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24 June 2024

Hutt City Council
30 Laings Road
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Attn: Dan Kellow
Dan.Kellow@huttcity.govt.nz

Request for more information – Eastern Hill Notice of Requirement

Dear Dan,

Please find below our response to your letter dated 10 June 2024 requesting additional noise and vibration information. Our Acoustic Engineer has provided the following information in reply to the peer review carried out by Marshall Day Acoustics on behalf of Hutt City Council.

Please provide further information in relation to why the night-time concrete pours, and associated truck movements, cannot start later than 3am.

Night works to pour concrete are required due to the significant volume of concrete that needs to be poured in one continuous period. One continuous concrete pour is required so that:

- All concrete is poured whilst it is wet;
- The majority of the pour is completed prior to the warmth of the day (mid-day) so as to address the potential risk associated with concrete curing at different rates if it was to be poured throughout the day (a night-time pour will result in a uniform curing time); and
- The concrete can be stressed to prevent cracking (which would lead to water leaks in the base of the reservoir which is to be avoided at all costs given the reservoir is to serve as a water retention structure), and this cannot occur progressively in some parts of the slab but not others.

We note that while this concrete pouring activity starts at 3am, the delivery of concrete is for a single night, followed by a second night of works to remove framework and to post-tension the slab. This will occur twice (once during the base slab pour and once during the roof pour) during the whole construction of the reservoir. If the concrete is not poured in one continuous period there could be structural issues with the slab.

Where the WSP report has established noise and vibration effects to be 'obvious' or 'unreasonable', then an assessment should be undertaken to demonstrate the Best Practicable Option (BPO) has been adopted. Specifically, adequate information has not been provided to conclude that concrete pours commencing at 3am aligns with the BPO.

There are three instances where 'obvious' or 'unreasonable' effects are indicated:

1. **Daytime piling activities** that are obvious are predicted to range between 70 to 83 dB after mitigation. This will be applicable to a total count of 25 receptors. A noise level above 80 dB is noted to potentially cause behavioural changes which we would consider to be an effect (i.e. likely to require the receptor to turn the volume up on a TV or radio to be intelligible over

background noise). A total of 3 receptors are predicted to potentially experience noise levels above 80 dB with implementation of the proposed mitigation measures.

If no mitigation measures were applied, then five receptors are predicted to receive noise levels above 80 dB. For three of those receptors, the noise levels without mitigation are in the region of 85-91 dB. The proposed mitigation measures attenuate noise levels by 5-9 dB. We consider this reduction to be a good assessment outcome, which demonstrates that BPO have been adopted for daytime piling activities to reduce impacts as far as practicable.

Further physical noise mitigation measures could be explored by the contractor including:

- Piling head attachment such as Duraflex Pile Rig Attachment
- Installation of higher (5 – 10 m high) barriers close to the piling rig
- Using sacrificial dollies or vibration damping plates on piling heads
- Consideration of quieter piling methodologies

However, the mitigation measures and reduction provided above are specific to the equipment and/or manufacturer, and while the BPO would include these, we have not included the reduction of these measures within the calculations due to the unknown nature of the acoustic reduction they could provide. They also may have other non-acoustic implications / effects such as health and safety concerns, ground conditions requiring specific piling methodologies, or generate prolonged extensions to the construction programme. It is noted that the contractor will explore these types of additional mitigation measures as the Construction Noise and Vibration Management Plan requires the appointed contractor to "*j) Where compliance with the criteria in Conditions 23 and 24 may not be achieved, a description of alternative mitigation strategies that will be used"*.

All properties predicted to exceed 70 dB will also be advised before the works occur. Therefore, they will be made aware of when the works are to start, the expected duration, and who to contact to get any additional information on the works. This will minimise how people perceive the infringements, as they will not occur without prior warning. This is secured through the proposed consent conditions which now include *"n) Procedures for community liaison"* within the proposed Construction Noise and Vibration Management Plan.

2. **Night-time concrete pouring activities** occurring on the site are predicted to exceed the night-time criteria, in particular to the north direction down the valley. Justification as to why the concrete pour is required to occur during night-time hours has provided in the previous response.

   As part of the BPO investigations, we have accounted for site boundary barriers which will screen noise produced by the concrete pouring equipment to the receptors down the valley, and we have proposed that a CNVMP that addresses night works is implemented to manage construction noise. This will include community consultation and engagement to set expectations and provide reasoning to the community about why the construction must follow this methodology and why it must be done overnight, as indicated above. This mitigation approach demonstrates that the BPO have been applied for concrete pouring activities, which will help to minimise disruption.

3. **Vehicle movements along the site access road** during the night-time are noted to generate noise that will be obvious to unreasonable. This is due to the predicted noise level of these vehicle movements when measured at the façade of the nearest dwellings to the road.

   There are no practicable physical measures that could be taken to mitigate trucks driving up the road, since this would require erecting barriers outside of the properties along Summit Road for which the contractor has no control of, for a single night. It is further noted that the erection of the barriers would have its own noise effects that are likely to cause disruption to residents, and even with provision of such a barrier along the street, it would not reduce the noise to a level that did not cause disturbance.

   Thus, managerial mitigation measures are the only practicable option. This includes the implementation of a CNVMP as required by the proposed conditions that will outline rules for drivers (i.e. no idling or engine braking) / community consultation / engagement / complaint procedure / monitoring procedures and will require the contractor to communicate to residents prior to the night works and consider offering temporary relocation to affected parties for both nights of concrete pours. These measures will help to minimise disruption and demonstrates that the BPO has been applied.

Please provide further information or justification as to why during the first night-time pour that only management measures will be put in place. Please provide further explanation as to why it is not proposed to put all management measures in place for both pours.

Noise mitigation measures will be put in place for both nights that concrete pours take place. The intent of this comment was for lessons learned on the first night to be taken forward on the second night in the case of unforeseen impacts that occurring during the first night. Management of all construction noise and vibration impacts during the night time works period are expected to be detailed within the Construction Noise and Vibration Management Plan.

Mitigation measures within the Construction Noise and Vibration Management Plan will include rules for drivers (e.g. no idling or engine braking) / community consultation / engagement / complaint procedure / monitoring procedures and will require the contractor to communicate to residents and may include offering temporary relocation to affected parties for both stages if the residual effects are significant. Temporary relocation is dependent on the outcome of specific consultation with the nearby residents, in particular the worst affected residents that are located on the site access road should be prioritised.

We note that there are no physical measures we can take to mitigate trucks driving up the road at night, since this would require erecting barriers within private properties that adjoin Summit Road, for a single night. The erection of the barrier would also have its own noise effects that are likely to cause disruption to residents.

Please comment on the concerns raised in the peer review in relation to the reliance on residents closing windows to justify an increase in the night-time noise limits to 50dB.

Optimal concrete pouring conditions are generally in cold to mild and wet weather conditions. For a high-quality finish, the contractor would avoid pouring concrete during hot weather period. Therefore, based on the ECI input for construction methodology, it was reasonably assumed that residents would likely have their windows closed during cold or wet conditions, since there is less likelihood for overheating at this time. Justification as to why the concrete pour is required to occur at night, and in one continuous pour, has been provided in response to the first question in this letter.

Regardless of whether noise limits are 45 dBA or 50 dBA, the worst affected receptors up Summit Road will be subject to noise levels that are significantly above the limit, and this is where the greatest noise impact will be felt. Therefore communication / consultation and community engagement will identify those receptors that are likely to be worst affected on the specific night of works, and management measures up to and including temporary relocation can be considered as will be detailed in the Construction Noise and Vibration Management Plan.

The Construction Noise and Vibration Management Plan will require the contractor to provide prior notice and communicate with the nearby receptors that works are about to take place, so sufficient early warning would be provided for the night(s) of construction activity, and the residents could choose to keep their windows closed during this short period.

The closest properties are predicted to receive levels well above 45 dB or 50 dB and therefore, the analysis of whether a 45 dB or 50 dB level is appropriate wouldn't change the noise mitigation or management procedures that would be developed within a Construction Noise and Vibration Management Plan for those worst affected receivers that the proposed mitigation measures is intended to prioritise.

Please also note the comments made in the attached peer review in relation to the proffered conditions of consent. Please confirm if the applicant agrees to the changes

proposed in relation to Condition 19 and comments made in relation to removing or amending Condition 20.

We agree with the proposed amendments to condition 19. clause d) and suggested addition of clause n) as suggested below (text be inserted into the proposed conditions is shown as *underlined*, and text to be removed from the proposed conditions is ~~*struckthrough*~~):

"d) The normal hours of operation being 7:00 am till 6:00 pm Monday to Saturday *with noisy activities restricted prior to 7:30 am*."

"*n) Procedures for community liaison*"

We propose the following be added to condition 19 as clause o):
"*o) Where practicable, based on the phasing of works, a 3 metre high site hoarding shall be constructed around the boundary of the construction site. The site hoarding shall be designed and constructed to act as a noise barrier and be maintained for the duration of the project*."

We note that this does not provide flexibility in future to reduce noise in other ways to minimise/remove the need for barriers (such as using quieter equipment), which may reduce the overall effects (i.e. reducing equipment noise may mean barriers are not required, and therefore the extension of time and noise generated by installing the barriers is not needed).

We agree that condition 20 can be amended based on the peer review comments received.

20. Where Construction Works require night-time works, the CNVMP must address the following matters:
a) The arrangement for night works including:
- *I. Enhanced communication procedures with residents on Summit Road identified as PPFs in the Noise and Vibration Assessment submitted with the application;*
- ~~*II. Planning night works so that the noisiest work is scheduled earlier in the night to limit sleep disturbance and the use of equipment with lower noise levels or activities where noise mitigation can be implemented (e.g., temporary barriers);*~~
- *III. Scheduling in respite periods (e.g., a maximum of 3 consecutive nights of works).*

b) Controls to minimise the occurrence of events generating intermittent sounds such as reverse beepers, shouting, or whistling.

Yours sincerely

Cathy Crooks

Cathy Crooks
Principal Planner
Connect Water/WSP