DP SKIP HIRE LIMITED

Waste Processing Facility

Sutherland Road, Barker Street, stoke-on-TrentBL3 1RP

Noise Impact Assessment

Report by
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Site Visit: 13th November 2020
Report Date: 20th November 2020
Ref: DP Skip Hire. Longton. BS4142

Signed:

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1.0 INTRODUCTION

On the instructions of DP Skip Hire Ltd., AC Environmental Ltd. carried out a noise impact assessment in regard to their site activities and proposal to extend the site and include a mechanical picking station.

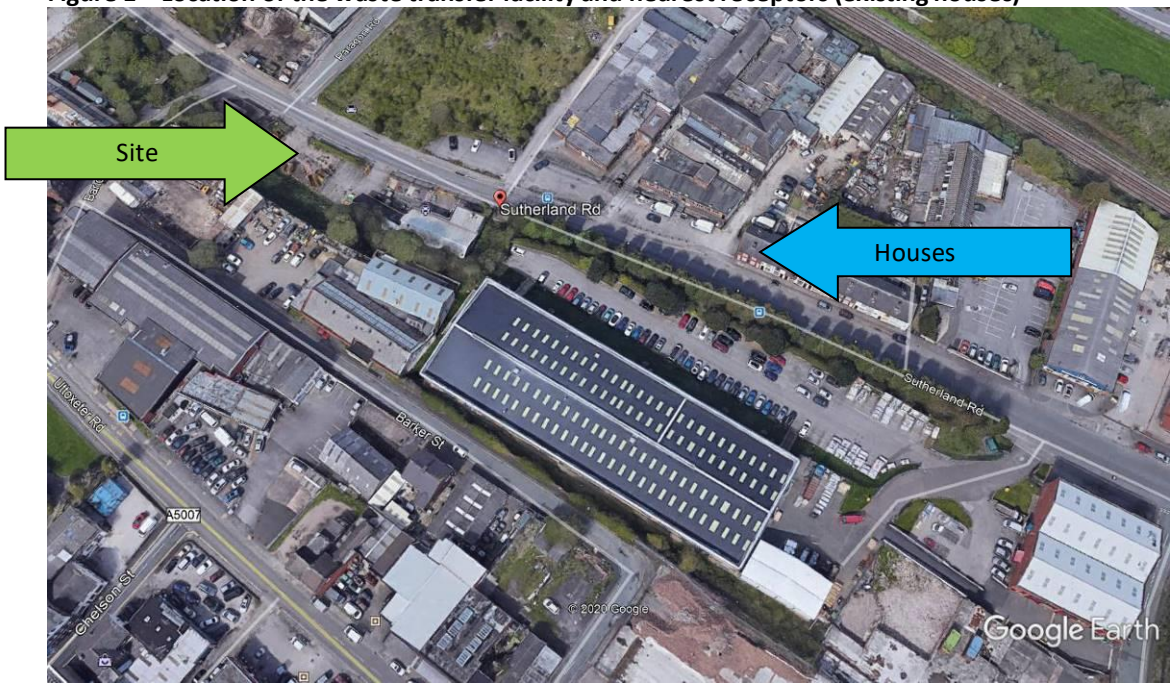
The purpose of the assessment was to compare noise levels with and without site activities at the nearest sensitive receptors (houses).

The site is highlighted in figure 1 below. The locations of the nearest receptors are also highlighted.

Measurements of existing ambient and background noise levels at the nearest receptors were made from before the site was operational during a week period (from 6.00am) without any site activities. The early morning period is likely to be one of the most sensitive periods.

Measurements were then made with the site operational at the same monitoring position and also on site in closer proximity to the activities so that they could be observed (and also without any potential influence from other sources of noise).

Figure 1 – Location of the waste transfer facility and nearest receptors (existing houses)



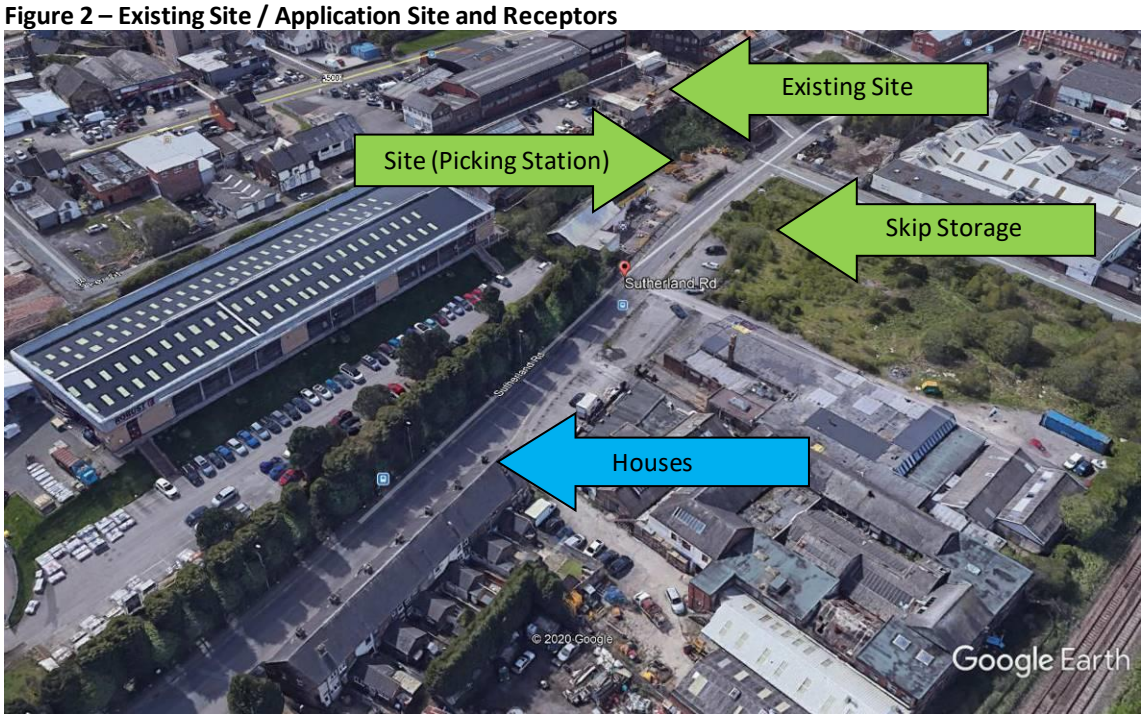
Operating hours are from 07.00 – 17.00.

Acoustic terminology is explained at Appendix 1 of this report and the author's qualifications and experience are described in Appendix 2; site and activity photographs plus equipment details are found at Appendix 3, measurement position grid references at Appendix 4 and picking station sound data at Appendix 5.

2.0 SITE DESCRIPTION

The nearest sensitive receptors feature existing houses at approximately 135m from the proposed picking station. The existing site is located at a raised position above the extended area (application site) – it is intended to transfer the waste from the upper yard to the picking station using a loader (expected noise levels measured as noted below).

Figure 2 – Existing Site / Application Site and Receptors



There is significant, well-established industrial activity already at this location, including pottery works, "Bluestar" works, Robust Doors, a

timber merchant on the opposite side of the houses and BP petrol station (plus many others).

The intervening ground between the site and receptors is predominantly hard ground.

3.0 NOISE CRITERION

Where industrial-type noise is present BS4142:2014 is normally referenced. We will also reference the desirable level for offices as recommended by BS 8233:2014 *Sound Insulation and Noise Reduction for Buildings*. For staff / meeting rooms a design range of 35dB to 45dB LAeq,T is recommended.

3.1 BS4142:2014 – Rating Industrial Noise Affecting Mixed Residential and Industrial Areas

BS4142:2014 states, *"Response to sound can be subjective and is affected by many factors, both acoustic and non-acoustic. The significance of its impact, for example, can depend on such factors as the margin by which a sound exceeds the background sound level, its absolute level, time of day and change in the acoustic environment, as*

well as local attitudes to the source of the sound and the character of the neighbourhood…This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature".

This British Standard describes a method for assessing whether a specific sound may have an adverse impact.

The Standard requires that the ambient noise ***(totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far)*** including the "specific" sound from the source in question is measured in terms of the equivalent continuous sound level LAeq [see Appendix 1 for acoustic terms], which is then corrected for the residual sound (total LAeq excluding the "specific" sound).

A correction for character is made if ***"a tone, impulse or other characteristic occurs".*** For tonality, a correction of between +2dB and 6dB is considered acceptable and for impulsivity between 3 and 9dB. See table below.

Table 1

Character	Just Perceptible	Clearly Perceptible	Highly Perceptible
Tonality	+2dB	+4dB	+6dB
Impulsivity	+3dB	+6dB	+9dB

Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied. Where tonal and impulsive characteristics are present in the specific sound within the same reference period then these two corrections can both be taken into account. If one feature is dominant, then it might be appropriate to apply a single correction. Where both features are likely to affect perception and response, the corrections ought normally to be added in a linear fashion.

The final figure, including any character correction is known as the Rating level. This Rating Level is then compared with the measured background [LA90] level. The greater this difference the greater the likelihood of "adverse impact" (See Notes 1 & 2 from BS4142:2014 below).

NOTE 1

a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

NOTE 2

Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

3.2 MEASUREMENT PROCEDURE

The location of the nearest receptors (houses) were visited on Friday 13th November 2020 before the site was operational, from between 6.00am and 7.00am. Measurements were taken to establish existing ambient and background levels L90 without the introduction of DP Skip Hire Ltd site activities. The equipment was positioned in a free-field position away from the front of the houses so as not to block the pavement – pedestrians walking past.

The monitoring equipment was then kept in place for the first hour of "normal activities" once the site was open from 7.00am until 10.00am.

Additional measurements were then taken on the DP Skip Hire site to establish individual activity noise in closer proximity and also on the proposed skip storage area opposite the extended section of the site.

The weather conditions throughout the monitoring period were mostly dry with a short period of drizzle at the start, initially overcast and then sunny with little cloud. There was a temperature of 8-9 degrees

centigrade and a wind speed of up to 3.6m/s (SW) (measured on a digital anemometer) although slightly higher wind speeds were forecast.

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

The sound level meters used, and associated equipment are shown in the table below:

Table 2

Instrument	Type	Serial No.	Calibration Cert. No.	Date of Due Calibration
Svan 977	Sound Level Meter	36870	1400 7353-1	09/09/2021
ACO 7052E	Microphone	61121	1400 7353-1	09/09/2021
Svan SV12L	Preamp	47576	1400 7353-1	09/09/2021
Cirrus 511E	Calibrator	39816	Cirrus 248531	24/04/2021
Anonometer	Digital	DE398343	With outdoor kit and all-weather windmuffs	

The meter calibrated correctly before and after the measurements using a Cirrus calibrator type CR:551E (s/n 39816); the instrumentation had been laboratory calibrated within the preceding 2 years.

4.0 MEASUREMENT RESULTS

The results obtained are shown in the tables below.

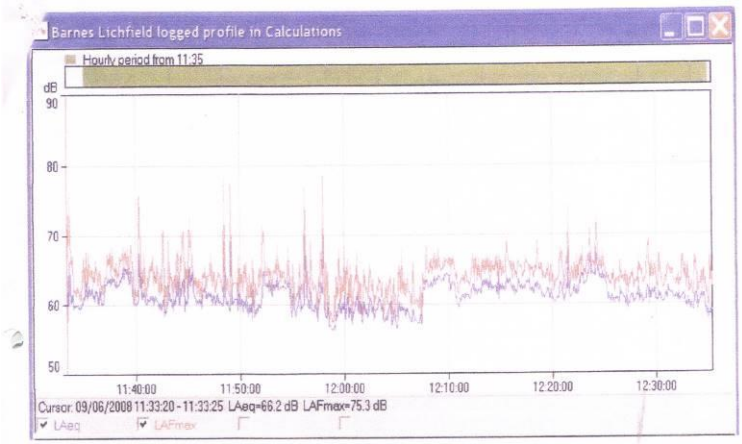
Table 3: Ambient and background level (L90) at nearest houses 6.00am to 7.00am and 7.00am to 8.00am - before the existing site starts to operate and afterwards dBA

Start date & time	Duration	LAeq [dB]	LAFmax [dB]	LAFmin [dB]	L01	L10	L50	L90	L95
13/11/2020 06:00:05.600	00:15:00.000	68.5	85.1	53.3	87.7	77.4	68.2	63.6	62.7
13/11/2020 06:15:05.600	00:15:00.000	69.2	84.1	53.5	88.6	80.2	69.7	63.6	62.7
13/11/2020 06:30:05.600	00:15:00.000	68.3	84.3	52.7	82.5	74.5	66.4	62.4	61.7
13/11/2020 06:45:05.600	00:15:00.000	69.1	87.5	50.7	85.5	77.1	67.4	63.2	62.4
13/11/2020 07:00:05.600	00:15:00.000	68.0	84.5	48.7	82.5	76.3	67.1	62.4	61.5
13/11/2020 07:15:05.600	00:15:00.000	67.7	81.3	49.5	84.3	76.8	69.2	64.8	64.0
13/11/2020 07:30:05.600	00:15:00.000	68.0	84.6	53.6	83.9	77.0	70.6	66.4	65.5
13/11/2020 07:45:05.600	00:15:00.000	68.8	86.2	52.0	87.1	78.5	71.4	66.9	66.0

Table 4: Existing activities and proposed at the extended site and skip storage yard (dBA)

File Number	Duration	LAeq [dB]	LAFmax [dB]	LAFmin [dB]	L01	L10	L50	L90	L95	Notes
635	00:34.0	70.9	80.9	62.3	86.4	80.7	75.2	71.5	70.5	26T vehicle movement on and off weighbridge on application site area @5m
636	11:19.0	71.8	88.8	57.6	90.3	81.7	74.9	72.1	71.1	JCB 85 mini-grab and JCB TM320 Wastmaster @ 6-8m existing site
637	02:01.0	57.5	74.9	48.4	79.0	73.0	67.6	64.0	63.0	Application site at 12m from the bank (location where Wastemaster will push waste onto picking line)
638	02:22.0	71.1	89.2	61.1	91.9	80.9	77.5	74.9	74.1	Load / unload skips at skip storage area @6m
639	01:55.0	72.5	84.5	64.3	87.9	82.3	78.4	75.5	75.0	Load / unload skips at skip storage area including reverse alarm @6m
640	00:23.0	71.1	79.1	63.7	83.9	81.5	77.1	73.3	72.4	Vehicle movement at skip storage area @10m
641	05:01.0	67.9	82.4	55.8	83.9	79.1	73.7	68.1	66.6	Application site at 12m from the bank (location where Wastemaster will push waste onto picking line)
642	04:42.4	56.0	64.0	48.7	73.2	70.2	67.1	64.2	63.5	JCB 85 mini-grab and JCB TM320 Wastmaster @ 6-8m existing site

Table 5: Data for picking line provided by Client (dBA)



Barnes Lichfield logged profile in Calc...

	Name	LAeq [dB]	LAFmax [dB]
1	Total	61.6	78.5
2	Unmarked	61.0	75.6
3			
4	(All) Hourly period from 11:35	61.7	78.5
5	(All) Time Block	61.6	78.5
6			
7	Hourly period from 11:35	61.7	78.5
8	Time Block	62.0	75.6
9	Time Block	62.1	75.8
10	Time Block	61.6	72.6
11	Time Block	61.7	78.3
12	Time Block	62.1	78.5
13	Time Block	59.1	68.4
14	Time Block	59.6	68.2
15	Time Block	62.5	67.8
16	Time Block	62.6	69.7
17	Time Block	62.2	74.2
18	Time Block	62.6	72.8
19	Time Block	60.9	69.1
20	Time Block	59.9	66.7

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See also appendix 5.

The measured level from the picking station was 62dBA at approximately 40m, or 74dBA at 10m

4.1 Source Noise – Plant / Vehicles and Activities

Plant and vehicles and associated activities include the following (highest recorded levels used):

Table 6 – highest measured levels for each activity dBA

Equipment and Activity	LAeq dB @10m	Occasions	Duration
26T vehicle movement on and off weighbridge on application site area @5m	64.9[1]	6-10 times per day	1 minute per hour
JCB 85 mini-grab and JCB TM320 Wastmaster @ 9-8m existing site	69.8[2]	Constant	60 minutes per hour
Application site at 12m from the bank (location where Wastemaster will push waste onto picking line)	69.9[3]	Constant	10 minutes per hour
Load / unload skips at skip storage area @6m	67.1[4]	2 occasions per hour	6 minutes per hour
Load / unload skips at skip storage area including reverse alarm @6m	68.5[5]	2 occasions per hour	4 minutes in any hour
Vehicle movement at skip storage area @10	71.1	2 occasions per hour	1 minute in any hour
Picking Station activities[6]	74.0	Constant	60 minutes per hour

[1] Adjusted from 5m to 10m
[2] Adjusted from 8m to 10m – existing activities for information only
[3] Adjusted from 12 to 10m
[4] Adjusted from 6m to 10m
[5] Adjusted from 6m to 10m
[6] Levels from assessment at Lichfield site picking station. Data provided by the client

Resultant Levels

Total LAeq, for all current external activities from Table 6 (BS4142 reference period) using the value for the measurement at 12m from the upper yard (where waste will be pushed to the picking line). Individual activities adjusted for 1-hourly level = 77.9dB (level at 10m). However, if we separate the two locations for the lower yard (picking line) and associated activities and skip storage and associated activities then this would be 75.8dB and 74.0dB, respectively.

5.0 ASSESSMENT OF RESULTS

5.1 Measured Levels at Houses

If we look at the LAeq, 15 minute samples taken before the DP Skip Hire site opened at the nearest houses and after the site had been operational for an hour, 6-7am and 7-8am respectively, then there is little difference. 68 to 69dB in both instances to the nearest whole decibel.

Table 7 – LAeq, 15 minutes (before the current site is open and after)

Start date & time	Duration	LAeq [dB]	Pre Opening	Site Open
13/11/2020 06:00:05.600	00:15:00.000	68.5	✓	
13/11/2020 06:15:05.600	00:15:00.000	69.2	✓	
13/11/2020 06:30:05.600	00:15:00.000	68.3	✓	
13/11/2020 06:45:05.600	00:15:00.000	69.1	✓	
13/11/2020 07:00:05.600	00:15:00.000	68.0		✓
13/11/2020 07:15:05.600	00:15:00.000	67.7		✓
13/11/2020 07:30:05.600	00:15:00.000	68.0		✓
13/11/2020 07:45:05.600	00:15:00.000	68.8		✓

5.2 Calculation of Activity Noise Levels from the extended site / picking line and skip storage area

Distance Correction (to the nearest house) at approximately 135m

20log (r1/r2)
r1 = Measured Level Distance 10m
r2 = Receiver distance approximately 135m (**from picking line position and associated activities**)
= **-22.6dBA**

20log (r1/r2)
r1 = Measured Level Distance 10m
r2 = Receiver distance approximately 100m (**from skip store and associated activities**)
= **-20dBA**

Resultant level at the nearest house from the new lower yard and picking station = 75.8 – 22.6 = **53dB** to the nearest whole decibel.

Resultant level at the nearest house from the new skip yard and associated activities = 74.0 – 20 = **54dB** to the nearest whole decibel.

Therefore, the anticipated cumulative noise levels at the nearest houses is anticipated to be **57dBA**.

5.3 BS4142:2014

Prediction of noise levels at the receptor (dBA to nearest whole decibel).

Table 8 – BS4142 assessment (Facility noise at existing and proposed houses) LAeq, 1 hour

	Riverbanks
Cumulative Level at Receptor	57 dB
Tonal Correction	2 dB
Impulsive Correction	3 dB
Intermittency	-
Distinctive	-
Rating Level	62 dB
Background Noise Level LA90	62-64 dB
Excess over Background [Rating – Background]	-2 to 0 dB

Conclusion – "Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context".

5.4 Uncertainty

The following factors have a bearing on the uncertainty of the assessment:

- As outlined above, BS4142:2014 can apply a character correction of up to +15dB, if the noise is deemed to be "highly impulsive" and "highly tonal", so depending on how well the machinery is maintained, and how considerately it is operated, will govern the character correction to be applied. It is possible that the corrections applied above overestimate the audibility of the sounds and in reality, will not be discernible and the potential for adverse impact less.

- The above assessment is based on variable noise sources in terms of activities and therefore levels may generally be lower than those

predicted, again overestimating potential impact. The same can be said in regard to all sources operating within any one hour (reference period).

- Background noise levels were made on one occasion; however, this period was very early morning (considered night-time period) and likely to be a worst case. Road traffic even at this time was significant and it wasn't possible to pause traffic out the traffic from measurements, but the samples are considered representative of the existing noise climate. See also subjective impressions below.

- There is some screening provided by building, walls and other barriers between the lower, upper and skip storage yards which are likely to provide an additional 5-10dBA of sound reduction depending on partial or full screening from the houses line of sight – this has not been included in the BS4142 calculation and again may overestimate the potential impact, but erring on the side of caution and a "worst case".

Overall, the assessment is considered to be robust.

5.5 Subjective Observations

To the observer, Sutherland Road was fairly busy even very early in the morning with all types of vehicles including public transport, HGV's, cars and vans. Various industrial sites were already operating at distance. Reversing alarms were audible at distance before the DP Skips site was operational.

6.0 CONCLUSION

6.1 BS4142:2014

It is estimated that noise levels from the extended site, picking station and skip storage area are not likely to result in an adverse impact at the nearest houses, i.e. they are likely to be below the existing background levels.

"Low Impact" *depending on context.*

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 M. 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 19 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

Location Images / Activity Images / Equipment

Upper Yard (existing) and lower yard (for picking)

Skip store view to houses in the distance

Weighbridge – lower yard (application site)

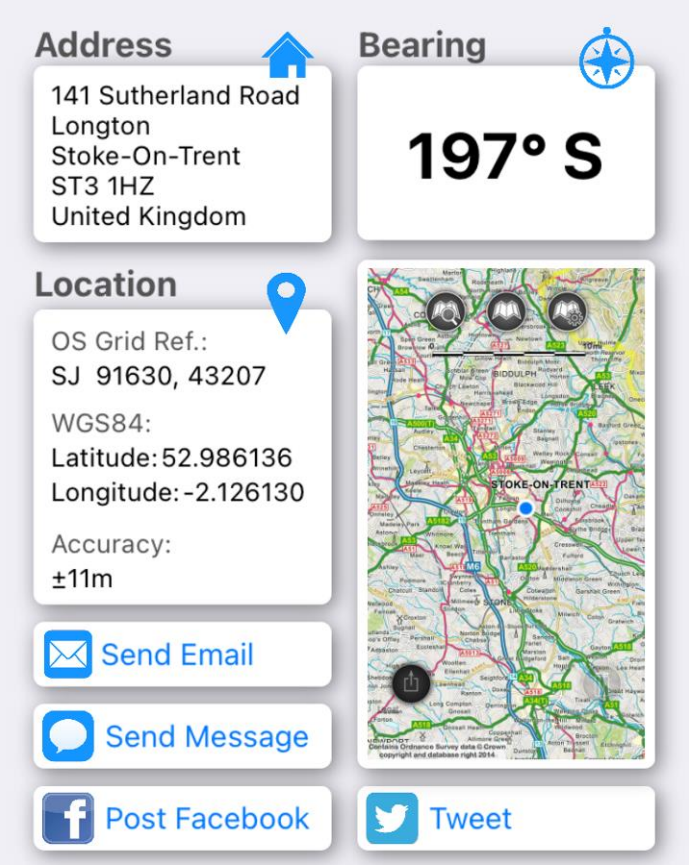
Top yard existing activities

Skip storage yard (loading / unloading empty skips)

Barriers / screening at upper / lower yards

APPENDIX 4

Measurement Locations – Houses



APPENDIX 5

Picking Station Data

Equipment Used and Measurement Method

The noise levels were measured using a :

Bruel & Kjaer Type 2238 Mediator Integrating Sound Level Meter

Calibration was carried out prior to the measurements – and checked afterwards using a ;

Norsonic Acoustic Calibrator.

The measurements were carried out at the locations described at a height of 2500mm above the ground and away from reflecting surfaces.

The measurements were undertaken at the times stated in the results.

The weather was dry with a light breeze of 0.0 to 1.1 m / sec

Results and Discussion

Below is the plot of the noise level – both LAeq and LAmax over a 1 hour period during the morning of Monday 09 June 2008 together with a table showing the Laeq as measured over a block of 5 minute periods within the 1 hour measurements.

Introduction

AB Acoustics were commissioned by E A Barnes & Sons Ltd to undertake an environmental noise survey to measure the impact of the installation of a waste separating plant at their site at Vulcan Road Lichfield.

This report should be read in conjunction with our earlier report dated 18 February 2008.

Once the plant had been installed there is a requirement that the noise level at the site boundary be monitored to determine the actual level once the plant is operative and compare this with the requirement of the Grant Notice of the Planning Permission.

This states :

Site attributable noise shall not exceed 65 dBA LAeq(1 hour – Freefield) measured at the site boundary nearest to any noise sensitive property, or 68 dB LAeq (1 hour Façade) measured in front of the offices adjacent to the north – western boundary overlooking the Site.

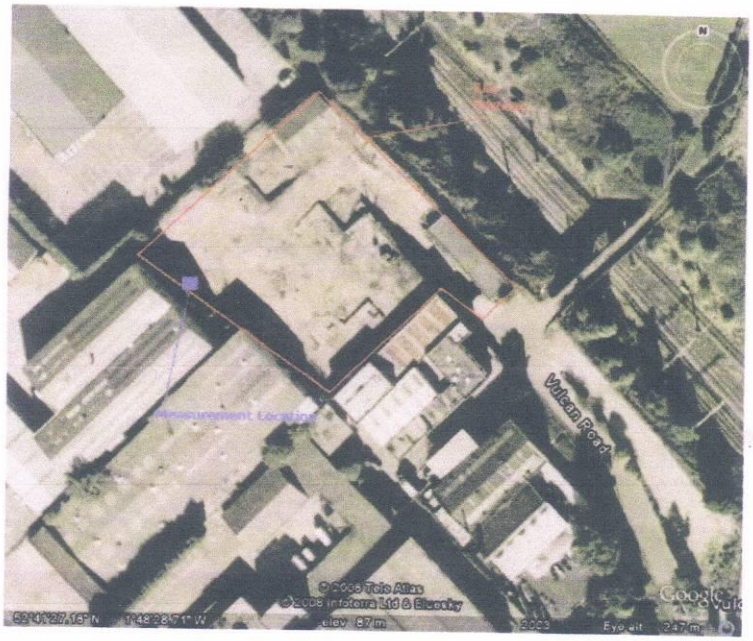
This report details the noise measurements undertaken at the site with the installed plant operative – at the time the measurements were undertaken the Trommel was being loaded with a 360° backactor - there were two JCB shovels operating in the yard (clearing the waste dropped by the delivery skips onto the concrete floor – and all so loading gravel from stockpile into skips for delivery off site) – during the period of the test 13 vehicle movements were made at the site by skip lorries and two by small 'transit' type lorries.

The site is located on the Trent Valley Trading Estate at the end of Vulcan Road – the site has a noise level restriction as part of the overall Environmental Protection statement.

As can be seen from the above graph the noise level is reasonably constant over the 1 hour measurement *period – Site attributable noise was recorded at* 61.7 dBA *rounded in* accordance with BS 4142 to **62 dBA** LAeq(1 hour – Freefield) measured at the site boundary .

As can be seen this measured level is within the requirements of the Grant Notice of the Planning Permission.

The measurement location is shown below :



Roger Leach AMIOA

Dated : 12 June 2008.

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