

BARNHAWK ACOUSTICS

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Date: 26th October 2012

Our ref: 1012/1

Your ref: A303 Recycling Facility

Raymond Brown Minerals & Recycling Ltd
Lee Lane
Nursling
Southampton SO16 0AD

Attention: Mr Steve Cole

Dear Mr Cole,

**Raymond Brown Minerals & Recycling Ltd
A303 Barton Stacey Recycling Facility – Evening/Night Working**

Noise Impact associated with Trial Operation of MRF during period 18.00-24.00hrs.

1. INTRODUCTION

Barnhawk Acoustics was instructed by Raymond Brown Minerals & Recycling Ltd to prepare a noise assessment in support of an Application to vary the hours of working of the indoor processing element of the already permitted MRF activities at their Barton Stacey Materials Recycling Facility. This facility currently is operated under planning permission 09/01293/HCC3N, with variation 10/00030/CMAN. The permitted current hours of working are 06.00-18.00 Monday to Friday and 06.00-14.00 Saturday.

The proposal is to vary the hours of working to permit **solely** the processing element of the waste materials **inside the MRF building together with operation of the picking station** during the hours of 1800-24.00 hrs. Accordingly, because of the restriction of the permitted existing hours for the complete MRF site as a whole, the main roller shutter doors of the MRF building would normally be kept closed during these proposed extended hours of working, since there would be no requirement to accommodate waste delivery lorry movements, external yard activities or vehicle movements.

As part of their preparation to submit an Application to vary the hours of operation, the Applicant obtained the agreement of Hampshire County Council, as Waste Planning Authority, to conduct the waste processing operation inside the MRF building as described above, during the relevant evening period, for a trial period of four weeks, commencing 1st October 2012.

Clearly, this trial period operation provided an opportunity to evaluate the actual environmental noise impact in the local community.

2. MRF BUILDING AND LOCAL AREA

Plan BA 1 replicates the layout of the existing MRF building and shows the extent and heights of the soil bunding around the site. It can be seen that the acoustic shielding on three sides of the site is maximised by the existing and the proposed soil bunding of up to 10m high above the base elevation of the recycling site. The original Planning Statement indicated that that the existing 10m high bunding around the site was required, not for community noise reasons, but for safety reasons associated with the use of the adjacent active shooting ranges and MOD land.

3. LOCAL COMMUNITY AREA

The Application Site is situated in a relatively remote rural area surrounded by large areas of MOD land and shooting areas. The closest relevant residential property to the Application site, Owls Lodge Farm, is situated at a distance of approximately 1100m from the Application Site.

In addition, the topography of the intervening farmland and MOD land, when viewed from the

dwellings adjacent to Nuns Walk/Mills Lane (including Owls Lodge Farm and Southside Farm), in the direction towards the Application Site, first rises from the river at Mill Lane to a wide ridge, then descends gradually to the Application Site. As a result, the local community is not only well distanced from the Application Site, but also is completely out of sight in the river valley below the ridge and, of course, additionally well acoustically screened by the 10m high peripheral safety bunding around the recycling site.

During the local inspections and throughout the period of the noise monitoring measurements that were undertaken at Nuns Walk/Mill Lane, no 'activity' noise components attributable to the MRF were audible in the local background noise climate. It was also observed that A303 trunk road, situated close to the Application Site, clearly was a continuing source of traffic noise which controlled the local L_{A90} background level noise over a wide local area.

4. NOISE CRITERIA

4.1 Planning Policy: National Planning Policy Framework (NPPF)

General guidelines on noise are provided by National Planning Policy Framework (NPPF reference 1). In relation to noise of industrial origin from fixed noise sources, the relevant noise should normally be assessed according to British Standard BS 4142 (reference 2).

4.2.1 British Standard 4142 - Fixed Noise Sources

In relation to noise of industrial origin, the advice of British Standard 4142 is that the 'rating' noise levels generated by fixed plant and equipment as perceived in the community should be assessed in relation to the pre-existing background noise levels (L_{A90}) in the community. The arithmetical difference between the 'rating' level and the L_{A90} background level provides a measure of the likelihood of complaints. A difference of around +10dBA or higher indicates that complaints are likely; a difference of around + 5 dBA is of marginal significance; a difference of - 10dBA is a positive indication that complaints are unlikely.

5. NOISE ASSOCIATED WITH THE MRF OPERATION

5.1 Noise Model and Description of the Recycling Operations

The noise level contributions associated with the relevant recycling activities have been determined using standard acoustic theory and in accordance with the methodology provided in BS 5228 (ref 3). The predictions take into account the cumulative sound power level (PWL) of the sources, the distance of the acoustic centre of the MRF building from the appropriate residential dwelling together with the acoustic shielding/ground effects provided by the intervening features (bunds, local topography etc). The noise due to the recycling operations inside the MRF during the trial included the noise contributions generated by the operation of the trommel, feeding grab/loader, handling of materials, picking station and intermittent baler. The base sound power levels associated with the relevant plant activity used in the predictions of the noise levels at the nearest dwelling are provided below.

'Activity' Sound Power Levels: Internal MRF activities at A303 Longparish site:

Trommel/picking station activities, PWL = 111 dBA (Barnhawk measurements, includes feeder loading activity indoors)

Baler, PWL = 104 dBA (Barnhawk measurements)

Overall sound power level, MRF activities: $PWL = (111 + 104) = 111.8$ dBA

During the trial operation of the internal activities in the MRF building in the evening period, the roller shutter doors were normally closed and thus it is reasonable to assume that the building as a whole provides a sound reduction index of a minimum of 15 dBA.

5.2 Community Noise Predictions

As indicated above, the base noise source data used for the prediction of the noise level contributions in the community have been obtained from relevant 'activity noise' measurements. The predictions of the noise level contribution at the relevant closest dwelling due to the development have been determined using the usual equation, $L_{Aeq,1hr} = PWL - (20 \log D + 8) - A$, where

PWL = sound power level of noise source, dBA.

D = Distance in metres from the acoustic centre of source to the receptor location.

A = noise attenuation in dBA due to intervening acoustic screening.

The noise attenuation due to the 10m high peripheral bunds has been estimated in accordance with BS 5228 to be 10 dBA. In addition, because of the long distance of 1.1km to Owls Farm, it is reasonable also to consider separately that the acoustic attenuation (screening/ground effects) due to the intervening ridge in the local topography provides a further estimated 10 dBA attenuation.

5.2.1 Owls Lodge Farm/Southside Farm

The noise level predictions at Owls Lodge Farm, associated with the trial period MRF operation, are summarised below as follows:

MRF activity alone, in evening period: overall sound power level, PWL = 111.8 dBA.

Distance to relevant receptor = 1100m.

MRF Specific Noise level Contribution, $L_{Aeq,1hr} = 111.8 - (20\log 1100 + 8) - 20.0 = 23.0$ dBA

6. NOISE MEASUREMENTS IN THE COMMUNITY.

During the previous and current visits to the Recycling Facility, it was very obvious that the close proximity of the site to the busy A 303 trunk road ensured that the MRF activity noise was 'embedded' in the continuous traffic noise environment generated by the high traffic flow levels on the adjacent A303. Even late into the evening period, traffic flows were observed to be high and continuous.

In order to assess the noise contribution in the community, the background noise climate was measured in the late evening, with and without the MRF operation, on Nuns Walk at the gated entrance to Owls Lodge Farm. The measurements and relevant comments, are provided in Table 1 below together with additional survey details in Appendix BA 1.

TABLE 1

Location 1: Field boundary on Nuns Walk, adjacent to entrance drive to Owls Lodge Farm.

Location	Date	Time	L_{Aeq}	L_{A01}	L_{A10}	L_{A50}	L_{A90}	Comment
Nuns Walk, adjacent entrance drive to Owls Lodge Farm.	Wednesday 10.10.12	21.00-21.05	43.5	52.1	46.0	43.0	42.0	Continuous A 303 traffic to noise clearly audible, also continuous water flow noise from nearby stream. Local traffic on Nuns Walk. N.B. Recycling Plant noise contribution was inaudible throughout the monitoring period.
"	"	21.05-21.10	43.5	45.0	44.0	43.5	43.0	
"	"	21.10-21.15	42.7	44.5	43.5	42.5	42.0	
"	"	21.15-21.20	45.6	51.5	44.0	43.5	42.0	
"	"	21.20-21.25	42.9	44.5	43.5	43.0	42.0	
"	"	21.25-21.30	43.1	45.0	44.0	43.0	42.0	
"	"	21.30-21.35	46.6	55.5	44.5	43.5	42.0	
"	"	21.35-21.40	43.4	45.5	44.5	43.0	42.5	
"	"	21.40-21.45	48.3	57.5	46.0	44.0	43.5	
"	"	21.45-21.50	43.9	46.5	45.0	43.5	42.5	
"	"	21.50-21.55	43.1	44.5	43.5	43.0	42.5	
"	"	21.55-22.00	<u>43.3</u>	<u>45.5</u>	<u>44.5</u>	<u>43.0</u>	<u>42.0</u>	
		cumulative/average	44.6	48.1	44.1	43.2	42.3	
"	"	22.00-22.05	45.9	57.0	46.5	43.0	42.5	
"	"	22.05-22.10	47.7	60.0	49.0	43.0	42.5	
"	"	22.10-22.15	42.8	44.5	43.5	42.5	42.0	
"	"	22.15-22.20	42.8	44.0	43.5	43.0	42.0	
"	"	22.20-22.25	42.5	43.5	43.0	42.5	42.0	
"	"	22.25-22.30	42.4	44.5	43.0	42.0	41.5	
"	"	22.30-22.35	46.5	50.5	46.0	42.5	42.0	
"	"	22.35-22.40	42.9	44.5	43.0	42.5	42.0	
"	"	22.40-22.45	42.8	44.5	43.5	42.5	42.0	
"	"	22.45-22.50	47.4	57.5	45.5	43.0	42.0	
"	"	22.50-22.55	42.5	43.5	43.0	42.5	42.0	
"	"	22.55-23.00	<u>42.5</u>	<u>44.5</u>	<u>43.0</u>	<u>42.0</u>	<u>41.5</u>	
		cumulative/average	44.7	48.2	44.4	42.6	42.0	

The measurements indicated that there was no significant change in the noise levels in the community (in any measurement index) between the periods of up to 10pm when the MRF was operating, and the period after 10pm when the MRF was completely shut down and the site closed.. This was not surprising because it was abundantly clear at the time of the measurements, taken under virtually

still, calm conditions, consequently with neither tree noise or wind noise components, that the MRF activity was inaudible at the community locations. Consequently, it was not feasible to determine the specific noise level associated with the MRF by direct measurement in the community and the BS 4142 assessment relies on the base information provided in 5.2.1 above.

COMPLIANCE WITH NOISE CRITERIA

7.1 Compliance with British Standard 4142

Treating the recycling facility as an industrial fixed noise source, an assessment of the noise impact in the community can be determined according to the methodology of BS 4142 by comparing the ‘rating level’ with the existing (L_{A90}) background noise level.

The relevant background L_{A90} noise level at Nuns Walk/ Owls Lodge Farm was measured (Table 1) as $L_{A90} = 42.0$ dBA.

On the basis that the MRF activity was not audible at Location 1, a character correction for that location would be inapplicable and it is probably inappropriate to apply the BS 4142 + 5 dBA penalty applied for tonal/impulsive/intermittency characteristics. Accordingly, the ‘rating’ noise level at Nuns Walk/Owls Lodge Farm together with an assessment according to BS 4142 would be as follows:

- Specific noise level = 23 dBA (from 5.3)
- Daytime reference time interval = 1hr, night time reference time interval = 5 mins
- On-time = 100% (no correction)
- Character Correction = 0 (recycling activity was inaudible at closest dwelling)
- Rating level = 23 dBA
- Background L_{A90} noise level = 42.0 dBA (Table 1)

BS 4142 Assessment

Location	Recycling Plant ‘Rating’ level	BS 4142 Assessment (Rating level - L_{A90})
Nuns Walk/ Owls Lodge Farm, MRF evening operation	23.0 dBA	23.0 - 42.0 = - 19.0 dBA

It can be seen above that according to BS 4142, the conclusion would be that at the closest dwelling and, by implication at the farther dwellings in Mill Lane and Southside Road, the rating level would be 19 dBA or more **below** the existing background level, an entirely satisfactory situation corresponding to the BS 4142 assessment as ‘complaints positively unlikely’. Even if the +5 dBA BS 4142 tonal penalty were to be applied, the situation would not change and would still be rated as ‘complaints unlikely’.

8. SUMMARY AND CONCLUSIONS

8.1 The Applicant instructed Barnhawk Acoustics to consider the noise implications of extending the hours of operation for the enclosed MRF activities inside the existing MRF building together with the picking station for the period 18.00-24.00hrs. As Hampshire County Council sanctioned a trial period of these operations, the opportunity was taken to conduct appropriate noise measurements in the community to determine the magnitude of any resultant noise impact at the closest residential community.

8.2 Noise measurements were undertaken at NunsWalk/Owls Lodge Farm, both for 'with' and 'without' the enclosed MRF operations and picking station. The results confirmed that there was no significant difference in the noise levels between the 'with' and 'without' the MRF activities. This was not surprising because at the operation of the enclosed MRF activities were inaudible to the monitoring personnel at the community location.

8.3 An assessment of the noise impact at the community location according to the relevant British Standard 4142 has been undertaken, based on realistic noise measurements undertaken by Barnhawk Acoustics. The conclusion of this assessment is that the overall noise contribution associated with the evening/night-time operation of the enclosed MRF and picking station as described in the Planning Statement, would be acceptable in the local community, and that there would be no significant noise impact in the community.

References

1. Technical Guidance to the National Planning Policy Framework, Communities and Local Government, March 2012.
2. British Standard 4142:1997 “Method for rating industrial noise affecting mixed residential and industrial areas”
3. British Standard 5228-1:2009 “Code of practice for noise and vibration control on Construction and open sites”

I trust that this preliminary assessment provides you with the information that is required at present.

Yours sincerely,

Bob Crawford

Dr. R. Crawford, Principal Consultant

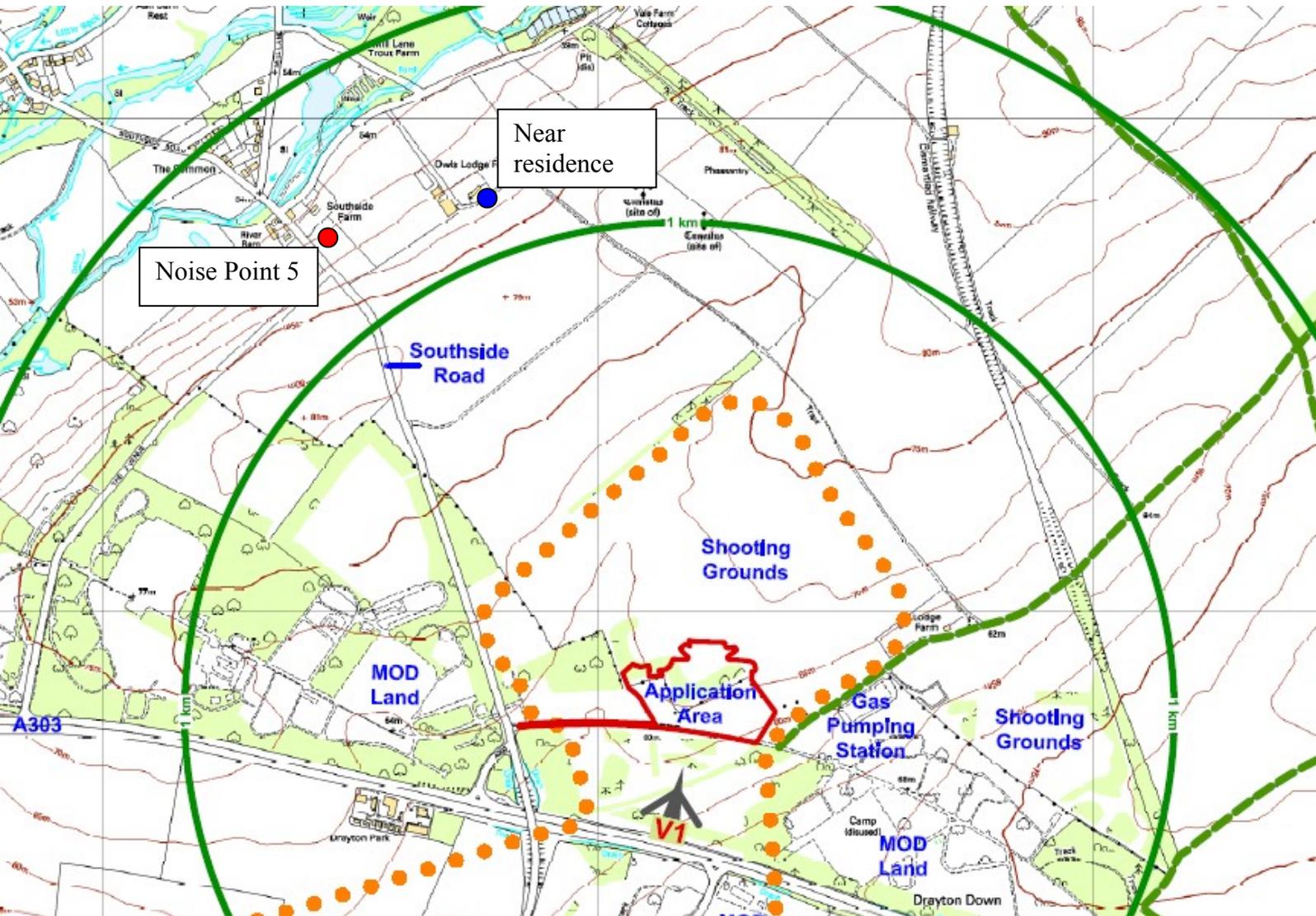
- Encl. Appendix BA 1 – Noise Survey Details
Plan BA 1 – Existing Site Layout
Plan BA 2 – Location Plan

APPENDIX BA 1

Environmental Noise Measurements

Noise Survey Details

1. **Equipment used in noise survey:**
Type 1 Environmental Noise Meter, CEL Type 268, Serial No. 106241
Microphone pre-amplifier CEL Type 225/3, Serial No.0762636
Microphone CEL Type 250, Serial No.1329
Calibrator CEL Type 284/2, Serial No.11310745
2. **Calibration:**
Sound Level Meter was calibrated before and after each set of measurements and found to be accurate.
3. **Measurements:**
All measurements were taken in free- field conditions at a microphone height of 1.5m above local ground level.
4. **Weather conditions during noise survey:**
Wednesday 10th October 2012:
Dry, partly cloudy, virtually no wind temperature ~ 10⁰ C.



PLAN BA 2 Location Plan