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Kendyll Harper  
South Wairarapa District Council

P. 09 308 9015  
E. info@stylesgroup.co.nz  
W. www.stylesgroup.co.nz  
Saatchi & Saatchi Building,  
L2, 125 The Strand, Parnell  
PO Box 37857, Parnell,  
Auckland 1151

By email: kendyll.harper@swdc.govt.nz

Dear Kendyll,

**Acoustic review of Underhill Road aggregate processing resource consent application**

Styles Group have been engaged by the South Wairarapa District Council to review the “Underhill Road Aggregate Processing Noise Compliance Assessment” dated 6 April 2021 prepared by Marshall Day Acoustics (the **MDA Report**).

The resource consent application seeks consent to authorise soil stripping, aggregate extraction, and processing, including stockpiling and aggregate crushing at 73 Algies Road, Featherston (the **Site**). We understand the application holds a discretionary activity status overall under the Wairarapa Combined District Plan (the **District Plan**). This review has been prepared further to review of the AEE and Section 92 response.

**District Plan noise management framework**

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The Site and adjacent sites are located in the Rural (Primary Production) Zone (**RPPZ**) of the District Plan. The MDA Report correctly identifies the noise standards for the Rural Zone under Standard 4.5.2(f) of the District Plan, and the relevant acoustical standards for the measurement and assessment of noise. These are reproduced in Figure 1 below.

**(f) Noise Limits**

- (i) The sound level from activities within any site, excluding mobile sources associated with primary production (e.g. tractors, harvesters), shall not exceed the following limits within any measurement time interval in the stated time-frames, when assessed at any point within the notional boundary of any dwelling on any site within the Rural Zone but excluding any dwelling on the property where the sound levels are generated, and at any point within the boundary of any site within the Residential Zone:

*Policy 4.3.5(a), 4.3.5(c), 4.3.5(e), 4.3.5(f) and 4.3.8(a)*

<b>Daytime</b>	7.00am – 7.00pm	55dBA L10
<b>Nighttime</b>	7.00pm – 7.00am	45dBA L10
	9.00pm – 7.00am	75dBA Lmax

- (ii) All sound levels shall be measured in accordance with NZS 6801:1999 “Acoustics – Measurement of Environmental Sound”, and assessed in accordance with NZS 6802:1991 “Assessment of Environmental Sound”.

**Figure 1 District Plan noise standards**

The MDA Report notes that “*the legislative status of the combined activities of extraction, screening and crushing aggregates on this site is not clear to us*” and on this basis, refers to the District Plan noise levels as “*guideline noise limits*”. MDA confirm the duty to comply with section 16 of the RMA and consider that the permitted activity criteria provide “*appropriate guideline criteria*” in determining what constitutes a “*reasonable noise level*”.

Section 4.3.11 of the District Plan provides further guidance on the application of the permitted activity standards:

*“Rural activities are the defining feature of the zone and are to be protected. Therefore, a series of permitted activity standards have been set, which establish a baseline for protecting rural character and the normal functioning of rural activities. Non-conformance with one or more of these standards will necessitate a resource consent, at which time an assessment of environmental effects will be required, and ways to avoid, remedy or mitigate any adverse effects on the rural environment examined, particularly on the viability of primary production activities and on rural character or amenity”.*

We understand the activity is not permitted in the zone, and the overall activity status is discretionary. We consider that while the District Plan noise limits for permitted activities are relevant, the overarching requirement is to determine whether the permitted noise levels are reasonable for the activity in question. This determination should be reached through an assessment of effects that takes into account:

- i. The overall noise levels and noise effects likely to be generated by the proposal, considering factors such as, character, timing, duration and intensity of the noise levels.
- ii. The noise effects of the activity in the context of the “*rural character or amenity*” of the existing noise environment, taking into account the ambient and background sound levels in the locality.
- iii. The noise effects of the proposal in the context of what could reasonably be expected to occur in the zone, taking into account the “*normal functioning of rural activities*” permitted in the zone.

We note that the MDA Report applies the noise limits as “*guideline noise limits*” but does not provide any assessment of the noise effects that the consent seeks to authorise. Furthermore, the MDA Report does not include noise level contours that would describe the extent to which the activity externalises noise effects beyond the site boundaries. It is clear from the MDA Report that the noise effects will extend well beyond the boundaries of the Site in many instances.

## Written approvals

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The MDA Report notes that written approvals have been provided by some neighbours, and that “*a noise compliance assessment is required for neighbouring properties which have not provided written approval*”.

We disagree with this approach. In our view:

- The noise assessment should clearly identify the predicted noise levels at all receivers. This should be in the form of noise level predictions or noise level contours which clearly describe the noise levels in the receiving environment. There should also be assessment of noise effects which clearly describes the effects likely to be authorised by the consent application.
- The assessment of noise effects is not required at any property where written approval has been provided and where that written approval recognises that noise levels above the District Plan standards are a reason for consent.
- We consider that any written approval for noise reasons must be provided on the basis that the person providing their approval is aware that the noise levels may be higher than the District Plan standards. This is required for the written approval to be considered 'valid' in terms of authorising noncompliance with the District Plan standards without an assessment of noise effects.

We understand the MDA Report was commissioned at Section 92 stage and there are no written approvals relating to noise effects that must be taken into account by the consent authority.

## Predicted noise levels

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The MDA Report is based on the proposal achieving compliance with a noise level of 55dB L<sub>A10</sub> at any notional boundary<sup>1</sup>.

Compliance is proposed through the mitigation methods proposed in Section 5.4, in conjunction with the work area restrictions in Figure 5 of the MDA Report. The MDA Report does not include a set of recommended conditions to provide sufficient certainty that the predicted noise levels will not be exceeded.

Compliance with the noise levels is based on excavation and screening occurring outside the areas shaded blue in Figure 5 of the MDA Report, and the applicant achieving the relevant separation distances (based on whether bunds are constructed). If no bunds are constructed, excavation and screening activities must not take place closer than 300m from any dwelling.

We agree with the recommended compliance distances for excavation and screening activities, however note that they do not appear to take into account cumulative noise levels of the crusher if it is operated outside the primary crushing location.

### Crusher noise levels

The noise levels from the crusher will depend on:

- Its location on the Site and proximity to adjacent dwellings
- Whether screening is constructed around the crusher

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<sup>1</sup> The MDA Report does not include noise level contours that would aid understanding of the extent to which the activity externalises its effects beyond boundaries, however the application states that the proposal will comply with the noise levels prescribed in Standard 4.5.2(f).

The MDA Report appears to be based on the crusher operating within the fixed location reproduced in Figure 2 below. However the 'working areas' described in section 5.3 include excavation and screening. Aggregate is not typically screened until it has been crushed. We therefore assume that the crusher will travel throughout the site as part of the 'working area' described in the MDA Report.

The AEE confirms the crusher may be moved around the Site:

*“Depending on how the final operation goes, there may be times when the crusher moves around the site. The crusher will operate within the areas of the site shaded blue on the site plan. This will ensure a buffer from nearby houses is achieved which will allow the District Plan noise standards to be met and reduce visual impact. Bunding can be established between the crusher and nearby houses where necessary to further reduce noise.”*

The site plan reproduced in Figure 3 below confirms the areas of the Site where crushing is proposed (shaded blue). The separation distances in Figure 3 show that the crusher may be located 130m from neighbouring dwellings. The AEE and site plan conflicts with the applicant's Section 92 response, which states *“the crusher is proposed to be located in the centre of the site and bunded to reduce noise and visually screen it.”* The primary crushing location shown in Figures 2 and 3 is not centrally located within the Site. We are not aware of an updated site plan that supersedes the crusher location shown in Figures 2 and 3 below.

We have undertaken desktop predictions for a crusher with a sound power level of  $L_w$  114 dBA. We have determined a minimum separation distance of 250m is required to achieve compliance with 55dB  $L_{A10}$  at any notional boundary. If a 3m bund is established around the crusher, the minimum separation distance reduces to 100m.

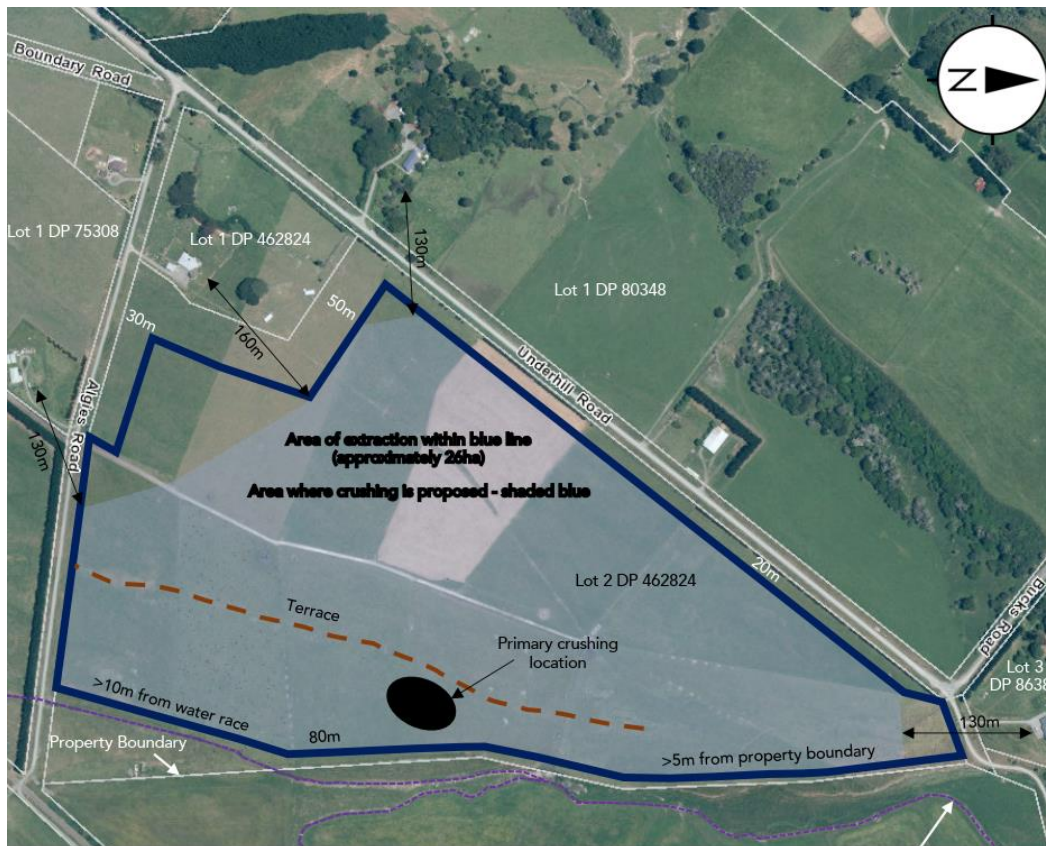
If consent is granted, the crusher location and screening would need to be carefully controlled through a condition of consent to ensure that there is a sufficient degree of certainty that compliance with the final specified noise limit is achieved.

We think that a significantly greater degree of certainty is required to establish that the proposal will consistently comply with any noise limit. This could be achieved through carefully drafted conditions of consent, including a requirement for an operational noise management plan.



Figure 1: Approximate location of subject site (blue outline) and dwellings within this assessment (Base image: LINZ)

**Figure 2 MDA Report- Primary crushing location**



**Figure 3- Aggregate crushing site plan**

## Assessment of effects

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The proposal is a discretionary activity in the RPPZ and therefore further assessment of the character, intensity, timing and duration of the noise levels is required before a view can be reached on whether the noise levels will be compatible or acceptable. This assessment must take into account the District Plan's policy framework for the management of noise in the RPPZ.

The MDA Report does not provide an assessment of the noise effects arising from the activity and does not provide an assessment of the ambient and background noise levels present in the locality that would inform an assessment of the activity noise levels in the context of the noise sources present in the locality.

The consent seeks to authorise noise levels of up to 55dB  $L_{A10}$  at any notional boundary between the hours of 0700 and 17:00, Monday to Friday.

The Section 92 Response confirms the area surrounding the site is popular for rural residential development. Aside from the Wairarapa- Wellington railway line to the east of the Site, there do not appear to be any significant noise sources in the locality. We anticipate that the noise sources present in the locality will include intermittent noise from passing traffic, and agricultural noise sources that are likely to be intermittent and seasonal in nature.

We anticipate that the ambient noise levels would be relatively low throughout the day. Background noise levels could be as low as 25-30dB  $L_{A90}$ <sup>2</sup> in calm conditions, and possibly lower in very calm meteorological conditions. We would expect that typical background noise levels in the area would range from approximately 30dB  $L_{A90}$  to 35dB  $L_{A90}$  in typical meteorological conditions. We would expect ambient noise levels in the area to be approximately in the range of 40dB  $L_{Aeq}$  to 50dB  $L_{Aeq}$ <sup>3</sup>. From time to time, we would expect that seasonal and intermittent agricultural activities would punctuate the noise environment. Based on our understanding of the general area we would expect that the noise environment could be subjectively described as relatively quiet with some periods when agricultural or traffic noise dominates the acoustic environment.

The proposed noise limit in this case is 55dB  $L_{A10}$ . This would be approximately equivalent to a level of 52-53dB  $L_{Aeq}$ . The noise levels from the proposal are likely to be approximately 20dB higher than the background noise levels and 2-12dB higher than the ambient  $L_{Aeq}$  noise levels. This would make the noise of the proposal the dominant and constant noise source in the environment while it is operating. We expect that the noise would be described as dominant and intrusive on the environment. Many natural or lower-level sounds would become inaudible or difficult to hear, and the noise of the equipment on the Site will dominate.

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<sup>2</sup> The  $L_{A90}$  is a measure of the 'background' sound in an area. It represents the noise level that is present between intermittent sounds (e.g., car passbys). The  $L_{A90}$  level is commonly associated with the subjective impressions of peacefulness or amenity.

<sup>3</sup> The  $L_{Aeq}$  is the 'average' sound level. It represents all sounds in the environment over a given time frame and is heavily influenced by the highest noise events that occur during a measurement. The  $L_{Aeq}$  noise level is typically 2-4dB below the  $L_{A10}$  noise level in many situations.

## Objectives and policies

We have reviewed the relevant objectives and policies for the RPPZ to understand the extent to which the activity is consistent with the anticipated outcomes for noise amenity in the zone.

The District Plan's definition of "primary production" activities" includes:

*"the use of land and accessory buildings (e.g. greenhouses) for the raising, growing and breeding of animals or vegetative matter and crops, including horticulture, plantation forestry, agriculture, viticulture, floriculture, racing stables, and outdoor (extensive) pig farming, as well as winemaking, flower packing, and other primary processing activities, but excludes top soil stripping, intensive farming activities, and mineral extraction and processing"*

We understand the activity involves top-soil stripping, mineral extraction and processing which are not included in the definition of primary production activities. The activity is therefore an "other activity" under the RPPZ provisions. In our view, the activities which fall within the definition of primary production activities typically involve noise sources which are seasonal and intermittent. While the District Plan noise standard excludes mobile sources associated with primary production (e.g. tractors, harvesters) from the noise limits, these noise sources are also typically used seasonally and intermittently. In our experience, the noise levels arising from primary production activities will inherently involve periods of noisy activities (i.e. at harvesting) interspersed with periods of respite (during the day, and over the seasons).

Objective Rur2- *Provision for Primary Production and Other Activities* seeks to "enable primary production and other land uses to function efficiently and effectively in the Rural Zone, while the adverse effects are avoided, remedied, or mitigated to the extent reasonably practicable". Policy 4.3.5(e) requires that "other activities that may have significant external adverse effects are appropriately sited from sensitive land uses or are otherwise controlled to avoid or mitigate such effects".

We leave the comprehensive assessment of the effects against the objectives and policies to the Council.

## Effects beyond boundaries

The MDA Report does not describe or demonstrate how the noise effects will extend beyond the Site. It is clear that noise levels over 55dB  $L_{A10}$  will be experienced across large areas of surrounding land.

Any consent condition should require compliance with the final noise limit at any notional boundary. This includes any existing or future notional boundary which may be established. If the applicant seeks to guarantee the right to generate noise over neighbouring land and essentially use that land as a buffer for its activity, the effects over that land will need to be clearly understood. This includes the potential for any future notional boundary to be exposed to noise levels over the final consented noise limit.

In our experience, the applicant would either:

- a) Accept a condition of consent that requires compliance with a noise limit at any existing or future notional boundary; or
- b) Seek to exclude future notional boundaries from the condition to authorise the use of neighbouring land as a buffer for noise effects in a permanent way. This may lead to a legitimate reason for the Council to notify those landowners (although this decision is left to the Council).

We support option (a). Option (b) could only be explored if noise level contours are provided to show the noise effects over neighbouring land and to enable an assessment of the effects on that land.

## Conclusion

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The activity proposes to generate noise levels up to 55 dB  $L_{A10}$  at the notional boundary of adjacent sites between 07:00 to 17:00, Monday to Friday.

We consider that a greater degree of certainty is required to establish that the proposal will consistently comply with any noise limit, taking into account the mobile nature of machinery noise sources.

The MDA Report does not describe the noise effects or demonstrate how the noise levels will extend beyond the Site. It is clear that noise levels over 55dB  $L_{A10}$  will be experienced across large areas of surrounding land. There are several notional boundaries within relatively close proximity (130m- 160m) to the areas of the site where machinery will be operated. The neighbouring receivers will experience the activity noise levels as a dominant, intrusive and constant noise source in the environment. We anticipate that the noise levels are likely to be approximately 20dB higher than the background noise levels and 2-12dB higher than the ambient  $L_{Aeq}$  noise levels).

The RPPZ permitted noise standards have been prescribed to enable primary production activities. These activities typically involve noise sources that are temporary, seasonal and intermittent. In this instance, the proposal will generate the maximum permitted daytime noise level in the RPPZ, and the noise levels will be relatively constant in terms of intensity and duration. This means that the proposal will generate a greater level of effect than what would be reasonably anticipated in the zone.

## Conditions

If required, we can provide further advice on conditions under separate cover. We recommend any condition set achieves the objectives below.

- That the cumulative noise levels from all activity noise sources are controlled through a specified noise limit (to be determined) at any notional boundary.
- The crusher location and screening would need to be carefully controlled through a condition of consent to ensure that there is a sufficient degree of certainty that compliance with the specified noise limit is achieved.
- Requirements for acoustic performance of screening and bunds



- Restriction on the use of tonal reverse alarms (the MDA Report does not apply a +5dB for noise sources exhibiting “special audible characteristics”. Machinery using tonal reverse alarms would qualify for such a penalty).
- Requirement for a noise management plan to clearly set out the operational noise management measures that must be adopted to ensure compliance with the specified noise limit.

Please contact me if you require any further information.

Yours sincerely,



Jon Styles, MASNZ  
Principal