

## **Discussion Points for Hanson's Response**

### ***1. How many tonnes currently pass through mobile crushers? (note: plan is to use the mobile crusher for 20,000t worth of concrete recycling activities in Stage 4&5)***

There are no mobile crushers used at the Brandy Hill Quarry currently. As stated in the RTS, “Concrete recycling activities would commence from Stage 1 and involve the use of mobile crushing equipment”, detailed in Section 3.7. Recycling of concrete material would occur on site with up to 20,000 tonnes annually recycled.

### ***2. Can we see video / photos of these things in operation?***

As noted above, there are no mobile crushers used at the Brandy Hill Quarry currently. However, it is suggested you look at the following YouTube video for a good example of how this equipment operates.

<https://www.youtube.com/watch?v=ap9Z8V6pBHA>

Hanson are intending to host an Open Day at the Quarry in the coming months (date to be confirmed). If you are able to attend, quarry staff can show you the equipment that is in use on the site. It will not be operating during any Open Day though.

### ***3. What dust control measures are installed on mobile crushers?***

The mobile crusher will be self-contained with dust suppression sprays. There are three main components to a mobile crusher.

- A hopper into which the raw materials are placed.
- The crushing component.
- A conveyor to move the material.

The crushing component that generates the most dust is contained in the equipment and as such has a designed enclosed hopper. The sprays are located at the discharge chute, from crusher to conveyors to moisten the material that is exiting the crusher. There are no sprays on the hopper as this would create a risk of overly wet material become clogged and damaging the equipment.

### ***4. Other than enclosure, what dust control measures are being considered / implemented for on-site haulage, handling, crushing and off-site haulage?***

The air quality design and operational controls that would be implemented are described in a Draft Air Quality Management Strategy (attached). Please note that these are not ‘being considered’ but would be implemented if the extension is approved. Hanson understand this has been a concern for the community. In summary, there are a range of standard and additional mitigation measures that would be implemented at the Quarry to reduce dust generation including the following.

- Internal roads would continue to be watered. Current practice is to have a water cart in operation in conjunction with haul truck operation but this may increase or decrease depending on conditions (i.e. more on dry dusty days and less when there is rain).
- The earthen amenity barrier to the south of the Quarry Site would minimise dust dispersion, however this is principally designed for noise and visual amenity benefits. The barrier would be stabilised with groundcover vegetation as soon as practical following construction.
- Disturbed areas within the Quarry Site that are no longer required for operations would be stabilised with groundcover vegetation as soon as practical following completion.

- Operations at exposed locations and under unfavourable weather conditions would be modified, where necessary, to reduce potential dust generation.
- The internal road network would continue to be surfaced with well graded materials to reduce dust generation.
- Earthen amenity barriers of various lengths and heights would be temporarily constructed for each stage of operations and strategically located within the Processing and Stockpiling Area.
- Vehicle speed on internal roads would be limited to 30km/hr to reduce potential dust lift off.
- Dump heights from trucks, front-end loaders and conveyors would be minimised, where practical.
- Blasts would be scheduled to avoid dry and dusty conditions, where practical.
- It is expected that as the quarrying depth increases this would provide natural mitigation by restricting fugitive dust.

**5. *Has the processing stream been modelled (DEM) or designed specifically?***

The Air Quality Assessment for the project was prepared by Vipac Engineers and Scientists and included predictive modelling of dust dispersion. This process uses a 3D model of the local terrain and places dust sources in that model. Each dust source has a specific elevation, and this includes the processing equipment.

The processing equipment will not change during the first three stages of operations. During Stage 3 a new area would be developed to the south of the existing processing area and new processing equipment commence use in Stage 4.

**6. *If so, have the impacts of your dust control measures been quantified and validated?***

The dust control measures are included in the modelling. It is not possible to model the amenity barriers and so this benefit is not quantified. However, dust suppression, enclosures and vehicle speeds are all incorporated in the modelling process. The effect of each specific measure is not quantified only the overall predicted dust levels. The modelling assumptions are detailed in the Air Quality Assessment and this is reviewed by technical staff within the EPA who are trained and experienced to validate the assumptions and conclusions.

**7. *Do you have environmental controls on operations (i.e., not operating during certain wind / barometer events?***

The Draft Air Quality Management Strategy describes the triggers for Quarry personnel to adjust operations or undertake an investigation of dust generation. These include the following.

- Predicted adverse weather conditions such as high winds and excessively dry periods. Where these predictions occur, they are taken into consideration in operational planning.
- Alarms set within the continuous particulate matter monitoring equipment will advise Quarry personnel when dust levels are approaching or likely to approach the criteria levels.
- Air quality complaints.
- Exceedance of air quality criteria established through emissions monitoring.
- Extraordinary events or conditions such as bushfires, prescribed burning, dust storms, fire incidents or any other activity.

In terms of ceasing operations during adverse conditions, this would be the responsibility of the Quarry Manager at the time that adverse conditions are occurring.

- 8. *Enclosing the crusher for dust control is one thing, but what treatment / control measures are proposed for the dust inside this enclosure? Is it captured and stored or released into atmosphere?***

Dust suppression and dust collection will be installed. Fine dust is normally blended back into road base materials for improved product performance.

- 9. *Will people be working in this enclosure or is remotely operated?***

The plant will be remotely controlled, as per current practice.

- 10. *Have you done testing to show the optimum moisture content for your product's dustiness?***

The Quarry operates a generally dry processing plant; however the insitu moisture content will vary depending on the climatic conditions. The moisture content of the material is not tested for all material produced unless where customers request moisture content in their specifications and this is managed to meet their needs.

Specific testing for the site has not been undertaken. There is a fine balance between adding water to suppress dust and moisture impacting equipment or product performance. This is managed with our equipment suppliers who include dust suppression as standard in some equipment.

- 11. *Do you have moisture content requirements for your product written into supply contracts (i.e., could it's moisture content be altered if necessary?)***

Some customers do require a percentage of moisture in their products to meet engineering specifications for projects they are working on. Hanson addresses these requests as they arise with customers.

- 12. *Can we get full time, permanent dust monitoring stations installed along the perimeter of the quarries land and at specified locations within the community?***

Hanson have been discussing dust monitoring with the Community Consultative Committee and included this in the Draft Air Quality Management Strategy. Dust monitoring will be a requirement within the conditions of consent if the extension is approved. It is likely that a single continuous particulate matter monitor will be installed at the Quarry. It is likely that a mobile monitor such as a Dusttrak or E-sampler will be used for other locations on an ad-hoc basis.

- 13. *Can these be of the Tapered Element Oscillating Microbalance (TEOM) type?***

As noted above, a single continuous particulate matter monitor will most likely be installed at the Quarry. The type and location of the monitor will be determined on consultation with air quality specialists, DPE and the EPA.

- 14. *The "Response to Community Questions" document mentioned noise control measures in the form of an amenity barrier along the southern boundary. What measures are you putting along the western boundary?***

The natural topography of the local area provides noise mitigation and attenuation. Predictive noise modelling identified that attenuation such as a stand-alone barrier was not required for residents to the west of the Quarry. It is considered that the proposed mitigations such as enclosing equipment will provide acceptable mitigation. According to Vipac, a conservative estimate for the noise reduction from the set of enclosed sources would be at least of the order of 10dB to 15dB. The project must also consider the need for mitigation with other impacts such as the removal of vegetation. Hanson aims to reduce the area of vegetation that needs to be cleared.

***15. Do you have wind speed and direction roses for your site?***

The Air Quality Assessment wind roses were generated from meteorological data using a combination of The Air Pollution Model (TAPM) and CALMET. This data was then compared to the data available from the Bureau of Meteorology weather station at Patterson (Tocal) (Site number 061250).

Seasonal wind roses show that winds blowing from the west are dominant during spring, autumn and winter, impacting residents on Mooghin Road and Clarence Town Road. During summer months, potential dust at residents on Clarence Town Road could be higher due to predominant north easterly winds. These meteorological conditions have been taken into account in the Air Quality Assessment that has assumed worst case conditions for assessment.

It is expected that onsite meteorological monitoring will be a condition of consent for the Quarry extension.

***16. What is the target product size following blasting? What is the target product size following crushing? Have you considered optimising your blasting patterns to minimise the requirements for crushing?***

Blasting target product size is 500mm minus, plant target product size after crushing is 45mm minus. However, although the processing operations involve crushing and screening they also include shaping of the product to improve performance (strength) in concrete. Yes, blasting patterns are optimised to meet customer needs.

***17. Do you expect that the deeper pit shell will contain more of the dust than the current pit shell?***

Yes, for example, an excavator loading a haul truck will generate dust when the materials fall into the trailer of the truck. At a lower elevation, more of this dust will fall out of the air before reaching the edge of the pit. Some dust will still be generated and may be picked up by wind. The elevation of benches and the pit floor have been incorporated into the dispersion modelling.