv. Peak noise level (air blast).

v. Vibration velocity time history and absolute maximum vibration velocity for each of the three components.

vi. Frequency of vibration monitoring on an ongoing basis which shall not be less than a frequency of at least 1 in 20 blasts.

vii. Details of how vibration monitoring results will be logged and recorded so that they are made available to the Council on request.

...

3.5.4.8 QUARZ-S4: Quarry Setback Overlay and the Quarry Activity Overlay

Submission

- (150) Winstone Aggregates (444.71) opposes standard QUARZ-S4 and seeks that the standard be deleted. The submitter (444.106) also opposes the Quarry Setback Overlay referred to in the standard.
- (151) The submitter is concerned that the standard refers to an overlay that is not shown on the Planning Maps and is not defined elsewhere in the PDP. They state that without mapped overlays, these provisions are unenforceable and introduce risk to all parties.
- (152) Winstone Aggregates (444.103) also support the inclusion of 620 Hebden Crescent in the Quarrying Activity Overlay.³

Assessment

- (153) The submitter is correct in stating that standard QUARZ-S4 does not relate to a mapped overlay in the PDP and that this undermines the effectiveness of the District Plan. The standard incorrectly refers to the Quarry Activity Overlay which is a result of an error in the preparation of the PDP. The standard should instead refer to the 'Quarry Activity Overlay' which is shown on the Planning Maps.
- (154) For context:
- The ODP includes a 25m buffer strip along the boundaries of the Extraction Activity Area (the ODP equivalent of the Quarry Zone) with Belmont Regional Park. These buffers are shown in Appendix Extraction 1A and 1B of the ODP.
 - The ODP permits "extraction activities" (similar to quarrying or mining) subject to permitted activity conditions, including a condition for the maintenance of indigenous vegetation in this buffer area (6D2.1.1j of the ODP).

³ In the Summary of Decisions Requested, this submission point is incorrectly recorded as being opposed to the application of the overlay to this site.

- If this condition is not met, the extraction activity is a discretionary activity.

(155) However, in preparing the PDP errors were made in how the overlay and associated provisions were carried over. Specifically:

- The 25m buffer was carried over to the PDP maps (as the “Quarry Activity Overlay”) for the quarry site in Haywards, but not for the quarry site in Kelson)
- The provisions that relate to the buffer refer to a “Quarry Setback Overlay”, rather than the “Quarry Activity Overlay”.

(156) While the question could be asked on whether this was an error or whether Council intended to remove the buffer overlay, I note the s32 evaluation report for the Quarry Zone assesses the option of removing the buffer but concluded that this option was less effective in providing protection from the effects of quarrying on the adjacent zone and ultimate it was not adopted for the PDP⁴.

(157) There are three options to resolve this issue:

- Option 1: Remove standard QUARZ-S4 and the Quarry Activity Overlay (effectively the request of Winstone Aggregates)
- Option 2: Amend standard QUARZ-S4 to refer to the Quarry Activity Overlay. This would mean the standard and overlay would apply only to the quarry site in Haywards.
- Option 3: Amend standard QUARZ-S4 to refer to the Quarry Activity Overlay **and** add the buffer to the maps of the Proposed District Plan for the Belmont Quarry site.

(158) In terms of the scope of the submission, the submitter has requested the deletion of QUARZ-S4 on the basis this overlay is not shown on the planning maps or defined through objectives or policies for the zone.

(159) I consider that it is within scope to change the reference in the QUARZ-S3.4 from Quarry Setback Overlay to Quarry Activity Overlay (or vice versa) and to

4

https://hccpublicdocs.azurewebsites.net/api/download/d764466f20cf454ba1010adf695ed15f/_dplanreview/564b68b4706e45f48a5a89813111bc5d09b, page 45.

consider the modification of the area within it to address the issues raised in the submission.

(160) However, I consider Option 1 as the buffer for the Haywards quarry site and most of the buffer for the Belmont Quarry site is either subject to an existing QEII covenant or are part of a proposed land exchange which would result in this land being added to the conservation estate. The remaining piece that is not subject to a covenant/land exchange is in the location of a planned expansion of the Belmont Quarry site to create a new Overburden Disposal Area. This expansion would likely result in the clearance of the vegetation within the buffer, and if the buffer was retained, it would no longer provide a visual screen for the quarrying activities at the site (given the expansion of the quarries operation beyond the location of the buffer).

(161) I note that the proposed land exchange and expansion of the Belmont Quarry site are currently being advanced through a *Fast-track approval process*, and final decisions on that process are yet to be made, although this process is expected to be completed prior to Council's final decisions on the PDP. If this is not the case, or if the proposed land exchange and expansion are declined, this recommendation would need to be revisited. This can be done so through the Wrap-up hearing for the PDP (currently scheduled for December 2026).

Recommendation

(162) I recommend accepting the relief sought by Winstone Aggregates (444.71) and that QUARZ-S4 be deleted.

(163) As a consequential amendment, I recommend that the Quarrying Activity Overlay be removed from the PDP maps.

(164) Given the recommended removal of the Quarrying Activity Overlay from the PDP map, I recommend that the submission point of Winstone Aggregates that supports the inclusion of 620 Hebden Crescent in the Overlay (444.103) be rejected.

3.5.4.9 QUARZ-S5: Special Amenity Area Overlay and Quarry Amenity Protection Overlay map layer

Submission

- (165) Winstone Aggregates (444.72, 444.76, 444.105, and 444.104) opposes standard QUARZ-S5 and the Quarry Amenity Protection Overlay map layer and seeks their deletion.

Assessment

- (166) The submitter is states in their submission (correctly) that standard QUARZ-S5 refers to an overlay that is not shown on the PDP maps (i.e. the Special Amenity Area Overlay). Instead, the mapped layer is labelled as the Quarry Amenity Protection Overlay. I generally agree that this error undermines the effectiveness of the District Plan.

- (167) The submitter states that:

“Vegetation is already protected by QEII covenant, and no further district plan protection is warranted. Expert LV assessment from DCM Urban demonstrates minimal visual impacts when viewed from the Valley Floor.

The proposed vegetation removal would enable access to additional aggregate resources and OBDA, extending the quarry life by up to 20 years. Recognise that existing QEII covenant already provides this area with appropriate environmental protection.”

- (168) For context:

- The ODP identifies three “Special Amenity Areas” within the Extraction Activity Area (the ODP equivalent of the Quarry Zone). One on the northeastern side of the quarry site in Haywards, the second on the eastern corner of the Belmont Quarry site, and the third on the southeastern boundary of the Belmont Quarry site. These overlays are shown in Appendix Extraction 2A and 2B of the ODP.
- The ODP permits “extraction activities” (similar to quarrying or mining) subject to permitted activity conditions, including a condition for the maintenance of indigenous vegetation within these identified areas (6D 2.1.1k of the ODP).

- If this condition is not met, the extraction activity is a discretionary activity.

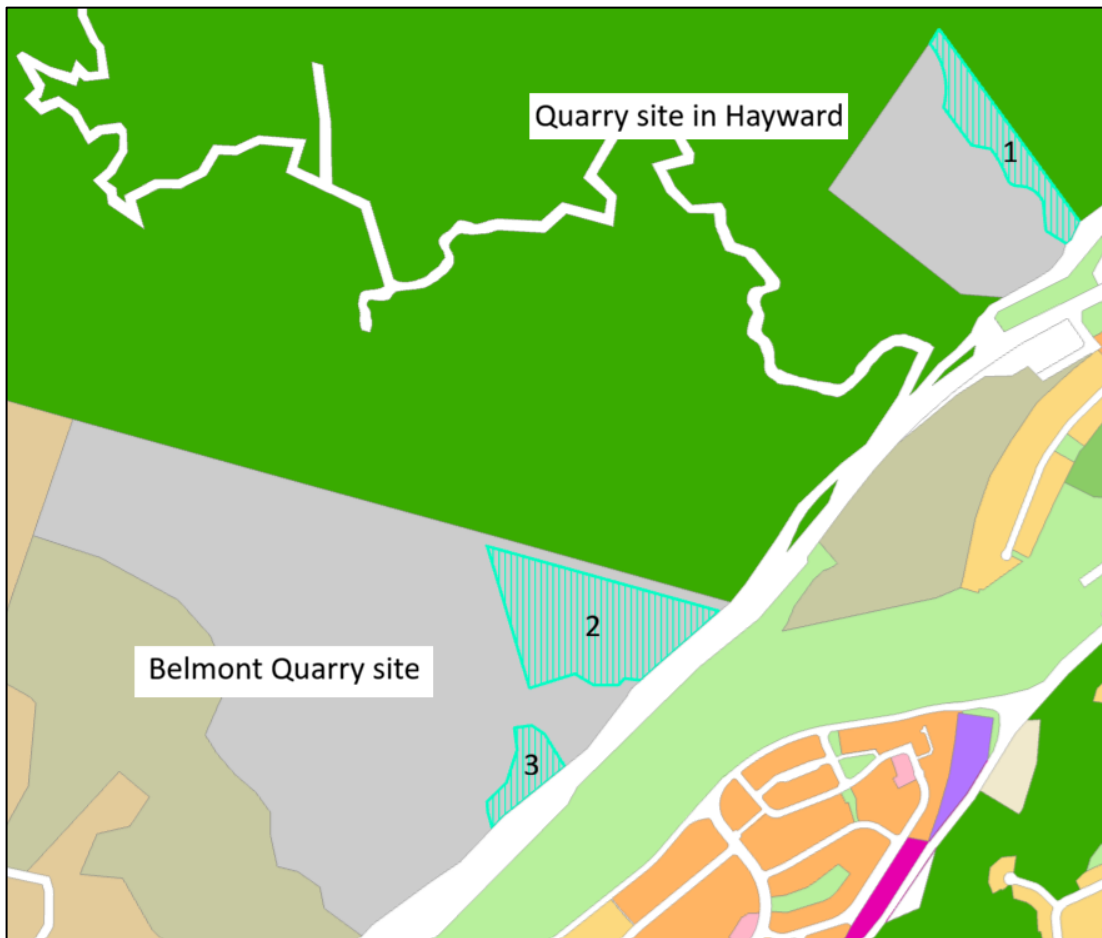


Figure 1. Location of the three Quarry Amenity Protection Overlay sites (in cyan).

(169) An error was made in preparing the PDP, which resulted in standard QUARZ-S5 referring to the “Special Amenity Area Overlay”, when the standard should have referred to the “Quarry Amenity Protection Overlay”, which is shown in the PDP maps and aligns with the equivalent overlay of the ODP.

(170) I have considered two options to resolve this issue:

- Option 1: Remove standard QUARZ-S5 and the Protected Special Amenity Area
- Option 2: Amend standard QUARZ-S5 to refer to the Quarry Amenity Protection Overlay (effectively continuing the existing protection of the ODP for the area)

(171) I consider the key consideration is the mapping of smaller southern area in the overlay map (marked as area '3' in Figure 1, above). I have considered the impact on the submitter of retaining QUARZ-S5, noting that:

- The quarry site in Haywards is being retired.
- The larger area within the quarry site in Kelson are largely covered by QEII covenants.
- The ODP contains current restrictions restricting development

(172) The impact on potentially affected persons of not amending the provisions for QUARZ-S5 and the Quarry Amenity Proportion Overlay potentially affects the residents of nearby the residential zones to the east. The overlay mitigates the visual effects of the quarry on the adjacent residential areas, particularly Manor Park and Taitā. The PDP provides a resource consent pathway for activities that would breach this standard, as well as objectives and policies to guide decision-making when considering a resource consent application for an activity that does not meet the standard (particularly objective QUARZ-O3, QUARZ-P5 and QUARZ-P7).

(173) I consider standard QUARZ-S5 should be retained and amended to refer to the Quarry Amenity Protection Overlay. In addition, I recommend that the Quarry Amenity Protection Overlay map layer is retained as notified.

Recommendation

(174) I recommend rejecting the relief sought by Winstone Aggregates (444.72, 444.76, 444.104 and 444.105) and recommend amending QUARZ-S5 as follows:

QUARZ-S5: ~~Special Amenity Area Overlay Quarry Amenity Protection Overlay~~

1. *The indigenous vegetation cover within the ~~Special Amenity Area Overlay Quarry Amenity Protection Overlay~~ shall be maintained.*

3.5.4.10 QUARZ-S6: Landslide hazard and erosion

Submission

(175) Winstone Aggregates (444.73) opposes standard QUARZ-S6 and seeks its deletion. The submitter is concerned that the standard requires the reader to exercise discretion in its application and is not binary as to whether compliance is able to be achieved prior to work commencing. The submitter

considers the words 'is not increased' is not a suitable permitted activity standard and cannot be readily enforced.

Assessment

(176) I note that this standard is effectively a continuation of the permitted activity condition 6D 2.1.1(m) of the ODP, and has been part of the ODP since it was first made operative in 2003. In that time, there is no record of the condition creating any issues with the application of the associated rule.

(177) The submitter states that the wording "is not increased" is not a sound permitted activity standard and cannot be enforced. I consider that it is important to consider any increased natural hazard risk to land outside the Quarry Zone and to manage that risk. I recommend the following amendment to:

1. *Quarrying activities must be undertaken in a way that the ~~susceptibility of land prone to erosion and landslide is not increased~~ erosion and landslide hazards on land in adjoining zones are avoided through methods included in a Quarry Management Plan.*

Matters of discretion if the standard is breached:

1. *The increase in risk of landslides; for land in adjoining zone.*
2. *The increase in risk of erosion; for land in adjoining zone.*
3. *The sensitivity of activities in areas at risk of erosion or landslides.*
4. *Any adverse effects on the character and visual amenity beyond the site.*

Recommendation

(178) I recommend rejecting the relief sought by Winstone Aggregates (444.73), but recommend the following amendment to QUARZ-S6:

1. *Quarrying activities must be undertaken in a way that the ~~susceptibility of land prone to erosion and landslide is not increased~~ erosion and landslide hazards on land in adjoining zones are avoided through methods included in a Quarry Management Plan.*

Matters of discretion if the standard is breached:

1. *The increase in risk of landslides; for land in adjoining zone.*

2. *The increase in risk of erosion; for land in adjoining zone.*
3. *The sensitivity of activities in areas at risk of erosion or landslides.*
4. *Any adverse effects on the character and visual amenity beyond the site.*

3.5.5 Quarry Zone Protection Overlay objectives and policies

3.5.5.1 GRUZ-QZPO-01/RLZ-QZPO-01: Protection of quarrying activities in the Quarry Zone

Submission

(179) Enviro NZ (323.60) and the Aggregate and Quarry Association (202.10) submit in support of the GRUZ-QZPO-01 as notified.

(180) The Aggregate and Quarry Association (202.11) submit in support of RLZ-QZPO-01 as notified.

(181) Winstone Aggregates (444.78 and 444.79) seek an amendment to GRUZ-QZPO-01 and RLZ-QZPO-01 as follows:

~~New~~ activities and development in the General Rural Zone do not restrict quarrying activities in the Quarry Zone.

(182) They state that new and existing activities can each have reverse sensitivity effects on the Quarry Zone.

Assessment

(183) The submissions in support of GRUZ-QZPO-01 and RLZ-QZPO-01 from Enviro NZ (323.60) and the Aggregate and Quarry Association (202.10 and 202.11) are noted.

(184) I recommend accepting the relief sought by Winstone Aggregates (444.78). I consider that the proposed amendment has little actual effect on development, as existing development has existing use rights under s10 of the RMA. However, I think the proposed amendment provides more clarity where the bulk and location of buildings changes, or there is a change in the use, or the intensity of an activity.

Recommendation

(185) I recommend that the submissions of Enviro NZ (323.60) and the Aggregate and Quarry Association (202.10 and 202.11) be accepted in part, in that I recommend that GRUZ-QZPO-O1/RLZ-QZPO-O1 be retained, subject to the amendments recommended below.

(186) I recommend accepting the relief sought by Winstone Aggregates (444.78 and 444.79) and that GRUZ-QZPO-O1/RLZ-QZPO-O1 be amended as follows:

~~New or~~ *Activities and development in the General Rural Zone do not restrict quarrying activities in the Quarry Zone.*

3.5.5.2 GRUZ-QZPO-P1/RLZ-QZPO-P1: Activities in the Quarry Zone Protection Overlay

Submission

(187) Enviro NZ (323.63) support GRUZ-QZPO-P1 and seek that it is retained as notified.

(188) Winstone Aggregates (444.80 and 444.81) seek that GRUZ-QZPO-P1 and RLZ-QZPO-P1 be amended as follows:

~~Only allow~~ *Avoid activities within 500 m of ~~in~~ the Quarry Zone Protection Overlay ~~where they do not increase reverse~~ that are sensitive to any effects ~~on of quarrying-lawfully established~~ activities within the Quarry Zone.*

(189) The submitter seeks the amendments to provide additional recognition of reverse sensitivity issues noting the policy creates a bottom line for any further loss of protection from reverse sensitivity.

Assessment

(190) The submission effectively seeks to include consideration of reverse sensitivity effects from development 500m beyond the boundary of the QZPO, and avoidance of some activities within that additional area. Figure 2 below shows the QZPO (hatched) and the area of rural zoned land within 500m of the QZPO boundary (dark brown) that would be affected by the change to the policies.

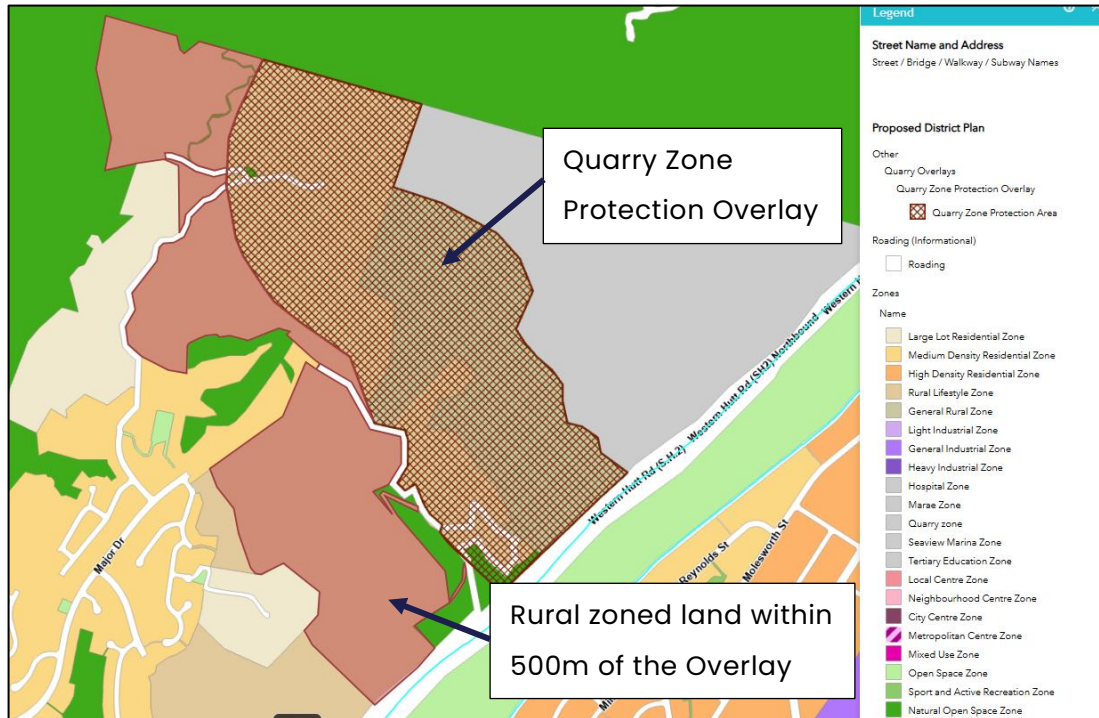


Figure 2. Quarry Zone Protection Overlay (in hatched brown) and rural zoned land within 500m of that Overlay (in dark brown, immediately to the west of the Overlay).

- (191) The proposed amendment would result in the policy addressing additional issues located in the Rural lifestyle zoned land up to 500m beyond the QZPO. There is no land in the General Rural Zone within 500m of the QZPO. Any changes to the policies would not affect development, use or subdivision in the residential zones.
- (192) The basis for an extension to the spatial restrictions on development is unclear. Council records indicate no complaints concerning quarrying activities from the sites in the QZPO (or in Rural Lifestyle Zone within 500m of it's boundary) and that Council has not been informed of any complaints from this area by the quarry operator. The lack of complaints may indicate that the extent of the QZPO and existing provisions have been effective in managing reverse sensitivity.

Recommendation

- (193) I recommend accepting the submission of Enviro NZ (323.63), and that GRUZ-QZPO-PI be retained as notified.
- (194) I recommend rejecting the relief sought by Winstone Aggregates (444.80 and 444.81).

3.5.6 Quarry Zone Protection Overlay rules and standards

3.5.6.1 Rules for the QZPO – Submission points from Winstone Aggregates

(195) Winstone Aggregates (444.82, 444.83, 444.84, 444.85, 444.86, 444.87, 444.88, 444.89, 444.90, 444.91, 444.92, 444.93) have similar submission points on each of the rules for the Quarry Zone Protection Overlay, being:

- GRUZ-QZPO-R1/RLZ-QZPO-R1: Construction of new residential units in the Quarry Zone Protection Overlay,
- GRUZ-QZPO-R2/RLZ-QZPO-R2: Residential activities in the Quarry Zone Protection Overlay, and
- GRUZ-QZPO-R3/RLZ-QZPO-R3: Visitor accommodation in the Quarry Zone Protection Overlay.⁵

(196) In summary, Winstone Aggregates seeks:

- a) That the QZPO rules be amended to be subject to the following internal noise standards:

35 dB L_{Aeq} between 10 pm and 7 am within bedrooms and sleeping spaces.

40 dB L_{Aeq} at all other times within all other noise sensitive spaces.⁶

- b) That the QZPO rules continue to provide for limited notification.⁷
- c) New non-complying rules where the internal noise standards are not met (inferred).⁸
- d) Requirements that applications under the new non-complying rules be limited notified to the quarry owner and/or operator.⁹

⁵ For this section, these rules are referred to collectively as the “QZPO rules”.

⁶ Submission points 444.82 to 444.87.

⁷ Submission points 444.82 to 444.87.

⁸ Submission points 444.88 to 444.93.

⁹ Submission points 444.88 to 444.93.

Assessment

(197) The submitter states that:

- The proposed rules are fit for purpose but do not provide standards which design and construction must achieve,
- Public notification is precluded but limited notification should remain available
- The submitter's requested rule framework provides a viable consenting pathway where adverse effects (reverse sensitivity) are avoided and the ongoing operation of lawfully established quarrying activities in the Quarry Zone are not compromised, and
- The owner and operator of the quarry should be allowed opportunity to be heard in matters with potential or actual adverse effects on the quarry.

Internal noise standards for *the QZPO rules* (point a, above)

(198) The submitter seeks to amend the *QZPO rules* to include a requirement that proposals under the rule must comply with internal noise standards (also proposed by the submitter) in order to be a restricted discretionary activity, and that if those standards are not met, that the proposal would be a non-complying activity. In my opinion, the proposed change does not provide any additional benefit given the matters of discretion of the rule as notified already provide for consideration of reverse sensitivity effects on quarrying activities in the Quarry Zone.

(199) While I accept that noise standards provide for mitigation of noise effects on activities covered by the rules, in my opinion this matter of discretion provides adequate scope for the assessment of reverse sensitivity effects through the resource consent process.

Limited notification under *the QZPO rules* (point b, above)

(200) The support for providing for limited notification of resource consents under the proposed restricted discretionary rules is noted.

New non-complying rules where the internal noise standards are not met (point c, above)

- (201) As noted above, the submitter requests new internal noise standards for the QZPO rules, and if these standards are not met, that a proposed activity should be a non-complying activity.
- (202) I consider a non-complying activity status would be too restrictive for activities under these rules. The purpose of the QZPO is ensure new activities and development do not increase reverse sensitivity on quarrying activities in the quarry zone. As noted above, I consider a restricted discretionary activity status provides adequate consideration of the reverse sensitivity resulting from alterations, additions and new residential activities, buildings and visitor accommodation.

Requirements that applications under the new non-complying rules be limited notified to the quarry owner and/or operator (point d, above)

- (203) The submitter considers that requiring limited notification of the quarry owner (and operator if separate) provides for fair representation in the management of reverse sensitivity effects.
- (204) I do not recommend the committee add a new non-complying activity to each rule in the QZPO, or to add new rules with the same effect. If the committee was to amend the rules I consider that a requirement for limited notification of the quarry owner and quarry operator need not be included. Determination of who is to be notified in an application for resource consent is most appropriately determined through the resource consent process.

Recommendation

- (205) I recommend that the amendments sought by Winstone Aggregates to the rules associated with the Quarry Zone Protection Overlay (submission points 444.82 to 444.93) be rejected.

3.5.6.2 GRUZ-QZPO-R3: Correcting reference to GRUZ-R12

Submission

- (206) The Policy Planning team of the Hutt City Council (440.67) seeks to amend the note to GRUZ-QZPO-R3 to correct a typographical error. The proposed amendment is:

This rule replaces GRUZ-R12 within the Quarry Zone Protection Overlay.

Assessment

- (207) The proposed amendment proposed by the Policy Planning Team of Hutt City Council is minor amendment that is necessary to improve the readability and effectiveness of the plan.

Recommendation

- (208) I recommend that the relief sought by the Policy Planning team (440.67) be accepted, and that GRUZ-QZPO-R3 be amended as follows:

This rule replaces GRUZ-R12 within the Quarry Zone Protection Overlay.

4 Conclusion

- (209) This report has provided an assessment of submissions points on the Quarry Zone and related provisions for the Quarry Zone Protection Overlay.
- (210) Section 3 of this report assesses and provide recommendations on the decisions requested in submissions. I consider that the submissions addressed in that section should be accepted, accepted in part, or rejected, as set out in my recommendations of this report and in Appendix 2.
- (211) I recommend that provisions be amended as set out in Appendix 1 for the reasons set out in this report.
- (212) I consider that the amended provisions will be efficient and effect in achieving the purpose of the RMA, the relevant objectives of the PDP and other relevant statutory documents, for the reasons set out in the Section 32AA evaluations in Appendix 3 of this report.

5 Appendices

Appendix 1: Recommended amendments to the Proposed Lower Hutt District Plan

Appendix 2: Recommended decisions on submission points relating to rural zones

Appendix 3: Section 32AA assessment

Appendix 4: Expert review of the submission on the standard QUARZ-S3 Vibration associated with blasting

Appendix 1: Recommended amendments to chapters

QUARZ — Quarry Zone

The purpose of the Quarry Zone chapter is to provide for quarrying and ancillary activities within existing quarry sites in Kelson and Haywards, whilst ensuring that adverse effects beyond the site are managed appropriately and that the site is remediated on completion of the quarrying.

Quarries, and ancillary activities, are critical source of materials associated with infrastructure and development in the Lower Hutt Aggregate is used in the constructions of roads, concrete, manufactured concrete building materials, asphalt and other products.

Quarries can have a range of adverse effects on surrounding areas. These include noise and vibration, dust and odour, loss of ecological values, and visual amenity. Rehabilitation of the land following quarrying is an issue. The benefit of future use is dependent on the rehabilitation.

While this chapter includes the core objectives, policies, and rules that apply to the Quarry Zone, other district-wide chapters of the District Plan set additional objectives, policies and rules for all or part of the zone. As such, this chapter should be read alongside the district-wide chapters of the District Plan. However, the Earthworks chapter does not apply to quarrying activities within the Quarry Zone, including earthworks associated with rehabilitation.

Role of Wellington Regional Council

Wellington Regional Council also have functions under the Resource Management Act that relate to the management of quarrying activities. This includes the control of discharges of contaminants (including dust, odour and sediment) into or onto land, air, or water.

As a result, the objectives, policies and rules of the Regional Council’s Natural Resources Plan for the Wellington region are also likely to apply to quarrying activities and associated activities, and resource consents may be required under the rules of that plan.

Objectives

QUARZ-O1	Purpose of the Quarry Zone
The Quarry Zone contributes to well-functioning environments by providing a source of aggregate and products manufactured from aggregate for use in construction and development.	
QUARZ-O2	Activities in the zone
The Quarry Zone:	

1. Primarily provides for quarrying, processing of quarried material, and manufacturing of products from quarried material,
2. Provides for ancillary activities that are directly associated with quarrying, and
3. Provides for other activities that are compatible with quarrying activities within the Zone and have a functional need or operational need to be within the zone.

QUARZ-O3	Adverse effects
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Adverse effects of activities and development within the Quarry Zone are effectively managed within the Zone.

QUARZ-O4	Site rehabilitation
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Quarry sites within the Quarry Zone, including exposed and cut faces, are rehabilitated as soon as practicable on the completion of quarrying at the site.

Policies

QUARZ-P1	Enabled activities
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Enable the operation and development of quarrying activities and conservation activities within the Quarry Zone.

QUARZ-P2	Potentially incompatible activities
-----------------	--------------------------------------------

Only allow activities other than quarrying activities and activities ancillary to quarrying where:

1. They are compatible with the quarrying activities and ancillary activities, undertaken at the site, or
2. There is a functional need or operational need to be in that location.

QUARZ-P3	Recognition of significance of aggregates and finite nature
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Recognise:

1. The importance of aggregates and products of quarries for regional development and land use,
2. That aggregates are a limited resource, and
3. There are limited opportunities to establish new quarries, due to geology, size of sites, access, and the existing environment, including existing land use and development.

QUARZ-P4	Built development
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Manage the effects of built development in the Quarry Zone by:

1. Enabling the repair, maintenance, demolition and removal of existing buildings, and
2. Manage the visual effects of new buildings and structures and additions to existing buildings and structures including by controlling their height.

QUARZ-P5	Zone interfaces
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Require land use and development in the Quarry Zone to maintain reasonable amenity for adjoining zones, including through management of:

1. Impacts on visual amenity,
2. Light and glare,
3. Traffic,
4. Noise,
5. Vibration, and
6. Dust.

QUARZ-P6	Vibration
<p>Enable the generation of vibration in the Quarry Zone where it:</p> <ol style="list-style-type: none"> 1. Is for quarrying activities or ancillary activities, and 2. Does not compromise people's health. 	
QUARZ-P7	Retention of indigenous vegetation
<p>Minimise the adverse effects of quarrying activities and ancillary activities on the visual amenity and character of the surrounding area through:</p> <ol style="list-style-type: none"> 1. Firstly, retaining existing indigenous vegetation that screens views of disturbed areas where practicable, having regard to whether there are functional needs or operational needs to clear the vegetation to enable quarrying on the site. 2. Where existing indigenous vegetation is not retained (under point 1): <ol style="list-style-type: none"> a. Screening the disturbed areas as far as practicable with new planting. b. Minimising the length of time that newly disturbed areas are visible and adversely affect visual amenity values beyond the site, including through prompt rehabilitation of these areas, having regard to functional and operational needs for quarrying activities on the site and any impacts rehabilitation of these areas may have on the effectiveness of rehabilitation within the site in general. 	
QUARZ-P8	Land stability
<p>Manage quarrying activities so that there is no increased risk from erosion and landslide hazards to people's health and safety.</p>	
QUARZ-P9	Quarry Management Plan
<p>Ensure appropriate management and rehabilitation of quarry sites within the Quarry Zone by requiring the preparation and implementation of a Quarry Management Plan for quarrying activities within Zone.</p>	

Rules

Note:

Resource consent may be required under rules in this chapter as well as other chapters. Unless specifically stated, resource consent is required under each relevant rule. The steps to determine the relevant rules and activity status of an activity are set out in the General Approach chapter.

Buildings and structures

QUARZ-R1	Repair and maintenance of buildings and structures
	1. Activity status: Permitted
QUARZ-R2	Demolition and removal of buildings and structures
	1. Activity status: Permitted
QUARZ-R3	Construction of new buildings and structures and alterations and additions to existing buildings and structures
	1. Activity status: Permitted
	Where:

	<p>a. Compliance is achieved with:</p> <ul style="list-style-type: none"> i. QUARZ-S1: Height, and ii. QUARZ-S7: Quarry Management Plan.
	<p>2. Activity status: Restricted discretionary</p> <p>Where:</p> <ul style="list-style-type: none"> a. Compliance is not achieved with QUARZ-R3.1. <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> 1. The matters of discretion in any standards not met.

Land use activities

QUARZ-R4	Conservation Activities
	<p>1. Activity status: Permitted</p>
QUARZ-R5	Quarrying activities
	<p>1. Activity status: Permitted</p> <p>Where:</p> <ul style="list-style-type: none"> a. Compliance is achieved with: <ul style="list-style-type: none"> i. QUARZ-S2: Hours of operation, ii. QUARZ-S3: Vibration associated with blasting, iii. QUARZ-S4: Quarry Setback Overlay, iv. QUARZ-S5: Special Amenity Area Overlay, v. QUARZ-S6: Natural hazards, and vi. QUARZ-S7: Quarry Management Plan.
	<p>2. Activity status: Restricted discretionary</p> <p>Where compliance is not achieved with QUARZ-R5.1.</p> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> 1. The matters of discretion in any standards not met. 2. Any positive benefits that can only be achieved through non-compliance with any standards not met.
QUARZ-R6	Industrial activities ancillary to quarrying
	<p>1. Activity status: Discretionary</p>
QUARZ-R7	Residential activity
	<p>1. Activity status: Non-complying</p> <p>Where:</p> <ul style="list-style-type: none"> a. There is no more than 1 residential unit on the site, and b. The residential unit is ancillary to a quarrying activity on site (such as a caretaker's quarters). <p><u>Notification:</u> <u>Public notification is precluded for applications under this rule.</u></p>
	<p>2. Activity status: Prohibited</p>

a. Where compliance with QUARZ-R7.1 is not achieved.

QUARZ-R8

Activities not otherwise provided for

1. **Activity status:** Non-complying

Standards

QUARZ-S1

Height

1. Buildings and structures must not exceed a maximum height:
 - a. On any part of the area where the ground level is RL 45 metres or lower at the time of installation or construction of the structure: 24 metres above ground level.
 - b. On any part of the area where the ground level is greater than RL 45 metres at the time of installation or construction of the structure: 12 metres above ground level.

For the purpose of this standard, RL = MSL, ~~1949~~ 2016 Geodetic Datum.

Matters of discretion if the standard is breached:

1. The extent to which the additional height is necessary to provide for functional need or operational need of a quarry.
2. The effect on visual amenity of the surrounding area.
3. The effectiveness of any proposed landscaping, screening or other mitigation at mitigating the effects on visual amenity of the surrounding area.

QUARZ-S2

Hours of operation

1. The hours of operation are 6.00am to 10.00pm, Monday to Saturday (excluding public holidays) for all activities except:
 1. Administrative activities,
 2. Maintenance of plants and machinery, ~~and~~
 3. Loading/unloading and movement of vehicles, ~~and~~
 4. Emergency activities.which may occur at any time.

Matters of discretion if the standard is breached:

1. The impact on adjacent sites and residential units in adjacent zones, including effects from:
 - a. Noise and vibration, and
 - b. Light and glare.
2. ~~Impacts on the transport network.~~

QUARZ-S3

Vibration associated with blasting

1. Blasting shall be carried out in accordance with the operating practice described in *Appendix J. Section J5 of AS 2187 2 — 2006 Explosives — storage, transport and use. Part 2 Use of explosives.*
2. Blast noise (airblast) created by the use of explosives shall not exceed:
 - a. 126 dB L_{Zpeak} when measured at the notational boundary 20 metres from occupied dwellings, ~~shall not exceed a peak overall sound pressure of 120 dBC (126 dBL).~~
 - b. 133 dB L_{Zpeak} when measured not less than 4 metres from unoccupied buildings building, in the direction of the blasting.

3. All blasting shall be restricted to between 10:00am and 4:00pm, Monday to Saturday (excluding public holidays) except where blasting is necessary for safety reasons.
4. Blasting shall be confined to two occasions per day except where necessary for safety reasons.
5. Where blasting is irregular and the occupiers of neighbouring sites could be alarmed, they shall be advised of impending blasts at least one hour before any such blast.
- ~~6. Monitoring to obtain records and data representative of the effects of blasting on the Quarry Management Area (shown on the District Plan maps) shall be carried out at such frequency to ensure there is sufficient data (at least 10 blasts) to ensure continued compliance with clauses 11 and 12 (below) and shall be maintained on an ongoing basis at a frequency of at least 1 in 20 blasts.~~
7. Every blast shall be recorded, including:
 - a. The date and time of the blast,
 - b. Location of blast, **and**
 - c. Blast size and charge mass per delay, **and**

Blast records shall be made available to the Council on request.
- ~~8. Where vibration monitoring is carried out in accordance with 6 above, blasts shall be recorded with particular attention to details of:

 - a. Location of monitoring points,
 - b. Distance from the blast to the monitoring points,
 - c. Type and serial numbers of the monitoring instruments and transducers,
 - d. Peak noise level (air blast), and
 - e. Vibration velocity time history and absolute maximum vibration velocity for each of the three components.~~
- ~~9. The blast records and monitoring results shall be made available to the Council on request.~~
- ~~10. Vibration from blasting shall be measured at appropriate monitoring points established between the closest dwelling and its nearest boundary in accordance with Appendix J4 2.2 of AS2187.2-2006.~~
- ~~11. In order to avoid damage to buildings blasting shall not exceed PPV vibration limits of the German Standard DIN 4150-3:2016 Structural Vibration – Part 3: Effects of Vibration on Structures when measured at the foundation for single storey buildings or in the plane of the highest floor of multi storey buildings. When blasting, the maximum absolute value of the vector sum of three time-synchronised velocity components shall not exceed the guideline values for evaluating the effect of short-term vibration in AS2187.2 – 2006, Table J1.~~
12. Evaluation of the effect of vibration on building occupants shall be also carried out in accordance with NZS/ISO2631: 1997(E) Mechanical vibration and shock Evaluation of human exposure to whole body vibration; Part 1:General requirements and Part 2: Continuous and shock induced vibration in buildings (1 to 80 Hz). The multiplying factor of the base curves to be used in evaluating satisfactory magnitudes will be 60, as defined in Table 2 of Annex A in ISO 26 31: Part 2. In order to protect occupants of buildings blasting shall not exceed PPV vibration limits of Appendix J, Table J4.5(A) of Australian Standard AS 2187-2:2006 Explosives – Storage and use, Part 2: Use of explosives.

Matters of discretion if the standard is breached:

1. The effects of vibration on adjacent sites and residential units in adjacent zones.
2. Any relevant DIN vibration standard or Australian/New Zealand vibration standard for quarries.
3. Any practicable measures taken to manage the vibration effects.

QUARZ-S4	Quarry Setback Overlay
<p>1. The indigenous vegetation cover within the Quarry Setback Overlay shall be maintained.</p> <p>Matters of discretion if the standard is breached:</p> <p>1. Effects on amenity values beyond the site.</p> <p>2. Effects on slope stability.</p> <p>3. The effects of any remedial or mitigation works.</p> <p>4. Any functional need or operational need for the works.</p>	
QUARZ-S5	Special Amenity Area Overlay Quarry Amenity Protection Overlay
<p>1. The indigenous vegetation cover within the Special Amenity Area Overlay <u>Quarry Amenity Protection Overlay</u> shall be maintained.</p> <p>Matters of discretion if the standard is breached:</p> <p>1. Effects on character and amenity beyond the site.</p> <p>2. Any functional need or operational need to remove vegetation.</p>	
QUARZ-S6	Landslide hazard and erosion
<p>1. Quarrying activities must be undertaken in a way that the susceptibility of land prone to erosion and landslide hazards is not increased <u>erosion and landslide hazards on land in adjoining zones are avoided through methods included in a Quarry Management Plan.</u></p> <p>Matters of discretion if the standard is breached:</p> <p>1. The increase in risk of landslides, <u>to land in adjoining zone.</u></p> <p>2. The increase in risk of erosion, <u>to land in adjoining zone.</u></p> <p>3. The sensitivity of activities in areas at risk of erosion or landslides.</p> <p>4. Any adverse effects on the character and visual amenity beyond the site.</p>	
QUARZ-S7	Quarry Management Plan
<p>1. A Quarry Management Plan must be prepared and maintained for all quarrying activities.</p> <p>2. Quarrying activities and rehabilitation of the site must be undertaken in accordance with the Quarry Management Plan.</p> <p>3. As a minimum, the Quarry Management Plan must describe:</p> <p>a. The quarrying activities covered by the Quarry Management Plan,</p> <p>b. Planned measures to mitigate impacts of quarrying activities beyond the site, including:</p> <p>i. Hours of operation,</p> <p>ii. Noise management,</p> <p>iii. Vibration management,</p> <p>iv. Dust management,</p> <p>v. Management of visual amenity, including landscape plans, and</p> <p>vi. Management of natural hazards, including slope stability, and</p> <p>vii. <u>Methods to be employed to provide prior advice to occupants of nearby sites of the timing of proposed quarry blasting including a description of properties to be advised, the proposed method of notification and the timing of such notification prior to planned blasting.</u></p> <p>c. <u>Details of vibration monitoring undertaken to assess continued compliance with QUARZ-3.11 and QUARZ-3.12 including:</u></p> <p>i. <u>Location of monitoring points,</u></p> <p>ii. <u>Distance from the blast to the monitoring points.</u></p>	

- iii. Type and serial numbers of the monitoring instruments and transducers.
 - iv. Peak noise level (air blast).
 - v. Vibration velocity time history and absolute maximum vibration velocity for each of the three components.
 - vi. Frequency of vibration monitoring on an ongoing basis which shall not be less than a frequency of at least 1 in 20 blasts.
 - vii. Details of how vibration monitoring results will be logged and recorded so that they are made available to the Council on request.
- d. The rehabilitation that is planned for the site on the completion of the quarrying activities, including:
- i. The intended end use of the site or parts of the site on the completion of quarrying activities,
 - ii. When rehabilitation will occur,
 - iii. The landform and drainage pattern of the site following completion of quarrying activities and rehabilitation,
 - iv. Any change in natural hazards resulting from quarrying and any proposed mitigation, and
 - v. Any adverse effects associated with the rehabilitation.
4. A copy of the Quarry Management Plan shall be provided to the Council's Head of Planning prior to undertaking quarrying activities covered by the Plan.
5. At least every two years, the Council's Head of Planning shall be provided with:
- a. A progress report on the effectiveness of the Quarry Management Plan, and
 - b. Any changes that have been made to the Quarry Management Plan.

Matters of discretion if the standard is breached:

- 1. Alternative measures to ensure adverse effects of quarrying activities beyond the boundary of the sites will be managed appropriately.
- 2. Alternative measures to ensure suitable rehabilitation of the site.

RLZ — Rural Lifestyle Zone

Quarry Zone Protection Overlay

To address the potential for reverse sensitivity effects on quarrying activities within the Quarry Zone from new land use within the rural area near the Quarry Zone, the District Plan identifies the rural areas through the Quarry Zone Protection Overlay, and includes specific objectives, policies, and rules to manage new land use in the identified area. This includes objectives, policies and rules in both the General Rural Zone and Rural Lifestyle Zone chapters.

These objectives, policies, and rules are additional to the other objectives, policies, and rules for the zones.

Objectives

Objective — Quarry Zone Protection Overlay

RLZ-QZPO-O1	Protection of the quarrying activities in the Quarry Zone
<i>This objective is additional within the Quarry Zone Protection Overlay.</i>	
New Activities and development in the Rural Lifestyle Zone do not restrict quarrying activities in the Quarry Zone.	

Policies

Policies — Quarry Zone Protection Overlay

RLZ-QZPO-P1	Activities in the Quarry Zone Protection Overlay
<i>This policy is additional within the Quarry Zone Protection Overlay.</i>	
Only allow activities in the Quarry Zone Protection Overlay where they do not increase reverse sensitive effects on quarrying activities within the Quarry Zone.	

Rules

Note: Resource consent may be required under rules in this chapter as well as other chapters. Unless specifically stated, resource consent is required under each relevant rule. The steps to determine the relevant rules and activity status for an activity are set out in the General Approach chapter.

Rules — Quarry Zone Protection Overlay

RLZ-QZPO-R1	Construction of new residential units in the Quarry Zone Protection Overlay
<i>This rule is additional within the Quarry Zone Protection Overlay.</i>	
<p>1. Activity status: Restricted discretionary</p> <p>Matters of discretion are restricted to:</p> <p>1. Reverse sensitivity effects on quarrying activities in the Quarry Zone.</p> <p>Public notification is precluded for applications under this rule.</p>	
RLZ-QZPO-R2	Residential activities in the Quarry Zone Protection Overlay
<i>This rule is additional within the Quarry Zone Protection Overlay.</i>	
<p>1. Activity status: Restricted discretionary</p> <p>Matters of discretion are restricted to:</p> <p>1. Reverse sensitivity effects on quarrying activities in the Quarry Zone.</p> <p>Public notification is precluded for applications under this rule.</p>	
RLZ-QZPO-R3	Visitor accommodation in the Quarry Zone Protection Overlay
<i>This rule is additional within the Quarry Zone Protection Overlay.</i>	
<p>1. Activity status: Restricted discretionary</p> <p>Matters of discretion are restricted to:</p> <p>1. Reverse sensitivity effects on quarrying activities in the Quarry Zone.</p> <p>Public notification is precluded for applications under this rule.</p>	

GRUZ — General Rural Zone

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Quarry Zone Protection Overlay

To address potential reverse sensitivity effects on quarrying activities within the Quarry Zone from new land use within the rural area near the Quarry Zone, the District Plan identifies the rural areas through the Quarry Zone Protection Overlay, and includes specific objectives, policies, and rules to manage new land use in the identified area. This includes objectives, policies, rules in both the General Rural Zone and Rural Lifestyle Zone chapters.

These objectives, policies, and rules are additional to the other objectives, policies, and rules for the zones.

Objectives

Objective — Quarry Zone Protection Overlay

GRUZ-QZPO-O1	Protection of the quarrying activities in the Quarry Zone
<i>This objective is additional within the Quarry Zone Protection Overlay.</i>	
<p>New Activities and development in the General Rural Zone do not restrict quarrying activities in the Quarry Zone.</p>	

Policies

Policies — Quarry Zone Protection Overlay

GRUZ-QZPO-P1	Activities in the Quarry Zone Protection Overlay
<i>This policy is additional within the Quarry Zone Protection Overlay.</i>	
<p>Only allow activities in the Quarry Zone Protection Overlay where they do not increase reverse sensitive effects on quarrying activities within the Quarry Zone.</p>	

Rules — Quarry Zone Protection Overlay

GRUZ-QZPO-R1	Construction of new residential units in the Quarry Zone Protection Overlay
<i>This rule is additional within the Quarry Zone Protection Overlay.</i>	
<p>1. Activity status: Restricted discretionary</p> <p>Matters of discretion are restricted to:</p> <p>1. Reverse sensitivity effects on quarrying activities in the Quarry Zone.</p> <p>Public notification is precluded for applications under this rule.</p>	

GRUZ-QZPO-R2	Residential activities in the Quarry Zone Protection Overlay
<i>This rule is additional within the Quarry Zone Protection Overlay.</i>	
<p>1. Activity status: Restricted discretionary</p> <p>Matters of discretion are restricted to:</p> <p>1. Reverse sensitivity effects on quarrying activities in the Quarry Zone.</p> <p>Public notification is precluded for applications under this rule.</p>	
GRUZ-QZPO-R3	Visitor accommodation in the Quarry Zone Protection Overlay
<i>This rule replaces GRUZ-R12 within the Quarry Zone Protection Overlay.</i>	
<p>1. Activity status: Restricted discretionary</p> <p>Matters of discretion are restricted to:</p> <p>1. Reverse sensitivity effects on quarrying activities in the Quarry Zone.</p> <p>Public notification is precluded for applications under this rule.</p>	

Appendix 2: Submission points and recommendations

Submitter	Sub #	SP #	Provision	Support/oppose	Requested Relief	Recommendation
Winstone Aggregates	444	109	Whole Plan	Other/Not stated	Updating standards based on current best practice Recognition that Quarry is a long and lawfully established activity (Refer to original submission for full reasons)	Accept
Winstone Aggregates	444	110	Whole Plan	Other/Not stated	Quarry is a significant regional mineral deposit No choice in location of resource (Refer to original submission for full reasons)	Accept
Winstone Aggregates	444	113	Whole Plan	Other/Not stated	Quarrying results in progressive and constant changes in ground levels and topography, requires bespoke management. (Refer to original submission for full reasons)	Accept
Aggregate and Quarry Association	202	1	Quarry Zone	Support	Supports the use of a Quarry Zone and a dedicated Quarry Zone chapter. Broadly supports provisions of chapter.	Accept in part
Winstone Aggregates	444	39	Quarry Zone	Support	Quarry Zone is the most appropriate zone from the National Planning Standards. The Quarry Zone Purpose Statement recognises the critical role of quarries in regional development. (Refer to original submission for full reasons)	Accept

Winstone Aggregates	444	98	Quarry Zone	Support	Most appropriate zone from National Planning Standards	Accept
Aggregate and Quarry Association	202	9	Quarry Zone Protection Overlay	Support	Quarry Zone Protection Overlay which is designed to address potential reverse sensitivity effects on quarrying activities within the Quarry Zone from new land use within rural areas near the Quarry Zone. Provides for benefit and comfort of residents as much as it prevents disruption to extractive operations. (Refer to the original submission for the full reasons).	Accept
Winstone Aggregates	444	77	Quarry Zone Protection Overlay	Support	This buffer zone will slow down the encroachment of sensitive activities i.e. rural residential. The protection of regionally significant infrastructure from reverse sensitivity is provided for by RPS Policy 22(m). (Refer original submission for full reasons)	Accept
Winstone Aggregates	444	102	Quarry Zone Protection Overlay	Support	Critical to manage reverse sensitivity.	Accept
Winstone Aggregates	444	103	Quarrying Activity Overlay	Support	Applies to 620 Hebden Crescent Part Lot 1 DP 28205.	Reject
Winstone Aggregates	444	40	QUARZ-O1 (Purpose of the Quarry Zone)	Support	QUARZ-O1 as worded is a clear indication of the objective of the quarry zone.	Accept
Winstone Aggregates	444	41	QUARZ-O2 (Activities in the zone)	Support	Winstone supports the inclusion of functional need or operational need to be within the zone in the objective.	Accept

Winstone Aggregates	444	42	QUARZ-O3 (Adverse effects)	Amend	This objective is too restrictive on future plans and spatial expansion. As the QZPO is located over the General Rural Zone to the west, there is no need to internalise effects at the QZ boundary. (Refer to original submission for full reasons).	Reject
Winstone Aggregates	444	43	QUARZ-P1 (Enabled activities)	Amend	Restoration/rehabilitation of the quarry provided for in QUARZ-P1. Conservation demand is around the edges of the Quarry Amenity Protection Overlay and the Quarry Zone Protection Overlay which provide for the ARM of adverse effects and the transition of land use from sensitive to non-sensitive. (Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	44	QUARZ-P2 (Potentially incompatible activities)	Support	Winstone supports the inclusion of functional need or operational need to be within the zone in the objective.	Accept
Winstone Aggregates	444	45	QUARZ-P3 (Recognition of significance of aggregates and finite nature)	Support	Winstone supports the recognition of the Quarry Zone as a natural and physical resource of regional importance.	Accept
Winstone Aggregates	444	46	QUARZ-P5 (Zone interfaces)	Amend	If the QZPO is located over the General Rural Zone to the west, there is no need to internalise effects at the QZ boundary.	Reject

Winstone Aggregates	444	47	QUARZ-P6 (Vibration)	Amend	<p>QUARZ-P6 enables vibration where it “does not compromise people’s health” but doesn’t specify the point of assessment (e.g. zone boundary vs. within site). Health and safety within the site are most appropriately managed under the Health and Safety at Work Act 2015, not the District Plan.</p> <p>The provision should clarify that health effects are assessed at the zone boundary, to avoid overlap with workplace legislation. The policy does not specify where it applies to within the environment.</p> <p>Avoid redundant overlap with health and safety legislation.</p>	Reject
Winstone Aggregates	444	48	QUARZ-P7 (Retention of indigenous vegetation)	Oppose in part	<p>Policy QUARZ-P7 also does not specify where it shall be applied. As a policy within the QUARZ Zone, it will apply within the Quarry Zone. There is a functional and operational need to remove vegetation within the Zone. The retention of vegetation for visual amenity and screening purposes better relates to the Quarry Amenity Protection Overlay which is within the General Rural and Rural Lifestyle zones. Policy QUARZ-P7 should be removed from the QUARZ as there is no need to retain vegetation within the Zone. (refer to original submission for full reasons)</p>	Reject
Winstone Aggregates	444	49	QUARZ-P7 (Retention of indigenous vegetation)	Amend	<p>The policy and rule framework sends mixed signals and risks confusion for both Council and quarry operators. Policy intent should reflect what is actually enabled by rules. (Refer to original submission for full reasons)</p>	Reject

Winstone Aggregates	444	50	QUARZ-R1 (Repair and maintenance of buildings and structures)	Support	The efficient reuse of buildings, removal of buildings, and construction of new buildings is ancillary to quarry activities.	Accept
Winstone Aggregates	444	51	QUARZ-R2 (Demolition and removal of buildings and structures)	Support	The efficient reuse of buildings, removal of buildings, and construction of new buildings is ancillary to quarry activities.	Accept
Winstone Aggregates	444	52	QUARZ-R3 (Construction of new buildings and structures and alterations and additions to existing buildings and structures)	Support	The efficient reuse of buildings, removal of buildings, and construction of new buildings is ancillary to quarry activities.	Accept
Winstone Aggregates	444	53	QUARZ-R4 (Conservation Activities)	Amend	Rehabilitation activities are crucial to the successful management, remedy, and offset of effects permitted within the zone. Part of the zone is subject to QEII covenant. As part of the proposed exchange of reserve land, this QEII land will be acquired by DOC. Therefore, while conservation activities will occur in the environment (if the fast track is approved that land will become part of the Regional Park), they will not be occurring within the Quarry Zone.	Reject

Winstone Aggregates	444	54	QUARZ-R5.1 (Quarrying activities)	Oppose in part	The Quarry Setback Overlay and the Special Amenity Area Overlay are not shown on maps and not provided for in the objectives and policies. The wording of the standard is unclear and unenforceable.	Accept in part
Winstone Aggregates	444	55	QUARZ-R5.2 (Quarrying activities)	Support in part	A controlled activity status gives the site operator more certainty in the future investment into quarry operations as well as environmental enhancements. (Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	59	QUARZ-R7 (Residential activity)	Support in part	Living quarters on the Quarry site will have no adverse effect on any person other than Winstone itself, therefore notification is not required on a limited or public basis.	Accept
Winstone Aggregates	444	60	QUARZ-R8 (Activities not otherwise provided for)	Support in part	Winstone supports a consenting pathway be provided for activities not related to quarry activities, with the appropriate activity status of Non-Complying Activity. Poor planning control of neighbouring activities is a key risk to sterilise resource and continued life of the quarry. Winstone considers it should be notified about these activities and have the chance to submit, given the potential impact on their activities. (Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	61	QUARZ-S1 (Height)	Amend	Use of an outdated vertical reference could lead to errors in compliance calculations, surveyor confusion, and technical disputes. Reconsider vertical datum to modern LINZ standards. (Refer to original submission for full reason)	Accept

Winstone Aggregates	444	62	QUARZ-S1 (Height)	Amend	These structures are common to quarry operations and, while tall, are often not visually intrusive due to topography. The rules should include function-based exemptions or acknowledge the context of quarrying. An amendment would provide functional exemptions for narrow or essential structures. (Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	63	QUARZ-S2 (Hours of operation)	Support in part	This will mitigate the need for retrospective consenting after an incident.	Accept
Winstone Aggregates	444	64	QUARZ-S2 (Hours of operation)	Amend	Loading, unloading and movement of vehicles can occur at any time (24 hours/7 days). As such it would seem that under QUARZ- S2 (hours of operation) that the matter of discretion of the impact on the transport network resulting from a breach of the standard is redundant. Vehicles can move onto and off the site (24 hours/7 days) so transport movements cannot breach the standard.	Accept
Winstone Aggregates	444	65	QUARZ-S3 (Vibration associated with blasting)	Amend	No reasons specific to this relief, refer to original submission	Accept in part
Winstone Aggregates	444	66	QUARZ-S3 (Vibration associated with blasting)	Oppose in part	There are no measurable criteria in QUARZ-S3.5. It is not stated how the occupiers should be notified, and compliance depends on their availability to be contacted. This standard is unclear and would be difficult to assess compliance with.	Accept in part

Winstone Aggregates	444	67	QUARZ-S3 (Vibration associated with blasting)	Oppose in part	QUARZ-S3.6. sets unclear requirements for monitoring blasting within a 'Quarry Management Area' which is not defined. It requires monitoring to continue after sufficient data is available to ensure continued compliance, which is unnecessary.	Accept in part
Winstone Aggregates	444	68	QUARZ-S3 (Vibration associated with blasting)	Oppose in part	The reference in QUARZ-S3.10 to Appendix J4.2.2 of AS2187.2 2006 is incorrect. Compliance with the proposed rule would depend on access to the nearest receiving site being obtained for all blasting vibration monitoring. Additionally, the referenced locations for measurements are not the most appropriate for monitoring the effects of blasting vibration on buildings. Compliance with the blasting vibration limits can be determined by monitoring at proxy locations when access to a receiving site is not available, so this rule is unnecessary.	Accept in part
Winstone Aggregates	444	69	QUARZ-S3 (Vibration associated with blasting)	Amend	The AS 2187.2:2006 Table referenced in QUARZ-S3.11 for vibration limits does not exist. The guideline values in the AS Standard are provided for information and guidance only, and they do not include values for structures that may be particularly sensitive to vibration (e.g., heritage buildings). They are significantly higher than the guideline values of DIN 4150-3:2016, which are based on zero damage occurring.	Accept in part

Winstone Aggregates	444	70	QUARZ-S3 (Vibration associated with blasting)	Oppose in part	QUARZ-S3.12 requires compliance with the 1997 version of NZS/ISO 2631, which has been withdrawn and is no longer available. It contains values that are significantly higher than the zero damage guideline values of DIN 41503:2016. The current version of NZS/ISO 2631 does not recommend any guideline values to comply with. The NZS/ISO 2631 Standard is therefore not an appropriate reference for permitted vibration limits.	Accept in part
Winstone Aggregates	444	71	QUARZ-S4 (Quarry Setback Overlay)	Oppose	The standard refers to the 'Quarry Setback Overlay', at QUARZ-S4 but that does not feature on planning maps, objectives, or policies of the QZ. Standards that depend on spatial layers must be linked to mapped overlays and clearly defined in the plan. Without mapped overlays, these provisions are unenforceable and introduce risk to all parties. These standards read as policy directives, not quantifiable rules. Vegetation is already protected by QEII covenant, and no further district plan protection is warranted. If further protection is needed from the Quarry Amenity Protection Overlay, then vegetation clearance rules can be applied within the GRZ and RLZ. (Refer to original submission for full reasons)	Accept

Winstone Aggregates	444	72	QUARZ-S5 (Special Amenity Area Overlay)	Oppose	This is an outdated reference from the DDP. Vegetation is already protected by QEII covenant, and no further district plan protection is warranted. Expert LV assessment from DCM Urban demonstrates minimal visual impacts when viewed from the Valley Floor. The proposed vegetation removal would enable access to additional aggregate resources and OBDA, extending the quarry life by up to 20 years. Specification of 'maintenance' in the standard is inappropriate. Use of 'maintain' QUARZ-S5 functions more as a policy directive. It is difficult for a plan user to determine whether compliance with s4 and or s5 is achieved in its current configuration. (Refer to the original submission for full reasons)	Reject
Winstone Aggregates	444	73	QUARZ-S6 (Landslide hazard and erosion)	Oppose	This standard requires the reader to exercise discretion in its application and is not binary as to whether compliance is able to be achieved prior to the commencement of works. "is not increased" is not a sound permitted activity standard and cannot readily be enforced.	Reject in part
Winstone Aggregates	444	74	QUARZ-S7 (Quarry Management Plan)	Support	There is already a compliant QMP in place, that applies to the Quarry's existing use and operation of the site, for which existing use rights exist.	Accept
Winstone Aggregates	444	78	GRUZ-QZPO-O1 (Protection of the quarrying activities in the Quarry Zone)	Amend	New and existing activities can each have reverse sensitivity effects on the quarry zone.	Accept

Enviro NZ	323	060	GRUZ-QZPO-O1 (Protection of the quarrying activities in the Quarry Zone)	Support	Reasons given not specific to this relief, see original submission	Accept in part
Aggregate and Quarry Association	202	10	GRUZ-QZPO-O1 (Protection of the quarrying activities in the Quarry Zone)	Support	We support the Quarry Zone Protection Overlay which is designed to address potential reverse sensitivity effects on quarrying activities within the Quarry Zone from new land use within rural areas near the Quarry Zone. (Refer to the original submission for the full reasons)/	Accept in part
Winstone Aggregates	444	80	GRUZ-QZPO-P1 (Activities in the Quarry Zone Protection Overlay)	Amend	Support the proposed Quarry Protection Area provisions but request additional recognition of reverse sensitivity issues. Prohibit or tightly control sensitive activities (e.g., residential development) within 500 metres of the Quarry Zone boundary. This policy creates a bottom line for any further loss of protection from reverse sensitivity.	Reject
Enviro NZ	323	63	GRUZ-QZPO-P1 (Activities in the Quarry Zone Protection Overlay)	Support	Reasons given not specific to this relief, see original submission	Accept
Winstone Aggregates	444	82	GRUZ-QZPO-R1 (Construction of new residential units in the Quarry Zone Protection Overlay)	Support in part	Rules are fit for purpose but do not provide standards which design, and construction must achieve. Public notification is precluded but need to keep limited notification available. The owner and operator of the quarry should be allowed opportunity to be heard in matters with (potential or actual) adverse effects on the quarry. (Refer to original submission for full reasons)	Reject

Winstone Aggregates	444	83	GRUZ-QZPO-R2 (Residential activities in the Quarry Zone Protection Overlay)	Support in part	Rules are fit for purpose but do not provide standards which design, and construction must achieve. Public notification is precluded but need to keep limited notification available. The owner and operator of the quarry should be allowed opportunity to be heard in matters with (potential or actual) adverse effects on the quarry. (Refer to original submission for full reasons)	Reject
Policy Planning team of the Hutt City Council	440	67	GRUZ-QZPO-R3 (Visitor accommodation in the Quarry Zone Protection Overlay)	Oppose in part	Typographical error correction	Accept
Winstone Aggregates	444	84	GRUZ-QZPO-R3 (Visitor accommodation in the Quarry Zone Protection Overlay)	Support in part	Rules are fit for purpose but do not provide standards which design, and construction must achieve. Public notification is precluded but need to keep limited notification available. The owner and operator of the quarry should be allowed opportunity to be heard in matters with (potential or actual) adverse effects on the quarry. (Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	88	GRUZ-QZPO-R4 (New rule)	Oppose (requesting new provision)	Non-compliant development within the QZPO will compromise the operation of the quarry. The new rule allows for the quarry owner fair representation in the management of reverse sensitivity effects, and prevents assumptions by neighbours and processing Officers. Refer to original submission for full reasons)	Reject

Winstone Aggregates	444	89	GRUZ-QZPO-R5 (New rule)	Oppose (requesting new provision)	Non-compliant development within the QZPO will compromise the operation of the quarry. The new rule allows for the quarry owner fair representation in the management of reverse sensitivity effects, and prevents assumptions by neighbours and processing Officers. Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	90	GRUZ-QZPO-R6 (New rule)	Oppose (requesting new provision)	Non-compliant development within the QZPO will compromise the operation of the quarry. The new rule allows for the quarry owner fair representation in the management of reverse sensitivity effects, and prevents assumptions by neighbours and processing Officers. Refer to original submission for full reasons)	Reject
Aggregate and Quarry Association	202	11	RLZ-QZPO-O1 (Protection of the quarrying activities in the Quarry Zone)	Support	We support the Quarry Zone Protection Overlay which is designed to address potential reverse sensitivity effects on quarrying activities within the Quarry Zone from new land use within rural areas near the Quarry Zone. (Refer to the original submission for the full reasons)/	Accept in part
Winstone Aggregates	444	79	RLZ-QZPO-O1 (Protection of the quarrying activities in the Quarry Zone)	Amend	New and existing activities can each have reverse sensitivity effects on the quarry zone.	Accept

Winstone Aggregates	444	81	RLZ-QZPO-P1 (Enabled activities)	Amend	Support the proposed Quarry Protection Area provisions but request additional recognition of reverse sensitivity issues. Prohibit or tightly control sensitive activities (e.g., residential development) within 500 metres of the Quarry Zone boundary. This policy creates a bottom line for any further loss of protection from reverse sensitivity.	Reject
Winstone Aggregates	444	85	RLZ-QZPO-R1 (Construction of new residential units in the Quarry Zone Protection Overlay)	Support in part	Rules are fit for purpose but do not provide standards which design, and construction must achieve. Public notification is precluded but need to keep limited notification available. The owner and operator of the quarry should be allowed opportunity to be heard in matters with (potential or actual) adverse effects on the quarry. (Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	91	RLZ-QZPO-R1A (New rule)	Oppose (requesting new provision)	Non-compliant development within the QZPO will compromise the operation of the quarry. The new rule allows for the quarry owner fair representation in the management of reverse sensitivity effects, and prevents assumptions by neighbours and processing Officers. Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	86	RLZ-QZPO-R2 (Residential activities in the Quarry Zone Protection Overlay)	Support in part	Rules are fit for purpose but do not provide standards which design, and construction must achieve. Public notification is precluded but need to keep limited notification available. The owner and operator of the quarry should be allowed opportunity to be heard in matters with (potential or actual) adverse effects on the quarry. (Refer to original submission for full reasons)	Reject

Winstone Aggregates	444	92	RLZ-QZPO-R2A (New rule)	Oppose (requesting new provision)	Non-compliant development within the QZPO will compromise the operation of the quarry. The new rule allows for the quarry owner fair representation in the management of reverse sensitivity effects, and prevents assumptions by neighbours and processing Officers. Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	87	RLZ-QZPO-R3 (Visitor accommodation in the Quarry Zone Protection Overlay)	Support in part	Rules are fit for purpose but do not provide standards which design, and construction must achieve. Public notification is precluded but need to keep limited notification available. The owner and operator of the quarry should be allowed opportunity to be heard in matters with (potential or actual) adverse effects on the quarry. (Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	93	RLZ-QZPO-R3A (New rule)	Oppose (requesting new provision)	Non-compliant development within the QZPO will compromise the operation of the quarry. The new rule allows for the quarry owner fair representation in the management of reverse sensitivity effects, and prevents assumptions by neighbours and processing Officers. Refer to original submission for full reasons)	Reject
Winstone Aggregates	444	76	Quarry Amenity Protection Overlay	Oppose	This is shown on maps but no other provisions. Uncertain in its implementation. Unclear what the objective this overlay relates to, and does not appear to link to any policies, rules, and methods.	Reject
Winstone Aggregates	444	104	Quarry Amenity Protection Overlay	Oppose	Quarry Amenity Protection Overlay is shown on maps but does not relate to policies, rules, or methods.	Accept
Winstone Aggregates	444	105	Special Amenity Area Overlay	Oppose	The Special Amenity Area Overlay from QUARZ-S5 is not shown on maps.	Reject

Winstone Aggregates	444	106	Quarry Setback overlay	Amend	The Quarry Setback Overlay from QUARZ-S4 is not shown on maps.	Reject
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Appendix 3: Section 32AA assessment

Introduction

The recommended changes of this report that will meaningfully affect the Proposed Lower Hutt District Plan are assessed below. Where factors in section 32 of the Act are not discussed, I consider that the original section 32 report still applies to that factor.

Where I recommend amendments that are clarifications, corrections or minor changes that do not alter the policy approach of the plan, the original section 32 report for the Quarry Zone and Quarry Zone Protection Overlay largely still applies to these unchanged.

Quarry activities in the Quarry Zone

I recommend amendments to:

- **Rule QUARZ-R5: Quarrying activities**, to remove reference to standard QUARZ-S4, which I recommend be deleted.
- **Rule QUARZ-R7: Residential activities**, to add a public notification preclusion for resource consent applications under this rule.
- Standards:
 - **QUARZ-S1: Height**, to update the vertical reference used in the standard to a more recent reference.
 - **QUARZ-S2: Hours of operation**, to exempt emergency activities from the standard and remove the *impacts on the transport network* from the matters of discretion where the standard is not met.
 - **QUARZ-S3: Vibration associated with blasting** and **QUARZ-S7: Quarry Management Plan**, including in relation to measurement, monitoring and reporting requirements for vibration from blasting.
 - **QUARZ-S4: Quarry Setback Overlay**, to be deleted.
 - **QUARZ-S6: Landslide hazard and erosion**, to specify that the standard addresses potential hazards beyond the Quarry Zone, in adjoining zones.
- **RLZ-QZPO-O1 and GRUZ-QZPO: Protection of the quarrying activities in the Quarry Zone**, to clarify that the objective addresses the impact of activities and development in general and not just the impacts of new activities and development.

I consider that these provisions are the more appropriate way to achieve the purpose of the RMA compared to the plan as notified as:

- They provide for more effective management of visual effects of quarrying on sites in nearby zones, including by updating the vertical reference and removing unnecessary buffer controls at the boundary of the zone (rule QUARZ-R5 and standards QUARZ-S1 and QUARZ-S4)
- They improve efficiency of the hours of operation standard, albeit to a small extent, by removing the unnecessary matter of discretion for the impacts of the transport network when the standard is breached (standard QUARZ-S2).
- They provide greater certainty for living quarters within the zone through the addition of a public notification preclusion (standard QUARZ-R7).
- They provide for effective and efficient management of natural or manmade hazards associated with quarrying activities and ancillary activities (standard QUARZ-S2 in relation to the exemption for emergency activities from the hours of operation controls, and standard QUARZ-S6 in relation to managing hazards beyond the boundary of the zone).
- They provide for more effective assessment of vibration effects which will allow for more effective assessment of the effects of blasting (standards QUARZ-S3 and QUARZ-S7).
- They make it clear that reverse sensitivity controls are intended to not only address new activities and development that are established within the Quarry Zone Protection Overlay, but also from changes to already established activities and development (objectives RLZ-QZPO-O1 and GRUZ-QZPO).

Appendix 4: Expert review of the submission on the standard QUARZ-S3 Vibration associated with blasting

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Date of Issue:	11 June 2026
Client:	Hutt City Council c/- Sean Bellamy Intermediate Policy Planner Hutt City Council
Project:	Review of Winstone Aggregates Submission 444 - Noise & Vibration Matters QUARZ-S3 - Vibration associated with blasting
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On Behalf of Hutt City Council:

Proposed District Plan – Review of Noise & Vibration Matters Raised With Submission 444

1.0 Introduction

As requested, Malcolm Hunt Consulting have carried out a review of noise & vibration matters raised within submission number 444 by Winstone Aggregates to the Proposed District Plan (PDP). Specifically, this review comments on the matters raised within submission 444 in relation to QUARZ-S3 “Vibration associated with blasting”. We have reviewed matters raised within this submission relating to;

- Appropriate decibel limits for quarry blasting overpressure (airblast)
- Appropriate standards for the measurement of vibration from blasting
- Issues regarding notification of occupiers of neighbouring sites prior to carrying out blasting
- Monitoring to obtain records and data representative of the effects of blasting
- Standards to be applied to limit the vibration effects of blasting.

Submission 444 also deals with matters set out in NOISE-R5 “Activities that result in vibration” which are standards that apply to all types of district-wide vibration and are not specific to quarry blasting. For this reason, matters raised in submission 444 regarding NOISE-R5 are to be assessed at a later date, at the time of dealing with all submissions on the NOISE chapter.

2.0 Assessment of Submission Points

2.1 Blast Noise

It is widely understood that airblast represents an undesirable and unavoidable output of blasting. While modern blast techniques considerably limit air blast, fly rock, etc due to quarry blasting, airblast or blast ‘overpressure’ does have potential to cause damage and annoyance under certain conditions. Air blast disturbances propagate as compression wave in air. The effect is influenced by numerous factors such as blast design, weather, field characteristics, and human response. It is therefore appropriate for QUARZ-S3 to contain limits for air blast to achieve the purpose of the district plan which includes ensuring that adverse effects beyond the site are managed appropriately (ref. QUARZ introduction).

QUARZ-S3.2 currently sets quarry blasting air blast limits in terms of peak overall sound pressure of 120 dBC and 126 dBL, as measured at the notational boundary 20 metres from occupied dwellings. That is, a limit of ‘C-frequency weighted’ air blast of 120 dB peak value, with an additional limit of 126 dB peak ‘unweighted’ airblast pressure. As per comments below, any amendments to QUARZ-3.2 should address the inherent uncertainty that exists when two different peak value limits apply to the same blast event.

A description of the submission points on airblast noise and comments in response are set out in Table 1 as follows;

QUARZ - 3 Submission Point (Air Blast)	Comments In Response
<p>1. This submission point concerns the measurement units used to quantify airblast arising from quarry blasting. QUARZ-3.2 sets airblast limits in terms of both a 'C-frequency weighted' air blast peak value (L_{Cpeak}) in addition to peak 'unweighted' airblast pressure (L_{Zpeak}). The submitter seeks to set airblast limits using peak 'unweighted' limits only, expressed as L_{Zpeak}.</p>	<p>Amendment of QUARZ-3.2 to adopt only a L_{Zpeak} limit is <u>supported</u> as this is consistent with the peak sound pressure naming convention (nomenclature) adopted within NZS6801:2008 <i>Acoustics – Measurement of Sound</i> which is the relevant NZ Standard for sound measurement prescribed in the PDP NOISE Chapter. Omitting the use of a peak C-weighted airblast limit (L_{Cpeak}) as an alternative limit is <u>supported</u> to avoid uncertainty of having two limits applying to the same blast event.</p>
<p>2. Submitter seeks to retain the 126 dB L_{Zpeak} airblast limit applying at the notional boundary of <u>occupied</u> buildings and add a second higher limit of 133 dB L_{Zpeak} applying at the façade of <u>unoccupied</u> buildings.</p>	<p>An airblast limit of 133 dB L_{Zpeak} applying at the façade of unoccupied buildings is <u>supported</u>. This peak level airblast limit for unoccupied buildings is recommended within Australian Standard AS 2187.2:2006 <i>Explosives – Storage and use – Part 2: Use of explosives</i> as an peak airblast value to avoid structural damage in unoccupied buildings. The use of AS 2187.2:2006 for the control of airblast noise from blasting is recommended within NZS6803:1999 <i>Acoustics – Construction Noise</i>, a Standard referred to within NOISE-S2 "Emission of noise from construction activities". Applying this 133 dB L_{Zpeak} airblast limit at the building façade is <u>not supported</u>. This is because the building itself will cause significant reflections of the airblast pressure wave and artificially increase the reading above the actual pressure wave experienced by the building. To avoid unwanted reflection effects, it is recommended that compliance with the limit of 133 dB L_{Zpeak} applying to unoccupied buildings be assessed not less than 4 m from the building, in the direction of the blasting.</p>

Table 1 Submission points on airblast noise and comments in response.

2.2 Blast Vibration

It is common knowledge that when an explosive charge detonates in the ground, it rapidly releases energy which has the desired effect of fragmenting rock. While most of this energy goes into the rock, the remainder dissipates as seismic waves through the ground and as airblast (noise) through the air. The primary aim of QUARZ-S3 is to set out limits and precautions to manage the effects of airblast and ground vibration from blasting undertaken within the quarry zone.

A description of each submission point on quarry blasting vibration and comments in response are set out in Table 2 as follow

Table 2 Submission points on quarry blasting and comments in response.

QUARZ – 3 Submission Point (Blast Vibration)	Comments In Response
<p>3. The submitter seeks QUARZ- S3.5 be deleted. QUARZ- S3.5 sets out a requirement to notify occupiers of neighbouring sites at least one hour before quarry blasting where “blasting is irregular and the occupiers of neighbouring sites could be alarmed”.</p>	<p>The rationale of the submitter to remove QUARZ- S3.5 is that compliance would be difficult to achieve given the lack of measurable standards. It is agreed QUARZ- S3.5 would be difficult to enforce and is more appropriately included within a site-specific quarry management plan. Amendments to QUARZ- S7 to reflect the aims of QUARZ- S3.5 are discussed below in Section 3 and set out in ATTACHMENT 1.</p>
<p>4. The submitter seeks QUARZ- S3.6 be deleted. QUARZ- S3.6 sets out how monitoring of the “effects” of blasting should be carried out without setting out an actual requirement to undertake such monitoring. The submitter is concerned QUARZ- S3.6 sets unclear requirements for monitoring blasting within a ‘Quarry Management Area’ which is not a defined area nor is this included within any planning maps. The submitter is also concerned QUARZ- S3.6 requires monitoring to continue after sufficient data is available to ensure continued compliance, which seems unnecessary to the submitter.</p>	<p>It is agreed QUARZ- S3.6 contains a number of inaccuracies and provides only limited generic guidance for carrying out blast vibration monitoring. It is considered monitoring of blast vibration is best carried out using a site-specific monitoring plan which reflects the particular circumstances of each quarry. QUARZ- S3.6 as notified is inflexible and would be difficult to enforce. The matters referred to are more appropriately included within a site-specific quarry blasting management plan, as recommended below. Note, the proposal to replace QUARZ- S3.6 with a site-specific monitoring plan has the consequential effect of replacing QUARZ-S3.8, and QUARZ-3.9 as these standards relate to vibration monitoring carried out in accordance with QUARZ-S3.6. It is considered more efficient for matters referred to within QUARZ-S3.6, QUARZ-S3.8, and QUARZ-3.9 to be included within a Quarry Management Plan already required under QUARZ-S7. Amendments to QUARZ-S7 to reflect the aims of QUARZ- S3.6, QUARZ-S3.8, and QUARZ-3.9 are discussed below in Section 3 and set out in ATTACHMENT 1.</p>
<p>5. It appears the submitter seeks QUARZ- S3.10 be deleted. QUARZ- S3.10 requires measurement of quarry blast vibration at “appropriate” monitoring points established between the closest dwelling “and its nearest boundary” which the submitter seeks be deleted as this is incorrect. Compliance with the proposed rule would depend on access to the nearest receiving site being obtained for all blasting vibration monitoring. Additionally, submitter is concerned the referenced locations for measurements may not be the most appropriate for monitoring the effects of blasting vibration on buildings. The submitter maintains compliance with the blasting vibration limits can be determined by monitoring at proxy locations when access to a receiving site is not available, so this rule is unnecessary.</p>	<p>The submitter’s position that QUARZ- S3.10 contains errors and inconsistencies is supported. It is agreed there are sometimes access issues which means access to prescribed monitoring locations is not always possible. The matters referred to within QUARZ- S3.10 regarding blast vibration monitoring locations are considered important but need to reflect the sensitivity of the receiving environment which varies for each quarry site. Implementing vibration monitoring taking into account the sensitivity of the receiving environment is best achieved within a site-specific Quarry Management Plan, a plan already required to be prepared for each quarry under QUARZ-S7. Amendments to QUARZ-S7 to reflect the aims of QUARZ- S3.10 are discussed below in Section 3 and set out in ATTACHMENT 1.</p>

<p>6. QUARZ-S3.11 sets out vibration limits for protecting buildings from vibration damage due to quarry blasting based on guideline values for evaluating the effect of short-term vibration specified in AS2187.2 - 2006, Table J1. The submitter does not support the use of Table J1 and claims this table does not exist. The submitter claims the guideline values in the AS2187.2 Standard do not include values for structures that may be particularly sensitive to vibration (e.g. heritage buildings). The submitter prefers adopting vibration limits of German Standard DIN 4150-3:2016 "Structural Vibration – Part 3: Effects of Vibration on Structures" which it claims will better protect structures from damage due to blasting vibration. The submitter states compliance with the guideline values of DIN 4150–3:2016 is more typical and appropriate as a permitted rule than compliance with the Standards referenced in QUARZ-S311 and QUARZ-S312. It would also be consistent with NOISE-R5</p>	<p>QUARZ- S3.11 is concerned with protecting building structures from damage due to quarry blasting. Vibration limits to protect buildings are based on Appendix J of Australian Standard AS 2187-2:2006 <i>Explosives – Storage and use, Part 2: Use of explosives</i> however the submitter prefers adopting vibration limits of the German Standard DIN 4150-3:2016 "Structural Vibration – Part 3: Effects of Vibration on Structures" which is considered relevant and is an internationally recognised standard used to assess the effects of vibration on structures. The Standard is in common use across New Zealand in district plan standards and consent conditions where buildings are to be protected from damage due to short term ground vibrations such as from construction work, earthworks, mining or blasting. The DIN recommended vibration limits are in terms of Peak Particle Velocity (PPV) as this is directly related to strain, and hence potential for damage to structures. The limits are least in the frequency range of 1-10 Hz, which is the normal range of natural frequency of most structures. The limits increase at higher frequencies where the potential harmonic effects are reduced. The guideline values for PPV are at the foundation and in the plane of the highest floor of various types of building. DIN 4150-3:2016 recommends that vibration levels in buildings used for residential purposes should be limited to less than 5 mm/s at low frequencies, increasing up to 20 mm/s at higher frequencies, and for intermittent or short-term vibrations are less than 5 mm/s for continuous activities. The limits recommended in the DIN 4150-3:2016 standard provides a low probability of cosmetic damage.</p>
<p>7. QUARZ-S3.12 requires compliance with the 1997 version of NZS/ISO 2631:1997(E) to protect the occupants of buildings from the adverse effects of quarry blasting, including annoyance. The submitter correctly notes this Standard has been withdrawn. It contains values that are significantly higher than the zero damage guideline values of DIN 4150–3:2016. The current version of NZS/ISO 2631 does not recommend any guideline values to comply with. The NZS/ISO 2631 Standard is therefore not an appropriate reference for permitted vibration limits.</p>	<p>QUARZ- S3.12 is concerned with protecting building occupants from annoyance and other effects of blast vibration (e.g. as may interfere with human activities). We agree the 1997 version of NZS/ISO 2631:1997(E) is an out-of-date standard and should no longer be relied upon. More recent versions of this Standard are of little use as they do not include any specific recommendations for vibration limits to protect people. The submitter prefers adopting vibration limits of DIN 4150-3:2016 to deal with effects on people (building occupants) however the DIN Standard limits are not specifically designed to protect people from the adverse effects of blasting vibration which contrasts with Appendix J, Table J4.5(A) of Australian Standard AS 2187-2:2006 <i>Explosives – Storage and use, Part 2: Use of explosives</i> which is specifically designed to protect occupants of buildings exposed to blast vibration and is recommended to be adopted within QUARZ- S3.12. While the footnotes to Table J4.5(A) indicate the recommended vibration limits should not override any statutory requirements set by other authorities, there are no other relevant NZ Standards or limits which would undermine the adoption of the Table J4.5(A) within a New Zealand district plan standard, e.g. QUARZ- S3.11.</p>

3.0 Recommendations

This review has found seven valid submission points raised within submission 444 in relation to standard QUARZ-S3. A summary of recommendations to address each submission point is provided as follows.

In relation to QUARZ- S3.1 and 3.2, this review finds support for the use of a single measurement unit (L_{Zpeak}) also supporting the adoption of an appropriate airblast limit for unoccupied buildings (133 dB L_{Zpeak}) in addition to limit already proposed to protect occupied buildings (126 dB L_{Zpeak}). The submitter's proposal to set the airblast limit for unoccupied buildings to be measured "at the building façade" is not supported due to reflected pressure artificially increasing the measured value. To address this issue, the location for assessing peak airblast limit for unoccupied buildings is recommended to be not less than 4 metres from the building façade which is a location where reflected sound pressure would be considered negligible.

Regarding blast vibration, submission points relating to QUARZ-S3.5, S3.6 and S3.10 relate to where and how vibration monitoring is carried out, with QUARZ-3.5 dealing with notification of impending blasting to neighbouring sensitive sites as a mitigation measure. The submitter seeks QUARZ-S3.5, QUARZ-S3.6, and QUARZ-S3.10 be deleted however this is not supported given their mitigation value and practical guidance provided in these provisions on how vibration monitoring should be carried out. The proposal is to replace QUARZ-S3.6 with a requirement to undertake site-specific monitoring. It is considered the most efficient means of requiring vibration monitoring and of advising neighbours of impending blasting activity is to include these provisions within a site-specific Quarry Management Plan. The proposal is to replace QUARZ-S3.6 has the consequential effect of replacing QUARZ- S3.8 and QUARZ- S3.9 as these standards also relate to vibration monitoring as referred to within QUARZ- S3.6. The requirement to prepare a site-specific Quarry Management Plan (and undertake activities in accordance with this plan) is already set out under QUARZ-S7. Amendments to QUARZ-S7 to reflect the aims of QUARZ-S3.5, QUARZ-S3.6, QUARZ- S3.8, QUARZ- S3.9 and QUARZ-3.10 are set out below in ATTACHMENT 1.

QUARZ-3.11 and QUARZ-3.12 sets out quarry blasting vibration limits. QUARZ-3.11 sets out vibration limits for protecting buildings from vibration damage due to quarry blasting based on guideline values for evaluating the effect of short-term vibration in AS2187.2 - 2006, Table J1. As pointed out by the submitter, Table J1 does not contain vibration limits (as it does not exist). The submitter seeks vibration limits to avoid building damage the German Standard DIN 4150-3:2016 "*Structural Vibration – Part 3: Effects of Vibration on Structures*". This submission point is accepted as the DIN standard is technically considered technically appropriate being internationally recognised standard which is in common use across New Zealand in district plan standards and consent conditions. The DIN standard sets out limits for different types of structures, including vibration limits designed to protect typical dwellings and very sensitive buildings such as heritage buildings and structures.

QUARZ-3.12 sets out standards to protect occupants of buildings from annoyance and other effects of blast vibration. The submitter seeks QUARZ-3.12 be deleted as the submitter considers compliance with the above DIN standard is sufficient to protect building occupants as well as the building structure. This submission point is not accepted as the DIN standard is not intended to be used to avoid annoyance and other effects of building occupants from blasting vibration. While the vibration standard currently proposed within QUARZ-3.12 (NZS/ISO 2631:1997(E)) is out of date and not supported, a suitably protective vibration standard is proposed based on Appendix J, Table J4.5(A) of Australian Standard AS 2187-2:2006 *Explosives – Storage and use, Part 2: Use of explosives* which is specifically designed to protect occupants of buildings exposed to blasting vibration and is recommended to be adopted within QUARZ-3.12.



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ATTACHMENT 1 Proposed Amendments to QUARZ-S3 and QUARZ-S7

QUARZ-S3 Vibration associated with blasting

1. Blasting shall be carried out in accordance with the operating practice described in Appendix J, Section J5 of AS2187.2 — 2006 Explosives — storage, transport and use. Part 2 Use of explosives.
2. Blast noise (airblast) created by the use of explosives shall not exceed:
 - a. 126 dB L_{zpeak} when measured at the notational boundary 20 metres from occupied dwellings, shall not exceed a peak overall sound pressure of 120 dBC (126 dBL).
 - b. 133 dB L_{zpeak} when measured not less than 4 m from unoccupied buildings building, in the direction of the blasting
3. All blasting shall be restricted to between 10:00am and 4:00pm, Monday to Saturday (excluding public holidays) except where blasting is necessary for safety reasons.
4. Blasting shall be confined to two occasions per day except where necessary for safety reasons.
- ~~5. Where blasting is irregular and the occupiers of neighbouring sites could be alarmed, they shall be advised of impending blasts at least one hour before any such blast.~~
- ~~6. Monitoring to obtain records and data representative of the effects of blasting on the Quarry Management Area (shown on the District Plan maps) shall be carried out at such frequency to ensure there is sufficient data (at least 10 blasts) to ensure continued compliance with clauses 11 and 12 (below) and shall be maintained on an ongoing basis at a frequency of at least 1 in 20 blasts.~~
7. Every blast shall be recorded, including:
 - a. The date and time of the blast,
 - b. Location of blast, and
 - c. Blast size and charge mass per delay.Blast records shall be made available to the Council on request
- ~~8. Where vibration monitoring is carried out in accordance with 6 above, blasts shall be recorded with particular attention to details of:
 - a. Location of monitoring points,
 - b. Distance from the blast to the monitoring points,
 - c. Type and serial numbers of the monitoring instruments and transducers,
 - d. Peak noise level (air blast), and
 - e. Vibration velocity time history and absolute maximum vibration velocity for each of the three components.~~
- ~~9. The blast records and monitoring results shall be made available to the Council on request.~~
- ~~10. Vibration from blasting shall be measured at appropriate monitoring points established between the closest dwelling and its nearest boundary in accordance with Appendix J4.2.2 of AS2187.2 2006.~~
- ~~11. In order to avoid damage to buildings blasting shall not exceed PPV vibration limits of the German Standard DIN 4150-3:2016 *Structural Vibration – Part 3: Effects of Vibration on Structures* when measured at the foundation for single storey buildings or in the plane of the highest floor of multi storey buildings. When blasting, the maximum absolute value of the vector sum of three time-synchronised velocity components shall not exceed the guideline values for evaluating the effect of short-term vibration in AS2187.2 – 2006, Table J1.~~
- ~~12. In order to protect occupants of buildings blasting shall not exceed PPV vibration limits of Appendix J, Table J4.5(A) of Australian Standard AS 2187-2:2006 *Explosives – Storage and use, Part 2: Use of explosives* Evaluation of the effect of vibration on building occupants shall be also carried out in accordance with NZS/ISO2631: 1997(E) *Mechanical vibration and shock – Evaluation of human exposure to whole body vibration; Part 1: General requirements and Part 2: Continuous and shock induced vibration in buildings (1 to 80 Hz)*. The multiplying factor of the base curves to be used in evaluating satisfactory magnitudes will be 60, as defined in Table 2 of Annex A in ISO 2631: Part 2.~~

Matters of discretion if the standard is breached:

1. The effects of vibration on adjacent sites and residential units in adjacent zones.
2. Any relevant DIN vibration standard or Australian/New Zealand vibration standard for quarries.
3. Any practicable measures taken to manage the vibration effects

QUARZ-S7 Quarry Management Plan

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3. As a minimum, the Quarry Management Plan must describe:
 - a. The quarrying activities covered by the Quarry Management Plan,
 - b. Planned measures to mitigate impacts of quarrying activities beyond the site, including:
 - i. Hours of operation,
 - ii. Noise management,
 - iii. Vibration management,
 - iv. Dust management,
 - v. Management of visual amenity, including landscape plans, and
 - vi. Management of natural hazards, including slope stability.
 - vii. Methods to be employed to provide prior advice to occupants of nearby sites of the timing of proposed quarry blasting including a description of properties to be advised, the proposed method of notification and the timing of such notification prior to planned blasting.
 - c. Details of vibration monitoring undertaken to assess continued compliance with QUARZ-3.11 and QUARZ-3.12 including:
 - i. Location of monitoring points,
 - ii. Distance from the blast to the monitoring points,
 - iii. Type and serial numbers of the monitoring instruments and transducers,
 - iv. Peak noise level (air blast),
 - v. Vibration velocity time history and absolute maximum vibration velocity for each of the three components,
 - vi. Frequency of vibration monitoring on an ongoing basis which shall not be less than a frequency of at least 1 in 20 blasts,
 - vii. Details of how vibration monitoring results will be logged and recorded so that they are made available to the Council on request.
 - d. The rehabilitation that is planned for the site on the completion of the quarrying activities, including:
 - i. The intended end use of the site or parts of the site on the completion of quarrying activities,
 - ii. When rehabilitation will occur,
 - iii. The landform and drainage pattern of the site following completion of quarrying activities and rehabilitation,
 - iv. Any change in natural hazards resulting from quarrying and any proposed mitigation, and
 - v. Any adverse effects associated with the rehabilitation.