

The General Manager
Bathurst Regional Council
158 Russell Street
BATHURST NSW 2795

1 March 2017

Attention: Lucie Clifton, Development Control Planner

**DEVELOPMENT APPLICATION NUMBER 2016/413
WASTE MANAGEMENT FACILITY AT 51 UPFOLD ST, GORMANS HILL**

Dear Ms Clifton,

Thank you for your correspondence regarding our development application described above.

We attach further information from our acoustic and air quality consultants for your consideration and referral to the NSW Environment Protection Authority (EPA).

We also provide the following additional information for your assistance and for the assistance of EPA:

1. Operating Hours

We accept Council's concerns regarding the appropriateness of the operating hours and that the assessment reports provided did not assess the full range of hours proposed.

We seek to amend our application to propose the following reduced operating hours:

Delivery and Pickup

7:00am to 5:00pm Monday to Friday

8:00am to 2:00pm Saturdays

CLOSED on Sundays and Public Holidays

Operation of the Crusher and Screen

8:00am to 4:00pm Monday to Friday

CLOSED Saturdays, Sundays and Public Holidays

<p>2. The concrete batching plant and cumulative effects</p>	<p>We accept the concerns of EPA and Council in relation to potential cumulative impacts from the operation of the crusher and concrete batching plant on the same site, particularly in relation to cumulative air quality and noise impacts.</p> <p>We have discussed this with the operator who has advised that they cannot logistically operate both operations at the same time. That is, at any given time they can only use either the crusher and screen OR the concrete batching plant. They cannot use both concurrently.</p> <p>Consequently, we propose that Council impose a consent condition prohibiting the operation of both pieces of plant concurrently. For Council's assistance, we provide the following draft condition for consideration:</p> <p><i>The concrete crushing and screening activities approved under this consent shall not be undertaken at any time during which the existing concrete batching plant is being operated. The objective of this condition is to prevent adverse environmental impacts that may result from the cumulative generation of noise and dust from both activities operating concurrently.</i></p>
<p>3. The concrete batching plant and its relationship to this development application and any future consent</p>	<p>We acknowledge the request of EPA and Council to clarify the relationship between the existing batching plant and the current development application.</p> <p>We understand that the existing concrete batching plant is lawful and is subject to one or more development consents. Consequently, we have not revisited the assessment of this plant in our development application and instead rely on the existing consent and any associated rights that may exist under S109 of the Act. We assume that whatever impacts the plant has have previously been considered by Council and found acceptable.</p> <p>As outlined at point 2 above, the concrete batching plant is not proposed to operate concurrently with the crushing and sorting component of this application.</p> <p>We have considered whether there is a cumulative impact from the vehicle movements, weighbridge, and storage components of this development. We conclude that there is not. The reason is that vehicle movements, measurement and storage are integral components of both development and there is no limit on truck movements associated with the batching plant. These elements are common to both developments and do not intensify the concrete batching activity.</p>

	<p>Consequently, we request Council to frame any consent for this development in such a manner that the consent acknowledges and “submits” to the existing consents in so far as the concrete batching activity is concerned. For Council’s assistance, we provide the following draft condition for consideration:</p> <p><i>With the exception of conditions* <<LISTNUMBERS>> this consent does not fetter or regulate the operation of the existing concrete batching plant in so far as it is operated lawfully in accordance with a valid development consent. The objective of this condition is to allow for the operation of the existing plant in accordance with the Newbury Principles.</i></p> <p>*This part of the condition is provided to allow for whole of site conditions (if any) to be excluded, eg. Limits on total numbers of trucks to the site.</p>
4. The concrete batching plant and EPA Licensing	<p>We appreciate Council’s concerns regarding the potential for an EPA license to interfere with the operation of the batching plant. We have taken note of this concern and will ensure it is included in any discussion over license conditions.</p>
5. Operating hours and truck movements	<p>Our proposed operating hours are the times that the gate will open to allow vehicles into the development. While we cannot deny patrons access to the road network outside of these hours we can, and will, deny access to the site. We do not anticipate large numbers of early arriving vehicles queuing to access the site because it is proposed to service a relatively small catchment in terms of potential customers.</p>
6. Noise penalties under the Industrial Noise Policy	<p>Our Acoustic Engineer provides the following advice:</p> <p><i>The issue of penalties should have been addressed in the acoustic report. Low-frequency noise is not a feature of the equipment, The C-weighted minus A-Weighted measurements for the combined Komplet equipment and the Hammbreaker alone were typically less than 10 dB and so no low-frequency penalty is applicable.</i></p> <p><i>Although tonality was not obvious during the measurement the operation of the Komplet crusher/sieve is nominally tonal. The operation of the Komplet Crusher/Sieve and loader measured at 15 metres just meets the tonality specification at 250Hz.</i></p> <p><i>The relevant frequencies and dB levels are 200Hz - 72.2 dB/ 250 Hz - 79.8/ 315Hz - 67.4. The 200Hz band is 7.6 dB less than the level at 250 Hz and the 315Hz band is 12.4 dB</i></p>

	<p><i>less, thus when rounded both side bands are 8dB less than the 250Hz 1/3 octave centre band. This will require a +5dB penalty added to the measured level of 78 dBA for the Komplet Crusher/Sieve and Loader operation. The new level for the combined operation is 83 dBA, one dB louder than the measured level of the Hammbreaker shredder. As the report stated the acoustic analysis predicting the noise levels at the Bryant was conservative. The noise loss due to the existing barrier of the Levee walls and the existing mound of the railway line was not included as it is not practical to make accurate measurements of the rail mound height because of access to the rail corridor.</i></p> <p><i>However, as a more defined calculation is required it would be safe to assume that the Levee wall and the railway mound is at least a line of sight barrier. This will provide 5 dB of additional attenuation. Based on this analysis the predicted noise level at Bryant street residence would be 36dBA including the penalty for tonality.</i></p> <p><i>The Hammbreaker Shredder is not tonal in operation, the revised predicted level is 33dBA at Bryant Street. For the isolated residences (19 and 20 Upfold Street) within the industrial zone the prediction for the Hammbreaker is 37 dBA and for the Komplet Crusher/Sieve and loader in operation is 41 dBA including the tonality penalty. The noise from the Komplet system will exceed the project noise criteria at the isolated residence by 3 dB, these residences are within the industrial area and the exceedence will only occur during the day time hours. For the residences near to the corner of Lyal and Upfold Street the prediction for the Hammbreaker is 34 dBA and for the Komplet Crusher/Sieve and loader in operation is 38 dBA including the tonality penalty. The noise levels will comply with project noise criteria for these residents that are bordering the industrial area.</i></p> <p><i>We note that the tonality of the Komplet Crusher/Sieve operation only just triggers the definition of tonality on rounding up.</i></p> <p><i>All of the measured noise sources did not have the characteristics of an impulsive noise source. Specific measurement were not made to confirm impulsiveness but the process of concrete crushing although it involves hammering and impact, is continuous and unlikely to be impulsive.</i></p>
<p>7. Noise from all crushing and screening plant</p>	<p>Our Acoustic Engineer provides the following advice:</p> <p><i>The measurement of the Agristion Loader and the Komplet Crusher and Sieving machine were measured as a single</i></p>

operating concurrently	<p>operation with all machines working together. The Hammbreaker Sheader (A concrete crushing machine) was later measured on its own at a later date. As the Hammbreaker machine at 15 metres was 82dBA, four (4) dB louder than the combined noise of the Komplet crusher/sieving machine operation with the loader.</p> <p>The Hammbreaker Shredder will be used alone with the Argistion Loader which is not tonal, the Hammbreaker will be become the dominant noise source and in operation with the Agristion loader would not be any louder than the Hammbreaker on its own.</p> <p>Only one of the concrete crushing machines, the Komplet or Hammbreaker, will be used at any one time. The proposed shed at the crushing area only has room for one crushing machine.</p> <p>For Council's assistance, we provide the following draft condition for consideration:</p> <p><i>Only one piece of crushing plant shall be operated on site at any one time. In this condition "crushing plant" refers to any device, machine or piece of equipment that is principally intended to break a masonry product into smaller pieces. This condition is imposed to ensure the development does not result in excessive noise impacts.</i></p>
8. Noise criteria at Durham Street	<p>Our Acoustic Engineer provides the following advice:</p> <p><i>We note that there is a typographic error and the noise criteria listed in Table 5 on page 9 should be 38dBA. The background levels were measured in the rear yard of the property at 4 Durham Street. The rear yard of this property is located near to the Eastern end of Bryant Street and is representative of the noise environment at the other residences along Bryant Street. The environmental noise logger was placed in this yard as it provided reasonable security while being in an open environment that was generally exposed to ambient noise in the local area.</i></p>
9. Noise measurement for properties on Upfold Street	<p>We agree with Council that Table 5 in the acoustic report was potentially miss-leading. Our Acoustic Engineer provides the following advice to clarify this:</p> <p><i>The project noise criteria for the residences at 19 and 21 Upfold Street located within the Industrial zone remains to be the lower of the amenity criteria and the intrusiveness criteria. The Amenity criteria for isolated residences within an industrial area is equal to LAeq, day 70 dBA. However for all residential receivers the intrusiveness criterion of background + 5 dBA must be considered. As the residences</i></p>

	<p><i>are located within an industrial area slightly exceeding the intrusive criterion may be acceptable if all reasonable and feasible methods of noise reduction are employed.</i></p> <p><i>The background noise levels in the industrial area of Upfold Street will be similar to those at the Bryant Street area and thus the project noise criteria for these residences remains at 38 dBA.</i></p> <p>We observe that there are existing uses along Upfold Street that are likely to generate more noise than the dwellings on Bryant Street. This includes the truck movements associated with the courier business and the Cleanaway Depot. The assumption that background noise levels in this location would be no less than those on Bryant Street seems reasonable to us.</p>
10. Maximum noise output for the crusher	<p>Our Acoustic Engineer provides the following advice:</p> <p><i>As the supplied data sheet for the Hammbreaker Shedder didn't provide conclusive results for the operation of the machine at full load. The report contains measurements of the Hammbreaker Shedder operating at full load.</i></p>
11. PM ₁₀ Air Quality Criteria Exceedance	<p>The exceed of the criteria is localised within the site and its immediate surrounds. Compliance is achieved for all sensitive receivers in accordance with the guidelines.</p>
12. Table 5.6 and Figure 5.4 in the air quality assessment report	<p>The table and figure use different averaging periods. Table 5.6 uses an annual average while Figure 5.4 uses a 24-hour average. Figure 5.4 reflects the criteria determined in Table 5.8 of the report.</p>
13. Construction of the shed approved in 2016	<p>We ask Council to assume the 2016 approved shed has been constructed prior to the commencement of the subject development.</p>
14. Stormwater Treatment and changes to the operation	<p>We do not agree with the Council's contention that the development results in a change to the stormwater management needs of the site. The crushing activity will be housed in a building that will be roofed with an impervious material. The stock piling of crushed and uncrushed concrete is not significantly different to storing other aggregates and concrete products as part of the batching plant use. We find no basis to sustain an argument that this change will affect the land from a stormwater perspective.</p> <p>This development will not significantly alter the stormwater management regime on site and we submit that the existing stormwater system is adequate for the proposal.</p>

15. No testing in the Contaminated Land Assessment Report

State Environmental Planning Policy No. 55 – Remediation of Land does not require soil testing for a development application as a precondition to the granting of development consent in this case.

Rather it requires a preliminary contaminated site assessment (Clause 7(2)) and that the consent authority form an opinion that the site is suitable for the development either in its current state or with remediation that it is satisfied will be undertaken prior to the commencement of the development (Clause 7(1)).

Clause 7(3) provides that a consent authority can asked for a detailed investigation (which would include testing) but does not impose on the consent authority a requirement to do so. In our submission, the intent of Clause 7(3) is twofold. Firstly, it is to specify the pathway for a consent authority to seek more information to satisfy itself in relation to Clause 7(1). Secondly, it is to make clear that a remediation action plan should not necessarily be required at the development application stage, which is consistent with the broader objective of the SEPP to make remediation of land exempt development wherever practical.

Appendix L of the EIS is a preliminary contaminated site assessment and we understand that this is not contested by the Council. This, therefore, satisfies Clause 7(2) of the SEPP.

In relation to Clause 7(1) of the SEPP we note in that appendix that Council recently approved a development application on the site and no contaminating activities have occurred since that time. Consequently, we consider that Council can satisfy itself in relation to this clause in the same way it did for that earlier development application.

We trust this answers the concerns of Council and EPA. Please advise if any further clarification is required.

Regards,



Grant Rokobauer
Town Planner and Environmental Scientist

Air Noise Environment Pty Ltd

Unit 3, 4 Tombo Street
Capalaba
QLD 4157
T: 07 3245 7808
F: 07 3245 7809
E: ane@ane.com.au

ACN 081 834 513
ABN 13 081 834 513

Rokobauer Pty Ltd
PO Box 4550
Penrith Plaza
NSW 2750

Attention: Grant Rokobauer

Ref: 4616RepLetCV1.odt

23 February 2017

Dear Grant

RE: RESOURCE RECOVERY FACILITY, GORMANS HILL - RESPONSE TO INFORMATION REQUEST

Further to the information request regarding operation of the existing concrete batching plant and potential crystalline silica emissions, this report letter presents the results of additional dispersion modelling for the proposed Gormans Hill Facility. The information presented in this letter is supplementary to the analysis presented in the report dated 3 November 2016, 'Air Quality Assessment - Resource Recovery Facility, Gormans Hill' prepared on behalf of All Crushed Up.

Additional Analysis

The additional analysis relates to the potential for release of crystalline silica as a component of the emissions from the proposed construction waste recycling facility. Silica is a component of some construction materials, particularly those containing sand, and a proportion may be in the crystalline form. Air quality goals for exposure to crystalline silica in the ambient environment and in working environments are presented in Table 1.

Table 1: Assessment Air Quality Criteria

Pollutant	Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	Averaging Period	Source
Respirable Crystalline Silica (as $\text{PM}_{2.5}$)	3 Ambient Goal	Annual	Victorian EPA
Respirable Crystalline Silica	100 Occupational Threshold	8 hour average	Safe Work Australia





Revised Dispersion Modelling

To assess the potential emissions of crystalline silica, the composition of construction materials and the expected content has been considered. A summary of the typical proportions has been prepared by Workplace Health and Safety Queensland¹ as presented in Table 2.

Table 2: Proportion of Crystalline Silica in Building Materials

Construction or Building Material	% Composition Crystalline Silica
Sand and sandstone	96 - 100 %
Calcium-silicate bricks	50 - 55 %
Aggregate in concrete	30 %
Clay bricks	15 - 27 %
Fibre cement sheets	10 - 30 %
Demolition dust	3 - 4 %

The information presented in Table 2 confirms that the potential emissions of crystalline silica, even assuming all of the silica bonded in the construction materials were released during the recycling process, would typically be less than 55 % of the material being processed. The only material where the composition of silica is higher is for sand or sandstone, and these materials would comprise a small proportion of the overall waste stream processed at the site. For the modelling, a conservative approach has been adopted in which it is assumed that 100 % of the predicted PM_{2.5} concentrations are comprised of crystalline silica. In reality only a portion of the emissions would be crystalline silica, hence this approach represents a significant over estimate of potential emissions.

The atmospheric dispersion modelling has included the sources associated with the construction waste processing activity, based on the emission rates adopted for the original dispersion modelling analysis as shown in Table 3. Particulate emissions associated with the haul road have not been included. The haul routes are to be sealed and swept regularly, hence are unlikely to be a source of crystalline silica emissions which will be primarily associated with the processing of concrete and fibre cement waste.

The plant is assumed to operate at a maximum throughput rate of 300 tonnes per day, which is double the expected daily throughput, to predict the potential maximum 8-hour average crystalline silica concentration. For the purposes of predicting the annual average crystalline silica concentrations, for comparison to the long term ambient goal, the proposed average daily throughput rate of 150 tonnes per day has been adopted.

1 Workplace Health and Safety Queensland, Silica Lung Fact Sheet, 2009 (<http://www.stemsafe.com.au/silica-lung-factsheet.pdf>)



Table 3: Emission Factors (300 tonnes per day throughput)

No.	Activity/Source	Units	TSP	PM ₁₀	PM _{2.5}
F1	Unloading concrete rubble ^a	kg/Mg	0.00506	0.00239	0.000362
F2	Loading concrete rubble to crusher ^a	kg/Mg	0.00506	0.00239	0.00036
F3	Concrete crusher ^b	kg/Mg	0.00270	0.00120	0.000180
F4	Screening ^b	kg/Mg	0.01250	0.00430	0.0006
F5	Crushed concrete material handling ^a	kg/Mg	0.00506	0.00239	0.00036
F6	Material Storage ^d	kg/m ² /hr	0.00004	0.00002	0.0000030

a Derived from Equation 1 of AP 42 Chapter 13.2.4, assuming an average wind speed of 3.2 m/s based on average wind speed between 7 am and 6 pm at the Bathurst Airport BOM station. A moisture content of 1% has also been adopted for concrete dust.

b Emission factor for tertiary crushing and screening for stone processing

c Derived from Equation 1 of AP 42 Chapter 13.2.1, assuming truck weight of 30 tonnes and site pavement surface silt loading of 12 g/m² as per Table 13.2.1-2 (for a concrete batching plant).

d Wind erosion emission factor for coal stockpiles

In terms of the potential for cumulative emissions, it is understood that the proponent has agreed to a condition requiring that the approved batching plant and proposed construction waste recycling activity will not be operated simultaneously. The potential for emissions of crystalline silica from the concrete batching plant is low (< 30 %, even if all of the silica contained in the concrete aggregates was released to atmosphere) compared to the waste recycling process. As the modelling has assumed daily operations for the waste recycling process, for those periods when concrete batching occurs the potential emissions are lower hence the modelling adequately represents the potential impacts from this source.

No other sources significant sources of particulate emissions were identified in the 2016 assessment, hence the potential for other sources of crystalline silica in the local area to contribute to cumulative impacts is considered to be negligible.

Dispersion Modelling Results

The dispersion modelling has adopted the same meteorological data inputs as the 2016 modelling. Predictions of maximum receptor concentrations have been completed for the site boundary, to assess the risk of off site impacts. Figure 1 identifies the modelled boundary receptor positions.





Figure 1: Modelled Boundary Receptor Positions



The results of the dispersion modelling predictions for PM_{2.5}, assuming that 100 % of the PM_{2.5} comprises crystalline silica, are presented for each of the boundary receptor positions in Table 4.

Table 4: Maximum Predicted PM_{2.5} Ground Level Concentrations at the Site Boundary

Receptor	Maximum Predicted Concentrations PM _{2.5} (µg/m ³)			
	Annual Average (150 tonnes per day average)	Crystalline Silica Air Quality Criteria (µg/m ³)	8 hour Average (300 tonnes/day worst case)	Crystalline Silica Air Quality Criteria (µg/m ³)
1	0.13	3	5.24	100
2	0.21	3	6.95	100
3	0.62	3	9.97	100
4	1.57	3	46.14	100
5	0.88	3	23.73	100
6	1.34	3	30.03	100
7	1.38	3	43.25	100
8	0.33	3	10.73	100
9	0.15	3	7.96	100
10	0.14	3	6.13	100
11	0.28	3	10.89	100
12	0.63	3	13.44	100
13	0.62	3	16.63	100
14	0.57	3	11.83	100
15	0.49	3	6.47	100
16	0.23	3	5.76	100
17	0.11	3	3.70	100
18	0.11	3	4.34	100





The results presented in Table 4 confirm that the predicted concentrations at the site boundary are well within the annual average ambient goal recommended by the Victorian EPA for crystalline silica and the Safe Work Australia 8 hour limit.

Conclusions

On the basis of the results of the dispersion modelling, it is concluded that the potential emissions of crystalline silica from the proposed construction material recycling operation are low, providing the mitigation measures identified in the original assessment are adopted:

- maximum daily throughput limit of 300 tonnes/day;
- average daily throughput of 150 tonnes/day;
- use of wind sprays capable of achieving a 50% reduction to wind erosion, screening and crushing activities;
- roads are fully sealed and swept regularly to minimise dust emissions; and
- the concrete batching plant is not to be operated at the same time as the construction waste recycling facility.

Please contact us if any further information is required.

Yours sincerely

for Air Noise Environment Pty Ltd

Claire Richardson BSc(Hons), MAAS

Principal Consultant

Note: All professional advice provided by Air Noise Environment, including any information contained in this letter, is subject to the terms of the Disclaimer shown on our website at www.ane.com.au/disclaimer.



Acoustik
13 Orana Street
Orange 2800
Phone +61 (0) 431 914 038
harpertc@gmail.com
ABN: 27238273391

3 February 2017

(REF: 1602.002.Letter.0)

Chris Clark
51 Upfold Street
Bathurst NSW 2795

Letter of Opinion - Machine Vibration Impacts on Levee Walls

Acoustik provides the following advice in response to comments from stake holders about the development application for a Concrete Recycling Plant at 51 Upfold Street, Bathurst NSW.

The stake holder comment is that vibration generated by equipment could impact or damage the levee walls that bound the North-western to North-eastern sides of the site. The levee walls protect the area from flooding of the Macquarie River and Queen Charlottes Creek.

Vibration levels of concrete recycling equipment proposed for use at the site was measured by Acoustik on the 15 June 2016. The equipment measured is a Komplet Concrete crushing machine, Komplet Sieving machine, and a Agrison front-end loader. In all cases the level of vibration (acceleration) measured at 10 metres from centre of the machines during operation did not exceed the most sensitive residential vibration criteria.

For a residential vibration receiver, the preferred limit is 0.010 m/s^2 in the z-axis and 0.0071 m/s^2 for x and y axes. For a workshop, preferred limit is 0.040 m/s^2 and 0.029 m/s^2 respectively.

There is no current Australian Standard or guidelines to address vibration levels that damage buildings. In general, vibration levels that do not affect human amenity are lower than those associated with building damage.

A Hammbreaker Metal & Stone Shredder is also proposed for use at the site and vibration levels for this machine was not measured as it was not available on the 15 June 2016. However, the perceptive vibration levels for the Hammbreaker were similar to the previous machines and we have no reason to believe that higher vibration levels would results from the measurement of the Hammbreaker machine.

British Standards

British Standard BS 7385-2:1993 "Part 2: Guide to damage levels from groundborne vibration" provides advice regarding the effect of ground vibration and damage to buildings and soil compaction. The criteria for transient vibration to generate cosmetic damage (hairline cracks on a wall surface or growth of existing crack) is a peak component particle velocity level of 15 mm/s .

BS 7385-2:1993 advises that loose and especially water-saturated cohesionless soils can be vulnerable to vibration that leads to liquefaction and compaction. Such soil movement could cause damage to the levee wall foundation. The standard advises that vulnerability for such soils occurs at (peak particle velocity) p.p.v values of about 10 mm/s .

The soil vulnerability vibration criterion is set for a cohesionless type soil. We could expect that the levee wall contractor built the wall foundations on a well compacted and stable soil and thus it would be less vulnerable to the effects of vibration. If the soil around the foundations of the levee wall is loosely compacted a suitably qualified civil engineer should be consulted to confirm the levee bank soil type.

Letter of Opinion - Machine Vibration Impacts on Levee Walls
(REF: 130926-a - Vibration Opinon Letter_r0)

The measured velocity vibration levels from the concrete recycling equipment at 10 metres from the centre of operations was 0.13 mm/s p.p.v with the highest component value of 0.13 mm/s along the z-axis. The Levee walls are at least 10 metres of more from the operational centre of the machinery.

Even for measurements taken at 3 metres from the equipment the velocity vibration levels were 0.66 mm/s p.p.v with the highest component value of 0.54 mm/s along the x-axis

We note that the machinery at site would be considered a continuous vibration source and thus damage due to fatigue could occur at levels less than the transient criteria. The measured levels are well below the vibration criteria even allowing for the continuous vibration. Vibration values are typically 1% of building vibration criterion and 2% of soil criterion at 10 metres for the equipment.

It is our opinion, the low levels of vibration the machine vibration would have no negative impact on the levee walls.

As a precaution, concrete recycling processes could cease if flood waters saturated the soil around the levee walls and not recommence until the soil had dried out.

Sincerely,

Tom Harper
Principal Engineer
Acoustik