NOISE ASSESSMENT

Midlands Biomass and Recycling (MBAR)

Hillside Industrial Park Draycott Cross Road
Cheadle
Stoke-on-Trent
ST10 1PN

Activity Noise Monitoring (Quarterly)

Report by
S. B. Mellor, MA, MIOA, CMIOSH, MIIRSM

Report Date: 16th August 2016
Ref: MBAR Monitoring (2)
Site Visited by: S.B. Mellor MA, MIOA, CMIOSH
Site Visit: 18th July 2016

Signed:

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1.0 INTRODUCTION

As part of the planning conditions for this waste recycling site (biomass products), a noise management scheme (appended) was required. Part of this management scheme included periodic noise monitoring. As such AC Environmental will attend every quarterly (until instructed otherwise) and carry out the following monitoring:

- Attended measurements by MIOA qualified acoustician at quarterly intervals to determine levels at the nearest sensitive premises. LAeq, 5 minute levels over 1 hour.
- Monitoring to occur during typical working hours.
- Monitoring will be attended and meteorological conditions will be logged.
- Any 'pauses' for extraneous noise will be noted. Activities and events on site and off site will also be noted.
- The monitoring scheme will be reviewed after 12 months.
- Results and observations based on the above.

AC Environmental Consulting, attended the site to carry out the monitoring to determine the noise levels from site activities at the nearest sensitive premises.

Measurements were taken at the nearest accessible position to the closest sensitive receptor (house).

Acoustic terminology is explained at Appendix 1 of this report and the author's qualifications and experience are described in Appendix 2.

2.0 SITE DESCRIPTION

The site (Hillside Industrial Estate) is situated off Draycott Cross Road and is in a predominantly industrial area (industrial estate). The nearest residential property is to the rear (Commonside House) at approximately 140m from the principal site activities (see appendix) which in turn are approximately 160m from the monitoring position.

There are varied industrial activities in the vicinity including a timber yard (which lies between the nearest receptor and recycling site), construction companies, scrap metal companies and associated yards and activities.

The intervening ground between the site and receptor is predominantly 'soft' (grass) with a belt of trees approximately 30m in width directly behind the site.

Activities include the delivery of waste organic materials, the movement of waste on site by front end loader (Daewoo 400) and Jenz AZ600 Shredder. The shredder is loaded with organic waste for approximately 15 minutes in any hour (7-8 tonne per hour) maximum.

3.0 NOISE CRITERION

3.1 Local Authorities will also often seek to achieve the internal noise limits of BS 8233 (based on World Health Organisation - WHO Guidelines).

3.2 British Standard 8233:2014 (Guidance on Sound Insulation and Noise Reduction for Buildings)

The latest version of BS.8233 "Guidance on Sound Insulation and Noise Reduction for Buildings", was published in February 2014. BS 8233:2014 adopts guideline external noise values provided in WHO for external amenity areas such as gardens and patios. The Standard states that it is "desirable" that the external noise does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,\ T.}$ Where design standards cannot be achieved for traditional amenity spaces (e.g. gardens and patios) then the '*lowest practical levels*' should be achieved.

An extract of the "Design Range" of BS.8233's Table 4 for indoor noise levels (with Notes 4 & 7) appears below and it should also be noted that the assessment period is for the whole of the day (16 hours) or night (8 hours).

Table 4 **Indoor ambient noise levels for dwellings**

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

NOTE 4 regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or LAmax,P depending on the character and number of events per night. Sporadic noise events could require separate values.

NOTE 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB LAeq,T , with an upper guideline value of 55 dB LAeq,T. which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable."

4.0 MEASUREMENT PROCEDURE

The site was visited on the **18th July 2016** and instrumentation was installed at the location listed above.

The weather conditions were dry, sunny and with a temperature of approximately 19 degrees Celsius and a wind speed of 2-3m/s (SW). Cloud cover approximately 30%.

It is not considered that the weather conditions would have influenced the results.

The sound level meter used was a Svan 977 (s/n 36870). The meter calibrated correctly before and after the measurements using a Cirrus calibrator type CR:551E (s/n 039816); the instrumentation had been laboratory calibrated within the preceding 2 years.

5.0 MEASUREMENT RESULTS

The results obtained are shown in Table 1 below.

Table 1

Start date & time	Duration	LAeq	Lamax	LAFmin	L01	L10	L50	L90	L95	Notes
18/07/2016 09:44	00:05:00	46.5	58.5	36	54.7	51.9	41.6	38	37.3	Reversing alarm + distant inductrial noise just audible + birdsong
18/07/2016 09:49	00:05:00	48.5	59.5	40	54.9	52.2	45.8	42.5	42.1	Reversing alarm + mobile plant + distant dog barking + birdsong
18/07/2016 09:54	00:05:00	45.3	61.6	34.5	54.8	47.7	42.6	38.2	37	Process noise + impact + birdsong
18/07/2016 09:59	00:05:00	45	59.3	37.4	54.7	48.2	42.2	39.1	38.7	Impact + birdsong
18/07/2016 10:08	00:05:00	41.4	55.7	36.7	46.6	43.5	40.5	38.6	38.1	Distant Road Noise
18/07/2016 10:13	00:05:00	40.6	57.7	36	47.3	42.5	38.9	37.2	37	Impact + birdsong
18/07/2016 10:18	00:05:00	47.1	65.9	35.3	61.2	45.6	41	37.6	37	Impact + birdsong
18/07/2016 10:23	00:05:00	49.2	59.4	36.1	57.1	53.8	44.7	38.6	37.9	Impact + birdsong
18/07/2016 10:28	00:05:00	49.1	62.5	39.3	59.3	52.4	45.2	41.7	40.9	Process noise + impact + birdsong + mobile plant + reversing alarm
18/07/2016 10:33	00:05:00	45.4	56.8	38.7	54.1	46.9	43.6	41.3	40.5	Mobile Plant + Birdsong
18/07/2016 10:38	00:05:00	45.3	56.3	40.4	52.8	47.6	43.7	42.3	42.1	Mobile Plant + Birdsong
18/07/2016 10:43	00:05:00	45.9	53.9	38.9	52.5	49.5	44	40.5	39.9	Mobile Plant + Birdsong

5 minute samples. 1-hour total period.

LAeq, 60 minutes = 47dBA to nearest whole decibel.

6.0 SUBJECTIVE OBSERVATIONS

To the observer, industrial type noise such as the screening activities were occasionally just audible to the observer including some impact noise. However, on occasion some of this noise could be attributable to other businesses in the locality.

Distant road noise was audible throughout the monitoring period as was birdsong.

7.0 ASSESSMENT OF MONITORING RESULTS

7.1 LAeq, 1 Hour (Internal Level)

The resultant external level (at nearest receptor) LAeq, 1 hour:

Monitoring Results

Date	External Level
18th April 2016	50dB

18th July 2016	47

7.2 BS8233:2014

The resultant external noise level of 47dBA at the nearest receptor would meet the desirable external range for amenity spaces of between 50-55dBA.

7.3 Conclusion

For this monitoring period noise levels have reduced overall from the initial period in April 2016. The site activities (shredder) are still occasionally audible, particularly impact noise but to the observer appeared less noticeable. Site managers need to continue with their noise action plan and continue to strive for additional reductions in noise.

7.4 Next monitoring period

On or around 17th October 2016.

APPENDIX 1

EXPLANATION OF ACOUSTIC TERMS

The dB or the decibel, is the unit of noise. The number of decibels or the level, is measured using a sound level meter. It is common for the sound level meter to filter or 'weight' the incoming sound so as to mimic the frequency response of the human ear. Such measurements are designated **dB (A)**.

A doubling of the sound is perceived, by most people, when the level has increased by 10 dB (A). The least discernible difference is 2 dB (A). Thus most people cannot distinguish between, say 30 and 31 dB (A).

The Background level of noise is most commonly represented by the level which is exceeded for 90% of the time i.e. the LA90.

If a noise varies over time then the **equivalent continuous level, or LAeq**, is the notional constant level of noise which would contain the same amount of acoustic energy as the time varying noise.

The following table gives an indication of the comparative loudness of various noises expressed in terms of the A weighted scale:

Source of noise	dB(A)	Nature of Noise
Inside Quiet bedroom at night	30	Very Quiet
Quiet office	40	
Rural background noise	45	
Normal conversational level	60	
Busy restaurant	65	
Typewriter @ 1m	73	
Inside suburban electric train	76	
Alarm clock ringing @ .5m	80	
Hand clap @ 1m	80	
HGV accelerating @ 6m	92	Very Loud

APPENDIX 2

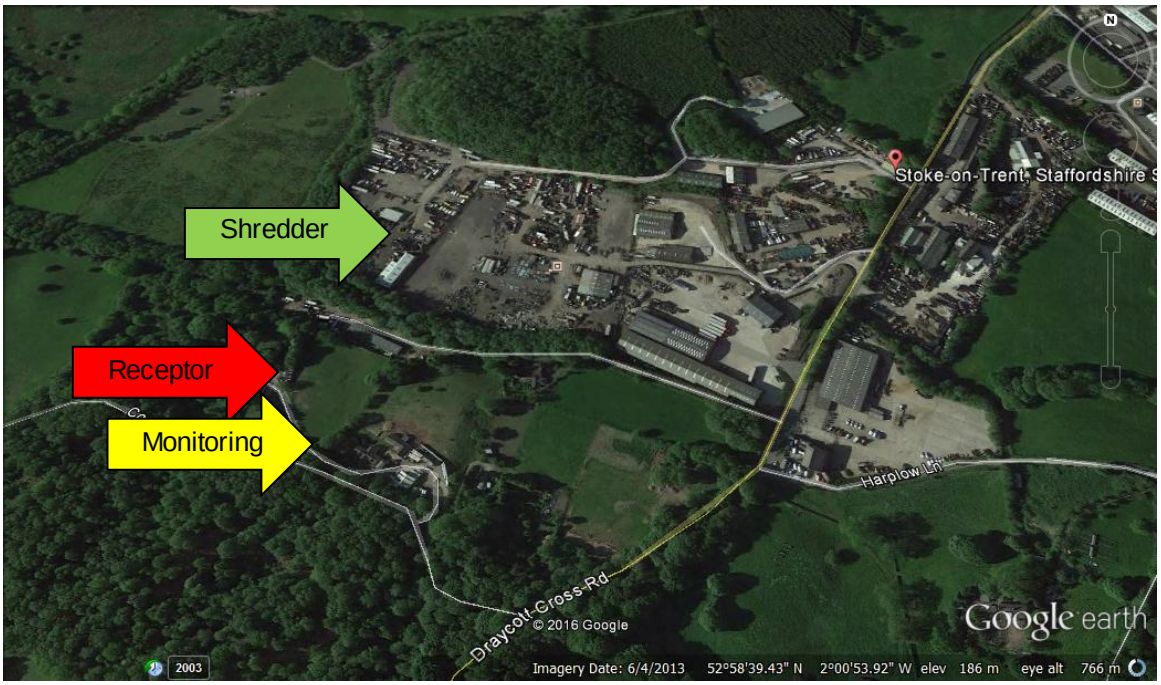
QUALIFICATIONS AND EXPERIENCE OF S. MELLOR

My full name is Steven Brian Mellor. I hold a Master's degree in Health, Safety and Environmental Law, British Occupational Health Society (BOHS) M104 certificate in Noise and Vibration and Institute of Acoustics Certificate of Competence in Environmental Noise Measurement (Derby University), plus Diploma in Acoustics and Noise Control (Bristol University). I am member of the professional body for noise and vibration specialists, the Institute of Acoustics, MIOA.

I have some 14 years of experience dealing with problems caused by noise and vibration, both regarding noise and vibration in the environment, the workplace and the home. During that time, we have advised many groups including employers, residents and developers about the problems of noise and vibration in the workplace and environment.

APPENDIX 3

Site and Monitoring Position



Source: Google Earth

Monitoring Position

Site in Distance

Shredder in Operation

Site