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Acoustic Design
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NOISE IMPACT ASSESSMENT

of

NEW SOIL & AGGREGATE WASHING FACILITY

at

ASHCOURT GROUP,
OFF HALIFAX WAY,
POCKLINGTON,
YO42 1NR

Date of measurements:	27th September - 6th October 2023.
Date of this report:	7th March 2024
Prepared for:	Ashcourt Group, Halifax Way, Pocklington, YO42 1NR
Prepared by	David Garritt, BEng, MIOA

Members of the Association of Noise Consultants (ANC) & Institute of Acoustics (IOA)
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1.0 **Introduction**

The Ashcourt Group have a new soil washing facility at Halifax Way, Pocklington. The operation requires a permit issued by the Environment Agency, for which a noise impact assessment is required. Ashcourt have commissioned this survey to accompany the permit application.

The grid reference of the site is SE 78524 48542, Latitude 53.927065 , -, Longitude 0.80565138. A site location plan, layout and photographs are shown later in this report.

This report has been prepared using the methodology and guidance of BS 4142: 2014 'Methods for and assessing industrial and commercial sound.' This is the most relevant standard and is usually called for by Local Planning Authorities and the Environment Agency for premises such as this. Information is also given on the overarching aims of the National Planning Policy Framework (NPPF).

1.1 **Summary and Conclusions**

Two different methods have been used to quantify sound output from the site. One method was to take sound levels at fixed distances from each area of plant and model their propagation to the nearest dwellings separately. The second method used was to measure the overall operation at two more distant points and use the results in calculations that assume the plant to be a line source of the full installation dimensions.

The nearest dwellings to the site are on Back Lane, Barmby Moor and Grangeland Walk, Barmby Moor to the north west. There are dwellings on Warwick Close, Pocklington to the north east where background sound levels from existing environmental sources are lower. There is also a residential care home 'Wilberforce Lodge' to the east and a private dwelling situated amongst industrial units within the estate to the south.

The sound climate at the nearest dwellings comprises mainly road traffic with sporadic audibility of various different industrial sources, which remain relatively indistinct with no individual dominant source identifiable during our visits. There appeared to be some audible process noise, occasional bangs or crashes, the exact cause / source and location of which could not be determined and contributed generally to the overall soundscape.

Sources from the Ashcourt soil washing plant received at the nearest dwellings were not dominant or significant during our visits and could not be identified or measured there. Industrial sources were the sporadic general sources that it is possible included some contributions from the site being assessed, but were not singularly identifiable or dominant.

Detailed calculations have been undertaken using a bespoke spreadsheet that gives sound level predictions at a large number of data points, so that noise contours/maps can be produced to illustrate predicted sound levels. In addition to this, five of the closest dwellings to Ashcourt have been selected for numerical predictions and individual assessment.

The existing soil mounds and material stockpiles provide noise barrier effect from many of the sound sources to surrounding dwellings, entirely breaking line of sight from many lower laying areas of machinery. With the inclusion of the proposed waste shed building, there will be at least partial barrier effect from many parts of the facility to surrounding dwellings. Full commentary on barrier effects is given on page 15, but it would be sensible to maximise these effects as far as practicable.

The specific sound levels from Ashcourt at the nearest dwellings are:

Specific Sound Level, dB $LA_{eq,1hour}$

Receptor	**Partial Noise Barrier**		
	Individual Source Method	Overall Method 1	Overall Method 2
Back Lane, Barmby Moor	39.2	38.2	38.1
Grangeland Walk, Barmby Moor	41.1	40.3	40.1
Warwick Close, Pocklington	33.1	31.5	31.4
Wilberforce Lodge	33.1	31.5	31.3
Dwelling to South	38.2	37.8	37.7

The typical background sound levels at the nearest receptors have been ascertained using attended and unattended sound measurements:

Background Sound Level, dB $LA_{90,15mins}$

Receptor	**Weekday**	**Saturday Morning**
Back Lane, Barmby Moor	54	52
Grangeland Walk, Barmby Moor	53	51
Warwick Close, Pocklington	46	44
Wilberforce Lodge	51	49
Dwelling to South	51	49

After correction for acoustic character, the Rating Levels are predicted below the typical background sound level at all dwellings at all times.

Discussion is included in the report of the effect that improved or complete noise barrier effect would have, also the unlikely scenario of no barrier effect being apparent. The increased propagation of sound to dwellings to the north east from wind gradient refraction during prevailing south westerly wind is considered in the report.

The conclusion of the assessment is that the new soil washing facility should cause Low Impact at all the nearby receptors.

1.2 Central Government Policies

The government's planning policies are described in the National Planning Policy Framework (NPPF) which includes consideration of potential adverse impacts of noise caused by new development. The NPPF makes reference to the Noise Policy Statement for England (NPSE) which includes an Explanatory Note describing three incremental categories of noise impact:

- No Observed Effect Level (NOEL) being the situation below which no effect caused by noise can be detected,
- Lowest Observable Adverse Effect Level (LOAEL) being the situation above which adverse effects caused by noise can be detected,
- Significant Observed Adverse Effect Level (SOAEL) being the level above which significant adverse effects caused by noise occur.

Stated objectives of the NPSE are:

1. Avoid significant adverse impacts, usually interpreted as calling for sound levels above SOAEL to be avoided.
2. Mitigate and minimise adverse impacts, usually interpreted as calling for noise mitigation to be used within the bounds of practicality for situations between LOAEL and SOAEL.
3. Where possible contribute to the improvement of health and quality of life, usually interpreted as calling for noise reductions to be made where possible for situations between NOEL and LOAEL.

Although introducing these subjective concepts for the assessment of noise impact, the NPPF and NPSE documents do not provide quantitative values against which the suitability of a site for development can be assessed in terms of sound levels.

BS 4142: 2014 'Methods for rating and assessing industrial and commercial sound' represents the most current and applicable quantitative guidance for demonstrating compliance with the overarching aims of the NPPF and NPSE for sound affecting dwellings.

1.3 BS 4142 ' Methods for Rating and Assessing Industrial and Commercial Sound'

The noise rating method of BS 4142 is to measure the outdoor sound levels at noise-sensitive premises during the emission of noise from the industrial or commercial premises under investigation and measure the background sound level typical of that location in the absence of the industrial or commercial noise. A correction factor is applied if appropriate to the measured levels for some acoustic features which affect its acceptability, described as tonal, impulsive or other characteristic features which are distinctive against the residual acoustic environment. The corrected measured level, the rating level, is compared with the background.

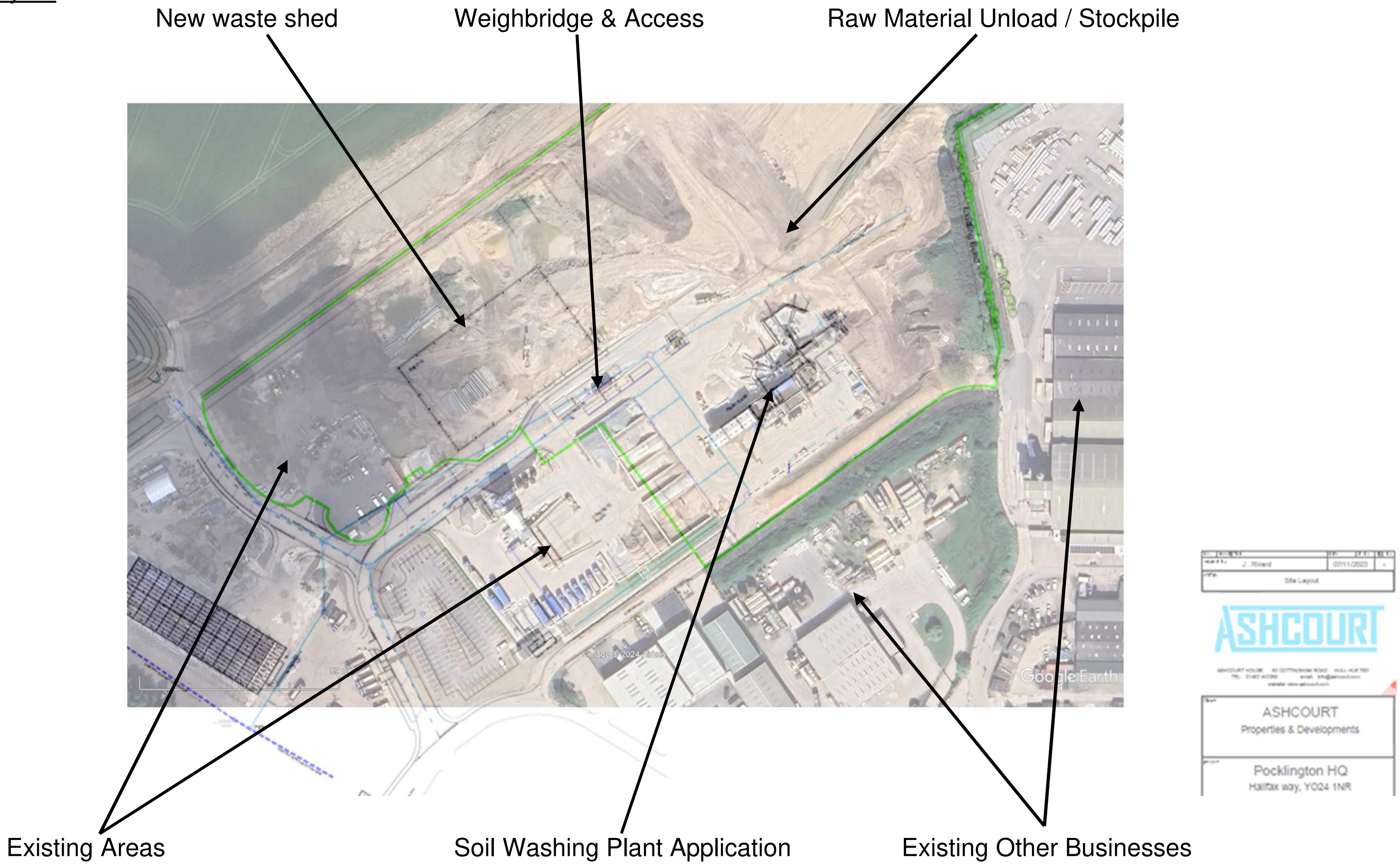
- If the rating level exceeds the background by around +10 dB or more then this is an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the background, the less likely it is that the industrial / commercial source will have an adverse impact.
- Where the rating level does not exceed the background, this is an indication of the industrial / commercial source having a low impact, depending on the context.

Situations where a noise impact assessment may need to be modified due to the context include those where:

- The residual sound levels in the absence of the industrial / commercial source are particularly high or low.
- The character of the residual sound has acoustic features comparable to those of the industrial / commercial sound.
- The sensitivity of the receptor is significant, and whether residential properties incorporate design measures that secure good internal or outdoor acoustic conditions.

2.0 **Site Location, Layout & Photographs**

Site Layout



New waste shed
Weighbridge & Access
Raw Material Unload / Stockpile
Google Earth
Site Layout
ASHCOURT
Properties & Developments
Pocklington HQ
Halifax way, YO24 1NR
Existing Areas
Soil Washing Plant Application
Existing Other Businesses

Rubble Crushing

HGV Unloading on Stockpile

Wheeled Loader for Material In

Loading Bucket to Hopper Material In, Conveyor to Vibrating Screen

Weighbridge and Site Access

Evowash

Loading HGV with Finished Product

Aggmax 160 Screen

Inside Biscuit Forming Building

Screens and Evowash

Tank Mixing

Silo & Pump

Aerial View Facing North East towards Pocklington, Wilberforce Lodge Further Right of Photo

Aerial View Facing West towards Barmby Moor

Aerial View Facing South East into Industrial Estate

3.0 **BS 4142: 2014 Survey**

BS 4142 is prescriptive in its requirements and methodology; Section 12 of the standard lists the information that is to be reported. This report adopts the same references and order as Section 12 of BS 4142.

The assessment is undertaken for the proposed site in its current operational condition.

(a) **Qualifications and Experience**

S & D Garritt Ltd are members of the Association of Noise Consultants (ANC). All work related to this report was undertaken by David Garritt.

David Garritt has been a member of the Institute of Acoustics since 2005 and holds an honours degree in Electronic and Computer Systems Engineering. David taught acoustics at post graduate level on a part time basis for the Institute of Acoustics between 2010 and 2021, sits on the Marketing and PR committee for the Association of Noise Consultants and is one of their media spokespeople. David has extensive experience in the preparation of surveys involving industrial sound sources directly comparable to the subject of this report.

(b) **Sources Being Assessed**

1. The source being assessed and subject to the permit application is a soil and aggregates washing facility that comprises several elements. The facility has been recently constructed and is now operational, so measurements could be taken directly of all sound sources. The operational process is:

- Waste products are transported into site via HGVs, most commonly tipper wagons but also refuse trucks.

- Vehicles cross a weighbridge. Any rubble transported into site is processed using a separate crusher with associated bucket loader to the north of the site entrance (left hand side as vehicles drive in). A wheeled loader is used to transport crushed materials to the relevant stockpile. This part of the site is used on an as-needed basis. For the purposes of assessment it is assumed that it will be in continual use for the assessment period of one hour, representing the reasonable worst case scenario.

- Raw materials to be processed using the soil washing plant are deposited to the north of the site on a material stockpile. HGVs drive up a slope at the side of the stockpile, then reverse towards the edge facing the soil washing plant and tip their material. On occasions that the material requires levelling, it is undertaken by a bulldozer on an as-needed basis.

- A wheeled loader transports material to be processed from the edge / bottom of the stockpile to the loading area at the start of the soil washing plant.

- Material is loaded into a hopper by tracked long reach bucket loader / excavator.

- The products make their way through the processing plant via a series of conveyors, sizing and vibrating screens. The first of these is a vibrating screen.

- Sand and silt are separated into different recovery processes using a cyclone 'Evo Wash' that outputs sand from the bottom of the unit and silt from the top. The main screen used for separating remaining materials is an 'Aggmax 160,' with stockpiles of sorted material formed via conveyors.

- Silt is sent to thickener tanks where it is mixed with polymer, before being sent to a press located within a building with open bottom at high level.

- The press forms soil 'biscuits' within this building at elevated height. These biscuits are dropped from the bottom of the press towards ground once formed. Measurements for this source were taken outside the building to allow for sound that may escape via the open bottom.

- The various finished, cleaned and sorted products are loaded into different storage bays or directly into HGVs for transportation out of site using a wheeled loader. Approximately 80 vehicles per day are loaded, most of which are eight wheel tipper HGVs. To maximise efficiency, where possible the HGVs enter site fully loaded with raw materials for tipping, then the same vehicles are reloaded with processed product before leaving site.

  This totals 160 separate movements in or out of site for the soil washing facility. An additional 20 in and 20 out movements are likely for the new waste shed (see below). These movements are spread across a 12 hour working day, a total average of 16.7 per hour. For the purposes of calculation, a rate of 20 HGV movements in any one hour has been assumed to give the reasonable likely busier hours of operation.

- There is a new 'waste shed' proposed on the site, indicated on the drawings reproduced earlier in this report. This will be used for storage, bulking up and sorting of materials. A wheeled loader will be used to move material around and to load into HGVs for transport off-site. The building will be constructed using an insulated profile steel cladding system such as Kingspan KS1000. The height of the building will be approximately 8.5 m to eaves. Access will be through a roller shutter door that faces into the soil washing site and will remain closed unless needed for access or short duration operational needs. There will be approximately 20 movements of HGVs in and out per day.

In order to provide predictions of sound from this future use, we have used source data measured by us at a commercial waste and plastics recycling facility at Wilsford Heath. This facility comprised several buildings; measurements have been used that were taken as a roaming sweep inside one of the buildings where a wheeled loader was being used to move material around and load HGVs in a very similar manner to the operations proposed inside this waste shed. Data that we hold on file for the sound insulation offered by Kingspan KS1000 has been used in the calculation process.

Two different methods have been used to quantify sound output from the site:

One method was to take sound levels at fixed distances from each area of plant or operation and model their propagation to the receptors separately, with overall sound levels calculated by logarithmic addition of the different sources (i.e. on an energy basis). Measurements were taken at a distance where each part of the source being measured would behave as a point source, but with contributions from other plant areas minimised as far as practicable.

This method allows for the accurate calculation of sound levels from each area including their proximity to each dwelling. The contributions from each source can be seen separately and Rating Level corrections or penalties applied on a per-source basis. On a site such as this with several noise sources in close proximity to each other, it is inevitable that each measurement will include some contribution from adjacent sources, so this method represents the worst-case scenario.

The second method used was to measure the overall operation at fixed points away from the site facing towards the nearest dwellings to the northwest, then use the results in calculations that assume the plant to be a line source of the full installation dimensions. The measurements were taken on top of a soil mound with full view of all items of plant and machinery.

This method captures all of the sound sources on site, removes uncertainty from sound bleed between separate fixed measurement positions and provides a useful overall average of sound across the operation. The disadvantage of this method is that contributions from each source cannot be separated and some overall averaging is required for distance decay and effective barrier height calculations.

The predictions at the nearest dwellings using each of these two methods can be compared to reduce uncertainty in the survey conclusions. In addition to this, measurements were taken at the nearest dwellings along with observations of audible sources to provide additional data.

The measurements taken on the operational site are shown below as overall dB $LA_{eq,T}$ quantities with each item in continual operation. The predictions of sound level at the nearest dwellings have been undertaken using third octave data for more accurate calculations of noise propagation, details of which are shown in the appendices of this report. Latitude and Longitude quantities are given for individual items of machinery. Four grid points have been used for buildings or overall site measurements, details of which are given in the appendices. Measurements are outdoors unless stated.

Source Sound Pressure Levels, dBA

Description	Measurement Distance, m	Latitude	Longitude	Sound Level, dB LA_{eq}
New Waste Shed, Indoors	Roaming			82.0
Rubble Crushing Including Loading Bucket	10	53.927592	-0.80597	80.8
Wheeled Loader (at Crusher)	10	53.927335	-0.805833	74.4
Deposit of Material on Stockpile	10	53.927162	-0.805479	73.5
Wheeled Loader (at Soil Washing)	10	53.927095	-0.80575	74.4
Long Arm Loader into Hopper	10	53.927049	-0.805819	69.5
First Screen	10	53.926971	-0.805989	78.8
Vibrating Screen Area	10	53.927133	-0.805929	76.7
Large Aggmax 160 Screen	8	53.926884	-0.805883	79.9
Evowash	10	53.92696	-0.805759	75.7
Thickener Mixing System	4	53.926719	-0.806466	78.6
Tank Water Sound	2	53.926749	-0.806113	74.8
Soil Biscuit Forming and Dropping	10			70.2
Silo Pump	2	53.926854	-0.807038	81.5
Loading Washed Soil to Tractor	10	53.926942	-0.807444	72.8
Finished Product Loading to HGV	10	53.926908	-0.807458	76.4
HGV Sound Power Level				102.0
All Sources, Average 60m, W/NW	60			66.7
All Sources, Average 150m, W/NW	150			56.6
All Sources, Average 90m, NE/Pocklington	90			60.7

2. The maximum hours of operation of the soil washing plant are Monday – Friday from 07.00 to 19.00, and 07.00 – 13.00 on Saturday mornings. There is no night-time operation of the plant.

3. The operation will be continuous throughout the assessment period of one hour during the daytime. For the purposes of predictions, it has been assumed that all items of machinery and plant will be in continuous use, including wheeled loaders, tracked excavators etc.

4. All plant items, machinery and aspects of the operation were operating at their normal full load / duty during our measurements of them.

5. Most of the sound sources are situated outdoors. The exception to this is sources associated with the new currently un-constructed waste shed and the soil biscuit forming area.

   Predictions of sound from the waste shed have been undertaken by using source measurements taken as a roaming sweep around the building interior of a waste recycling facility where sources and activity were very similar to those proposed within this waste shed. Sound reduction indices have been applied based on the proposed insulated profile steel cladding construction method and then recognised formula for sound decay due to distance have been used.

   As noted earlier, the soil biscuit forming process is housed within a building that has an open bottom, so that the biscuits can be dropped to the loading area. To take account of the sound been transmitted through the building and also via the open bottom, measurements were taken outside this building for use in the predictive calculations.

<u>Noise Barrier Effects</u>

The existing soil mounds and material stockpiles provide noise barrier effect from many of the sound sources to surrounding dwellings, entirely breaking line of sight from many lower laying areas of machinery. With the inclusion of the proposed waste shed building, we are informed it would be entirely practicable to use earth bunds or material stockpiles form complete noise barriers around the site facing north and west towards dwellings. The existing industrial estate to the east includes many buildings that will provide noise barrier effect towards more distant dwellings in that direction.

Some of the sources on site have significant height, which would be impractical to control by way of noise barrier. It also remains possible that some other items may have partial or glancing line of sight from some parts of the source to some areas of receiver.

For barrier effect, section D.3.2.2.1 of BS 5228 states that *'In the absence of spectral data, as a working approximation, if there is a barrier or other topographic feature between the source and the receiving position, assume an approximate attenuation of 5 dB when the top of the plant is just visible to the receiver over the noise barrier, and of 10 dB when the noise screen completely hides the sources* *from the receiver. High topographical features and specifically designed and positioned noise barriers could provide greater attenuation. Subtract the attenuation from the value of LAeq calculated at the point of interest.'*

The 5 dBA reduction rule of thumb described above has been considered in the calculation process for sources where barrier effect will apply. This is a reasonable worst case scenario and any items where full barrier effect is apparent will show more favourable levels. HGV movements are assumed to have 10 dBA shielding since they are located at ground level and are highly unlikely to have even glancing line of sight to any dwellings.

All of the predictions in this report have been calculated using octave or third octave frequency data. In order to apply barrier effect, the more accurate method of Maekawa has been used with an assumed nominal path difference of 0.001m (ie, glancing barrier effect path difference). The barrier effect predicted equates exactly to the 5 dBA approximation given in BS 5228.

No barrier effect has been assumed for the new waste shed, the biscuit forming building, or the unloading of raw material on top of the stockpile since it remains likely that all of these sources will be visible at some of the nearest dwellings.

Commentary is also given in the conclusions of this report that assume complete barrier effect for appropriate sources and also no barrier effect at all in order to fully discuss the possible permutations of barrier effect at this site. The dwelling to the south appears to be an isolated single dwelling amongst industrial buildings, which all provide complete barrier effect from sources at the soil washing site. It would of course be prudent to maximise the available barrier effect to dwellings by use of bunds or stockpiles as far as is practicable.

(c) Subjective Impressions

Attended measurements and subjective impressions were taken at the nearest dwellings to the site. The sound climate at the nearest dwellings comprises mainly road traffic with sporadic audibility of various different industrial sources, which remain relatively indistinct with no individual dominant source identifiable during our visits. There appeared to be some audible process noise, occasional bangs or crashes, the exact cause / source and location of which could not be determined and contributed generally to the overall soundscape.

This existing soundscape may well be expected given the location of the nearest dwellings, being close to the main A1079 York Road and the large Pocklington Industrial Estate. There did not appear to be any significant or dominant sound from the Ashcourt Soil Washing Plant during our visits received at the nearest dwellings, only the sporadic general sources that it is possible included some contributions from the site being assessed.

(d) **Existing Context**

The vast majority of the nearby dwellings and existing industrial units are very well established. The earliest available internet imagery from 2003 shows residential and industrial areas to be very similar to as now. The main exception appears to be a small number of additional dwellings built on Warwick Close, Pocklington to the north and Wilberforce Lodge Care Home to the east built between 2012 and 2017. There have also been some additional industrial units constructed to the far south-east of the industrial Park in recent years.

Our investigation of the area revealed a large number of active industrial premises, many with audible sound output at the closest accessible public land to them.

The context of the site suggests that some low-level audibility of sources associated with the new soil washing plant at the nearest dwellings is unlikely to increase adverse impact from industrial sound. The existing soundscape includes various mixed commercial or industrial sources at a relatively low-level and this is especially useful in determining acoustic penalties that may or may not be applicable to the sources being assessed.

While some audibility of industrial sound may be expected, tolerated or have existed for some time, the potential for adverse effect from any newly introduced dominant industrial sound sources should certainly not be overlooked.

It follows that it appears unlikely that the context of the site will significantly alter the initial conclusions reached by numerical BS4142 assessment.

It appears likely that a Rating Level at or below the typical background will have low impact and this remains the most desirable target. A large exceedance of around 10 dB above background is likely to cause significant adverse impact. A small numerical exceedance above background may be acceptable, but the initial conclusion of BS4142 that and exceedance of around 5 dB above background may cause some adverse impact is likely to remain the case.

(e) **Measurement Locations**

Detailed calculations have been undertaken using a bespoke spreadsheet that gives sound level predictions at a large number of data points, so that noise contours/maps can be produced to illustrate predicted sound levels. In addition to this, five of the closest residential receptors to the new facility have been selected for numerical predictions and individual assessment.

These individual receptor locations and their latitude / longitude details are shown in the table below.

Dwelling	Latitude	Longitude
Back Lane, Barmby Moor	53.929814	-0.815154
Grangeland Walk, Barmby Moor	53.930352	-0.812566
Warwick Close, Pocklington	53.930624	-0.788971
Wilberforce Lodge	53.924579	-0.788515
Dwelling to South	53.921735	-0.812378

Back Lane, Barmby Moor, Facing South
Site across fields to left

Rear of Grangeland Walk, Looking North East
Site across fields to right behind tree line

Rear of Dwellings on Warwick Close
Site across field on right

View Across Fields from Warwick Close to Site

Wilberforce Lodge, Industrial estate in background on left. Google Image.

Some of the sources at site are large and so the distance between the receptors and the sources varies depending on which part of the source is being considered, so for these items, the details in the table below represent a point towards the receptors for illustration.

The method used in this assessment is to take measurements of each source at a distance where they will behave as point sources, enabling accurate calculation of sound decay due to distance from the centre of each source.

The distances between each section of the overall installation and the nearest dwellings are shown below to the nearest whole metre.

Distance Between Source and Receiver, metres

Source	**Back Lane, Barmby Moor**	**Grangeland Walk, Barmby Moor**	**Warwick Close, Pocklington**	**Wilberforce Lodge**	**Dwelling to South**
All Sources, Average 60m, W/NW	620	514	1150	1156	644
All Sources, Average 150m, W/NW	620	514	1150	1156	644
New Waste Shed	532	440	1263	1276	635
Rubble Crushing Including Loading Bucket	635	526	1204	1212	728
Wheeled Loader (at Crusher)	626	520	1216	1222	717
Deposit of Material on Stockpile	646	527	1166	1193	769
Wheeled Loader (at Soil Washing)	671	555	1158	1170	757
Long Arm Loader into Hopper	697	582	1148	1148	753
First Screen	688	575	1155	1157	744
Vibrating Screen Area	684	575	1172	1165	731
Large Aggmax 160 Screen	679	572	1186	1174	716
Evowash	672	564	1182	1177	719
Thickener Mixing System	689	582	1175	1162	718
Tank Water Sound	692	585	1175	1161	717
Soil Biscuit Forming and Dropping	668	570	1202	1181	675
Silo Pump	682	581	1202	1178	693
Loading Washed Soil to Tractor	671	575	1225	1195	671
Finished Product Loading to HGV	632	535	1230	1210	658
HGVs on site	605	497	1168	1164	658

The majority of the intervening ground between source and receiver is soft, being mainly open farm land. The existing industrial estate represents hard more reflective ground, but this does not dominate the transmission path between source and nearest receptors.

For dwellings further away where the industrial estate does form part of the intervening land, the additional noise barrier effect provided by all of the various industrial buildings will more than offset the reduction in decay due to distance caused by the ground being hard and reflective. Also, the additional distance means that all predicted sound levels are significantly less than any of the closest receptors.

Decay due to distance has been calculated using the correct formula for soft ground, being Decay = 25 * Log (Distance Ratio) – 2, dB.

Discussion on noise barrier effect is given in section b) of this report.

The land profile has a very slight upward gradient from south to north at an approximate average rate of 1-in-120, which will not cause any material effect on the propagation of sound.

Location plans showing the site to be assessed and the nearest dwellings are given in section 2 of this report.

Background Measurements

Background sound levels were obtained using a combination of attended and unattended measurements.

The attended measurements could be taken on public land outside dwellings on Back Lane, Barmby Moor, at the rear of houses on Grangeland Walk, Barmby Moor and at the rear of houses on Warwick Close, Pocklington.

The dwellings at Barmby Moor represent the closest receptors to this site where sound received from the soil washing plant will be highest. The dwellings on Warwick Close are furthest from the main road traffic sources using the A1079, so represents the receptor where background sound levels are likely to be lowest (i.e. most onerous).

These locations are insecure and open to the public, hence the use of attended measurements. It was possible to install unattended monitoring equipment for a longer period of time on land owned or permitted by Ashcourt, along the edge of the field next to the tree line running north to south between the site and dwellings on Back Lane, see plan in section m) 'Background Sound Level.' These unattended results can be compared with shorter duration attended measurements at the exact locations of dwellings to ascertain the typical background sound levels for use in the assessment.

The background measurement methodology chosen is designed to be as representative of the background climate at the nearest dwellings as possible. The important quantity when measuring background sound levels is the dB $LA_{90,15mins}$, which is defined as the sound level that is exceeded for 90% of each 15 minute measurement period, thereby being less affected by precise proximity to the nearest local roads.

(f) **Instrumentation**

The equipment used is shown in the table below.

Equipment Description	Type number	Manufacturer	Date of expiration of Calibration	Calibration Certificate Number
Sound Level Meter	XL2 TA s/n A2A-10019-E0	NTi Audio	14.08.2024	178637
Microphone	MK 224 s/n 213144A	Cirrus Research	14.08.2024	178634
Calibrator	4231 s/n 2402706	Bruel & Kjaer	24.07.2024	196005

(g) **Operational Tests**

The reference level of the calibrator is 94 dB SPL at 1000 Hz.

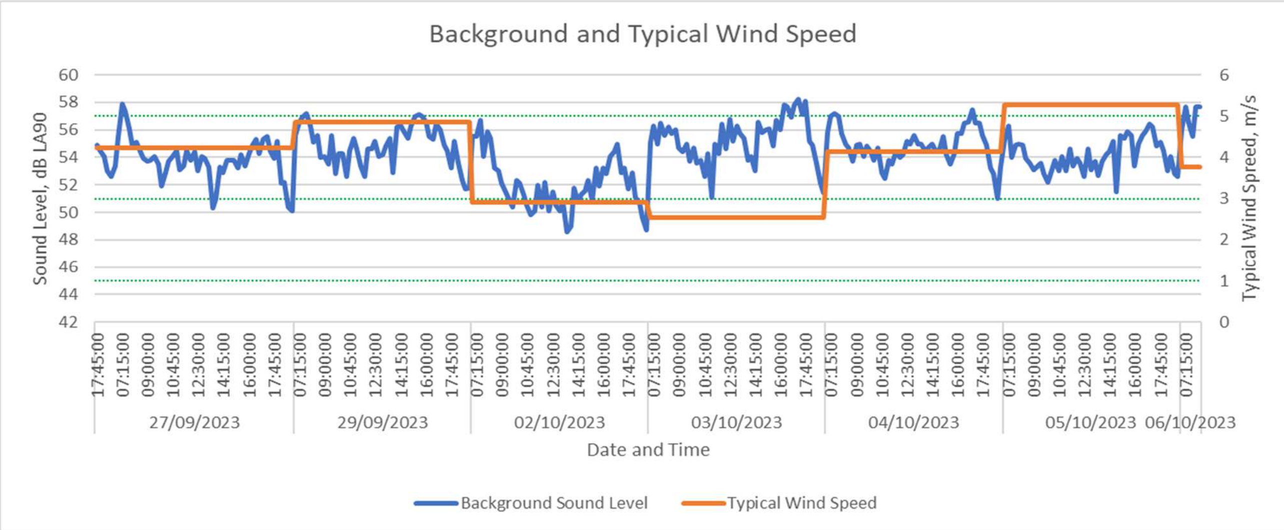
The meter readings with the calibrator before and after attended measurements were consistent at 94.0 dB SPL. For the unattended survey, the meter reading was 94.0 dB SPL before measurements and 93.9 dB SPL after measurements. This drift of 0.1 dB is within the maximum target for drift of 0.5 dB identified in BS 4142.

(h) **Weather Conditions**

The weather conditions were suitable for the monitoring of outdoor sound. There were no conditions likely to lead to inaccurate background sound measurements through temperature inversions, fog, frozen ground or snow. Wind speeds were generally within the desirable 5 ms^{-1} target with only brief periods exceeding this for peak speeds on each day. The summary of weather conditions is given below:

	Temperature ^{O}C		Wind Speed (m/s)			Direction	Precipitation	Cloud Cover
Date	**Min**	**Max**	**Low**	**Typical**	**High**		**mm**	**%**
27/09/2023	11	18	1.4	4.2	8.2	SSE	0.4	50 - 75
28/09/2023	14	16	2.2	4.9	8.6	SSW	0.7	75 - 100
29/09/2023	12	18	1.5	3.9	8.2	WSW	0.0	25 - 50
30/09/2023	9	15	1.5	2.7	6.2	S	2.1	25 - 50
01/10/2023	13	19	1.7	2.9	5.6	SSW	1.9	75 - 100
02/10/2023	11	16	1.0	2.5	3.9	WSW	3.5	50 - 75
03/10/2023	9	16	1.8	4.1	9.1	WSW	1.1	50 - 75
04/10/2023	11	17	2.8	5.3	8.1	SW	0.0	50 - 75
05/10/2023	13	16	2.0	3.8	8.3	SW	0.9	50 - 75
06/10/2023	15	19	1.5	4.5	9.2	WSW	0.2	50 - 75

The graph below shows measured background sound level with typical wind speed. This can be useful in analysing if wind speed had a material effect on background sound during the survey.



It can be seen that typical wind speed did not correlate to any change in background sound level during the survey. Indeed, some of the higher measurements were recorded during the day with lowest wind speed.

(i) Date and Time of Measurements

Background sound levels were measured in the form of continuous sound monitoring for a period of over 8 days from 17:45 on Wednesday 27th September to 08:30 on Friday 6th October 2023.

Attended background sound level measurements were taken at the nearest dwellings on the days used for setup and takedown of unattended monitoring equipment.

Sound from the soil washing facilities sources was measured on Friday 6th October 2023 approximately between 11:30 and 15:30.

(j) Measurement Time Intervals

Background sound levels were measured over continuous 15 minute intervals in accordance with BS 4142: 2014. Sound from the soil plant sources was measured over periods that allowed values to settle to a constant figure for fixed plant or continuous machinery and over several complete cycles of typical work for items such as wheeled loaders, excavators or loading of HGVs.

(k) **Reference Time Interval**

The reference time interval is 1 hour during the daytime in accordance with 3.8 of BS 4142. There is no night time working.

(l) **Specific Sound Levels**

Measured sound levels from each item of equipment or machinery are given in section b) of this BS 4142 assessment, with additional details of frequency spectra given in the appendices.

Residual sound levels do not form part of this calculation process since the specific sound levels from Ashcourt have been calculated using measurements taken at source, where residual levels do not affect the results.

The calculation of specific sound levels of the overall soil washing facility activities inclusive of all sound sources is described in the appendices of this report. Noise maps or contours giving a visual summary of sound distribution across the area are shown overleaf. The maps do not include any additional barrier effect caused by existing dwellings so show the reasonable worst case scenario, avoiding the over estimation of double-barrier attenuation. A second barrier can provide meaningful attenuation, but generally not of the same magnitude as the first barrier, depending on individual relative dimensions.

The specific sound levels at five of the closest receptors selected for individual commentary and comparison are summarised below for the two different methods of using individual source measurements and overall roaming measurements on site. For the methods using overall roaming measurements, to results are given, the first corresponding to measurements taken at an average distance of 60m from the washing plant operation and the second at 150m from the operation. Details of contributions from each source individually are given in the appendices of this report.

Specific Sound Level, dB $LA_{eq,1hour}$

Receptor	**Partial Noise Barrier**		
	Individual Source Method	Overall Method 1	Overall Method 2
Back Lane, Barmby Moor	39.2	38.2	38.1
Grangeland Walk, Barmby Moor	41.1	40.3	40.1
Warwick Close, Pocklington	33.1	31.5	31.4
Wilberforce Lodge	33.1	31.5	31.3
Dwelling to South	38.2	37.8	37.7

It can be seen that all of the results using the different methods are in agreement with each other. Indeed, the difference between the overall method results is a fraction of a decibel, which is a higher degree of agreement than would ever be expected using these different datasets.

The similarity between the results obtained using the different methods increases confidence in the results and reduces uncertainty. Generally, the results obtained using the individual source method are slightly higher as may be expected given that the individual source measurements will inevitably include some contributions from other surrounding machinery. The slightly higher (i.e. worse) results obtained using the individual source method have been used in the BS4142 assessment.

Alternative Barrier Effect

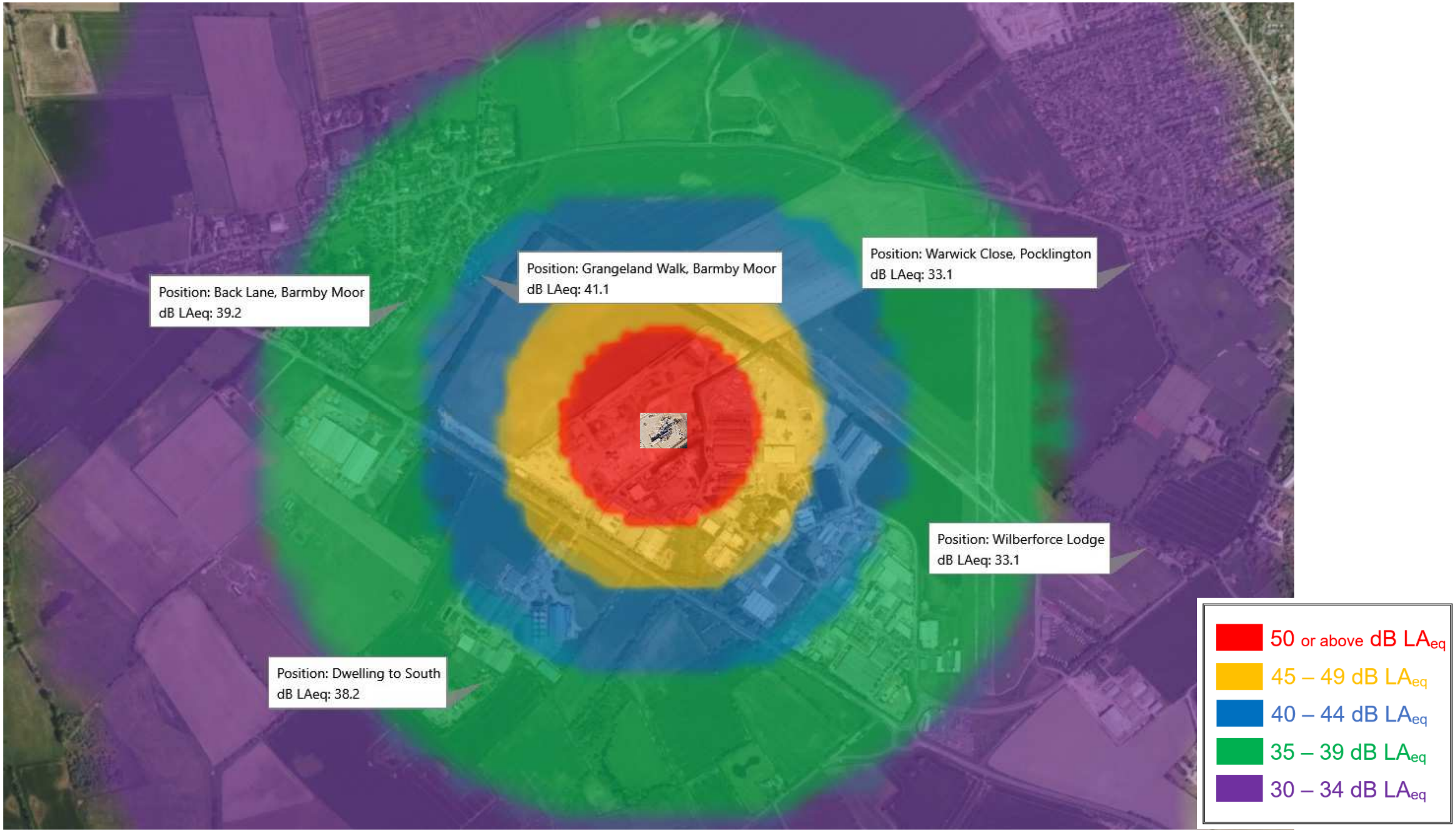
The calculations have also been processed for two alternative additional scenarios. One assumes that the finished earth bunds, material stockpiles and new waste building will constitute a full noise barrier between most of the sources and/or receivers. No barrier effect is assumed for the new waste shed, the biscuit forming building, or the unloading of raw material on top of the stockpile since it remains highly likely that all of these sources will remain visible at some dwellings. For this scenario, barrier effect calculations have been performed using Maekawa with a nominal path difference of 0.1m, which is likely to be typical to conservative and roughly approximates to the 10 dBA given in BS 5228.

The second additional scenario assumes that no barrier effect is apparent for any sources. In reality this is highly unlikely to be the case, but provides additional information when considering conclusions of low-impact. Specific sound levels for both of these additional scenarios are shown in the table below:

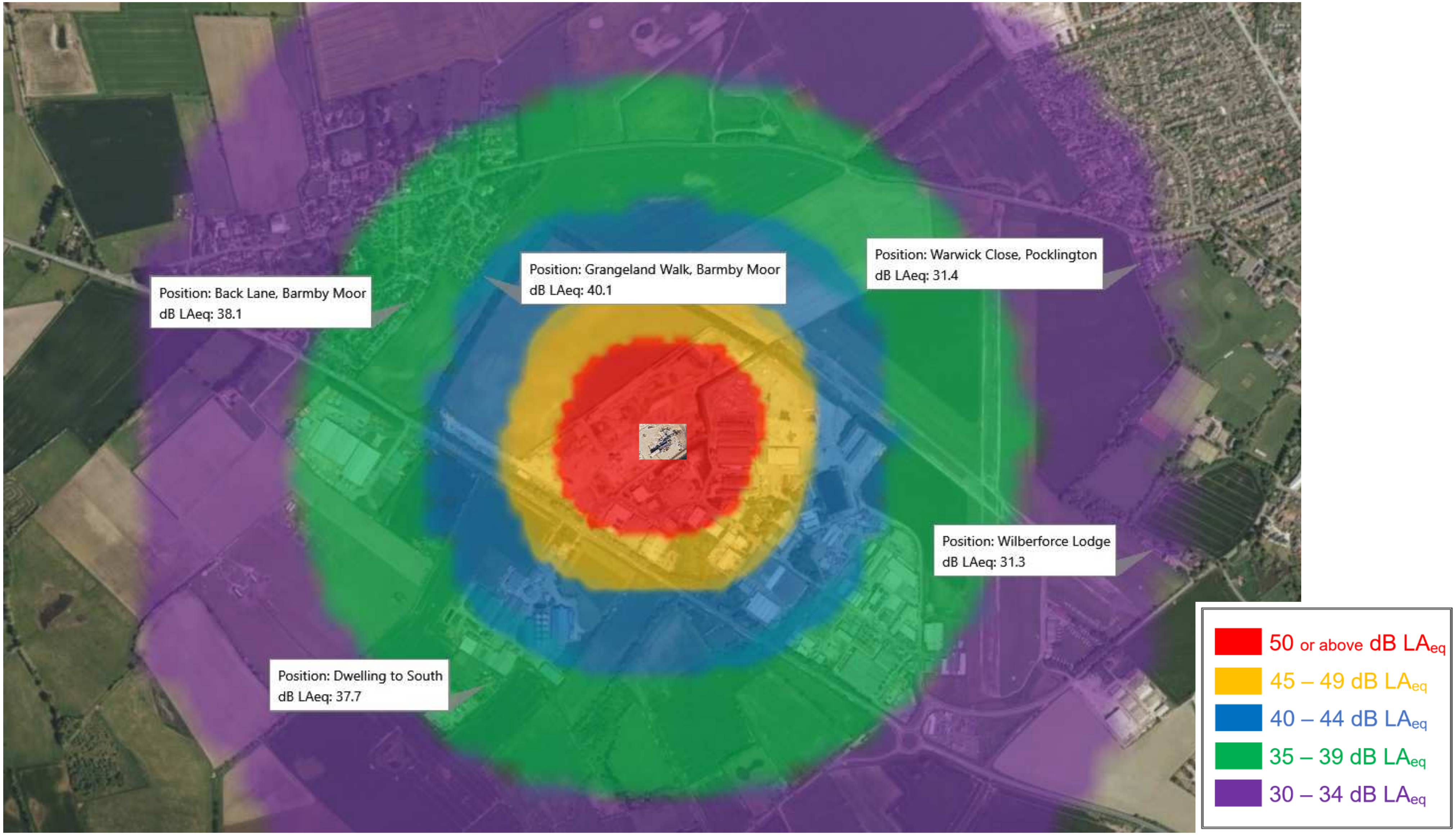
Specific Sound Level, dB $LA_{eq,1hour}$

Receptor	**Full Noise Barrier**		
	Individual Source Method	Overall Method 1	Overall Method 2
Back Lane, Barmby Moor	35.9	32.3	33.0
Grangeland Walk, Barmby Moor	37.8	34.3	35.1
Warwick Close, Pocklington	30.1	25.6	26.4
Wilberforce Lodge	30.0	25.6	26.3
Dwelling to South	34.8	31.9	32.6
Receptor	**No Noise Barrier**		
	Individual Source Method	Overall Method 1	Overall Method 2
Back Lane, Barmby Moor	43.6	43.4	43.2
Grangeland Walk, Barmby Moor	45.5	45.4	45.2
Warwick Close, Pocklington	37.3	36.7	36.5
Wilberforce Lodge	37.3	36.6	36.4
Dwelling to South	42.6	43.0	42.8

Noise Contours / Maps, Daytime Operation   Method Using Individual Measurements of Sources



Noise Contours / Maps, Daytime Operation Method Using Roaming Overall Measurement of Site



5. The methods of determining the specific sound are in accordance with section F.2.1 of BS 5228-1 which describes methods of quantifying the sound levels of sources on a site. Three alternative means of obtaining the necessary data on source sound levels are described in BS 5228 as:

(a) Carry out sound measurements on similar plant items operating in the same mode as those proposed at the application site.

(b) Use data on typical sound levels of various plant items as provided in Annexes C and D of BS 5288-1.

(c) Use data on the maximum permitted sound levels of plant items under EC Directive 2000/14/EC[11].

Section F.2.1 advises that "The method given in item (a) is likely to provide the most accurate prediction" and is used in this assessment for determination of the specific sound levels, with measurements taken directly from the sources in operation at the site.

(m) **<u>Background Sound Level</u>**

Sound levels were measured in the form of continuous sound monitoring for a period of over 8 days from 17:45 on Wednesday 27th September to 08:30 on Friday 6th October 2023.

Attended background sound level measurements were taken at the nearest dwellings on Wednesday 27th September and Friday 6th October 2023 before setting up and after taking down the unattended monitoring equipment. The time intervals of background measurements were 15 minutes.

The full results are shown in tabular form in the Appendices to this report. The requirements of BS 4142 : 2014 are that typical, representative values are used for background sound level in the assessment, not the lowest or necessarily modal values.

The attended background measurements of sound taken at the nearest dwellings are useful in that they provide details of the soundscape including subjective impressions directly at the nearest receptors. Measurements at the nearest receptors on Back Lane and the rear of Grangeland Walk facing the Ashcourt site are of similar order. The measurements taken at Warwick Close, Pocklington are less, being descriptive of the soundscape at the nearby dwellings subject to the lowest environmental sound levels.

These dwellings are on public land that is easily accessible and entirely insecure, being unsuitable for equipment to be left for long periods of time.

In order to describe the fluctuations of typical back sound level, unattended monitoring equipment could be left on the boundary of the larger Ashcourt site towards the nearest dwellings.

The location for the unattended monitoring was chosen carefully to make use of an existing bund that provided barrier effect to any sources on the existing Ashcourt site, thereby minimising contributions from them, maximising accuracy and minimising uncertainty. The location was slightly closer to the A1079 than the main dwellings being considered on Back Lane, but existing structures, material stockpiles and storage containers provided some barrier effect from road traffic reaching the measurement position. It was judged by us on site that this barrier effect and the reduction in distance decay from the road to this position when compared to the nearest dwellings would be relatively self cancelling.

The typical sound levels measured at the unattended measurement position can be compared to those attended at the nearest dwellings and correction factors applied as deemed necessary.

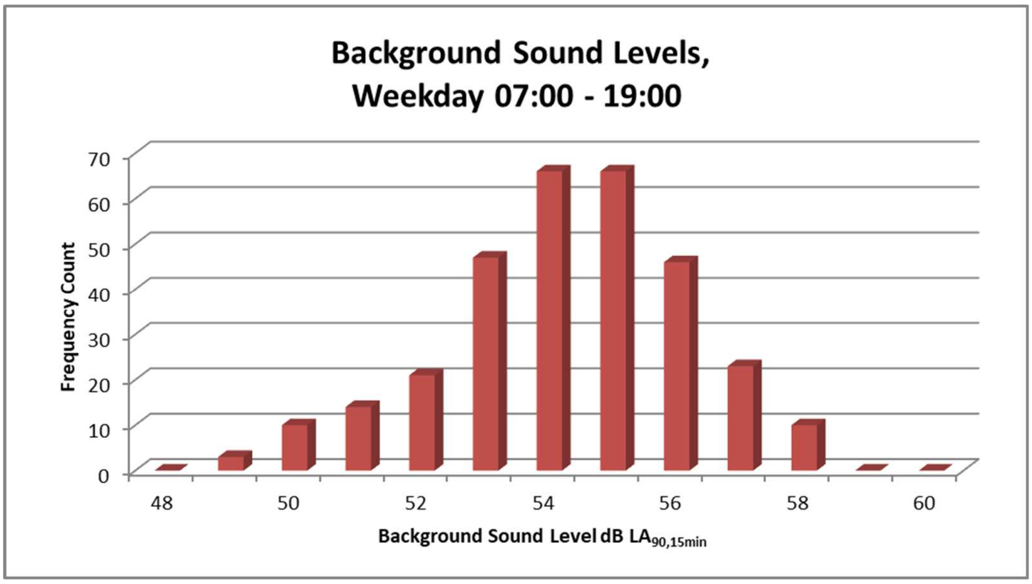
As can be seen by studying the results, the unattended monitoring position showed background sound levels that were in complete agreement and representative of those taken at the closest dwellings on Back Lane to the Ashcourt site. The sound levels at positions to the rear of Grangeland Walk were generally 1 dBA lower and also likely to be representative of background sound reaching the private land at Wilberforce Lodge and the dwelling to the south. The possibility remains that the background sound levels at these two private locations may be fractionally lower and so for the purpose of assessment 3 dBA has been subtracted from the unattended measurements or those taken on Back Lane to provide a reasonable worst-case scenario.

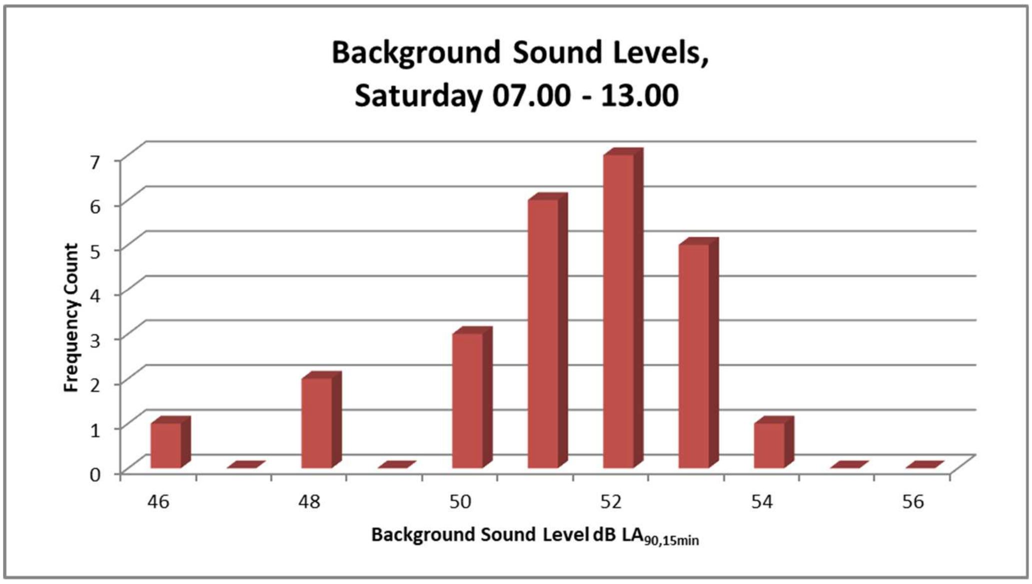
Background sound levels measured at Warwick Close, Pocklington were generally around 8 dBA lower than those measured at Back Lane. This is to be expected given the significantly increased distance from main roads and that the measurement position is relatively sheltered from the traffic.

The background sound levels measured in the hours immediately before and after operation occurs at Ashcourt have been separately analysed. This is to ensure that the typical daytime levels are not significantly affected by sound from other existing sources on the Ashcourt site, though as mentioned consideration was given in choosing an unattended background monitoring position that was both representative of environmental sound level that dwellings but also screened from some existing Ashcourt sources.

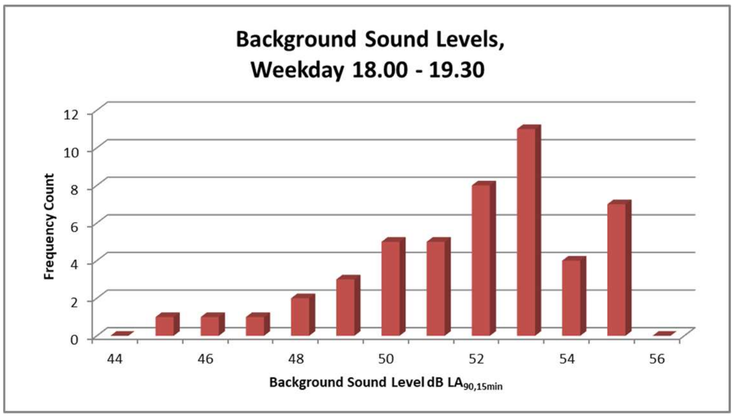
Full monitoring data is shown in the appendices of this report. Graphical and tabulated summaries of the results are shown in this section.

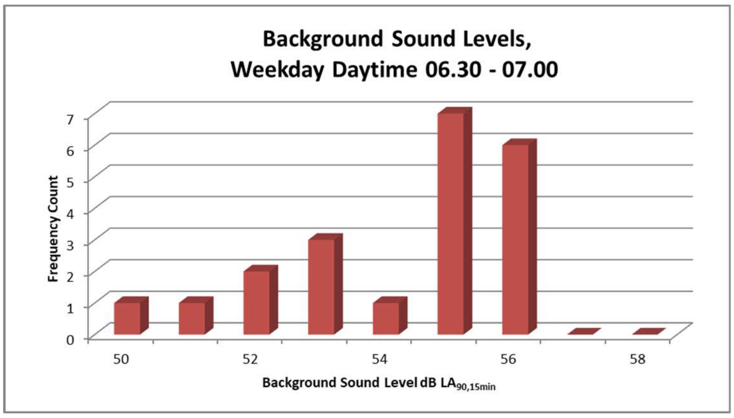
Unattended Measurements

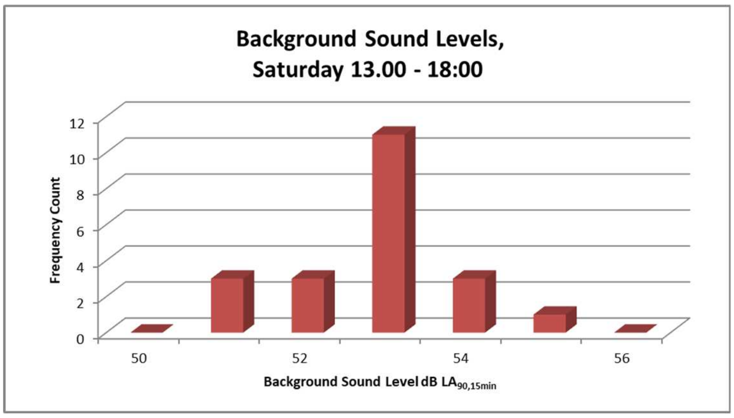


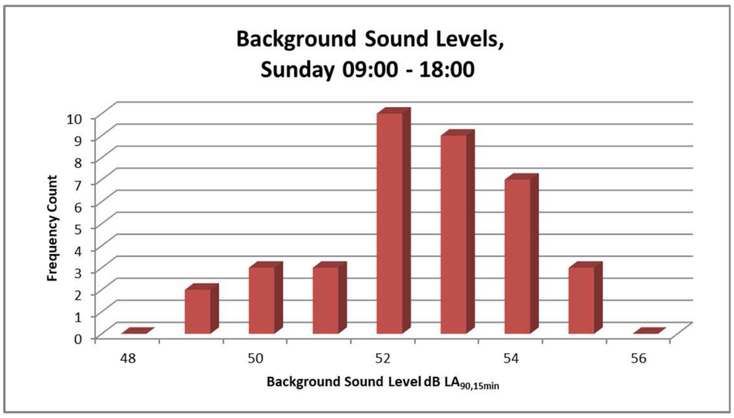


Unattended - Backgrounds at times of non-operation









It can be seen that the background sound levels measured before and after times of operation at Ashcourt site are entirely consistent with what would be expected at those times of day, indicating that sources on the site of not significantly influenced measured results.

The Google Earth image below shows the location of the nearest dwellings and the unattended background monitoring position.

The background sound levels taken during our attended measurements at the nearest dwellings are shown in the table below:

Background Sound Level, dB $LA_{90,15mins}$

Date	Rear of Grangeland	Back Lane	Pocklington
27/09/2023	52.3	54.9	47.6
	54.4	55.5	47.9
	53.6	56.0	46.4
	52.9	54.1	47.2
06/10/2023	53.9	54.3	45.9
	55.1	53.2	45.0
	54.3	53.7	45.2
	52.1	54.2	47.6
Range	52 - 55	53 - 56	45 - 48

The conclusions reached by analysis of all of the measured background data is that the typical back sound levels are:

Background Sound Level, dB $LA_{90,15mins}$

Receptor	Weekday	Saturday Morning
Back Lane, Barmby Moor	54	52
Grangeland Walk, Barmby Moor	53	51
Warwick Close, Pocklington	46	44
Wilberforce Lodge	51	49
Dwelling to South	51	49

(n) Rating Levels

The procedure for finding the BS 4142 Rating Level requires certain penalties or corrections to be added to the time-averaged sound level to take account of the character of sound. These penalties are:

Tonality
The rating method of BS 4142 adds penalties of 2 dB, 4 dB and 6 dB to the actual sound levels at dwellings if tonal characteristics are "just", "clearly" or "highly" perceptible (respectively).

Impulsivity
Penalties of up to 9 dB are added to take account of the impulsivity of sound received at receptors.

Intermittency

If a sound source operates intermittently its noise output is averaged over the assessment period time frames. Sound of this nature attracts a 3 dB penalty for intermittency.

Other sound characteristics

BS 4142 allows for the addition of 3 dB if the sources are not tonal or impulsive, but are readily distinctive against the acoustic environment.

These corrections are penalties should be applied for how the sound is perceived at the nearest receptors. For predictions of sound from this site, undertaken using measurements of individual sources, the corrections applied are as follows:

Tonality. Quantitative assessment of the frequency spectra received at the nearest dwellings shows no corrections required for tonality. Full details of this are given in the appendices of the report.

Impulsivity. Most of the sources do not exhibit impulsive characteristics. There are isolated processes on site that could be judged to be impulsive when close to the source. This would mainly be the loading of rubble into the crusher used specifically for that purpose. The specific sound level from this source is at least 10 dBA below the typical back at each of the nearest receptors and so the likelihood of perceptible impulsivity from this operation is low. Nevertheless, it is possible that some impulsivity may be just perceptible during lulls in background sound level and peaks from manipulation of rubble, so a 3B correction or penalty is applied to this source.

For the remaining sources, no impulsivity is anticipated at the nearest dwellings. The Waste Shed sources and vehicle / loader movements or operations are not impulsive and remain well below background. The depositing of material from delivery HGVs onto the material stockpile is not impulsive by nature of the material being tipped and that the surface being tipped onto is soil based. The screens and Evowash are not impulsive in their operation, neither are the thickening tank mixing systems. The biscuit forming and dropping operation is not impulsive either - the dropping of one material onto another may often be expected to be impulsive, but these biscuits are compacted end product soil and so the landing is soft with a more gradual onset of low-level sound. In addition to this, the specific sound levels of each process are so far below background that it is unlikely that impulsivity would be perceptible, even if it existed in the impressions at source.

Intermittency. All of the process noise is continuous and there are no repeated identifiable on/off conditions, so no corrections for intermittency are needed.

Other Sound Characteristics. As discussed in this report, the soundscape at the nearest dwellings is generally dominated by environmental sources, being mainly road traffic with sporadically audible existing industrial sources. None of these industrial sources were judged to be particularly dominant during our visit, but contribute to the overall subjective impressions, as may be expected given the surrounding land uses.

The processes involved with this soil washing plant are fairly distinctive if significantly audible. The results and background comparisons suggest that audibility should generally be subjectively low, but in order to provide a reasonable worst-case assessment it is judged that a 3 dB correction should be added to the Rating Level to take account of the possibility of sources being readily distinctive. This correction is added to the overall specific sound level that comprises all sources combined.

The intention of this is to provide an accurate reflection that each individual sources unlikely to warrant a separate correction (apart from the slim possibility of just perceptible impulsivity from rubble manipulation), but during periods of audibility, the overall process may be judged to be readily distinctive. This continues the theme of providing the reasonable worst-case scenario and minimising uncertainty in the assessment.

The BS 4142 Rating Levels are:

BS 4142 Rating Levels, dB

Dwelling	**Individual Source Measurement Method**	**Roaming Measurement Method**
Back Lane, Barmby Moor	42	41
Grangeland Walk, Barmby Moor	44	43
Warwick Close, Pocklington	36	35
Wilberforce Lodge	36	34
Dwelling to South	41	41

o) Background Comparisons

Comparisons between the predicted Rating Levels and the measured background levels are shown in the table overleaf. A positive number shows predicted exceedances of Rating Level above background and a negative number represents the Rating Level being below background.

Individual Source Measurement Method

Comparison of Rating Levels to Background, dB

Receptor	Weekday	Saturday Morning
Back Lane, Barmby Moor	-12	-10
Grangeland Walk, Barmby Moor	-9	-7
Warwick Close, Pocklington	-10	-8
Wilberforce Lodge	-15	-13
Dwelling to South	-10	-8

Roaming Measurement Method

Comparison of Rating Levels to Background, dB

Receptor	Weekday	Saturday Morning
Back Lane, Barmby Moor	-13	-11
Grangeland Walk, Barmby Moor	-10	-8
Warwick Close, Pocklington	-11	-9
Wilberforce Lodge	-17	-15
Dwelling to South	-10	-8

These assessments have been undertaken for the closest dwellings to the site. The sound levels from proposed operations received at dwellings further from the site will be progressively lower. The comparison of predicted sound against existing background will also be progressively more favourable.

The initial estimation of impacts without taking context into account is that sound from the proposed soil washing plant will have Low Impact.

As discussed earlier report, these predictions assume a partial/glancing barrier effect from appropriate sources, as appears to be the reasonable worst-case typical scenario. If the finished site includes complete barrier effect to appropriate sources, then the predictions will be more favourable. If there is no barrier effect (which appears to be highly unlikely) then the predictions of Rating Level will be higher, but will still remain below the typical background at all times of operation. This increases confidence and certainty in the assessment of Low Impact.

(p) **BS 4142 Conclusions**

As discussed earlier in this report, the context of this site is that the housing areas of Barmby Moor and Pocklington are very well established, as are the industrial estate areas where the Ashcourt soil washing plant is located.

The existing soundscape is slightly mixed, being generally dominated by environmental road traffic sources, with sporadic audibility of existing industrial premises. The conclusion of the discussion on context contained earlier in this report is that while some audibility of industrial sound sources may be expected and accepted at the nearest dwellings, newly introduced dominant industrial sound is likely to cause adverse impact. For these reasons, it appears unlikely that the context of the site will significantly alter the initial conclusions reached by comparison of BS4142 rating level to typical background.

The predictions of Rating Level are all comfortably below the typical background sound level during all times of operation. This includes a series of reasonable worst-case assumptions, yet still retains a significant margin of tolerance before the Rating Level exceeds background.

The normal method of assessment (and measurement of background sound level) is to be undertaken during relatively calm conditions with sustained wind speeds generally less than 5 ms^{-1}.

The closest receptors at Pocklington are to the north-east of the soil washing plant at a distance of around 1.2km across open fields. It is exactly this scenario where the effect of prevailing south westerly winds may increase sound levels received from the site. There is the argument that during these conditions, wind effects may increase background sound level, but nevertheless it is worth considering the potential scenario where prevailing wind gradient causes refraction of sound to receptor points at the edge of Pocklington.

The effect and exact location where refraction of sound due to wind gradient causes increased sound levels depends on a variety of factors including air temperature, whether there is temperature inversion or lapse and the specific characteristics of wind gradient as distance from ground level increases. Generally, the refraction effect may cause sound levels to increase by around 3 – 5 dBA.

It can be seen that at this site, if the potential effects of wind gradient are taken into account, it remains likely that the Rating Level will remain below the typical background sound level, even if that background sound level does not increase significantly with wind speed. This further reduces uncertainty in the assessment.

It is concluded that the proposed soil washing facility will have low impact at all dwellings at all times.

(q) **Uncertainty**

It is a requirement of BS 4142: 2014 that the level of uncertainty in data and calculations should be considered. There is commentary throughout the report on uncertainties, but additional information and how they have been minimised is considered in this section.

Sound measurements of sources have been undertaken directly at the site of the operation being assessed. Two methods have been used. The first is to take measurements directly of each sound source and calculate their propagation separately to the nearest dwellings. The second method is to take measurements of the overall operation at a greater distance from site and use this separate dataset to calculate sound levels at the nearest dwellings. The results from both methods agree with each other closely and the higher/worst-case predictions have been used in the assessment.

The procedures used for the calculation of specific sound levels at the nearest noise-sensitive receptors are based on basic, fundamental principles of acoustics. Sound decay with distance from the sources has been calculated using the principles and methods recommended in BS 5228. Barrier effect has been calculated using the accurate method of Maekawa. Different approaches to the calculation of specific sound level have been taken, and the results compared with a high level of agreement and certainty.

The addition and subtraction of sound levels was done logarithmically on an energy basis, which is the correct method for decibel calculations. It is anticipated that this method would be considered by other suitably qualified acousticians to be relevant, correct and appropriate for this survey and is a method examined by the Institute of Acoustics on their post graduate diploma course.

All sound level measurements were taken with a calibrated type 1 sound level meter, which represents the most accurate type of SLM available. Sound levels were measured to the nearest 0.1 dB, time periods were measured and recorded to the nearest second. No rounding was done in any calculations, the only rounding being done on final results, in compliance with BS 4142 : 2014. The sound level meter was calibrated before and after each survey period and the total drift apparent over the course of the unattended monitoring was 0.1dB.

Background sound data was obtained using both attended and unattended measurements, and the typical results were used in the assessment of noise impact.

Table 1 on page 35 of the ANC Technical Note to BS 4142: 2014 +A1:2019 gives a summary of the numerical uncertainty that can be expected during the field-use of a Type 1 sound level meter, totalling a combined standard uncertainty of 0.9 dB:

Table 1 Standard uncertainties using allowable tolerances minus test laboratory tolerances given in IEC 61672-1 (source: Narang and Bell, Table 14)

SLM Class	Frequency weighting dB	Directional response dB	Level linearity dB	Toneburst response dB	Calibrator (IEC 61672) dB	Supply voltage dB	Combined standard uncertainty dB
Class 1	0.5	0.5	0.4	0.25	0.125	0.05	0.9

Although it is not possible to attribute an accurate numerical value to many areas of potential uncertainty, the commentary on methods of minimising uncertainty is useful. These procedures along with the theme of making a series of reasonable worst case assumptions means that the likelihood of uncertainties causing an artificially favourable assessment are extremely low.

It is concluded that the uncertainty in this survey has been minimised as far as possible and is believed to be below the level at which it would have an impact on the assessment conclusions contained in this report.

APPENDIX 1

BACKGROUND SOUND LEVEL MEASUREMENTS

The table below shows details of the attended measurements of environmental sound taken at the nearest publicly accessible dwellings to the site:

Position	Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
Rear of Grangeland	27/09/2023	14:49:00	54.9	61.0	50.1	52.3
	27/09/2023	15:04:00	56.2	59.5	52.2	54.4
	27/09/2023	15:19:00	57.8	65.3	49.9	53.6
	27/09/2023	15:34:00	56.3	60.6	50.3	52.9
	06/10/2023	15:42:00	56.7	66.0	52.3	53.9
	06/10/2023	15:57:00	57.8	63.7	52.5	55.1
	06/10/2023	16:12:00	56.1	64.3	52.7	54.3
	06/10/2023	16:27:00	55.7	68.8	49.1	52.1
Back Lane	27/09/2023	15:54:00	57.7	63.0	51.3	54.9
	27/09/2023	16:09:00	58.4	67.7	53.4	55.5
	27/09/2023	16:24:00	57.8	67.7	54.9	56.0
	27/09/2023	16:39:00	57.1	66.8	52.1	54.1
	06/10/2023	09:02:00	57.7	65.6	52.6	54.3
	06/10/2023	09:17:00	57.7	66.5	49.8	53.2
	06/10/2023	09:32:00	56.9	62.1	51.8	53.7
	06/10/2023	09:47:00	57.7	71.9	51.7	54.2
Pocklington	27/09/2023	13:40:00	51.0	53.2	44.9	47.6
	27/09/2023	13:55:00	50.3	56.4	45.7	47.9
	27/09/2023	14:10:00	49.2	62.7	44.4	46.4
	27/09/2023	14:25:00	51.9	64.3	45.4	47.2
	06/10/2023	10:11:00	50.1	57.9	43.8	45.9
	06/10/2023	10:26:00	51.1	59.3	41.9	45.0
	06/10/2023	10:41:00	49.4	57.8	43.3	45.2
	06/10/2023	10:56:00	52.6	59.4	43.9	47.6

The table below, continued overleaf shows the measured sound levels from the long duration unattended survey of environmental sound:

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
27/09/2023	17:45:00	57.2	61.5	52.0	54.9
27/09/2023	18:00:00	57.2	63.1	51.2	54.5
27/09/2023	18:15:00	56.9	62.8	49.7	54.1
27/09/2023	18:30:00	56.5	62.6	48.6	53.0
27/09/2023	18:45:00	56.3	63.6	48.4	52.6
27/09/2023	19:00:00	57.1	67.2	50.0	53.4
27/09/2023	19:15:00	56.4	63.9	48.5	52.9
27/09/2023	19:30:00	56.2	69.8	47.0	51.9
27/09/2023	19:45:00	55.6	62.5	45.5	51.1
27/09/2023	20:00:00	56.3	67.2	49.0	52.5
27/09/2023	20:15:00	55.5	72.0	47.5	50.7
27/09/2023	20:30:00	54.7	67.9	46.4	50.2
27/09/2023	20:45:00	53.5	60.8	42.9	46.8
27/09/2023	21:00:00	58.5	92.5	42.3	47.4
27/09/2023	21:15:00	53.2	68.6	41.3	45.8
27/09/2023	21:30:00	52.8	63.5	39.5	44.4
27/09/2023	21:45:00	54.4	77.6	40.3	44.6
27/09/2023	22:00:00	51.8	62.4	37.8	41.9
27/09/2023	22:15:00	51.2	63.5	39.9	42.9
27/09/2023	22:30:00	52.2	62.0	40.1	43.3
27/09/2023	22:45:00	51.6	65.6	39.3	43.3
27/09/2023	23:00:00	52.2	71.4	41.2	44.3
27/09/2023	23:15:00	51.3	70.6	40.2	43.5
27/09/2023	23:30:00	54.0	76.8	41.6	46.2
27/09/2023	23:45:00	53.6	78.7	40.4	44.8
28/09/2023	00:00:00	50.7	70.1	38.1	41.6
28/09/2023	00:15:00	47.1	61.3	34.7	37.0
28/09/2023	00:30:00	49.2	61.3	36.7	39.9
28/09/2023	00:45:00	46.8	62.2	36.3	38.1
28/09/2023	01:00:00	45.3	58.0	34.0	37.0
28/09/2023	01:15:00	47.3	62.3	36.8	39.2
28/09/2023	01:30:00	47.6	63.3	38.2	41.4
28/09/2023	01:45:00	49.9	76.8	39.8	42.5
28/09/2023	02:00:00	47.3	62.2	36.9	40.4
28/09/2023	02:15:00	48.5	67.0	37.9	39.6
28/09/2023	02:30:00	48.9	64.1	38.8	41.0

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
28/09/2023	02:45:00	48.6	74.7	40.1	42.1
28/09/2023	03:00:00	50.6	74.6	39.4	41.7
28/09/2023	03:15:00	49.1	65.2	38.5	41.5
28/09/2023	03:30:00	48.3	61.5	39.8	41.5
28/09/2023	03:45:00	49.8	68.3	38.0	42.0
28/09/2023	04:00:00	50.5	65.8	39.0	41.0
28/09/2023	04:15:00	48.8	62.9	35.2	38.0
28/09/2023	04:30:00	48.1	59.8	35.0	37.0
28/09/2023	04:45:00	51.5	63.0	38.1	42.0
28/09/2023	05:00:00	52.9	68.3	37.5	40.8
28/09/2023	05:15:00	54.3	66.5	36.1	44.0
28/09/2023	05:30:00	53.6	63.2	35.9	40.0
28/09/2023	05:45:00	55.7	65.9	40.3	46.5
28/09/2023	06:00:00	55.2	62.6	40.2	48.2
28/09/2023	06:15:00	56.0	63.1	43.4	50.6
28/09/2023	06:30:00	58.2	73.6	47.1	53.2
28/09/2023	06:45:00	59.0	65.1	48.6	54.8
28/09/2023	07:00:00	59.3	63.7	49.9	55.5
28/09/2023	07:15:00	60.7	64.9	56.5	57.9
28/09/2023	07:30:00	60.5	66.5	53.9	57.3
28/09/2023	07:45:00	59.7	71.0	52.9	56.1
28/09/2023	08:00:00	58.1	71.0	49.2	54.8
28/09/2023	08:15:00	58.3	62.5	52.4	55.1
28/09/2023	08:30:00	57.7	71.6	51.0	54.4
28/09/2023	08:45:00	57.4	62.3	50.6	53.9
28/09/2023	09:00:00	58.0	65.0	49.2	53.7
28/09/2023	09:15:00	58.0	64.5	51.1	53.8
28/09/2023	09:30:00	57.3	63.2	49.2	54.1
28/09/2023	09:45:00	56.9	66.6	48.2	53.5
28/09/2023	10:00:00	56.3	63.4	42.9	51.9
28/09/2023	10:15:00	56.5	64.5	47.3	52.9
28/09/2023	10:30:00	56.7	65.9	48.5	53.7
28/09/2023	10:45:00	57.6	65.0	47.7	54.1
28/09/2023	11:00:00	57.9	79.2	49.2	54.5
28/09/2023	11:15:00	57.7	80.1	47.7	53.1
28/09/2023	11:30:00	57.8	65.6	45.2	53.4
28/09/2023	11:45:00	57.7	63.9	46.6	54.5
28/09/2023	12:00:00	57.3	64.3	44.6	53.8
28/09/2023	12:15:00	57.2	68.5	51.2	54.4
28/09/2023	12:30:00	56.6	67.7	48.0	53.0

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
28/09/2023	12:45:00	57.8	65.9	46.4	54.1
28/09/2023	13:00:00	57.7	69.1	48.7	53.9
28/09/2023	13:15:00	57.1	65.4	42.6	53.3
28/09/2023	13:30:00	55.4	61.8	42.1	50.3
28/09/2023	13:45:00	55.1	61.3	44.8	51.0
28/09/2023	14:00:00	56.7	62.1	43.8	53.3
28/09/2023	14:15:00	56.7	68.2	47.9	52.9
28/09/2023	14:30:00	57.1	64.8	47.0	53.8
28/09/2023	14:45:00	57.4	63.2	49.1	53.8
28/09/2023	15:00:00	57.1	63.3	45.4	53.8
28/09/2023	15:15:00	57.2	63.4	47.2	53.2
28/09/2023	15:30:00	57.4	65.2	48.0	54.2
28/09/2023	15:45:00	57.2	62.0	44.4	53.4
28/09/2023	16:00:00	57.4	66.0	45.2	54.3
28/09/2023	16:15:00	57.2	62.2	48.4	54.8
28/09/2023	16:30:00	57.7	71.0	52.4	55.3
28/09/2023	16:45:00	56.8	68.4	51.2	54.3
28/09/2023	17:00:00	57.6	61.3	52.5	55.3
28/09/2023	17:15:00	57.6	64.4	47.1	55.5
28/09/2023	17:30:00	57.0	61.4	44.8	54.5
28/09/2023	17:45:00	56.8	65.1	48.2	53.9
28/09/2023	18:00:00	57.7	64.8	50.6	55.2
28/09/2023	18:15:00	56.5	62.4	46.8	52.1
28/09/2023	18:30:00	55.8	60.4	44.9	52.2
28/09/2023	18:45:00	54.7	61.1	43.6	50.4
28/09/2023	19:00:00	54.9	62.0	43.8	50.1
28/09/2023	19:15:00	54.3	61.4	40.0	48.0
28/09/2023	19:30:00	53.4	62.5	39.8	47.7
28/09/2023	19:45:00	53.0	59.6	36.8	43.2
28/09/2023	20:00:00	53.6	63.5	37.4	43.1
28/09/2023	20:15:00	52.4	62.6	37.1	44.6
28/09/2023	20:30:00	52.8	59.4	37.6	43.5
28/09/2023	20:45:00	52.3	62.9	38.9	43.4
28/09/2023	21:00:00	51.9	59.2	36.5	43.8
28/09/2023	21:15:00	51.3	58.9	36.5	42.3
28/09/2023	21:30:00	52.3	60.0	35.7	42.0
28/09/2023	21:45:00	51.8	60.3	37.5	40.9
28/09/2023	22:00:00	51.5	60.8	36.7	39.5
28/09/2023	22:15:00	50.8	58.4	34.8	39.5
28/09/2023	22:30:00	51.3	60.6	35.7	40.9

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
28/09/2023	22:45:00	48.6	59.5	32.7	35.9
28/09/2023	23:00:00	48.5	59.3	29.6	34.0
28/09/2023	23:15:00	48.4	58.3	31.2	36.2
28/09/2023	23:30:00	48.2	58.3	32.6	36.5
28/09/2023	23:45:00	48.2	61.9	31.8	35.5
29/09/2023	00:00:00	48.7	60.7	29.3	32.0
29/09/2023	00:15:00	45.8	63.4	27.8	30.4
29/09/2023	00:30:00	47.3	59.2	28.8	31.4
29/09/2023	00:45:00	46.8	60.0	27.3	30.0
29/09/2023	01:00:00	43.7	59.1	25.8	28.1
29/09/2023	01:15:00	43.7	57.5	25.2	27.7
29/09/2023	01:30:00	45.5	57.5	26.4	28.6
29/09/2023	01:45:00	46.5	60.1	27.2	30.0
29/09/2023	02:00:00	44.4	57.5	27.2	29.4
29/09/2023	02:15:00	44.6	57.5	26.1	29.1
29/09/2023	02:30:00	45.6	60.3	25.7	28.3
29/09/2023	02:45:00	45.9	59.5	26.2	28.6
29/09/2023	03:00:00	45.4	57.6	26.5	28.9
29/09/2023	03:15:00	44.6	59.0	26.0	28.2
29/09/2023	03:30:00	46.6	59.1	25.1	27.8
29/09/2023	03:45:00	44.4	58.8	24.8	27.5
29/09/2023	04:00:00	44.7	59.0	24.9	27.4
29/09/2023	04:15:00	47.0	59.4	27.6	30.7
29/09/2023	04:30:00	47.2	58.4	28.5	31.1
29/09/2023	04:45:00	50.9	62.3	28.1	36.1
29/09/2023	05:00:00	52.0	62.4	27.9	38.2
29/09/2023	05:15:00	52.2	62.8	34.3	43.1
29/09/2023	05:30:00	52.1	62.1	33.6	40.9
29/09/2023	05:45:00	53.9	63.6	35.3	43.5
29/09/2023	06:00:00	53.8	62.1	38.2	44.7
29/09/2023	06:15:00	56.4	63.7	42.9	50.6
29/09/2023	06:30:00	56.7	63.7	46.8	50.8
29/09/2023	06:45:00	58.3	64.9	47.8	53.7
29/09/2023	07:00:00	59.0	64.8	48.3	55.6
29/09/2023	07:15:00	59.3	64.5	50.8	56.6
29/09/2023	07:30:00	58.9	70.8	53.1	56.9
29/09/2023	07:45:00	59.1	63.1	52.4	57.2
29/09/2023	08:00:00	58.6	71.3	52.6	56.3
29/09/2023	08:15:00	58.2	69.5	49.7	55.1
29/09/2023	08:30:00	58.0	69.0	51.3	55.6

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
29/09/2023	08:45:00	57.1	62.1	49.7	54.0
29/09/2023	09:00:00	57.5	63.1	49.2	54.1
29/09/2023	09:15:00	57.5	65.2	49.2	53.5
29/09/2023	09:30:00	58.6	64.5	51.8	55.6
29/09/2023	09:45:00	57.6	64.0	45.3	52.8
29/09/2023	10:00:00	58.4	64.6	49.5	54.3
29/09/2023	10:15:00	58.8	67.0	49.9	54.3
29/09/2023	10:30:00	59.0	68.0	46.4	52.6
29/09/2023	10:45:00	59.1	65.4	49.8	54.5
29/09/2023	11:00:00	60.2	74.1	50.1	55.4
29/09/2023	11:15:00	59.2	67.0	48.7	54.6
29/09/2023	11:30:00	59.2	66.4	46.2	53.4
29/09/2023	11:45:00	57.8	68.5	45.1	52.6
29/09/2023	12:00:00	59.8	69.9	51.5	54.6
29/09/2023	12:15:00	59.6	75.4	49.4	54.6
29/09/2023	12:30:00	60.1	76.3	50.8	55.2
29/09/2023	12:45:00	58.7	69.4	48.4	54.1
29/09/2023	13:00:00	58.3	67.0	49.0	54.2
29/09/2023	13:15:00	58.0	67.7	49.2	54.8
29/09/2023	13:30:00	58.6	66.8	50.6	55.4
29/09/2023	13:45:00	57.5	69.3	46.7	52.9
29/09/2023	14:00:00	59.9	69.7	50.7	56.2
29/09/2023	14:15:00	60.8	88.0	50.6	56.3
29/09/2023	14:30:00	60.6	75.1	51.3	55.9
29/09/2023	14:45:00	60.8	86.5	50.9	55.4
29/09/2023	15:00:00	60.0	70.5	50.7	56.3
29/09/2023	15:15:00	60.3	72.1	52.8	57.0
29/09/2023	15:30:00	60.5	85.0	52.3	57.1
29/09/2023	15:45:00	59.9	65.4	53.1	57.0
29/09/2023	16:00:00	59.9	70.5	52.1	56.6
29/09/2023	16:15:00	58.7	69.2	47.2	55.5
29/09/2023	16:30:00	58.5	67.2	51.1	55.3
29/09/2023	16:45:00	59.3	66.2	52.7	56.4
29/09/2023	17:00:00	58.7	64.5	50.1	56.0
29/09/2023	17:15:00	58.3	63.6	48.7	54.9
29/09/2023	17:30:00	58.1	64.0	49.0	54.5
29/09/2023	17:45:00	57.8	63.4	46.9	53.2
29/09/2023	18:00:00	57.8	65.7	49.5	55.2
29/09/2023	18:15:00	57.4	64.8	46.2	53.6
29/09/2023	18:30:00	57.3	64.3	42.4	52.3

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
29/09/2023	18:45:00	56.9	67.1	42.8	51.7
29/09/2023	19:00:00	56.6	66.6	44.2	51.8
29/09/2023	19:15:00	56.4	69.8	42.7	51.5
29/09/2023	19:30:00	56.1	63.3	41.1	48.7
29/09/2023	19:45:00	54.9	62.2	40.7	48.6
29/09/2023	20:00:00	54.1	61.6	44.0	49.2
29/09/2023	20:15:00	54.3	61.5	41.1	48.0
29/09/2023	20:30:00	54.3	62.3	38.7	46.7
29/09/2023	20:45:00	53.8	61.6	42.3	47.4
29/09/2023	21:00:00	53.1	61.6	39.1	45.4
29/09/2023	21:15:00	53.4	61.9	37.1	44.9
29/09/2023	21:30:00	51.7	60.8	36.3	41.8
29/09/2023	21:45:00	52.1	61.0	37.9	44.0
29/09/2023	22:00:00	52.3	61.1	35.3	43.0
29/09/2023	22:15:00	51.7	61.9	35.2	41.0
29/09/2023	22:30:00	51.6	66.0	34.5	39.5
29/09/2023	22:45:00	51.5	60.6	30.4	38.2
29/09/2023	23:00:00	51.5	62.3	36.5	41.8
29/09/2023	23:15:00	51.8	67.6	30.9	40.0
29/09/2023	23:30:00	50.2	60.3	28.7	37.2
29/09/2023	23:45:00	48.7	62.2	27.5	36.8
30/09/2023	00:00:00	49.0	61.7	26.1	29.2
30/09/2023	00:15:00	47.4	59.8	26.9	34.0
30/09/2023	00:30:00	46.1	59.8	21.8	24.6
30/09/2023	00:45:00	48.0	60.1	23.3	27.6
30/09/2023	01:00:00	47.7	62.2	22.7	27.3
30/09/2023	01:15:00	46.2	62.4	24.2	27.3
30/09/2023	01:30:00	45.5	60.3	24.0	26.7
30/09/2023	01:45:00	42.8	57.3	23.9	25.5
30/09/2023	02:00:00	47.8	63.6	25.4	29.3
30/09/2023	02:15:00	45.6	60.0	22.9	28.7
30/09/2023	02:30:00	48.3	67.8	27.5	31.3
30/09/2023	02:45:00	45.0	60.0	27.2	29.5
30/09/2023	03:00:00	43.8	56.0	26.3	28.8
30/09/2023	03:15:00	48.4	68.6	24.4	27.1
30/09/2023	03:30:00	47.6	65.0	25.8	28.6
30/09/2023	03:45:00	45.3	59.0	25.5	30.0
30/09/2023	04:00:00	47.0	61.7	27.2	30.6
30/09/2023	04:15:00	49.4	61.1	29.4	31.9
30/09/2023	04:30:00	49.1	61.4	27.9	32.2

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
30/09/2023	04:45:00	46.4	57.1	29.2	33.8
30/09/2023	05:00:00	47.2	61.0	30.0	34.6
30/09/2023	05:15:00	49.0	58.1	33.1	37.5
30/09/2023	05:30:00	49.0	59.2	29.9	35.6
30/09/2023	05:45:00	49.5	58.5	32.9	35.4
30/09/2023	06:00:00	50.5	58.7	34.9	41.0
30/09/2023	06:15:00	52.9	62.7	35.3	43.3
30/09/2023	06:30:00	53.2	69.3	39.8	46.2
30/09/2023	06:45:00	53.6	74.3	41.3	46.3
30/09/2023	07:00:00	53.9	69.9	40.9	47.9
30/09/2023	07:15:00	54.0	72.2	40.4	46.0
30/09/2023	07:30:00	54.5	62.4	45.7	49.8
30/09/2023	07:45:00	54.3	60.0	42.2	49.9
30/09/2023	08:00:00	54.7	67.2	42.1	48.4
30/09/2023	08:15:00	54.8	68.0	42.3	50.1
30/09/2023	08:30:00	55.1	60.8	44.6	50.7
30/09/2023	08:45:00	55.1	67.8	44.2	51.3
30/09/2023	09:00:00	54.8	61.2	45.5	50.8
30/09/2023	09:15:00	55.0	60.5	46.3	51.9
30/09/2023	09:30:00	54.5	62.1	46.9	51.3
30/09/2023	09:45:00	54.7	65.0	46.9	51.6
30/09/2023	10:00:00	54.2	61.0	41.5	50.8
30/09/2023	10:15:00	54.6	66.9	44.1	51.2
30/09/2023	10:30:00	54.9	66.2	45.5	52.2
30/09/2023	10:45:00	55.4	61.4	46.9	52.5
30/09/2023	11:00:00	55.4	69.2	45.8	52.4
30/09/2023	11:15:00	55.5	64.2	51.1	53.5
30/09/2023	11:30:00	55.3	63.9	46.4	52.4
30/09/2023	11:45:00	55.5	66.0	48.5	53.0
30/09/2023	12:00:00	55.6	63.8	43.7	52.9
30/09/2023	12:15:00	55.2	60.1	42.1	52.0
30/09/2023	12:30:00	56.0	72.6	48.5	53.4
30/09/2023	12:45:00	55.3	59.9	48.0	52.0
30/09/2023	13:00:00	55.7	62.5	48.5	52.9
30/09/2023	13:15:00	55.7	61.2	44.0	52.5
30/09/2023	13:30:00	56.0	62.0	44.0	52.5
30/09/2023	13:45:00	55.5	66.1	40.9	51.2
30/09/2023	14:00:00	55.5	61.6	42.1	51.3
30/09/2023	14:15:00	55.5	62.7	47.5	52.5
30/09/2023	14:30:00	55.9	61.3	44.3	52.5

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
30/09/2023	14:45:00	56.7	64.5	45.0	53.5
30/09/2023	15:00:00	57.5	68.0	46.4	54.5
30/09/2023	15:15:00	56.2	65.0	40.4	52.0
30/09/2023	15:30:00	56.3	68.1	45.7	52.7
30/09/2023	15:45:00	56.1	62.4	48.9	52.9
30/09/2023	16:00:00	56.6	61.4	46.4	53.3
30/09/2023	16:15:00	55.7	63.9	43.2	52.7
30/09/2023	16:30:00	55.5	63.2	44.2	52.4
30/09/2023	16:45:00	55.4	60.7	40.2	51.5
30/09/2023	17:00:00	55.1	63.6	44.6	51.1
30/09/2023	17:15:00	57.1	69.6	50.1	53.7
30/09/2023	17:30:00	57.5	62.5	40.9	54.0
30/09/2023	17:45:00	56.4	62.7	45.9	52.9
30/09/2023	18:00:00	55.9	69.1	46.3	52.5
30/09/2023	18:15:00	55.4	68.1	41.2	51.4
30/09/2023	18:30:00	53.3	64.6	44.4	49.2
30/09/2023	18:45:00	54.0	60.9	44.7	50.0
30/09/2023	19:00:00	51.9	57.4	37.2	45.9
30/09/2023	19:15:00	52.5	59.4	38.3	45.6
30/09/2023	19:30:00	51.2	56.4	36.9	44.7
30/09/2023	19:45:00	50.8	56.9	36.7	43.4
30/09/2023	20:00:00	50.2	60.2	39.1	43.4
30/09/2023	20:15:00	49.8	57.3	37.5	40.7
30/09/2023	20:30:00	50.1	57.8	36.4	39.9
30/09/2023	20:45:00	50.6	58.3	38.9	44.2
30/09/2023	21:00:00	51.4	60.2	37.6	44.6
30/09/2023	21:15:00	50.4	59.4	37.8	42.1
30/09/2023	21:30:00	50.3	59.2	36.5	43.5
30/09/2023	21:45:00	49.3	59.9	36.2	39.9
30/09/2023	22:00:00	50.7	60.0	35.3	39.0
30/09/2023	22:15:00	49.5	57.5	34.4	39.0
30/09/2023	22:30:00	49.5	57.4	34.0	39.7
30/09/2023	22:45:00	50.0	62.7	34.5	39.0
30/09/2023	23:00:00	49.6	62.1	31.8	37.0
30/09/2023	23:15:00	48.3	58.7	29.6	33.2
30/09/2023	23:30:00	49.4	59.9	31.0	34.8
30/09/2023	23:45:00	47.9	58.4	28.5	33.7
01/10/2023	00:00:00	47.5	58.5	27.8	31.3
01/10/2023	00:15:00	47.7	60.5	27.5	30.6
01/10/2023	00:30:00	47.1	60.8	26.0	28.6

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
01/10/2023	00:45:00	45.0	59.0	26.8	29.1
01/10/2023	01:00:00	44.8	56.4	26.0	27.9
01/10/2023	01:15:00	40.7	54.3	24.0	26.1
01/10/2023	01:30:00	46.0	59.9	25.3	27.6
01/10/2023	01:45:00	44.1	57.4	25.6	27.9
01/10/2023	02:00:00	45.1	60.1	25.4	28.0
01/10/2023	02:15:00	43.1	58.4	25.8	28.1
01/10/2023	02:30:00	43.6	60.0	23.5	26.4
01/10/2023	02:45:00	44.0	58.4	24.3	26.7
01/10/2023	03:00:00	42.7	55.5	23.9	26.2
01/10/2023	03:15:00	43.8	57.7	23.8	25.8
01/10/2023	03:30:00	43.1	56.4	24.7	26.5
01/10/2023	03:45:00	43.7	59.1	25.0	27.2
01/10/2023	04:00:00	42.1	56.9	25.2	26.7
01/10/2023	04:15:00	43.9	58.0	24.6	27.6
01/10/2023	04:30:00	46.0	57.7	29.1	32.9
01/10/2023	04:45:00	44.4	55.7	31.1	33.1
01/10/2023	05:00:00	50.4	65.0	31.7	35.2
01/10/2023	05:15:00	48.3	61.5	36.6	39.4
01/10/2023	05:30:00	47.2	57.3	37.8	40.2
01/10/2023	05:45:00	47.2	59.5	31.7	34.1
01/10/2023	06:00:00	50.7	60.8	31.1	34.7
01/10/2023	06:15:00	49.8	59.8	37.1	38.8
01/10/2023	06:30:00	50.8	67.0	38.9	41.1
01/10/2023	06:45:00	50.3	66.7	33.7	38.5
01/10/2023	07:00:00	51.5	66.5	33.4	39.1
01/10/2023	07:15:00	52.0	62.9	33.3	40.1
01/10/2023	07:30:00	50.9	61.9	32.4	39.1
01/10/2023	07:45:00	52.2	62.1	33.2	41.0
01/10/2023	08:00:00	53.0	63.2	35.4	44.1
01/10/2023	08:15:00	52.4	60.5	35.1	43.4
01/10/2023	08:30:00	53.0	61.6	37.5	48.0
01/10/2023	08:45:00	53.5	62.4	41.4	48.9
01/10/2023	09:00:00	54.3	63.7	43.3	49.7
01/10/2023	09:15:00	55.0	64.1	41.0	48.6
01/10/2023	09:30:00	55.8	61.1	41.3	52.5
01/10/2023	09:45:00	55.7	63.3	44.9	52.0
01/10/2023	10:00:00	55.5	62.4	40.0	51.3
01/10/2023	10:15:00	57.0	62.3	44.3	53.2
01/10/2023	10:30:00	57.7	65.7	43.2	54.8

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
01/10/2023	10:45:00	57.1	64.4	48.5	53.1
01/10/2023	11:00:00	55.9	62.5	44.6	53.2
01/10/2023	11:15:00	56.9	64.6	48.4	53.9
01/10/2023	11:30:00	57.6	63.6	51.5	54.8
01/10/2023	11:45:00	57.0	62.1	48.4	53.9
01/10/2023	12:00:00	56.8	62.1	46.3	53.8
01/10/2023	12:15:00	57.2	63.0	45.4	54.5
01/10/2023	12:30:00	57.3	68.0	44.2	54.4
01/10/2023	12:45:00	56.8	63.8	47.6	53.9
01/10/2023	13:00:00	56.5	61.8	47.8	53.2
01/10/2023	13:15:00	56.4	61.1	46.5	53.8
01/10/2023	13:30:00	57.0	63.2	44.8	54.0
01/10/2023	13:45:00	56.4	65.8	41.9	52.4
01/10/2023	14:00:00	56.4	68.2	47.3	52.0
01/10/2023	14:15:00	56.3	63.8	43.3	53.0
01/10/2023	14:30:00	56.4	61.7	41.8	52.4
01/10/2023	14:45:00	56.3	61.3	45.9	53.0
01/10/2023	15:00:00	56.7	67.0	45.8	53.0
01/10/2023	15:15:00	56.2	62.3	47.3	52.5
01/10/2023	15:30:00	56.3	60.6	45.7	52.4
01/10/2023	15:45:00	55.8	62.1	41.4	51.6
01/10/2023	16:00:00	56.0	61.8	40.5	51.9
01/10/2023	16:15:00	55.6	63.9	37.8	51.0
01/10/2023	16:30:00	55.9	65.6	45.9	52.3
01/10/2023	16:45:00	55.7	61.1	45.2	51.7
01/10/2023	17:00:00	55.2	61.2	39.3	50.4
01/10/2023	17:15:00	56.0	70.2	41.6	51.1
01/10/2023	17:30:00	55.0	62.7	39.9	49.9
01/10/2023	17:45:00	57.5	79.0	44.8	51.8
01/10/2023	18:00:00	54.5	60.4	41.1	49.1
01/10/2023	18:15:00	54.0	61.6	38.2	48.7
01/10/2023	18:30:00	54.2	64.4	38.8	46.7
01/10/2023	18:45:00	53.8	60.6	42.4	48.3
01/10/2023	19:00:00	56.5	86.9	41.6	47.6
01/10/2023	19:15:00	52.0	57.6	37.4	45.3
01/10/2023	19:30:00	51.5	61.6	34.3	42.3
01/10/2023	19:45:00	51.9	59.0	34.3	42.5
01/10/2023	20:00:00	50.7	58.5	33.3	39.1
01/10/2023	20:15:00	53.0	62.6	36.2	44.0
01/10/2023	20:30:00	52.1	59.2	37.3	43.2

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
01/10/2023	20:45:00	51.2	63.8	33.5	40.8
01/10/2023	21:00:00	49.6	64.8	31.6	36.7
01/10/2023	21:15:00	51.0	61.2	32.5	40.9
01/10/2023	21:30:00	49.9	58.9	27.7	39.4
01/10/2023	21:45:00	48.8	59.3	23.9	35.7
01/10/2023	22:00:00	50.1	59.3	26.1	36.8
01/10/2023	22:15:00	49.0	59.3	28.9	36.8
01/10/2023	22:30:00	48.2	58.3	24.6	34.4
01/10/2023	22:45:00	48.7	60.1	22.5	29.7
01/10/2023	23:00:00	48.8	63.3	24.4	30.3
01/10/2023	23:15:00	46.0	57.7	20.9	27.7
01/10/2023	23:30:00	47.4	60.1	20.5	23.7
01/10/2023	23:45:00	45.6	62.1	20.7	24.3
02/10/2023	00:00:00	45.1	61.0	20.7	22.0
02/10/2023	00:15:00	46.8	66.6	18.4	19.3
02/10/2023	00:30:00	42.3	58.3	18.9	19.9
02/10/2023	00:45:00	44.2	58.0	18.6	19.4
02/10/2023	01:00:00	41.5	61.3	18.8	19.7
02/10/2023	01:15:00	41.6	56.9	19.2	20.3
02/10/2023	01:30:00	44.8	56.6	19.8	24.4
02/10/2023	01:45:00	43.1	57.1	19.3	21.3
02/10/2023	02:00:00	46.0	62.3	20.0	21.5
02/10/2023	02:15:00	45.9	64.2	20.2	22.6
02/10/2023	02:30:00	46.9	62.8	20.9	24.3
02/10/2023	02:45:00	37.4	57.5	19.2	20.1
02/10/2023	03:00:00	48.2	64.3	18.7	19.8
02/10/2023	03:15:00	45.0	62.2	20.2	21.5
02/10/2023	03:30:00	45.8	64.7	18.7	20.1
02/10/2023	03:45:00	50.2	64.9	20.4	23.4
02/10/2023	04:00:00	49.3	61.3	20.4	26.7
02/10/2023	04:15:00	50.3	65.6	22.4	25.7
02/10/2023	04:30:00	51.6	65.0	25.1	32.3
02/10/2023	04:45:00	52.9	63.9	32.9	42.0
02/10/2023	05:00:00	52.5	61.6	33.3	41.7
02/10/2023	05:15:00	53.7	63.2	33.1	43.9
02/10/2023	05:30:00	53.4	62.5	40.3	46.4
02/10/2023	05:45:00	54.4	61.0	41.0	48.4
02/10/2023	06:00:00	55.5	62.1	42.3	50.4
02/10/2023	06:15:00	56.2	63.6	44.7	52.8
02/10/2023	06:30:00	58.1	73.7	48.2	53.0

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
02/10/2023	06:45:00	58.1	62.9	52.6	55.7
02/10/2023	07:00:00	57.6	61.7	52.3	55.5
02/10/2023	07:15:00	57.5	63.3	51.3	55.5
02/10/2023	07:30:00	58.4	69.5	52.2	56.7
02/10/2023	07:45:00	57.0	63.1	50.0	54.1
02/10/2023	08:00:00	57.7	65.4	52.8	55.9
02/10/2023	08:15:00	57.3	62.5	52.2	55.4
02/10/2023	08:30:00	55.9	71.5	48.6	53.2
02/10/2023	08:45:00	55.8	64.1	45.1	53.0
02/10/2023	09:00:00	55.7	63.7	45.6	52.1
02/10/2023	09:15:00	55.2	61.5	46.4	51.5
02/10/2023	09:30:00	55.6	62.6	42.7	51.0
02/10/2023	09:45:00	55.6	63.3	42.5	50.4
02/10/2023	10:00:00	60.3	82.9	44.6	52.3
02/10/2023	10:15:00	55.7	66.2	44.8	52.1
02/10/2023	10:30:00	56.2	72.0	43.5	51.3
02/10/2023	10:45:00	58.4	72.4	42.3	50.5
02/10/2023	11:00:00	54.9	62.1	43.1	49.8
02/10/2023	11:15:00	55.3	66.5	42.1	50.1
02/10/2023	11:30:00	55.8	63.3	46.1	52.0
02/10/2023	11:45:00	55.1	63.1	42.5	50.4
02/10/2023	12:00:00	55.8	62.6	44.0	52.2
02/10/2023	12:15:00	55.2	67.9	41.4	50.1
02/10/2023	12:30:00	55.2	63.3	42.8	51.5
02/10/2023	12:45:00	54.4	60.3	43.3	50.5
02/10/2023	13:00:00	55.4	67.9	44.2	50.1
02/10/2023	13:15:00	55.1	61.0	44.6	50.7
02/10/2023	13:30:00	55.5	70.4	42.0	48.6
02/10/2023	13:45:00	53.7	60.2	44.1	49.0
02/10/2023	14:00:00	55.8	63.7	44.5	51.8
02/10/2023	14:15:00	55.0	66.9	44.1	50.7
02/10/2023	14:30:00	55.1	62.3	42.2	51.3
02/10/2023	14:45:00	56.8	72.9	42.0	51.6
02/10/2023	15:00:00	55.7	60.9	44.8	52.3
02/10/2023	15:15:00	54.9	61.3	44.5	50.9
02/10/2023	15:30:00	55.8	61.2	45.5	53.2
02/10/2023	15:45:00	55.6	69.1	42.3	51.9
02/10/2023	16:00:00	55.9	64.7	48.9	53.2
02/10/2023	16:15:00	56.0	61.5	45.7	52.8
02/10/2023	16:30:00	57.0	62.6	48.1	54.1

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
02/10/2023	16:45:00	57.3	62.4	49.2	54.4
02/10/2023	17:00:00	56.9	60.7	51.6	55.0
02/10/2023	17:15:00	56.0	60.7	47.0	52.9
02/10/2023	17:30:00	56.3	63.7	48.2	53.2
02/10/2023	17:45:00	55.3	61.5	42.5	51.7
02/10/2023	18:00:00	58.0	75.0	46.0	52.9
02/10/2023	18:15:00	54.9	60.8	42.3	51.1
02/10/2023	18:30:00	54.2	60.5	44.7	50.7
02/10/2023	18:45:00	53.0	60.3	40.2	49.6
02/10/2023	19:00:00	53.3	62.8	38.4	48.7
02/10/2023	19:15:00	51.3	58.6	36.7	44.6
02/10/2023	19:30:00	51.1	59.1	37.3	40.8
02/10/2023	19:45:00	52.7	63.7	38.4	45.7
02/10/2023	20:00:00	52.4	60.6	42.4	46.2
02/10/2023	20:15:00	52.8	65.9	39.5	44.2
02/10/2023	20:30:00	51.8	60.0	41.0	45.5
02/10/2023	20:45:00	51.0	60.4	37.5	43.1
02/10/2023	21:00:00	51.2	61.2	38.9	42.4
02/10/2023	21:15:00	50.2	58.4	38.3	42.9
02/10/2023	21:30:00	50.1	58.2	36.6	41.6
02/10/2023	21:45:00	49.1	58.7	34.4	40.6
02/10/2023	22:00:00	50.4	58.8	38.2	43.3
02/10/2023	22:15:00	48.3	58.7	39.3	40.9
02/10/2023	22:30:00	47.3	57.6	34.9	38.4
02/10/2023	22:45:00	46.6	60.1	31.9	35.4
02/10/2023	23:00:00	44.8	55.9	29.2	32.3
02/10/2023	23:15:00	47.3	61.6	29.7	37.6
02/10/2023	23:30:00	44.4	59.3	36.4	37.9
02/10/2023	23:45:00	44.5	55.9	38.8	40.1
03/10/2023	00:00:00	44.6	58.2	39.2	40.1
03/10/2023	00:15:00	44.2	57.7	36.4	37.8
03/10/2023	00:30:00	45.0	57.9	38.2	40.0
03/10/2023	00:45:00	44.5	59.8	31.9	33.5
03/10/2023	01:00:00	41.8	56.0	28.0	30.2
03/10/2023	01:15:00	42.8	59.7	27.5	29.5
03/10/2023	01:30:00	47.5	63.8	37.6	38.7
03/10/2023	01:45:00	44.5	56.0	31.8	34.6
03/10/2023	02:00:00	40.0	58.1	29.0	30.5
03/10/2023	02:15:00	45.2	59.2	29.1	31.6
03/10/2023	02:30:00	43.6	56.9	26.9	29.4

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
03/10/2023	02:45:00	40.3	55.9	25.0	27.1
03/10/2023	03:00:00	43.7	57.9	25.1	29.5
03/10/2023	03:15:00	40.4	56.7	24.0	25.2
03/10/2023	03:30:00	42.3	56.9	24.2	26.5
03/10/2023	03:45:00	46.1	60.0	24.2	26.4
03/10/2023	04:00:00	47.4	62.6	24.8	27.0
03/10/2023	04:15:00	48.1	61.9	25.1	29.6
03/10/2023	04:30:00	50.3	61.2	29.0	35.3
03/10/2023	04:45:00	50.5	61.4	34.8	38.8
03/10/2023	05:00:00	52.2	61.3	38.7	45.4
03/10/2023	05:15:00	53.7	63.2	35.0	42.5
03/10/2023	05:30:00	54.9	63.0	42.3	46.2
03/10/2023	05:45:00	56.9	66.4	36.0	46.3
03/10/2023	06:00:00	56.2	63.0	45.9	50.3
03/10/2023	06:15:00	57.3	63.1	49.3	53.3
03/10/2023	06:30:00	57.6	64.1	45.6	52.6
03/10/2023	06:45:00	59.0	65.0	51.3	54.8
03/10/2023	07:00:00	58.9	63.1	51.2	55.1
03/10/2023	07:15:00	59.5	64.1	54.6	56.3
03/10/2023	07:30:00	58.2	64.4	52.6	55.0
03/10/2023	07:45:00	59.2	72.9	53.1	56.5
03/10/2023	08:00:00	58.8	74.2	52.9	55.6
03/10/2023	08:15:00	59.0	64.8	53.9	56.2
03/10/2023	08:30:00	59.1	64.7	52.7	55.7
03/10/2023	08:45:00	59.2	63.3	50.9	56.0
03/10/2023	09:00:00	58.3	68.6	49.9	54.7
03/10/2023	09:15:00	57.8	66.4	52.2	54.4
03/10/2023	09:30:00	58.6	69.9	51.1	55.0
03/10/2023	09:45:00	57.7	62.4	48.4	53.7
03/10/2023	10:00:00	58.0	65.0	53.1	54.7
03/10/2023	10:15:00	58.0	63.2	50.4	53.6
03/10/2023	10:30:00	57.3	63.4	50.5	53.8
03/10/2023	10:45:00	56.9	63.9	47.2	52.6
03/10/2023	11:00:00	57.9	66.7	50.8	54.3
03/10/2023	11:15:00	57.3	65.7	42.5	51.1
03/10/2023	11:30:00	58.6	65.0	48.4	55.0
03/10/2023	11:45:00	58.8	68.2	50.3	54.3
03/10/2023	12:00:00	60.1	79.9	52.9	56.4
03/10/2023	12:15:00	58.9	65.5	47.7	54.6
03/10/2023	12:30:00	63.9	84.1	50.1	56.8

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
03/10/2023	12:45:00	59.6	75.5	48.6	55.2
03/10/2023	13:00:00	62.9	94.2	50.2	56.3
03/10/2023	13:15:00	61.0	77.3	50.2	55.7
03/10/2023	13:30:00	60.3	75.4	49.5	55.4
03/10/2023	13:45:00	58.7	74.5	49.6	53.8
03/10/2023	14:00:00	59.4	71.5	45.2	54.1
03/10/2023	14:15:00	59.1	74.8	46.6	53.0
03/10/2023	14:30:00	64.1	82.4	51.2	56.6
03/10/2023	14:45:00	60.0	73.1	48.9	55.8
03/10/2023	15:00:00	60.3	68.6	50.5	56.0
03/10/2023	15:15:00	60.3	80.5	49.8	56.1
03/10/2023	15:30:00	58.6	69.0	49.6	54.8
03/10/2023	15:45:00	60.7	81.8	49.1	56.7
03/10/2023	16:00:00	60.1	70.6	48.0	56.0
03/10/2023	16:15:00	61.2	82.7	54.3	57.8
03/10/2023	16:30:00	60.6	68.7	54.1	57.7
03/10/2023	16:45:00	60.2	72.3	53.7	56.9
03/10/2023	17:00:00	60.6	68.8	53.9	57.8
03/10/2023	17:15:00	60.6	66.7	55.0	58.2
03/10/2023	17:30:00	60.2	69.5	54.2	57.1
03/10/2023	17:45:00	60.7	66.6	55.0	58.1
03/10/2023	18:00:00	62.4	94.2	48.0	55.2
03/10/2023	18:15:00	61.5	93.3	50.4	54.9
03/10/2023	18:30:00	58.4	74.1	43.1	53.6
03/10/2023	18:45:00	57.2	63.2	42.5	52.1
03/10/2023	19:00:00	55.9	61.4	44.6	51.4
03/10/2023	19:15:00	55.6	62.4	42.2	48.5
03/10/2023	19:30:00	55.3	63.1	42.3	50.6
03/10/2023	19:45:00	55.3	64.2	42.3	49.3
03/10/2023	20:00:00	55.0	66.9	39.2	47.1
03/10/2023	20:15:00	54.6	63.1	41.0	47.6
03/10/2023	20:30:00	53.7	63.9	37.7	45.1
03/10/2023	20:45:00	54.0	63.3	37.7	45.1
03/10/2023	21:00:00	52.8	62.4	37.5	43.2
03/10/2023	21:15:00	52.5	62.1	39.4	44.0
03/10/2023	21:30:00	52.0	60.7	32.4	40.3
03/10/2023	21:45:00	50.8	61.1	33.5	39.8
03/10/2023	22:00:00	52.3	63.6	31.6	38.4
03/10/2023	22:15:00	49.9	61.5	29.6	34.5
03/10/2023	22:30:00	51.7	62.2	28.4	35.9

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
03/10/2023	22:45:00	49.9	60.1	28.1	33.4
03/10/2023	23:00:00	49.7	65.5	32.1	37.3
03/10/2023	23:15:00	48.8	63.0	26.0	32.3
03/10/2023	23:30:00	47.5	65.5	25.3	28.9
03/10/2023	23:45:00	44.4	59.1	27.8	30.3
04/10/2023	00:00:00	48.8	65.5	29.1	31.9
04/10/2023	00:15:00	51.0	65.1	28.7	34.3
04/10/2023	00:30:00	47.5	63.8	25.5	27.5
04/10/2023	00:45:00	44.6	61.4	23.5	26.9
04/10/2023	01:00:00	39.6	59.4	24.0	25.3
04/10/2023	01:15:00	42.4	58.5	23.9	26.5
04/10/2023	01:30:00	46.0	62.0	23.8	26.4
04/10/2023	01:45:00	46.5	60.1	26.6	30.9
04/10/2023	02:00:00	48.1	62.0	27.5	29.4
04/10/2023	02:15:00	44.1	60.6	24.4	27.0
04/10/2023	02:30:00	40.4	55.1	25.6	27.9
04/10/2023	02:45:00	43.7	62.9	27.3	29.2
04/10/2023	03:00:00	47.8	63.3	29.2	31.2
04/10/2023	03:15:00	49.2	63.0	27.9	32.1
04/10/2023	03:30:00	44.5	59.4	25.0	27.4
04/10/2023	03:45:00	45.3	58.9	24.0	27.5
04/10/2023	04:00:00	49.2	61.9	28.4	31.8
04/10/2023	04:15:00	47.8	59.4	28.9	31.7
04/10/2023	04:30:00	47.0	59.4	25.7	29.3
04/10/2023	04:45:00	51.1	62.0	30.1	38.9
04/10/2023	05:00:00	52.8	63.2	35.4	41.9
04/10/2023	05:15:00	53.6	63.7	40.0	43.7
04/10/2023	05:30:00	54.5	63.8	39.0	45.1
04/10/2023	05:45:00	55.2	62.8	41.9	47.5
04/10/2023	06:00:00	54.9	61.4	38.5	48.2
04/10/2023	06:15:00	56.4	65.2	42.8	50.2
04/10/2023	06:30:00	58.9	73.3	44.7	51.8
04/10/2023	06:45:00	59.4	74.8	47.9	55.2
04/10/2023	07:00:00	58.5	72.3	48.5	55.8
04/10/2023	07:15:00	60.3	74.4	53.6	57.0
04/10/2023	07:30:00	65.1	98.3	53.4	57.2
04/10/2023	07:45:00	59.1	78.1	53.7	57.0
04/10/2023	08:00:00	64.4	97.6	53.3	55.7
04/10/2023	08:15:00	58.6	77.2	50.8	55.0
04/10/2023	08:30:00	58.2	69.7	51.9	54.7

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
04/10/2023	08:45:00	57.5	63.3	48.1	53.7
04/10/2023	09:00:00	58.5	66.6	51.4	54.9
04/10/2023	09:15:00	58.8	70.1	52.0	55.0
04/10/2023	09:30:00	57.7	78.7	49.1	54.1
04/10/2023	09:45:00	57.5	64.2	46.8	54.8
04/10/2023	10:00:00	57.9	64.0	50.1	54.4
04/10/2023	10:15:00	58.0	66.8	50.3	53.8
04/10/2023	10:30:00	58.0	65.9	48.2	54.7
04/10/2023	10:45:00	56.9	69.5	45.2	52.9
04/10/2023	11:00:00	56.8	65.3	43.9	52.5
04/10/2023	11:15:00	58.2	69.0	47.8	53.8
04/10/2023	11:30:00	58.7	83.4	48.7	53.5
04/10/2023	11:45:00	58.3	82.0	49.4	54.4
04/10/2023	12:00:00	57.3	70.2	49.2	54.0
04/10/2023	12:15:00	58.2	69.1	49.4	54.2
04/10/2023	12:30:00	58.8	69.1	49.0	55.2
04/10/2023	12:45:00	58.5	69.4	51.7	55.0
04/10/2023	13:00:00	58.7	67.3	49.9	55.6
04/10/2023	13:15:00	58.2	69.7	49.2	55.0
04/10/2023	13:30:00	58.4	65.2	48.8	55.0
04/10/2023	13:45:00	58.7	81.0	49.0	54.5
04/10/2023	14:00:00	58.6	70.2	49.7	54.7
04/10/2023	14:15:00	59.8	75.2	49.2	55.0
04/10/2023	14:30:00	58.5	70.2	49.0	54.4
04/10/2023	14:45:00	58.3	74.8	49.6	54.5
04/10/2023	15:00:00	58.7	65.6	51.0	55.5
04/10/2023	15:15:00	59.0	69.9	50.8	54.2
04/10/2023	15:30:00	58.2	67.3	49.3	53.5
04/10/2023	15:45:00	57.9	69.2	47.6	54.3
04/10/2023	16:00:00	58.8	65.8	49.8	55.7
04/10/2023	16:15:00	58.5	64.4	49.4	55.7
04/10/2023	16:30:00	58.8	68.1	52.3	56.5
04/10/2023	16:45:00	59.0	72.7	51.3	56.6
04/10/2023	17:00:00	59.7	69.4	54.6	57.5
04/10/2023	17:15:00	58.6	65.2	52.9	56.5
04/10/2023	17:30:00	58.9	66.1	53.4	56.5
04/10/2023	17:45:00	58.7	74.4	52.6	55.6
04/10/2023	18:00:00	57.9	72.5	49.1	54.9
04/10/2023	18:15:00	58.3	74.4	47.1	53.2
04/10/2023	18:30:00	56.2	63.3	45.4	52.8

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
04/10/2023	18:45:00	56.2	62.4	44.8	51.0
04/10/2023	19:00:00	56.4	63.3	46.4	53.3
04/10/2023	19:15:00	55.5	73.3	40.1	47.3
04/10/2023	19:30:00	55.3	62.8	40.9	45.9
04/10/2023	19:45:00	54.8	62.3	38.5	46.9
04/10/2023	20:00:00	53.9	61.8	40.2	46.1
04/10/2023	20:15:00	53.2	60.2	41.5	47.2
04/10/2023	20:30:00	52.9	60.3	40.9	45.9
04/10/2023	20:45:00	52.5	62.1	37.1	44.0
04/10/2023	21:00:00	53.2	61.9	37.6	45.6
04/10/2023	21:15:00	51.9	61.5	33.4	39.9
04/10/2023	21:30:00	51.8	62.5	37.2	42.6
04/10/2023	21:45:00	51.9	62.4	37.0	42.4
04/10/2023	22:00:00	52.1	61.7	37.8	42.9
04/10/2023	22:15:00	49.8	58.9	32.0	38.5
04/10/2023	22:30:00	51.5	62.4	33.9	36.9
04/10/2023	22:45:00	50.8	62.7	36.6	39.7
04/10/2023	23:00:00	50.3	62.1	34.8	38.6
04/10/2023	23:15:00	49.2	61.3	31.3	35.8
04/10/2023	23:30:00	50.1	64.9	31.7	36.0
04/10/2023	23:45:00	47.2	60.0	28.9	33.8
05/10/2023	00:00:00	45.4	59.9	30.0	32.4
05/10/2023	00:15:00	46.6	64.2	31.6	34.0
05/10/2023	00:30:00	47.8	62.8	31.8	34.7
05/10/2023	00:45:00	47.7	64.9	32.5	34.8
05/10/2023	01:00:00	44.9	59.8	32.1	35.2
05/10/2023	01:15:00	43.3	62.9	29.6	32.9
05/10/2023	01:30:00	47.2	64.5	27.5	29.5
05/10/2023	01:45:00	48.8	67.9	27.4	31.5
05/10/2023	02:00:00	42.9	59.3	27.2	29.1
05/10/2023	02:15:00	43.4	59.4	26.1	29.0
05/10/2023	02:30:00	44.6	60.9	25.7	28.7
05/10/2023	02:45:00	45.0	63.0	26.6	28.3
05/10/2023	03:00:00	46.9	73.3	25.9	27.5
05/10/2023	03:15:00	46.9	60.2	28.1	30.2
05/10/2023	03:30:00	44.2	59.9	27.1	29.2
05/10/2023	03:45:00	42.8	55.4	28.9	31.5
05/10/2023	04:00:00	43.9	59.1	28.4	30.9
05/10/2023	04:15:00	48.0	61.4	28.2	30.4
05/10/2023	04:30:00	50.9	71.8	30.1	35.4

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
05/10/2023	04:45:00	49.1	59.9	31.4	37.3
05/10/2023	05:00:00	52.7	62.2	35.0	41.4
05/10/2023	05:15:00	52.9	63.4	31.5	39.9
05/10/2023	05:30:00	52.5	61.5	38.7	42.9
05/10/2023	05:45:00	54.6	62.6	35.8	47.3
05/10/2023	06:00:00	54.7	75.0	37.7	46.0
05/10/2023	06:15:00	55.3	62.3	41.9	49.3
05/10/2023	06:30:00	56.0	63.1	42.7	52.0
05/10/2023	06:45:00	58.0	67.9	49.0	54.8
05/10/2023	07:00:00	57.8	61.3	50.9	55.3
05/10/2023	07:15:00	58.2	63.7	52.7	56.3
05/10/2023	07:30:00	56.5	61.1	48.5	54.0
05/10/2023	07:45:00	57.5	69.9	51.7	54.9
05/10/2023	08:00:00	57.7	73.1	49.6	55.0
05/10/2023	08:15:00	57.3	63.5	50.4	54.9
05/10/2023	08:30:00	57.0	63.6	47.5	53.9
05/10/2023	08:45:00	56.5	71.0	46.8	53.6
05/10/2023	09:00:00	56.4	67.0	48.6	53.1
05/10/2023	09:15:00	56.8	66.9	46.1	53.3
05/10/2023	09:30:00	57.0	65.3	48.6	53.6
05/10/2023	09:45:00	57.1	64.3	45.9	52.8
05/10/2023	10:00:00	56.3	66.7	45.7	52.2
05/10/2023	10:15:00	57.9	78.1	47.0	53.1
05/10/2023	10:30:00	58.6	80.0	47.6	53.8
05/10/2023	10:45:00	56.8	71.3	46.4	53.0
05/10/2023	11:00:00	57.1	69.0	48.0	54.1
05/10/2023	11:15:00	57.0	65.2	46.7	53.0
05/10/2023	11:30:00	58.4	70.6	49.2	54.6
05/10/2023	11:45:00	58.0	70.7	47.2	53.4
05/10/2023	12:00:00	57.0	67.8	49.9	53.9
05/10/2023	12:15:00	56.6	64.9	47.4	53.6
05/10/2023	12:30:00	57.0	64.6	48.0	52.6
05/10/2023	12:45:00	58.5	80.3	49.7	54.6
05/10/2023	13:00:00	57.4	67.1	47.6	53.1
05/10/2023	13:15:00	57.4	69.9	46.7	53.7
05/10/2023	13:30:00	56.5	68.6	44.8	52.7
05/10/2023	13:45:00	57.5	70.8	47.5	53.7
05/10/2023	14:00:00	57.7	67.2	50.2	54.2
05/10/2023	14:15:00	57.5	67.9	49.9	54.4
05/10/2023	14:30:00	58.1	67.8	47.9	55.2

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
05/10/2023	14:45:00	57.2	71.5	44.7	51.5
05/10/2023	15:00:00	58.5	68.6	48.9	55.6
05/10/2023	15:15:00	58.2	65.0	48.7	55.4
05/10/2023	15:30:00	58.4	80.1	51.8	55.9
05/10/2023	15:45:00	58.1	69.0	49.7	55.6
05/10/2023	16:00:00	57.0	65.3	45.9	53.4
05/10/2023	16:15:00	57.4	64.6	49.6	55.0
05/10/2023	16:30:00	58.0	62.6	52.1	55.6
05/10/2023	16:45:00	58.2	63.0	50.8	55.9
05/10/2023	17:00:00	58.0	61.8	52.9	56.4
05/10/2023	17:15:00	58.3	62.4	52.4	56.2
05/10/2023	17:30:00	57.8	62.2	48.9	54.8
05/10/2023	17:45:00	57.7	62.0	51.2	55.1
05/10/2023	18:00:00	57.3	63.2	48.2	54.5
05/10/2023	18:15:00	56.1	61.6	47.4	53.0
05/10/2023	18:30:00	55.9	61.4	46.8	54.1
05/10/2023	18:45:00	55.4	63.3	42.4	52.8
05/10/2023	19:00:00	55.5	62.2	44.3	52.6
05/10/2023	19:15:00	55.3	61.2	41.9	49.8
05/10/2023	19:30:00	55.8	71.1	41.2	50.3
05/10/2023	19:45:00	53.6	62.9	39.8	45.4
05/10/2023	20:00:00	53.4	61.8	38.9	46.5
05/10/2023	20:15:00	53.4	60.1	37.7	45.6
05/10/2023	20:30:00	53.4	61.0	36.2	44.4
05/10/2023	20:45:00	53.6	62.1	38.0	47.0
05/10/2023	21:00:00	53.1	61.9	37.7	45.5
05/10/2023	21:15:00	53.0	60.3	39.6	45.8
05/10/2023	21:30:00	52.9	61.5	33.7	40.0
05/10/2023	21:45:00	52.0	62.9	33.5	38.0
05/10/2023	22:00:00	52.1	60.5	36.8	40.5
05/10/2023	22:15:00	52.8	62.3	38.9	43.6
05/10/2023	22:30:00	53.5	70.8	38.6	42.4
05/10/2023	22:45:00	49.6	60.1	35.9	38.7
05/10/2023	23:00:00	51.6	68.5	38.8	41.3
05/10/2023	23:15:00	50.8	62.9	34.9	38.4
05/10/2023	23:30:00	46.2	59.7	28.1	32.3
05/10/2023	23:45:00	47.8	60.3	27.0	30.4
06/10/2023	00:00:00	47.7	62.8	26.9	29.4
06/10/2023	00:15:00	46.0	58.3	27.6	30.6
06/10/2023	00:30:00	48.3	63.8	26.4	29.3

Date	Time	Ambient LA_{eq}	Maximum LAF_{max}	Minimum LAF_{min}	Background dB LA_{90}
06/10/2023	00:45:00	46.6	61.1	27.9	30.5
06/10/2023	01:00:00	46.2	59.6	27.0	30.1
06/10/2023	01:15:00	43.8	59.9	25.8	28.0
06/10/2023	01:30:00	45.3	59.7	25.2	28.4
06/10/2023	01:45:00	40.6	56.3	26.6	29.0
06/10/2023	02:00:00	44.8	58.8	28.3	30.6
06/10/2023	02:15:00	45.8	62.7	28.6	30.4
06/10/2023	02:30:00	45.3	58.3	28.9	30.9
06/10/2023	02:45:00	45.6	62.4	26.9	28.9
06/10/2023	03:00:00	46.4	65.0	26.4	28.3
06/10/2023	03:15:00	47.2	62.1	30.7	32.6
06/10/2023	03:30:00	49.7	63.2	35.2	37.7
06/10/2023	03:45:00	48.3	66.8	29.5	34.1
06/10/2023	04:00:00	46.6	59.8	25.8	30.4
06/10/2023	04:15:00	47.2	61.3	26.0	29.9
06/10/2023	04:30:00	49.9	61.9	26.0	32.0
06/10/2023	04:45:00	52.2	63.8	32.6	36.7
06/10/2023	05:00:00	53.7	64.2	36.6	42.8
06/10/2023	05:15:00	53.9	64.5	35.7	41.4
06/10/2023	05:30:00	53.2	62.4	34.7	41.0
06/10/2023	05:45:00	55.3	63.2	36.9	45.0
06/10/2023	06:00:00	56.7	66.5	40.6	46.6
06/10/2023	06:15:00	57.1	64.9	41.6	50.4
06/10/2023	06:30:00	57.6	65.3	42.0	50.3
06/10/2023	06:45:00	59.1	72.6	50.2	54.8
06/10/2023	07:00:00	59.9	67.5	45.3	56.0
06/10/2023	07:15:00	60.3	73.7	53.5	57.7
06/10/2023	07:30:00	59.6	70.8	51.3	56.5
06/10/2023	07:45:00	59.6	64.9	52.4	55.5
06/10/2023	08:00:00	60.6	70.2	50.4	57.7
06/10/2023	08:15:00	60.4	66.8	53.4	57.7

APPENDIX 2 – SOUND LEVEL CALCULATIONS

Source positions, dimensions or distances between co-ordinates

The table below shows the latitude and longitude co-ordinates used for the different sources. Large sources such as buildings have their four corners defined by different co-ordinates. Smaller sources such as machinery, loaders, pumps etc where they can be considered as a point source from the source measurement distance used are defined as a point source with a single set of co-ordinates.

The approximate dimensions of larger sources are also given where those dimensions are used in calculation of distances where line source or point source decay behaviour can be observed. The assumed heights of sources are also shown. The value of these heights is of importance if barrier calculations are being undertaken using precisely calculated 'path differences.' If barrier effects are being calculated using the approximations given in BS 5228 or by conservative nominal values for Maekawa calculations (as is often the case), then these values for height do not make a difference to the predicted sound levels, but are included as a guide for information, other than very minor effects on the calculation of source to receptor distance. Heights of complex machinery or overall processes are given as typical / average values that tend towards reasonable worst case scenario.

Some items (for example areas where finished products are loaded into HGVs) take place within an area defined by the given co-ordinates, but the actual source size is considerably smaller than the area within which it may operate. For these items, the calculation procedure assumes point source behaviour (as is correct) from the closest part of each area to each of the receptor points. This gives a realistic, but reasonable worst case method of sound level prediction.

All values are in metres.

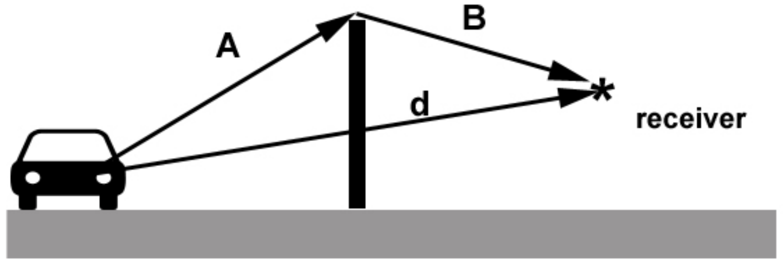
Item name	Point 1 Latitude	Longitude	Point 2 Latitude	Longitude	Point 3 Latitude	Longitude	Point 4 Latitude	Longitude	Dimension Point 1 to 2	Dimension Point 1 to 3	Dimension Point 3 to 4	Dimension Point 2 to 4	Height of unit or Building Walls
All Sources, Average 60m, W/NW	53.926908	-0.807458	53.927609	-0.806007	53.926322	-0.806699	53.926874	-0.805144	123	82	119	100	4
All Sources, Average 150m, W/NW	53.926908	-0.807458	53.927609	-0.806007	53.926322	-0.806699	53.926874	-0.805144	123	82	119	100	4
New Waste Shed	53.927157	-0.808726	53.927525	-0.807678	53.926777	-0.808245	53.927108	-0.807188	80	53	80	56	8.5
Rubble Crushing Including Loading Bucket	53.927279	-0.806452											3
Wheeled Loader (at Crusher)	53.927214	-0.806609											3
Deposit of Material on Stockpile	53.927592	-0.80597											15
Wheeled Loader (at Soil Washing)	53.927335	-0.805833											3
Long Arm Loader into Hopper	53.927162	-0.805479											10
First Screen	53.927095	-0.80575											5
Vibrating Screen Area	53.927049	-0.805819											5
Large Aggmax 160 Screen	53.926971	-0.805989											5
Evowash	53.927133	-0.805929											5
Thickener Mixing System	53.926884	-0.805883											5
Tank Water Sound	53.92696	-0.805759											5
Soil Biscuit Forming and Dropping	53.926719	-0.806466	53.926833	-0.806177	53.92667	-0.806393	53.926773	-0.806122	22	7	21	8	5
Silo Pump	53.926749	-0.806113											1
Loading Washed Soil to Tractor	53.926649	-0.806425											3
Finished Product Loading to HGV	53.926854	-0.807038	53.926935	-0.806723	53.926565	-0.806858	53.926698	-0.806489					3
HGVs on site	53.926942	-0.807444	53.92781	-0.806355	53.926479	-0.806422	53.926802	-0.805453					1.5
All Sources, Average 90m, NE	53.926908	-0.807458	53.927609	-0.806007	53.926322	-0.806699	53.926874	-0.805144	123	82	119	100	4

Source Sound Levels, dBA or dB Linear Octave Spectra

	Overall	Measurement		Third Octave Leq (or L10 for music)																										
Item name	**dB $LA_{eq,T}$**	**Distance (m)**		**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**	**200**	**250**	**315**	**400**	**500**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**
All Sources, Average 60m, W/NW	66.7	60		80.4	71.6	76.9	72.8	64.9	65.0	62.1	59.9	59.1	59.2	56.7	55.7	57.0	56.3	57.8	56.9	55.7	57.1	55.9	55.4	54.6	54.0	53.3	51.2	49.1	46.8	43.3
All Sources, Average 150m, W/NW	56.6	150		75.2	68.7	73.7	65.5	59.3	57.5	54.7	49.2	45.8	46.3	46.8	49.4	51.1	48.0	45.7	47.3	46.9	47.8	45.1	44.2	43.2	41.5	39.3	36.3	32.5	27.8	20.7
New Waste Shed	11.9	1			81.6			80.3			83.5			79.7			75.6			77.7			74.7			72.2			58.7	
Rubble Crushing Including Loading Bucket	80.8	10		78.4	74.2	76.6	74.4	72.6	86.5	88.9	79.9	82.1	86.6	71.8	73.0	72.6	73.2	71.0	68.0	68.6	66.4	65.3	63.8	62.2	61.2	59.2	57.0	54.9	52.4	48.2
Wheeled Loader (at Crusher)	74.4	10		84.6	79.3	87.7	76.3	71.7	72.7	70.8	71.2	70.5	66.3	64.2	64.8	66.4	65.9	65.2	65.6	64.6	64.0	63.4	63.9	61.1	59.7	57.7	55.2	52.9	50.3	47.8
Deposit of Material on Stockpile	73.5	10		77.3	79.8	78.8	74.6	68.7	66.9	67.6	71.2	71.5	68.9	64.6	62.6	62.0	65.1	63.5	63.9	64.4	62.5	62.6	60.5	62.1	61.0	59.0	55.5	51.8	48.6	47.0
Wheeled Loader (at Soil Washing)	74.4	10		84.6	79.3	87.7	76.3	71.7	72.7	70.8	71.2	70.5	66.3	64.2	64.8	66.4	65.9	65.2	65.6	64.6	64.0	63.4	63.9	61.1	59.7	57.7	55.2	52.9	50.3	47.8
Long Arm Loader into Hopper	69.5	10		87.6	76.1	84.1	79.0	73.6	70.7	68.0	65.8	63.2	65.9	63.8	63.4	62.2	59.4	59.7	58.8	58.6	58.3	57.6	57.4	57.4	56.8	54.9	52.4	49.9	47.2	43.0
First Screen	78.8	10		85.2	78.9	86.7	82.3	76.3	79.3	72.2	70.1	67.5	67.0	68.7	69.6	67.4	66.3	68.4	71.0	65.5	66.3	67.0	66.9	67.0	68.1	68.0	64.3	63.4	62.6	58.7
Vibrating Screen Area	76.7	10		96.1	80.4	86.9	79.5	73.3	77.0	72.3	71.4	70.5	70.3	68.3	68.3	65.1	64.3	65.5	65.1	66.3	65.8	64.8	65.9	65.7	65.6	64.0	62.8	60.7	58.8	56.1
Large Aggmax 160 Screen	79.9	8		98.4	85.8	93.8	83.0	81.1	82.3	75.1	74.8	73.1	73.2	71.3	71.8	68.1	69.0	68.9	67.9	67.6	68.4	67.9	69.8	68.8	68.3	67.9	66.2	63.9	61.4	58.3
Evowash	75.7	10		87.5	80.4	87.7	91.5	80.0	82.1	76.4	73.7	71.6	70.6	69.4	68.5	67.2	65.3	65.9	64.3	63.8	63.1	62.9	63.5	64.0	63.8	61.1	59.3	57.9	56.2	55.5
Thickener Mixing System	78.6	4		84.6	74.6	82.0	75.0	71.2	72.1	69.7	70.7	68.3	67.8	68.4	75.0	67.2	63.4	67.5	63.7	66.0	72.1	70.4	67.1	63.7	64.8	63.1	60.3	57.6	54.2	49.5
Tank Water Sound	74.8	2		93.4	77.1	79.6	79.9	72.7	76.5	68.3	66.9	66.1	67.5	65.2	66.1	63.7	62.9	63.9	63.3	64.5	64.4	63.5	63.7	63.3	63.1	62.5	60.8	59.5	58.0	55.7
Soil Biscuit Forming and Dropping	70.2	10		76.3	67.2	75.5	69.5	63.6	66.6	66.1	62.5	64.3	66.7	61.3	60.8	56.7	55.5	57.8	57.5	58.6	61.6	60.1	59.4	61.0	58.0	55.5	52.5	51.7	49.0	44.7
Silo Pump	81.5	2		80.6	72.1	79.3	67.8	65.6	65.7	64.6	64.1	68.7	68.2	68.1	71.2	77.2	75.8	72.8	71.5	70.3	73.7	69.7	68.4	67.6	64.1	64.2	62.0	60.8	59.7	55.6
Loading Washed Soil to Tractor	72.8	10		76.4	69.2	75.2	71.8	68.9	66.6	67.2	67.2	64.2	64.4	64.7	62.3	62.7	62.1	62.1	61.2	64.3	64.6	64.3	60.8	59.5	56.1	55.8	56.7	53.4	52.1	48.0
Finished Product Loading to HGV	76.4	10		82.9	72.3	77.6	73.5	70.9	74.1	73.9	71.5	72.2	71.9	66.3	64.5	63.3	65.0	64.2	64.6	64.6	64.1	63.9	64.4	64.8	66.7	66.6	63.8	60.9	58.4	55.4
HGVs on site	32.5	100																												
All Sources, Average 90m, NE	60.7	90		75.7	69.3	77.3	72.6	62.6	63.6	60.8	57.3	53.8	52.5	50.2	51.1	50.5	51.3	51.7	50.0	51.7	51.0	50.2	49.1	47.4	46.8	45.4	42.9	40.6	37.8	32.6

Barrier Effect

Maekawa explains the attenuation caused by barrier effect at each frequency by considering the path difference:



$$\text{Attenuation} = 20 \log \left\{ \frac{\sqrt{2\pi N}}{\tanh(\sqrt{2\pi N})} \right\} + 5$$

where $N = \frac{2}{\lambda}(A+B-d)$

This equation is used in the calculations. It can be noted that a commonly used and more simple formula is that Attenuation = 10 Log (3 + 20N)
The 'path difference' used in descriptions is equal to (A+B-d)

The limit of barrier effect at higher frequencies is capped at 20 dB in any of our calculations, according to our on site experience of typical limitations of barrier effect. For barrier effect, section D.3.2.2.1 of BS 5228 states that *'In the absence of spectral data, as a working approximation, if there is a barrier or other topographic feature between the source and the receiving position, assume an approximate attenuation of 5 dB when the top of the plant is just visible to the receiver over the noise barrier, and of 10 dB when the noise screen completely hides the sources* *from the receiver. High topographical features and specifically designed and positioned noise barriers could provide greater attenuation. Subtract the attenuation from the value of LAeq calculated at the point of interest.'*

The 5 and 10 dBA reduction rules of thumb described above have been considered in the calculation process. Where source frequency spectra are available, it is preferable to undertake calculations using these frequency spectra. In order to apply barrier effect, the more accurate method of Maekawa has been used. This method requires a value for the 'path difference' described using the diagram overleaf. There are circumstances where this path difference can be calculated, but full details of barrier location, precise heights, topographical data and quantities associated with source, receiver and barrier are required to do this accurately. Any inaccuracies can lead to uncertainty in the 'path difference' quantity and therefore in the determination of barrier effect.

The method adopted in the absence of all this data is to assume a nominal path difference for all instances where barrier effect applies. This is done on a conservative basis so that the barrier effect used will be either accurate or conservative. If there are any uncertainties that underestimate barrier effect then the on site reality will be better than the theory.

The nominal path differences used are described below, with barrier effect values shown for third octaves and octaves:

- 0.001m (ie, glancing barrier effect path difference) for sources where the top or parts of the source may be just visible to the receiver. The barrier effect predicted using this path difference in Maekawa's method equates exactly to the 5 dBA approximation given in BS 5228 for precisely this scenario.

- 0.1m for sources where a noise barrier entirely breaks line of sight from all parts of the source to all parts of the receiver. This is generally conservative and it may be of interest to note that this equates to a standardised level difference D_w of 12 dB, or 10 dB when applied to the 'Ctr' term often used to describe road traffic source spectra. Use of this method provides a better degree of accuracy and reduces the likelihood of low frequency barrier effect being over-estimated, again providing the reasonable worst case scenario.

Nominal Path Difference / Freq (Hz)	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**	**200**	**250**	**315**	**400**	**500**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**
0.1m (Complete Shielding)	5.27	5.34	5.43	5.53	5.66	5.82	6.01	6.24	6.55	6.88	7.27	7.74	8.30	8.90	9.59	10.37	11.16	12.00	12.97	13.89	14.82	15.81	16.83	17.80	18.80	19.84	20.00
0.001m (Partial Shielding)	5.00	5.00	5.00	5.01	5.01	5.01	5.01	5.01	5.02	5.02	5.03	5.03	5.04	5.05	5.07	5.09	5.11	5.14	5.17	5.22	5.27	5.34	5.43	5.53	5.66	5.82	6.01

Nominal Path Difference / Freq (Hz)	**31.5**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
0.1m (Complete Shielding)	5.34	5.66	6.24	7.27	8.90	11.16	13.89	16.83	19.84
0.001m (Partial Shielding)	5.00	5.01	5.01	5.03	5.05	5.11	5.22	5.43	5.82

Distance Decay

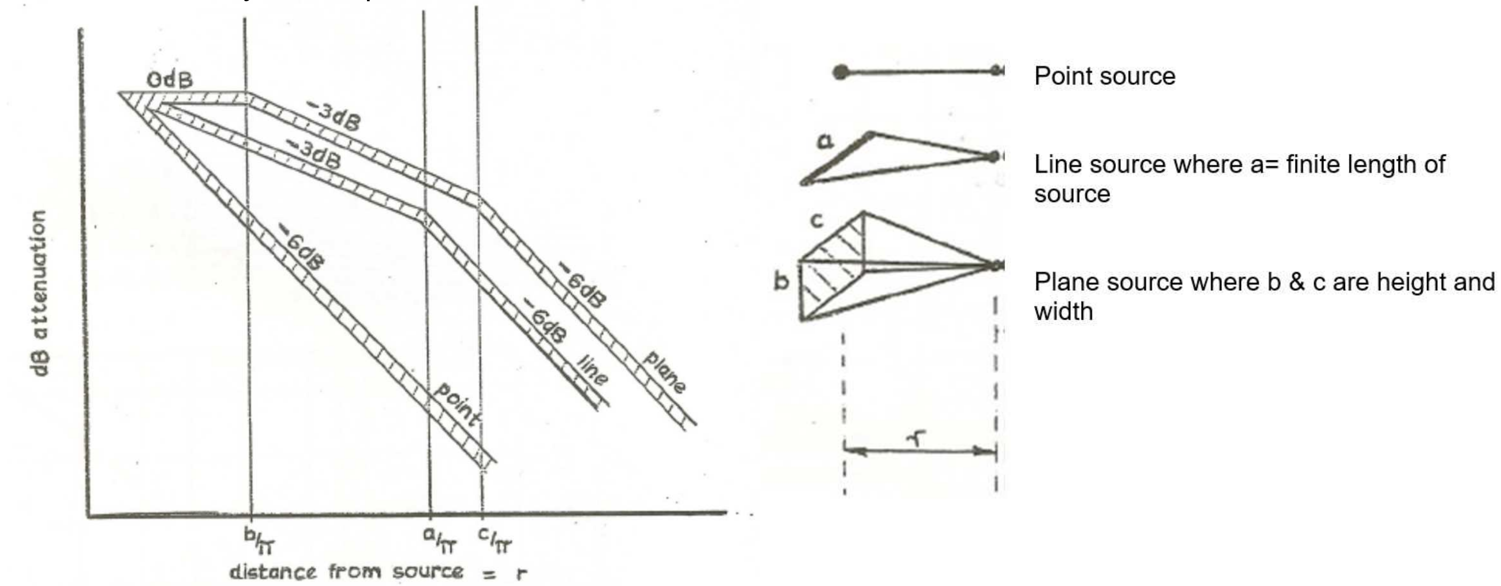
Decay of sound due to distance is calculated using the principle of Rathe. This assumes different rates of sound decay that depend on the dimensions of a source and the distance from it:

- Plane source, at distances less than the smallest or minor dimension divided by pi, **No sound decay**

- Line source, at distances less than the largest or major dimension divided by pi, decay equal to **10 x Log (distance ratio) dB** or 3 dB per doubling of distance

- Point source, at distances greater than the major dimension divided by pi, decay equal to **20 x Log (distance ratio) dB** or 6 dB per doubling of distance over hard ground,

  or **25 x Log (distance ratio) – 2 dB** over soft, more absorptive ground such as farmland.



Quantities used for Barrier Effect and Ground Type

Item name	Ground Type	Is There a Barrier	Use 10 dB Approximation	Use Maekawa	Use Nominal Path Difference?	Nominal Path Difference if Used (m)
All Sources, Average 60m, W/NW	soft	Yes	No	Yes	Yes	0.001
All Sources, Average 150m, W/NW	soft	Yes	No	Yes	Yes	0.001
New Waste Shed	soft	No	No	No	No	n/a
Rubble Crushing Including Loading Bucket	soft	Yes	No	Yes	Yes	0.001
Wheeled Loader (at Crusher)	soft	Yes	No	Yes	Yes	0.001
Deposit of Material on Stockpile	soft	No	No	No	No	n/a
Wheeled Loader (at Soil Washing)	soft	Yes	No	Yes	Yes	0.001
Long Arm Loader into Hopper	soft	Yes	No	Yes	Yes	0.001
First Screen	soft	Yes	No	Yes	Yes	0.001
Vibrating Screen Area	soft	Yes	No	Yes	Yes	0.001
Large Aggmax 160 Screen	soft	Yes	No	Yes	Yes	0.001
Evowash	soft	Yes	No	Yes	Yes	0.001
Thickener Mixing System	soft	Yes	No	Yes	Yes	0.001
Tank Water Sound	soft	Yes	No	Yes	Yes	0.001
Soil Biscuit Forming and Dropping	soft	No	No	No	No	n/a
Silo Pump	soft	Yes	No	Yes	Yes	0.001
Loading Washed Soil to Tractor	soft	Yes	No	Yes	Yes	0.001
Finished Product Loading to HGV	soft	Yes	No	Yes	Yes	0.001
HGVs on site	soft	No	No	No	No	n/a
All Sources, Average 90m, NE	soft	Yes	No	Yes	Yes	0.001

HGV Movements

Sound levels from lorry movements are predicted by the haul road equation given in BS 5228:

LAeq = LWA - 33 + 10 log Q - 10 log V - 10 log d + 10 log (a/180) dB

where V= average speed in km/h
Q = hourly vehicle rate
d = distance from haul road to receiver
a = the angle of view of the haul road from the dwelling.

Quantity	Source Point, 100m
LWA	102
Q (no. movements per hour)	20
V, kmh	10
d (distance)	100
a (angle of view)	20
Shielding	10
LAeq	32.5

The methodology used to enable prediction at a large number of receptor datapoints is to calculate the sound level at a point 100m from the areas used for loading, unloading and HGV movement, where the angle of view is greatest, ie. perpendicular to the major dimension of wagon movement area. This source sound level at 100m has then been used in the predictive calculations. This gives a reasonable worst case prediction of HGV movements at any of the thousands of receptor positions used to build the summary noise contours. Full barrier effect will be in evidence for HGV movements around the site. The exception to this is when manoeuvring and unloading at the top of the material stockpile, which is incorporated as a separate source entry of ‘Deposit of Material on Stockpile.’

Atmospheric Attenuation

The attenuation due to atmosphere has more effect on high frequency sound and varies depending on temperature and humidity. Atmospheric attenuation is not included in the calculations since the values are relatively small at mid-to low frequencies and vary with environmental conditions, so any benefit provided by it gives an additional small margin of tolerance. At very high frequencies atmospheric attenuation is very large indeed, but these upper frequencies seldom provide the dominant sound energy in sources being assessed.

The table below shows atmospheric attenuation in dB per km, at 10^{O}C and 70% humidity by way of example of the effect it can cause.

Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Attenuation per km, dB	0.1	0.4	1.0	1.9	3.7	9.7	32.8	117

Building Insertion Loss

The sound reduction indices used for calculation of sound through building envelopes is shown below:

Item name / Frequency (Hz)	31.5	63	125	250	500	1000	2000	4000	8000
New Waste Shed	16	20	18	20	24	20	29	39	47

This is data taken from manufacturers literature for the Kingspan KS 1000 insulated profile steel cladding system, which is typical of the method of construction proposed for the waste shed. For calculation of sound from a building, the overall internal sound level is attenuated by the values given for the sound insulation of the material. It is then assumed that the whole building acts as one large radiating sound source with dimensions equal to those of the physical building for application to plane source, line source and point source distance decay. This provides a worst case scenario prediction.

Item	31.5	63	125	250	500	1000	2000	4000	8000
Side Wall Refraction	2	3	3.5	4	5	6	6.5	7	8

Predictions of Sound at Nearest Dwellings

Distance Decay

Back Lane, Barmby Moor

Distance Decay

Source	Is Receptor Facing Major or Minor	Plane Source up to (m)	Line Source up to (m)	Measurement Distance	Change in Height	Receptor Distance	Line decay	Point Decay	Total Decay
All Sources, Average 60m, W/NW	Major	1.27	39.12	60.00	0.50	620.28	0.00	23.36	23.36
All Sources, Average 150m, W/NW	Major	1.27	39.12	150.00	0.50	620.28	0.00	13.41	13.41
New Waste Shed	Minor	2.71	16.77	1.00	2.75	531.78	7.92	35.53	43.45
Rubble Crushing Including Loading Bucket	Major	0.95	1.59	10.00	0.00	635.65	0.00	43.08	43.08
Wheeled Loader (at Crusher)	Major	0.95	1.59	10.00	0.00	629.73	0.00	42.98	42.98
Deposit of Material on Stockpile	Major	1.59	4.77	10.00	6.00	650.09	0.00	43.32	43.32
Wheeled Loader (at Soil Washing)	Major	0.95	1.59	10.00	0.00	669.62	0.00	43.65	43.65
Long Arm Loader into Hopper	Major	1.59	3.18	10.00	3.50	698.72	0.00	44.11	44.11
First Screen	Major	1.59	1.59	10.00	1.00	685.92	0.00	43.91	43.91

Vibrating Screen Area	Major	1.59	1.59	10.00	1.00	684.15	0.00	43.88	43.88
Large Aggmax 160 Screen	Major	1.59	1.59	8.00	1.00	678.22	0.00	46.21	46.21
Evowash	Major	1.59	1.59	10.00	1.00	673.54	0.00	43.71	43.71
Thickener Mixing System	Major	1.59	1.59	4.00	1.00	688.89	0.00	53.90	53.90
Tank Water Sound	Major	1.59	1.59	2.00	1.00	692.14	0.00	61.48	61.48
Soil Biscuit Forming and Dropping	Major	5.00	7.25	10.00	1.00	668.28	0.00	43.62	43.62
Silo Pump	Major	0.32	1.59	2.00	1.00	683.03	0.00	61.34	61.34
Loading Washed Soil to Tractor	Major	5.00	1.59	10.00	0.00	671.17	0.00	43.67	43.67
Finished Product Loading to HGV	Major	0.95	1.59	10.00	0.00	631.51	0.00	43.01	43.01
HGVs on site	Major	0.48	1.59	100.00	0.75	604.61	0.00	17.54	17.54
All Sources, Average 90m, NE	Major	1.27	39.12	90.00	0.50	598.58	0.00	18.57	18.57

Grangeland Walk, Barmby Moor

Distance Decay

Source	Is Receptor Facing Major or Minor	Plane Source up to (m)	Line Source up to (m)	Measurement Distance	Change in Height	Receptor Distance	Line decay	Point Decay	Total Decay
All Sources, Average 60m, W/NW	Major	1.27	39.12	60.00	0.50	513.99	0.00	21.32	21.32
All Sources, Average 150m, W/NW	Major	1.27	39.12	150.00	0.50	513.99	0.00	11.37	11.37
New Waste Shed	Minor	2.71	16.77	1.00	2.75	440.15	7.92	33.47	41.40
Rubble Crushing Including Loading Bucket	Major	0.95	1.59	10.00	0.00	526.30	0.00	41.03	41.03
Wheeled Loader (at Crusher)	Major	0.95	1.59	10.00	0.00	523.31	0.00	40.97	40.97
Deposit of Material on Stockpile	Major	1.59	4.77	10.00	6.00	529.82	0.00	41.10	41.10
Wheeled Loader (at Soil Washing)	Major	0.95	1.59	10.00	0.00	553.95	0.00	41.59	41.59
Long Arm Loader into Hopper	Major	1.59	3.18	10.00	3.50	584.05	0.00	42.16	42.16
First Screen	Major	1.59	1.59	10.00	1.00	574.72	0.00	41.99	41.99
Vibrating Screen Area	Major	1.59	1.59	10.00	1.00	574.47	0.00	41.98	41.98
Large Aggmax 160 Screen	Major	1.59	1.59	8.00	1.00	571.63	0.00	44.35	44.35
Evowash	Major	1.59	1.59	10.00	1.00	562.97	0.00	41.76	41.76
Thickener Mixing System	Major	1.59	1.59	4.00	1.00	583.22	0.00	52.09	52.09
Tank Water Sound	Major	1.59	1.59	2.00	1.00	583.84	0.00	59.63	59.63
Soil Biscuit Forming and Dropping	Major	5.00	7.25	10.00	1.00	570.31	0.00	41.90	41.90
Silo Pump	Major	0.32	1.59	2.00	1.00	582.24	0.00	59.60	59.60
Loading Washed Soil to Tractor	Major	5.00	1.59	10.00	0.00	575.49	0.00	42.00	42.00
Finished Product Loading to HGV	Major	0.95	1.59	10.00	0.00	535.13	0.00	41.21	41.21
HGVs on site	Major	0.48	1.59	100.00	0.75	497.13	0.00	15.41	15.41
All Sources, Average 90m, NE	Major	1.27	39.12	90.00	0.50	508.42	0.00	16.80	16.80

Warwick Close, Pocklington

Distance Decay

Source	Is Receptor Facing Major or Minor	Plane Source up to (m)	Line Source up to (m)	Measurement Distance	Change in Height	Receptor Distance	Line decay	Point Decay	Total Decay
All Sources, Average 60m, W/NW	Major	1.27	39.12	60.00	0.50	1150.33	0.00	30.07	30.07

All Sources, Average 150m, W/NW	Major	1.27	39.12	150.00	0.50	1150.33	0.00	20.12	20.12
New Waste Shed	Minor	2.71	16.77	1.00	2.75	1263.43	7.92	44.92	52.85
Rubble Crushing Including Loading Bucket	Major	0.95	1.59	10.00	0.00	1203.41	0.00	50.01	50.01
Wheeled Loader (at Crusher)	Major	0.95	1.59	10.00	0.00	1215.42	0.00	50.12	50.12
Deposit of Material on Stockpile	Major	1.59	4.77	10.00	6.00	1162.89	0.00	49.64	49.64
Wheeled Loader (at Soil Washing)	Major	0.95	1.59	10.00	0.00	1162.96	0.00	49.64	49.64
Long Arm Loader into Hopper	Major	1.59	3.18	10.00	3.50	1147.30	0.00	49.49	49.49
First Screen	Major	1.59	1.59	10.00	1.00	1166.51	0.00	49.67	49.67
Vibrating Screen Area	Major	1.59	1.59	10.00	1.00	1172.49	0.00	49.73	49.73
Large Aggmax 160 Screen	Major	1.59	1.59	8.00	1.00	1185.91	0.00	52.27	52.27
Evowash	Major	1.59	1.59	10.00	1.00	1176.15	0.00	49.76	49.76
Thickener Mixing System	Major	1.59	1.59	4.00	1.00	1182.76	0.00	59.77	59.77
Tank Water Sound	Major	1.59	1.59	2.00	1.00	1172.20	0.00	67.20	67.20
Soil Biscuit Forming and Dropping	Major	5.00	7.25	10.00	1.00	1202.26	0.00	50.00	50.00
Silo Pump	Major	0.32	1.59	2.00	1.00	1202.17	0.00	67.47	67.47
Loading Washed Soil to Tractor	Major	5.00	1.59	10.00	0.00	1225.23	0.00	50.21	50.21
Finished Product Loading to HGV	Major	0.95	1.59	10.00	0.00	1229.75	0.00	50.25	50.25
HGVs on site	Major	0.48	1.59	100.00	0.75	1168.39	0.00	24.69	24.69
All Sources, Average 90m, NE	Major	1.27	39.12	90.00	0.50	1138.00	0.00	25.55	25.55

Wilberforce Lodge

Distance Decay

Source	**Is Receptor Facing Major or Minor**	**Plane Source up to (m)**	**Line Source up to (m)**	**Measurement Distance**	**Change in Height**	**Receptor DIstance**	**Line decay**	**Point Decay**	**Total Decay**
All Sources, Average 60m, W/NW	Major	1.27	39.12	60.00	0.50	1155.60	0.00	30.12	30.12
All Sources, Average 150m, W/NW	Major	1.27	39.12	150.00	0.50	1155.60	0.00	20.17	20.17
New Waste Shed	Minor	2.71	16.77	1.00	2.75	1275.51	7.92	45.03	52.95
Rubble Crushing Including Loading Bucket	Major	0.95	1.59	10.00	0.00	1212.19	0.00	50.09	50.09
Wheeled Loader (at Crusher)	Major	0.95	1.59	10.00	0.00	1220.40	0.00	50.16	50.16
Deposit of Material on Stockpile	Major	1.59	4.77	10.00	6.00	1190.97	0.00	49.90	49.90
Wheeled Loader (at Soil Washing)	Major	0.95	1.59	10.00	0.00	1174.58	0.00	49.75	49.75
Long Arm Loader into Hopper	Major	1.59	3.18	10.00	3.50	1147.26	0.00	49.49	49.49
First Screen	Major	1.59	1.59	10.00	1.00	1162.63	0.00	49.64	49.64
Vibrating Screen Area	Major	1.59	1.59	10.00	1.00	1165.80	0.00	49.67	49.67
Large Aggmax 160 Screen	Major	1.59	1.59	8.00	1.00	1174.62	0.00	52.17	52.17
Evowash	Major	1.59	1.59	10.00	1.00	1175.02	0.00	49.75	49.75
Thickener Mixing System	Major	1.59	1.59	4.00	1.00	1165.70	0.00	59.61	59.61
Tank Water Sound	Major	1.59	1.59	2.00	1.00	1159.68	0.00	67.08	67.08
Soil Biscuit Forming and Dropping	Major	5.00	7.25	10.00	1.00	1180.81	0.00	49.80	49.80
Silo Pump	Major	0.32	1.59	2.00	1.00	1177.23	0.00	67.25	67.25
Loading Washed Soil to Tractor	Major	5.00	1.59	10.00	0.00	1195.04	0.00	49.93	49.93
Finished Product Loading to HGV	Major	0.95	1.59	10.00	0.00	1210.36	0.00	50.07	50.07
HGVs on site	Major	0.48	1.59	100.00	0.75	1163.55	0.00	24.64	24.64
All Sources, Average 90m, NE	Major	1.27	39.12	90.00	0.50	1118.30	0.00	25.36	25.36

Dwelling to South

Distance Decay

Source	Is Receptor Facing Major or Minor	Plane Source up to (m)	Line Source up to (m)	Measurement Distance	Change in Height	Receptor DIstance	Line decay	Point Decay	Total Decay
All Sources, Average 60m, W/NW	Major	1.27	39.12	60.00	0.50	644.09	0.00	23.77	23.77
All Sources, Average 150m, W/NW	Major	1.27	39.12	150.00	0.50	644.09	0.00	13.82	13.82
New Waste Shed	Major	2.71	25.43	1.00	2.75	635.16	9.73	32.94	42.67
Rubble Crushing Including Loading Bucket	Major	0.95	1.59	10.00	0.00	728.41	0.00	44.56	44.56
Wheeled Loader (at Crusher)	Major	0.95	1.59	10.00	0.00	716.84	0.00	44.39	44.39
Deposit of Material on Stockpile	Major	1.59	4.77	10.00	6.00	774.75	0.00	45.23	45.23
Wheeled Loader (at Soil Washing)	Major	0.95	1.59	10.00	0.00	755.91	0.00	44.96	44.96
Long Arm Loader into Hopper	Major	1.59	3.18	10.00	3.50	753.81	0.00	44.93	44.93
First Screen	Major	1.59	1.59	10.00	1.00	737.27	0.00	44.69	44.69
Vibrating Screen Area	Major	1.59	1.59	10.00	1.00	730.47	0.00	44.59	44.59
Large Aggmax 160 Screen	Major	1.59	1.59	8.00	1.00	716.93	0.00	46.81	46.81
Evowash	Major	1.59	1.59	10.00	1.00	733.88	0.00	44.64	44.64
Thickener Mixing System	Major	1.59	1.59	4.00	1.00	713.21	0.00	54.28	54.28
Tank Water Sound	Major	1.59	1.59	2.00	1.00	724.84	0.00	61.98	61.98
Soil Biscuit Forming and Dropping	Major	5.00	7.25	10.00	1.00	675.15	0.00	43.74	43.74
Silo Pump	Major	0.32	1.59	2.00	1.00	692.19	0.00	61.48	61.48
Loading Washed Soil to Tractor	Major	5.00	1.59	10.00	0.00	671.19	0.00	43.67	43.67
Finished Product Loading to HGV	Major	0.95	1.59	10.00	0.00	657.55	0.00	43.45	43.45
HGVs on site	Major	0.48	1.59	100.00	0.75	658.18	0.00	18.46	18.46
All Sources, Average 90m, NE	Major	1.27	39.12	90.00	0.50	631.21	0.00	19.15	19.15

Contributions from the side walls of the Waste Shed

		31.5	63	125	250	500	1000	2000	4000	8000	
Back Lane, Barmby Moor		22.5	16.2	20.9	14.6	5.5	10.6				
Grangeland Walk, Barmby Moor		24.7	18.4	23.1	16.8	7.7	12.8	0.3			
Warwick Close, Pocklington		13.4	7.1	11.8	5.5		1.5				
Wilberforce Lodge		13.2	6.9	11.6	5.3		1.3				
Dwelling to South		18.0	11.7	16.4	10.1	1.0	6.1				

Predictions of Sound Level at Dwellings

All Sources Combined

Octave Frequency Spectra, dB $Linear_{eq,T}$

Receptor	dB $LA_{eq,T}$		31.5	63	125	250	500	1000	2000	4000	8000
Back Lane, Barmby Moor	39.2		53.5	46.8	43.7	40.4	34.0	33.0	31.7	29.8	23.9
Grangeland Walk, Barmby Moor	41.1		55.4	48.7	45.7	42.4	36.0	34.9	33.6	31.6	25.5
Warwick Close, Pocklington	33.1		47.5	40.6	37.0	33.7	27.8	26.9	25.8	24.1	19.7
Wilberforce Lodge	33.1		47.5	40.6	36.9	33.7	27.8	26.9	25.8	24.1	19.7
Dwelling to South	38.2		52.7	45.8	42.4	39.1	32.9	32.0	30.8	29.0	23.3

Separate Sources

Back Lane, Barmby Moor

Results — **Octave Leq Results**

Results	dB LAeq	31.5	63	125	250	500	1000	2000	4000	8000
All Sources, Average 60m,	38.2									
All Sources, Average 150m	38.0									
New Waste Shed	18.0	25.3	19.5	24.5	18.5	10.0	15.8	3.7		
Rubble	32.7									
Wheeled Loader@Crusher	26.4									
Deposit of Material In	30.2									
Wheeled Loader @Soil Plant	25.8									
Long Arm Loader into Hopper	20.8									
First Screen	29.7									
Vibrating Screen Area	27.7									
Large Aggmax 160 Screen	28.5									
Evowash	26.9									
Thickener Mixing System	20.2									
Tank Water Sound	13.3									
Soil Biscuit Form & Drop	26.7									
Silo Pump	16.7									
Loading Washed Soil	24.2									
Finished Product Loading	28.2									
HGVs on site	15.1									
All Sources, Average 90m, NE	37.0									

Third Octave Leq (or L10 for music) Results

Results	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
All Sources, Average 60m,	52.0	43.2	48.5	44.4	36.5	36.6	33.7	31.5	30.7	30.8	28.3	27.3	28.6	27.9	29.4	28.5	27.2	28.6	27.4	26.8	26.0	25.3	24.5	22.3	20.1	17.7	14.1
All Sources, Average 150m	56.8	50.3	55.3	47.1	40.9	39.1	36.3	30.8	27.4	27.9	28.4	31.0	32.6	29.5	27.2	28.8	28.4	29.3	26.5	25.6	24.5	22.8	20.5	17.4	13.6	9.1	3.7
New Waste Shed																											
Rubble	30.3	26.1	28.5	26.3	24.5	38.4	40.8	31.8	34.0	38.5	23.7	24.9	24.5	25.1	22.9	19.9	20.4	18.2	17.1	15.6	14.0	13.0	11.0	9.0	7.1	5.1	2.6
Wheeled Loader@Crusher	36.6	31.3	39.7	28.3	23.7	24.7	22.8	23.2	22.5	18.4	16.3	16.9	18.4	17.9	17.2	17.6	16.6	16.0	15.4	15.8	13.1	11.7	9.8	7.5	5.6	3.8	2.5
Deposit of Material In	34.0	36.5	35.5	31.3	25.4	23.6	24.3	27.9	28.2	25.6	21.3	19.3	18.7	21.8	20.2	20.6	21.1	19.2	19.3	17.3	18.8	17.7	15.8	12.4	9.1	6.4	5.2
Wheeled Loader @Soil Plant	36.0	30.7	39.1	27.7	23.1	24.1	22.2	22.6	21.9	17.7	15.6	16.2	17.8	17.3	16.6	17.0	16.0	15.3	14.7	15.2	12.4	11.1	9.2	7.0	5.2	3.4	2.2
Long Arm Loader into Hopper	38.5	27.0	35.0	29.9	24.5	21.6	18.9	16.8	14.2	16.9	14.8	14.4	13.3	10.6	10.9	10.1	9.9	9.6	8.9	8.7	8.7	8.1	6.5	4.6	3.1	1.9	0.8
First Screen	36.3	30.0	37.8	33.4	27.4	30.4	23.3	21.2	18.6	18.1	19.8	20.7	18.5	17.4	19.5	22.0	16.6	17.3	18.0	17.8	17.9	18.9	18.7	15.0	14.0	13.1	9.3
Vibrating Screen Area	47.2	31.5	38.0	30.6	24.4	28.1	23.4	22.5	21.6	21.4	19.4	19.4	16.3	15.5	16.6	16.2	17.4	16.9	15.9	16.9	16.6	16.5	14.8	13.6	11.5	9.6	7.1
Large Aggmax 160 Screen	47.2	34.6	42.6	31.8	29.9	31.1	23.9	23.6	21.9	22.0	20.1	20.6	16.9	17.8	17.7	16.7	16.4	17.1	16.6	18.4	17.4	16.8	16.4	14.6	12.3	9.8	7.0
Evowash	38.8	31.7	39.0	42.8	31.3	33.4	27.7	25.0	22.9	21.9	20.7	19.8	18.5	16.6	17.2	15.6	15.1	14.4	14.2	14.7	15.2	14.9	12.2	10.5	9.1	7.5	6.8
Thickener Mixing System	25.7	15.8	23.1	16.2	12.5	13.4	11.1	12.1	9.9	9.4	9.9	16.2	8.9	5.8	9.1	6.0	7.8	13.3	11.6	8.6	5.8	6.6	5.3	3.5	2.1	1.1	0.4
Tank Water Sound	26.9	11.0	13.3	13.6	7.1	10.4	4.0	3.2	2.8	3.5	2.4	2.8	1.8	1.6	1.9	1.7	2.1	2.0	1.7	1.8	1.6	1.5	1.3	0.9	0.7	0.5	0.3
Soil Biscuit Form & Drop	32.7	23.6	31.9	25.9	20.0	23.0	22.5	18.9	20.7	23.1	17.7	17.3	13.3	12.1	14.3	14.1	15.1	18.0	16.6	15.9	17.5	14.5	12.1	9.4	8.7	6.5	3.6
Silo Pump	14.4	6.8	13.2	3.8	2.7	2.7	2.2	2.0	4.3	4.0	4.0	6.1	11.2	9.9	7.3	6.3	5.4	8.0	4.9	4.0	3.5	1.9	1.9	1.2	0.9	0.7	0.3
Loading Washed Soil	27.7	20.6	26.5	23.1	20.3	18.0	18.6	18.6	15.6	15.8	16.1	13.8	14.2	13.6	13.6	12.7	15.6	15.9	15.6	12.2	10.9	7.9	7.5	8.2	5.5	4.5	2.2
Finished Product Loading	34.9	24.3	29.6	25.5	22.9	26.1	25.9	23.5	24.2	23.9	18.3	16.6	15.4	17.0	16.2	16.6	16.6	16.1	15.8	16.3	16.6	18.4	18.2	15.4	12.5	10.0	7.3
HGVs on site																											
All Sources, Average 90m, NE	52.1	45.7	53.7	49.0	39.0	40.0	37.2	33.7	30.2	28.9	26.6	27.5	26.9	27.7	28.1	26.4	28.0	27.3	26.5	25.3	23.6	22.9	21.4	18.9	16.5	13.6	8.7

Grangeland Walk, Barmby Moor

Results — **Octave Leq Results** (31.5–8000) — **Third Octave Leq (or L10 for music) Results** (25–10000)

	dB LAeq	31.5	63	125	250	500	1000	2000	4000	8000	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
All Sources, Average 60m,	40.2										54.1	45.3	50.6	46.5	38.6	38.7	35.8	33.6	32.8	32.9	30.4	29.4	30.6	29.9	31.4	30.5	29.3	30.6	29.4	28.9	28.0	27.3	26.6	24.4	22.1	19.7	16.1
All Sources, Average 150m	40.1										58.8	52.3	57.3	49.1	42.9	41.1	38.3	32.8	29.4	29.9	30.4	33.0	34.7	31.6	29.3	30.8	30.4	31.3	28.6	27.6	26.6	24.8	22.5	19.4	15.6	11.0	5.0
New Waste Shed	20.1	27.5	21.7	26.6	20.6	12.1	17.9	5.8																													
Rubble	34.7										32.4	28.2	30.6	28.4	26.6	40.5	42.9	33.9	36.1	40.5	25.8	26.9	26.5	27.1	24.9	21.9	22.5	20.3	19.1	17.6	16.0	15.0	13.0	10.8	8.8	6.6	3.6
Wheeled Loader@Crusher	28.3										38.6	33.3	41.7	30.3	25.7	26.7	24.8	25.2	24.5	20.3	18.3	18.9	20.4	19.9	19.2	19.6	18.6	18.0	17.3	17.8	15.0	13.6	11.6	9.3	7.2	5.1	3.4
Deposit of Material In	32.4										36.2	38.7	37.7	33.5	27.6	25.8	26.5	30.1	30.4	27.8	23.5	21.5	20.9	24.0	22.4	22.8	23.3	21.4	21.5	19.4	21.0	19.9	18.0	14.6	11.1	8.2	6.9
Wheeled Loader @Soil Plant	27.7										38.0	32.7	41.1	29.7	25.1	26.1	24.2	24.6	23.9	19.7	17.7	18.2	19.8	19.3	18.6	19.0	18.0	17.4	16.7	17.2	14.4	13.0	11.0	8.7	6.7	4.7	3.1
Long Arm Loader into Hopper	22.6										40.4	28.9	36.9	31.8	26.4	23.5	20.9	18.7	16.1	18.8	16.7	16.3	15.1	12.4	12.7	11.8	11.6	11.3	10.7	10.4	10.4	9.8	8.1	6.0	4.2	2.6	1.2
First Screen	31.6										38.2	31.9	39.7	35.3	29.3	32.3	25.2	23.1	20.5	20.0	21.7	22.6	20.4	19.3	21.4	23.9	18.5	19.2	19.9	19.7	19.8	20.8	20.6	16.9	15.9	14.9	11.1
Vibrating Screen Area	29.6										49.1	33.4	39.9	32.5	26.3	30.0	25.3	24.4	23.5	23.3	21.3	21.3	18.1	17.3	18.5	18.1	19.3	18.7	17.7	18.8	18.5	18.3	16.7	15.4	13.3	11.3	8.7
Large Aggmax 160 Screen	30.4										49.0	36.4	44.4	33.6	31.7	32.9	25.8	25.4	23.8	23.8	21.9	22.4	18.8	19.6	19.5	18.5	18.2	19.0	18.4	20.3	19.2	18.7	18.2	16.4	14.1	11.5	8.6
Evowash	28.8										40.7	33.6	40.9	44.7	33.2	35.3	29.6	26.9	24.8	23.8	22.6	21.7	20.4	18.5	19.1	17.5	17.0	16.3	16.1	16.6	17.1	16.8	14.1	12.3	10.9	9.2	8.4
Thickener Mixing System	21.8										27.5	17.6	24.9	18.0	14.3	15.1	12.8	13.8	11.5	11.0	11.6	17.9	10.5	7.2	10.7	7.4	9.3	15.0	13.3	10.2	7.2	8.1	6.6	4.6	2.9	1.5	0.6
Tank Water Sound	14.0										28.8	12.7	15.1	15.4	8.7	12.1	5.2	4.3	3.8	4.7	3.3	3.8	2.5	2.2	2.6	2.4	2.9	2.8	2.4	2.5	2.3	2.2	1.9	1.4	1.0	0.7	0.4
Soil Biscuit Form & Drop	28.4										34.4	25.3	33.6	27.6	21.7	24.7	24.2	20.6	22.4	24.8	19.4	19.0	14.9	13.8	16.0	15.7	16.8	19.7	18.3	17.6	19.2	16.2	13.8	11.0	10.2	7.9	4.6
Silo Pump	17.9										16.1	8.2	14.8	4.9	3.5	3.6	3.0	2.8	5.5	5.2	5.1	7.4	12.8	11.5	8.8	7.6	6.6	9.5	6.1	5.2	4.6	2.6	2.6	1.7	1.3	1.0	0.4
Loading Washed Soil	25.8										29.4	22.2	28.2	24.8	21.9	19.6	20.2	20.2	17.3	17.5	17.7	15.4	15.8	15.2	15.2	14.3	17.3	17.5	17.2	13.8	12.5	9.3	9.0	9.7	6.8	5.7	3.0
Finished Product Loading	30.0										36.7	26.1	31.4	27.3	24.7	27.9	27.7	25.3	26.0	25.7	20.1	18.3	17.1	18.8	18.0	18.4	18.3	17.8	17.6	18.0	18.4	20.2	20.0	17.1	14.2	11.7	8.8
HGVs on site	17.2																																				
All Sources, Average 90m, NE	38.8										53.9	47.5	55.5	50.8	40.8	41.8	39.0	35.5	32.0	30.7	28.4	29.3	28.7	29.5	29.8	28.1	29.8	29.1	28.2	27.1	25.3	24.7	23.2	20.6	18.2	15.3	10.2

Warwick Close, Pocklington

Results — **Octave Leq Results** (31.5–8000) — **Third Octave Leq (or L10 for music) Results** (25–10000)

	dB LAeq	31.5	63	125	250	500	1000	2000	4000	8000	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
All Sources, Average 60m,	31.5										45.3	36.5	41.8	37.7	29.8	29.9	27.0	24.8	24.0	24.1	21.6	20.6	21.9	21.2	22.7	21.8	20.6	21.9	20.7	20.2	19.3	18.7	17.9	15.7	13.6	11.2	8.0
All Sources, Average 150m	31.4										50.1	43.6	48.6	40.4	34.2	32.4	29.6	24.1	20.7	21.2	21.7	24.3	25.9	22.8	20.6	22.1	21.7	22.6	19.9	18.9	17.9	16.2	13.9	11.0	7.6	4.0	1.1
New Waste Shed	8.7	16.1	10.3	15.3	9.2	0.7	6.5																														
Rubble	25.9										23.4	19.2	21.6	19.4	17.7	31.5	33.9	24.9	27.1	31.6	16.9	18.0	17.6	18.2	16.0	13.1	13.7	11.6	10.5	9.1	7.7	6.9	5.3	3.8	2.6	1.6	0.7
Wheeled Loader@Crusher	19.8										29.5	24.2	32.6	21.2	16.7	17.6	15.8	16.2	15.5	11.5	9.6	10.1	11.6	11.1	10.4	10.8	9.8	9.3	8.7	9.1	6.7	5.6	4.2	2.8	1.8	1.0	0.6
Deposit of Material In	24.1										27.7	30.2	29.2	25.0	19.1	17.3	18.0	21.6	21.9	19.3	15.1	13.2	12.6	15.6	14.0	14.4	14.9	13.1	13.2	11.2	12.7	11.7	9.8	6.9	4.2	2.5	1.9
Wheeled Loader @Soil Plant	20.2										30.0	24.7	33.1	21.7	17.1	18.1	16.3	16.6	16.0	11.9	10.0	10.5	12.0	11.5	10.9	11.2	10.3	9.7	9.2	9.6	7.1	6.0	4.5	3.0	2.0	1.2	0.7
Long Arm Loader into Hopper	16.6										33.1	21.6	29.6	24.5	19.2	16.3	13.7	11.6	9.2	11.7	9.8	9.4	8.4	6.1	6.3	5.6	5.5	5.2	4.7	4.6	4.5	4.1	3.0	1.9	1.1	0.6	0.2
First Screen	24.1										30.5	24.2	32.0	27.6	21.7	24.6	17.6	15.5	13.0	12.6	14.2	15.0	12.9	11.9	13.8	16.3	11.1	11.8	12.4	12.3	12.3	13.3	13.1	9.6	8.7	7.9	4.8
Vibrating Screen Area	22.2										41.4	25.7	32.2	24.8	18.6	22.3	17.6	16.8	15.9	15.7	13.7	13.7	10.7	10.0	11.1	10.7	11.8	11.3	10.3	11.3	11.1	10.9	9.4	8.2	6.4	4.9	3.2
Large Aggmax 160 Screen	22.7										41.1	28.5	36.5	25.7	23.8	25.0	17.9	17.6	15.9	16.0	14.2	14.6	11.1	12.0	11.9	10.9	10.6	11.3	10.8	12.6	11.6	11.0	10.6	9.0	6.9	5.0	3.0
Evowash	21.2										32.7	25.6	32.9	36.7	25.2	27.3	21.7	19.0	16.9	15.9	14.8	13.9	12.6	10.9	11.4	9.9	9.5	8.8	8.6	9.1	9.5	9.3	6.9	5.5	4.4	3.3	2.9
Thickener Mixing System	15.8										19.9	10.3	17.3	10.6	7.3	8.1	6.1	6.9	5.1	4.8	5.2	10.6	4.4	2.4	4.5	2.5	3.6	8.0	6.5	4.2	2.4	2.9	2.1	1.2	0.7	0.3	0.1
Tank Water Sound	12.2										21.2	6.1	8.1	8.4	3.3	5.7	1.5	1.1	1.0	1.3	0.8	0.9	0.6	0.5	0.6	0.5	0.7	0.6	0.5	0.5	0.5	0.5	0.4	0.3	0.2	0.1	0.1
Soil Biscuit Form & Drop	20.8										26.3	17.3	25.5	19.5	13.8	16.7	16.2	12.7	14.5	16.8	11.6	11.1	7.5	6.6	8.5	8.2	9.2	11.9	10.5	9.9	11.3	8.6	6.6	4.4	3.9	2.5	1.1
Silo Pump	13.6										8.7	2.8	7.6	1.3	0.8	0.8	0.7	0.6	1.5	1.4	1.3	2.4	6.0	4.9	3.1	2.5	2.0	3.6	1.8	1.4	1.2	0.5	0.5	0.3	0.2	0.2	0.1
Loading Washed Soil	18.5										21.2	14.2	20.0	16.7	13.9	11.7	12.3	12.2	9.5	9.7	9.9	7.8	8.2	7.7	7.6	6.9	9.5	9.7	9.4	6.5	5.5	3.3	3.1	3.5	2.0	1.5	0.6
Finished Product Loading	21.4										27.7	17.1	22.4	18.3	15.8	18.9	18.7	16.3	17.0	16.7	11.4	9.7	8.6	10.1	9.4	9.8	9.7	9.3	9.1	9.5	9.8	11.4	11.3	8.7	6.2	4.3	2.6
HGVs on site	11.7																																				
All Sources, Average 90m, NE	30.1										45.1	38.7	46.7	42.0	32.0	33.0	30.2	26.7	23.3	22.0	19.7	20.6	20.0	20.7	21.1	19.4	21.1	20.4	19.5	18.4	16.7	16.0	14.6	12.1	9.9	7.3	3.6

Wilberforce Lodge

Results		Octave Leq Results									Third Octave Leq (or L10 for music) Results																										
	dB LAeq	31.5	63	125	250	500	1000	2000	4000	8000	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
All Sources, Average 60m,	31.5										45.3	36.5	41.8	37.7	29.8	29.9	27.0	24.8	24.0	24.1	21.6	20.6	21.9	21.2	22.6	21.7	20.5	21.9	20.6	20.1	19.3	18.6	17.8	15.7	13.5	11.2	7.9
All Sources, Average 150m	31.3										50.0	43.5	48.5	40.3	34.1	32.3	29.5	24.0	20.7	21.1	21.6	24.2	25.9	22.8	20.5	22.1	21.7	22.5	19.8	18.9	17.8	16.1	13.9	11.0	7.5	4.0	1.1
New Waste Shed	8.6	15.9	10.1	15.1	9.1	0.6	6.4																														
Rubble	25.8										23.3	19.2	21.5	19.4	17.6	31.4	33.8	24.8	27.0	31.5	16.8	17.9	17.5	18.1	16.0	13.0	13.6	11.5	10.4	9.1	7.7	6.8	5.2	3.8	2.6	1.6	0.7
Wheeled Loader@Crusher	19.8										29.4	24.2	32.5	21.2	16.6	17.6	15.7	16.1	15.4	11.4	9.5	10.1	11.5	11.0	10.4	10.7	9.8	9.3	8.7	9.1	6.7	5.6	4.2	2.8	1.8	1.0	0.6
Deposit of Material In	23.8										27.4	29.9	28.9	24.7	18.9	17.1	17.8	21.3	21.6	19.1	14.8	12.9	12.4	15.3	13.8	14.2	14.7	12.8	12.9	11.0	12.5	11.4	9.6	6.7	4.1	2.4	1.8
Wheeled Loader @Soil Plant	20.2										29.9	24.6	33.0	21.6	17.0	18.0	16.1	16.5	15.8	11.8	9.9	10.4	11.9	11.4	10.8	11.1	10.2	9.6	9.1	9.5	7.0	5.9	4.5	3.0	1.9	1.1	0.6
Long Arm Loader into Hopper	16.6										33.1	21.6	29.6	24.5	19.2	16.3	13.7	11.6	9.2	11.7	9.8	9.4	8.4	6.1	6.3	5.6	5.5	5.2	4.7	4.6	4.5	4.1	3.0	1.9	1.1	0.6	0.2
First Screen	24.2										30.6	24.3	32.1	27.7	21.7	24.7	17.6	15.6	13.1	12.6	14.2	15.1	12.9	11.9	13.9	16.4	11.1	11.8	12.4	12.3	12.4	13.3	13.2	9.6	8.7	7.9	4.8
Vibrating Screen Area	22.2										41.4	25.7	32.2	24.8	18.7	22.4	17.7	16.8	15.9	15.7	13.8	13.8	10.8	10.0	11.1	10.7	11.8	11.3	10.4	11.3	11.1	11.0	9.4	8.3	6.5	5.0	3.2
Large Aggmax 160 Screen	22.8										41.2	28.6	36.6	25.8	23.9	25.1	18.0	17.7	16.0	16.1	14.3	14.7	11.2	12.1	11.9	11.0	10.7	11.4	10.9	12.7	11.7	11.1	10.7	9.1	7.0	5.0	3.1
Evowash	21.2										32.7	25.7	32.9	36.7	25.3	27.3	21.7	19.0	16.9	15.9	14.8	13.9	12.6	10.9	11.4	9.9	9.5	8.8	8.6	9.1	9.5	9.3	6.9	5.5	4.4	3.3	2.9
Thickener Mixing System	15.9										20.0	10.4	17.5	10.8	7.4	8.2	6.3	7.0	5.2	4.9	5.3	10.7	4.5	2.4	4.6	2.5	3.7	8.1	6.7	4.3	2.5	2.9	2.1	1.2	0.7	0.3	0.1
Tank Water Sound	12.2										21.3	6.2	8.2	8.5	3.3	5.8	1.5	1.1	1.0	1.3	0.8	1.0	0.6	0.5	0.6	0.5	0.7	0.7	0.5	0.6	0.5	0.5	0.4	0.3	0.2	0.1	0.1
Soil Biscuit Form & Drop	21.0										26.5	17.5	25.7	19.7	14.0	16.9	16.4	12.9	14.6	17.0	11.8	11.3	7.7	6.7	8.6	8.4	9.3	12.1	10.7	10.0	11.5	8.8	6.7	4.6	4.1	2.6	1.2
Silo Pump	13.6										8.9	2.9	7.8	1.3	0.8	0.9	0.7	0.6	1.6	1.4	1.4	2.5	6.1	5.1	3.3	2.6	2.1	3.7	1.9	1.4	1.2	0.6	0.6	0.3	0.3	0.2	0.1
Loading Washed Soil	18.7										21.5	14.4	20.3	16.9	14.1	11.9	12.5	12.5	9.7	9.9	10.2	8.1	8.4	7.9	7.9	7.1	9.7	10.0	9.7	6.7	5.7	3.4	3.2	3.7	2.1	1.6	0.6
Finished Product Loading	21.5										27.8	17.3	22.5	18.5	15.9	19.1	18.9	16.5	17.2	16.9	11.5	9.9	8.8	10.3	9.6	9.9	9.9	9.4	9.2	9.6	9.9	11.6	11.4	8.8	6.3	4.4	2.7
HGVs on site	11.7																																				
All Sources, Average 90m, NE	30.3										45.3	38.9	46.9	42.2	32.2	33.2	30.4	26.9	23.4	22.1	19.9	20.7	20.1	20.9	21.3	19.6	21.3	20.5	19.7	18.6	16.9	16.2	14.8	12.3	10.0	7.5	3.7

Dwelling to South

Results		Octave Leq Results									Third Octave Leq (or L10 for music) Results																										
	dB LAeq	31.5	63	125	250	500	1000	2000	4000	8000	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
All Sources, Average 60m,	37.8										51.6	42.8	48.1	44.0	36.1	36.2	33.3	31.1	30.3	30.4	27.9	26.9	28.2	27.5	29.0	28.0	26.8	28.2	27.0	26.4	25.6	24.9	24.1	21.9	19.7	17.3	13.7
All Sources, Average 150m	37.6										56.4	49.9	54.9	46.7	40.5	38.7	35.9	30.4	27.0	27.5	28.0	30.5	32.2	29.1	26.8	28.4	28.0	28.8	26.1	25.2	24.1	22.4	20.1	17.0	13.2	8.8	3.5
New Waste Shed	17.6	24.1	18.6	23.7	17.8	9.6	15.6	3.5																													
Rubble	31.2										28.8	24.7	27.0	24.8	23.1	36.9	39.3	30.3	32.5	37.0	22.2	23.4	23.0	23.6	21.4	18.4	19.0	16.8	15.7	14.2	12.6	11.6	9.7	7.7	6.0	4.1	2.0
Wheeled Loader@Crusher	25.0										35.2	29.9	38.3	26.9	22.3	23.3	21.4	21.8	21.1	17.0	14.9	15.5	17.1	16.6	15.9	16.2	15.2	14.6	14.0	14.5	11.7	10.4	8.5	6.4	4.7	3.1	1.9
Deposit of Material In	28.3										32.1	34.6	33.6	29.4	23.5	21.7	22.4	26.0	26.3	23.7	19.4	17.4	16.9	19.9	18.3	18.7	19.2	17.4	17.4	15.4	17.0	15.9	13.9	10.7	7.4	5.0	4.0
Wheeled Loader @Soil Plant	24.5										34.6	29.3	37.7	26.3	21.8	22.8	20.9	21.3	20.6	16.4	14.4	14.9	16.5	16.0	15.3	15.7	14.7	14.1	13.5	13.9	11.2	9.9	8.1	6.0	4.3	2.8	1.7
Long Arm Loader into Hopper	20.1										37.7	26.2	34.2	29.1	23.7	20.8	18.1	16.0	13.5	16.1	14.0	13.6	12.5	9.9	10.1	9.3	9.1	8.8	8.2	8.0	8.0	7.4	5.9	4.1	2.7	1.6	0.6
First Screen	28.9										35.5	29.2	37.0	32.6	26.6	29.6	22.5	20.4	17.9	17.4	19.0	19.9	17.7	16.6	18.7	21.3	15.8	16.6	17.2	17.1	17.1	18.1	18.0	14.2	13.3	12.3	8.6
Vibrating Screen Area	27.0										46.5	30.8	37.3	29.9	23.7	27.4	22.7	21.8	20.9	20.7	18.7	18.7	15.6	14.8	16.0	15.5	16.7	16.2	15.2	16.2	16.0	15.8	14.2	12.9	10.8	9.0	6.6
Large Aggmax 160 Screen	27.9										46.6	34.0	42.0	31.2	29.3	30.5	23.3	23.0	21.3	21.4	19.5	20.0	16.3	17.2	17.1	16.1	15.8	16.6	16.0	17.8	16.8	16.3	15.8	14.0	11.7	9.3	6.6
Evowash	26.0										37.9	30.8	38.1	41.9	30.4	32.5	26.8	24.1	22.0	21.0	19.8	18.9	17.6	15.7	16.3	14.7	14.2	13.5	13.3	13.8	14.3	14.0	11.4	9.6	8.3	6.8	6.1
Thickener Mixing System	19.9										25.3	15.4	22.7	15.8	12.2	13.0	10.8	11.7	9.5	9.1	9.6	15.8	8.5	5.5	8.8	5.7	7.5	12.9	11.3	8.3	5.6	6.3	5.0	3.3	2.0	1.0	0.3
Tank Water Sound	13.2										26.4	10.5	12.8	13.1	6.7	10.0	3.7	3.0	2.6	3.3	2.2	2.6	1.7	1.4	1.7	1.5	1.9	1.9	1.6	1.6	1.5	1.4	1.2	0.8	0.6	0.4	0.2
Soil Biscuit Form & Drop	26.6										32.6	23.5	31.8	25.8	19.9	22.9	22.4	18.8	20.6	23.0	17.6	17.1	13.2	12.0	14.2	13.9	15.0	17.9	16.5	15.8	17.3	14.4	12.0	9.3	8.6	6.4	3.5
Silo Pump	16.6										14.3	6.7	13.0	3.7	2.6	2.6	2.2	2.0	4.2	3.9	3.9	6.0	11.0	9.8	7.2	6.1	5.3	7.9	4.8	3.9	3.5	1.9	1.9	1.2	0.9	0.7	0.3
Loading Washed Soil	24.2										27.7	20.6	26.5	23.1	20.3	18.0	18.6	18.6	15.6	15.8	16.1	13.8	14.2	13.6	13.6	12.7	15.6	15.9	15.6	12.2	10.9	7.9	7.5	8.2	5.5	4.5	2.2
Finished Product Loading	27.8										34.5	23.9	29.2	25.1	22.5	25.7	25.5	23.1	23.8	23.4	17.9	16.1	14.9	16.6	15.8	16.2	16.1	15.6	15.4	15.8	16.2	18.0	17.8	15.0	12.1	9.6	6.9
HGVs on site	14.2																																				
All Sources, Average 90m, NE	36.4										51.5	45.1	53.1	48.4	38.4	39.4	36.6	33.1	29.6	28.3	26.0	26.9	26.3	27.1	27.5	25.8	27.5	26.7	25.9	24.7	23.0	22.3	20.9	18.3	15.9	13.0	8.2