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REVISED SOUND IMPACT ASSESSMENT

of

PROPOSED EXTENSION TO MINERALS EXTRACTION AND PROCESSING

at

WINDY RIDGE QUARRY, CARTWORTH MOOR ROAD, HOLMFIRTH, HD9 2RL

Date of measurements: 21st – 27th April 2022

Date of original report: 27th June 2022
Date of this revision: 26th October 2023

Prepared for: MWP Planning

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Members of the Association of Noise Consultants (ANC) & Institute of Acoustics (IOA)
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1.0 **Summary and Conclusions**

1.1 It is proposed to extend the excavation area of the existing Windy Ridge Quarry, Cartworth Moor Road, Holmfirth.

This acoustic report quantifies impact from proposed site activities in comparison to the normal assessment criteria for this type of operation contained in the NPPF. Since preparation of our original report, cross section drawings have been made available, showing the relationship between the site and the dwelling most affected by quarry sound. These cross section drawings enable a more accurate method of barrier calculation for sound reaching this dwelling, contained in this revision.

1.2 The guidance of the NPPF is that during daytime hours from 07.00 to 19.00, the sound level at noise-sensitive properties should not exceed the background level by more than 10 dBA. In some circumstances it may not be possible to meet this requirement without unreasonable burden of the mineral operator in which case the upper limit between 0700 to 1900 hours is 55 dB LA_{eq} (1-hour) at noise-sensitive properties.

1.3 The closest dwellings to the site are shown below.

Dwelling	Min Distance (m)	Max Distance (m)	Min & Max Distance to Processing Area	Grid Reference	Elevation (m)
Quarry House / White Gate Rd (N)	430	545	370 / 460	SE 13180 06673	298 - 305
Farm to East	400	540	420 / 430	SE 13560 06124	313
Moorfield Farm (SE)	125	270	190 / 270	SE 13198 06016	343
Upper Woodhouse Farm (W)	300	440	350 / 410	SE 12746 06279	279

1.4 The predictions of sound from the overall operation during typical activities when mobile plant is at the closest and furthest points to the dwellings are shown below using data measured directly on site of existing plant and machinery:

Specific Sound Pressure Levels, dB LA_{eq}

Dwelling	Closest Workings		Furthest Workings
Quarry House / White Gate Rd (N)	44.4		42.3
Farm to East	43.5		42.8
Moorfield Farm (SE), Deep	44.9		43.1
Moorfield Farm (SE), Shallow	46.1		43.8
Moorfield Farm (SE), Top / Rim	51.3		45.6
Upper Woodhouse Farm (W)	45.5		43.3

Acoustic line of sight will be entirely broken from the processing plant on the quarry floor and the mobile excavation works to all nearby dwellings.

1.5 The typical background sound level during times of operation was identified using unattended measurements of the existing sound climate at the nearest and most affected dwelling to the site. They were confirmed as being representative of the background at the other nearest dwellings using short duration attended measurements.

The typical background sound levels are identified as being 37 dB $LA_{90,15mins}$ during times of operation at the farm to the east and Moorfield Farm to the southeast. At the other two receptors, the typical background sound level was marginally lower at 36 dB $LA_{90,15mins}$.

1.6 Activity from the proposed quarry extension is predicted to fall within the 10 dBA above background limit at all receptors apart from Moorfield Farm when mobile workings are closer to the farm and at shallower depths.

The provision of an earth bund as indicated on the proposal drawings helps to maximise noise barrier effect for the majority of the time and it remains likely that the initial requirement to not exceed 10 dBA above background will be met for much of the time at Moorfield Farm unless workings are close to the dwelling and at higher elevations above the quarry floor.

For those instances where quarry sound may exceed background by more than 10 dBA, there appears to be no further practicable reduction in quarry sound without placing unreasonable burden on the operator. The NPPF then advises that quarry sound should not exceed 55 dB $LA_{eq,1\ hour}$, and this requirement is predicted to be met at all times.

1.7 The comparisons between sound from the quarry and the typical background levels are:

Dwelling	**Closest Workings**		**Furthest Workings**
Quarry House / White Gate Rd (N)	8.4		6.3
Farm to East	6.5		5.8
Moorfield Farm (SE) Deep	7.9		6.1
Moorfield Farm (SE) Shallow	9.1		6.8
Moorfield Farm (SE) Top / Rim	14.3		8.6
Upper Woodhouse Farm (W)	9.5		7.3

1.8 The predicted sound levels at dwellings during temporary phases when machinery may be visible at the closest dwellings are comfortably within the temporary 70 dB LA_{eq} limit.

1.9 The calculation procedures adopted in this report are generally conservative and give a reasonable worst-case, but are based on well recognised principles of acoustics.

1.10 It is concluded that the processing and excavation proposed at the site can be undertaken in compliance with the noise criteria given in the NPPF.

2.0 Introduction

It is proposed to extend the existing Windy Ridge Quarry at Cartworth Moor Road, Holmfirth, HD9 2RL The grid reference of the centre of the existing quarry site is SE 13115 06298 and SE 13091 06183 for the proposed extension.

The quarry operator and their consultant MWP planning consultants commissioned a noise impact assessment to accompany the application for the new area of works. Since preparation of our original report, cross section drawings have been made available, showing the relationship between the site and the dwelling most affected by quarry sound. These cross section drawings enable a more accurate method of barrier calculation for sound reaching this dwelling and so more comprehensive appraisal of noise impact.

Noise impact from proposed site activities affecting all dwellings is quantified in comparison to the normal assessment criteria for this type of operation, which is summarised in the next subsection.

Some text of this report remains unchanged, the updates being purely concerned with predictions of sound reaching Moorfield Farm to the south east.

2.1 Noise Assessment Criteria

The Department for Communities and Local Government published the document “Planning Practice Guidance” to the National Planning Policy Framework in March 2014. The section of the document which applies to minerals excavation and surface workings quantifies specific noise standards. These are summarised as:

- During the daytime from 07.00 to 19.00 hours the sound level at noise-sensitive properties should not exceed the background level by more than 10 dBA.

- In some circumstances it may not be possible to meet this requirement without unreasonable burden of the mineral operator in which case the upper limit between 0700 to 1900 hours is 55 dB LA_{eq} (1-hour) at noise-sensitive properties.

- During the evening from 19.00 to 22.00 hours the 55 dB LA_{eq} (1-hour) limit applies even if the background level is greater than 45 dB LA_{90}.

- At night between 22.00 to 07.00 hours the sound level at noise-sensitive properties should not exceed 42 dB LA_{eq} (1-hour).

- Where the site noise is tonal in character it may be appropriate to set specific limits for this element of the noise. Peak or impulsive noise, which may include reversing bleepers, may need specific limits and should not occur regularly at night.

- It is often necessary to raise the noise limits to allow temporary phases in a development, for example baffle mound construction, soil stripping, and construction of new permanent landforms. A limit of 70 dB LA_{eq} (1-hour) is suggested for periods of up to 8 weeks per year.

3.0 **Proposed Site Operations**

The site operations include:

- A processing area consisting of three large items (crushers and screens), loaded by tracked loader / excavator. Materials are transported around site using a dump truck and taken off site using HGVs. There is also a set of floodlights powered by portable, currently near the site portacabins.

- Mobile plant consisting of another tracked loader / excavator, a bulldozer and aforementioned dump truck.

The plant items and machinery are already in use on the existing site, so source sound levels could be measured from them directly.

Access to the site will be via a new track / access road off Cartworth Moor Road. HGVs call rates will vary throughout the day, but we understand that a reasonable worst case maximum for assessment purposes is 10 HGV movements per hour.

The processing operations will remain below ground level. Soils will be mounded around the perimeter and the land will be worked from the existing operational quarry towards the south, so plant and machinery will remain below ground level at all times. The hours of operation do not extend beyond 07.00 – 18.00 Monday – Friday, 07.00 – 12.00 Saturday.

3.1 Noise Sensitive Receptors

The nearest noise sensitive receptors are all dwellings, detailed in the table below along with their grid references, distance to processing area and typical minimum/maximum distances to the quarry areas.

Dwelling	Min Distance (m)	Max Distance (m)	Min & Max Distance to Processing Area	Grid Reference	Elevation (m)
Quarry House / White Gate Rd (N)	430	545	370 / 460	SE 13180 06673	298 - 305
Farm to East	400	540	420 / 430	SE 13560 06124	313
Moorfield Farm (SE)	125	270	190 / 270	SE 13198 06016	343
Upper Woodhouse Farm (W)	300	440	350 / 410	SE 12746 06279	279

The elevation of the ground where an extension to quarry activity is proposed is 344m. A Google location plan is given overleaf showing the site and nearby receptors.

3.2 **Site Location and Receptors**

(Quarry House & White Gate Road to North of Image)

3.3 **Sound Sources**

Measurements of processing machinery and plant were taken on the existing site. Two measurement positions were used at accessible parts of the quarry rim where the whole processing operation could be measured at a distance of 35m and 40m. These measurements included continual operation of the crusher, screens, tracked loader / excavator, movements of dump trucks and HGVs and any general site activity. One of these positions directly faced the noisiest part of the machine with the highest sound output. It is this measurement that has been used in the calculations of noise impact to allow for the worst case noise exposure at each dwelling.

The position of these overall measurements includes the effect of any reflections within the quarry, directionality of sources and enables accurate calculations of sound decay due to additional distance to the nearest dwellings. Some measurements were also taken at close proximity to the machinery/plant for additional information, but the overall measurements of operational sound provide a more reliable and accurate basis for calculation of noise impact. There were also some contributions from mobile excavation plant, but the dominant source remained the main processing area.

In addition to this, sound from the mobile tracked excavator and bulldozer are taken from measurements undertaken by us at previous sites where they could be measured in isolation. The sound power level of the dump truck and HGV movement is taken from BS 5228. Measurements were taken on this site of the dump truck manoeuvring. Each of these individual source levels are added to the overall measurements of the processing operation to calculate the reasonable worst case sound level from the whole quarry at the nearest noise sensitive receptors.

Measurement at Quarry Rim

Second Measurement at Quarry Rim

Processing Area

Dump Truck Manoeuvring

3.4 Plant Sound Levels

The sound levels measured by us at this and other previous quarry sites are shown in the table below, along with the distances from the sources that the measurements were taken and data from BS 5228. The sound levels are also shown normalised to a distance of 10 m for easy comparison.

Description	Sound Pressure Level, dBA	Sound Pressure Level at 10m, dBA
Processing Area		
Quarry Rim, All Sources, 40m	71.8	83.8
Quarry Rim, All Sources, Loudest Engine Visible, 35m	76.9	87.8
Generator and Floodlights, 2m	75.2	61.2
Crusher (Red Bodywork), 10m	87.7	87.7
McCloskey S190 Screen, 10m (contribution from others)	84.3	84.3
Tracked Bucket Loader / Excavator, 10m	80	80.0
Mobile / Excavation		
Tracked Bucket Loader / Excavator, 10m	80	80.0
Bulldozer, 10m	86	86.0
Dump Truck Moving and Manoeuvre, 10m	76.4	76.4
HGV Sound Power Level	SWL = 106 dBA	
Dump Truck Driving Sound Power Level	SWL = 110 dBA	

It is assumed that all processing plant items will operate with 100% utilisation. The mobile excavator may be in use continually, but it is unlikely that the bulldozer will typically have continuous use. It has been assumed that the on-times are 100% for the excavator and simultaneous 50% for the bulldozer. It may be noted that an increase in on time for the bulldozer would not cause a material change in assessment conclusions..

Calculation of sound from movements of dumptrucks is undertaken using the haul road formula from BS 5228 assuming reasonable worst case routes as received at each dwelling. It has been assumed that there will be eight movements of the dump truck per hour (ie. four trips in each direction, or one full load every 15 minutes), with a speed of 10 km/h. In addition, measurements were taken directly of the Dump Truck on site manoeuvring. Fifteen minutes per hour of this manoeuvring sound has been added to the calculations of sound from the site. These combined contributions are thought to represent the reasonable worst case scenario.

As described earlier, the maximum number of HGV movements on the access road to the processing area is unlikely to exceed 10 in the reasonably busiest hours of operation. The speed of HGVs on the access road has been taken as 16 km/h for calculation.

4.0 Sound Levels at Dwellings

4.1 Dwelling Positions

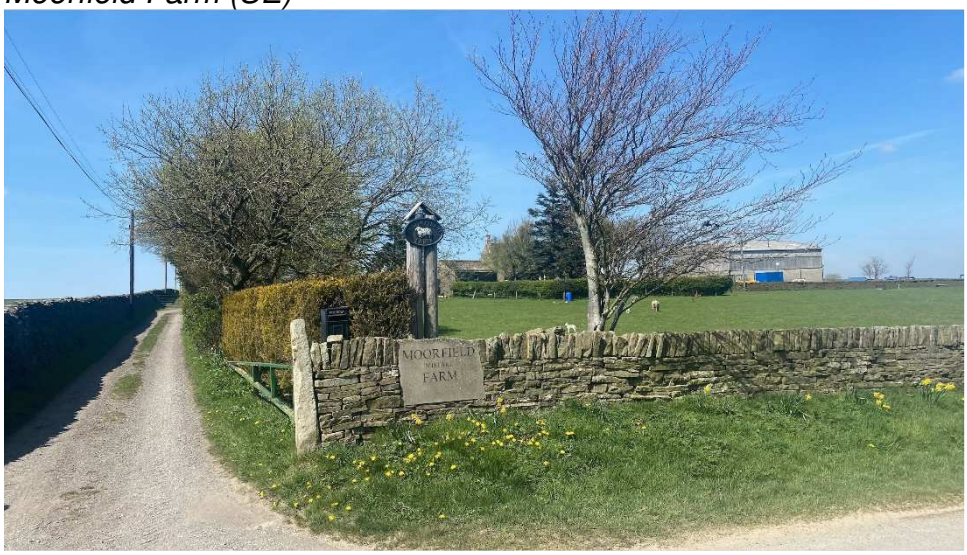
The assessment of sound impact from proposed site activities is undertaken for four sets of the closest dwellings. Other dwellings are at greater distances from the sites and will be subject to lower noise impact then identified in this report: The table showing details of the closest dwellings is repeated below for ease of reference.

Dwelling	Min Distance (m)	Max Distance (m)	Min & Max Distance to Processing Area	Grid Reference	Elevation (m)
Quarry House / White Gate Rd (N)	430	545	370 / 460	SE 13180 06673	298 - 305
Farm to East	400	540	420 / 430	SE 13560 06124	313
Moorfield Farm (SE)	125	270	190 / 270	SE 13198 06016	343
Upper Woodhouse Farm (W)	300	440	350 / 410	SE 12746 06279	279

The processing plant may remain in its current location, but the possibility exists that it may move to the south as the quarry progresses. To provide a reasonable worst case and accurate assessment, likely minimum and maximum distances between receptors and processing area have been used in the calculations.

For sound reaching Moorfield Farm, predictions have been undertaken for when mobile workings are at their closest and furthest points, when workings are at the full quarry depth, shallow depth and also at the top/ridge. This gives six predictions of sound at Moorfield Farm, within which the majority of operating conditions should fall.

Moorfield Farm (SE)

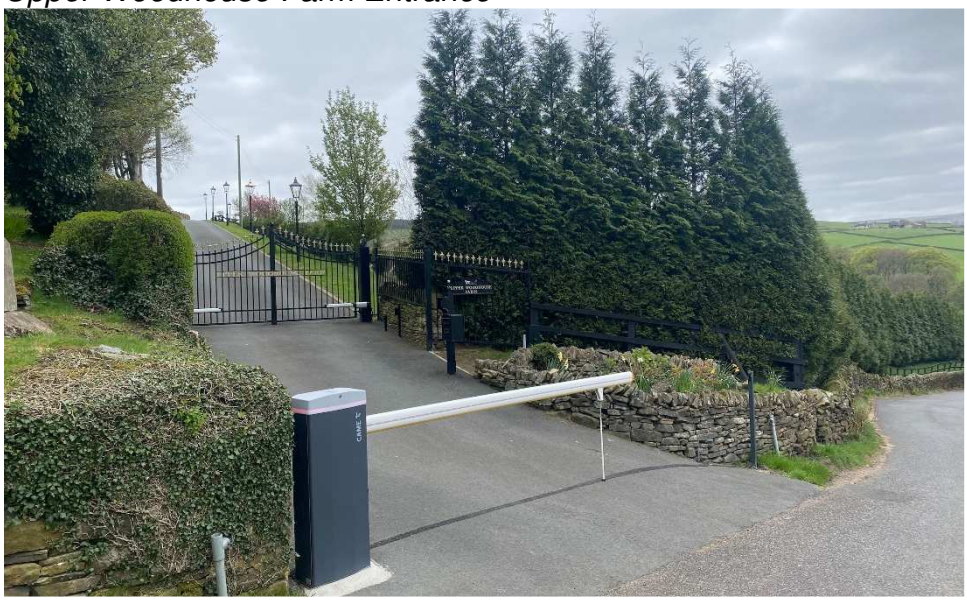


Farmyard / Animal Sheds of Moorfield Farm Towards Quarry Site

Cartworth Moor Road Towards Farm to East

Quarry House / Looking Down White Gate Road

Upper Woodhouse Farm Entrance



4.2 **Sound Predictions**

The distances between the mobile excavation plant and the nearest dwellings will vary depending on the area being worked, as shown in the table of receptors. For this reason, predictions have been undertaken at each set of dwellings for the closest and furthest excavation operations, giving a range of values that normal operations will fall within.

The calculations of sound levels at the nearest dwellings are given in the appendices to this report for conciseness, the results being summarised in this section.

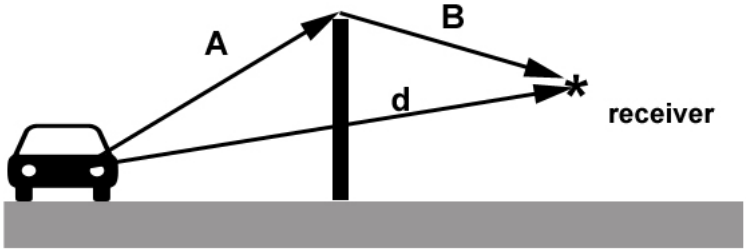
Barrier Effect, BS 5228 Approximation

For the effect of barriers on sound reaching all dwellings apart from Moorfield Farm, the guidance of section D.3.2.2.1 of BS 5228 has been used. This 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.'*

It has been assumed that all dwellings will benefit from full screening from the quarry operation, so a 10 dBA barrier effect has been applied. At this site, the quarry sides are tall and steep and many of the nearest dwellings are at a significant lower level than the quarry rim. This means that it is likely that the attenuation due to barrier effect will be more than the 10 dBA assumed in the calculations, again providing a worst case assessment.

Barrier Effect, Maekawa Theory

For sound reaching Moorfield Farm where cross section drawings have been prepared, Maekawa's theory is used to quantify barrier effect. This theory explains the attenuation caused by barriers at each frequency octave by considering the path difference:



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

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

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 limit of barrier effect at higher frequencies is capped at 20 dB according to our on site experience of typical limitations of barrier effect. Some commentary is also given in the conclusions on the potential for reduction of barrier effect due to reflections off the quarry sides.

Predicted Sound Levels

The predicted sound levels reaching dwellings are summarised in the table below from all activities combined, including excavation, processing, dump truck and movements of HGVs on the access road.

Specific Sound Pressure Levels, dB LA_{eq}

Dwelling	Closest Workings		Furthest Workings
Quarry House / White Gate Rd (N)	44.4		42.3
Farm to East	43.5		42.8
Moorfield Farm (SE), Deep	44.9		43.1
Moorfield Farm (SE), Shallow	46.1		43.8
Moorfield Farm (SE), Top / Rim	51.3		45.6
Upper Woodhouse Farm (W)	45.5		43.3

Sound Levels of Activity at Quarry Rim, No Barrier Effect

The extension will be worked from the existing quarry moving south, so it remains likely that all processing and excavation machinery will benefit from sound barrier effect all of the time.

The possibility remains that there may be isolated periods where excavation machinery is visible at some dwellings when working at the quarry rim. The predictions of sound levels at these times is shown in the table below, allowing for no barrier effect from mobile plant, but processing plant located on the quarry floor will still benefit from full screening.

Sound Pressure Levels with Operations at Rim, dB LA_{eq}

Dwelling	Closest Workings		Furthest Workings
Quarry House / White Gate Rd (N)	48.1		45.7
Farm to East	48.2		46.0
Moorfield Farm (SE), No Barrier Effect	60.9		52.7
Moorfield Farm (SE), With Barrier Effect	51.3		45.6
Upper Woodhouse Farm (W)	51.0		47.4

Cross sections show that even when at the rim, it is likely that barrier effect will still exist for some of the time at Moorfield House. For this reason, predictions are shown above that include or exclude barrier effect and sound levels will vary between these predictions.

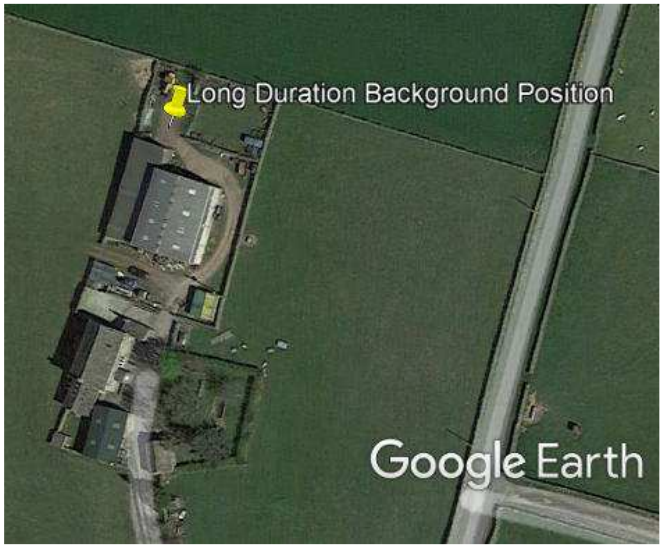
HGVS on Haul Road

Calculations of sound from HGVs on the Haul / Access road are given in the appendices of this report, but are included in the overall sound levels reported in the main body of this report.

There will be screening of HGVs and the access road from all dwellings so a barrier effect of 10 dBA is included in the access road calculations. It may be noted that if HGVs were visible, it would not cause a material change in conclusions, the only effect being a small increase in sound levels at Moorfield Farm when mobile works are furthest from the dwelling.

5.0 **Background Sound Levels**

Existing background sound levels were taken using long duration unattended measurements at the garden / farmyard of the most affected dwelling, Moorfield Farm to the southeast, shown in the image to the right. These measurements were supplemented by shorter duration attended measurements taken at the other nearest receptors.



During our visits to set up and take down the equipment, sporadic activity from the quarry could be heard but was not dominant and did not appear to have any material effect on background (dB $LA_{90,15min}$) sound levels. This provides further suggestion that the predictions contained in this report are worst case.

The measurements taken during the time immediately after quarry activity ceased each day were separately analysed and compared to those taken during periods of quarry activity. The typical background sound levels were identical, providing additional certainty that the long duration unattended measurements representative of the normal environmental background sound level.

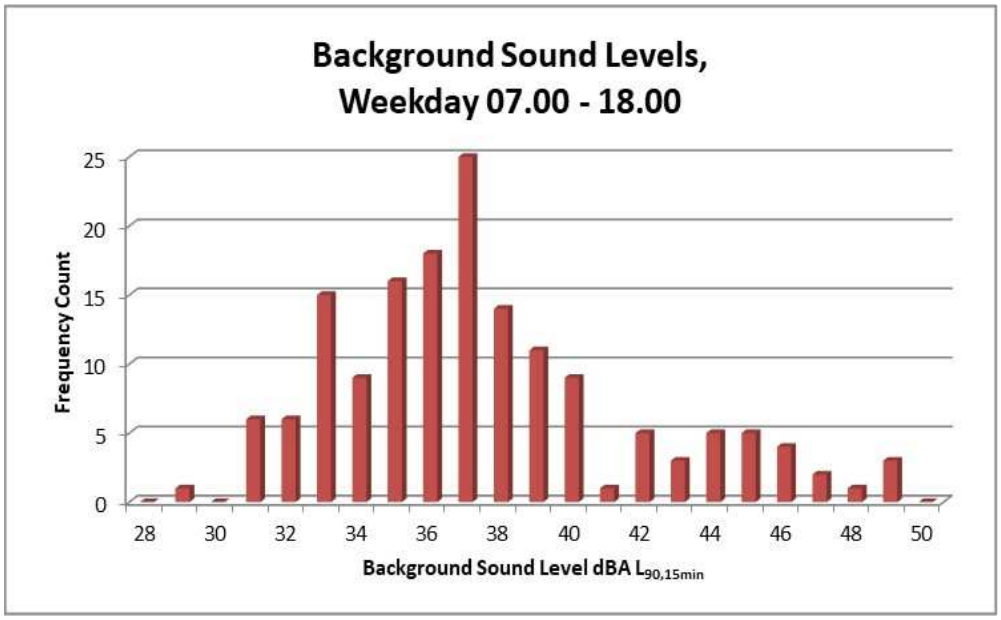
Measurements were taken using a Type I sound level meter with current traceable calibration certification. Full details of the equipment used are given in the appendices to this report.

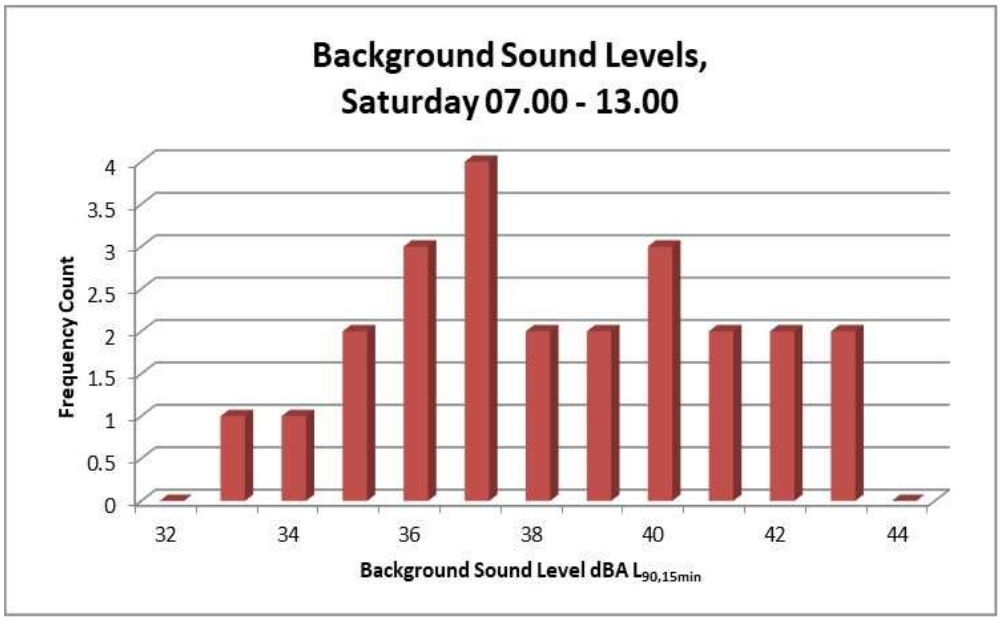
Measurements were taken between 14.15 on Thursday 21st April to 10.00 on Wednesday 27th April 2022.

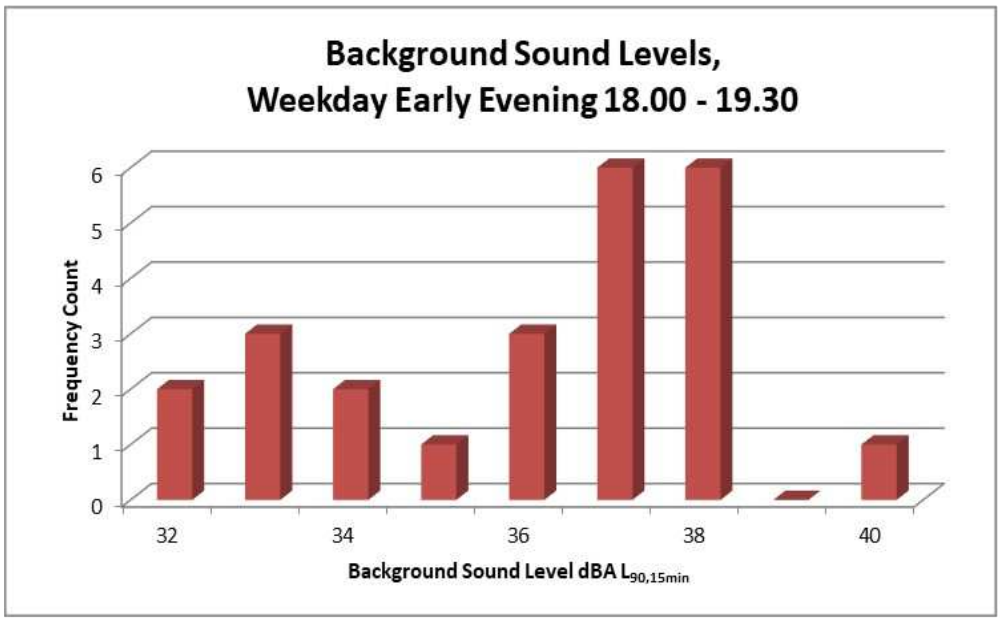
The location of the quarry and receptor is fairly exposed (as the name Windy Ridge Quarry may suggest), but the measurements were undertaken during a calm and dry period during spring. Weather conditions remained entirely suitable for the outdoor measurement of sound for the majority of time, as detailed in the table below

Date	Wind Speed (ms)	Temperature (deg C)	Cloud cover (%)
21/04/2022	3-5	12-15	0-25
22/04/2022	4-6	11-14	0-50
23/04/2022	3-6	9-12	0-50
24/04/2022	4-5	10-13	0-50
25/04/2022	2-4	8-11	25-75
26/04/2022	2-5	8-11	50-100
27/04/2022	1-3	6-9	75-100

Full measurement data is included in the appendices of this report; a graphical summary of background sound levels is shown below and overleaf:







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The results displayed on the above graphs are entirely conclusive that the typical background sound level is 37 dB $LA_{90,15mins}$ during times of quarry operation. The levels measured during the period immediately after quarry activity has ceased were in complete agreement, demonstrating that sound from the quarry did not influence typical background sound levels at the measurement position.

Attended measurements at the other nearest dwellings suggested that the typical background sound level at the farm to the east is also 37 dB $LA_{90,15mins.}$ Results of measurements at White Gate Road to the north and Upper Woodhouse Farm to the west suggest that the typical background sound level may be fractionally lower at these receptors at 36 dB $LA_{90,15mins}$.

6.0 Impact Assessment

6.1 Background Comparison - Normal Activities

The requirements of the NPPF "Planning Practice Guidance" on sound limits from minerals excavation and surface workings are summarised in section 2.0 of this report. The main requirement is that from 07.00 to 19.00 hours the sound level at noise-sensitive properties should not exceed the background level by more than 10 dBA unless this places unreasonable burden on the operator. In these instances a limit of up to 55 dBA can be applied, but exceedances above the 10 dBA comparison to background should be minimised where practicable – though in this instance the two limits are the same due to weekday background sound levels.

Comparison between the background sound levels measured for this survey and the predicted sound levels from the quarry operation in isolation are shown in the table below. Positive numbers show an exceedance above background, negative values show predicted sound from the quarry being below background.

Dwelling	Closest Workings		Furthest Workings
Quarry House / White Gate Rd (N)	8.4		6.3
Farm to East	6.5		5.8
Moorfield Farm (SE) Deep	7.9		6.1
Moorfield Farm (SE) Shallow	9.1		6.8
Moorfield Farm (SE) Top / Rim	14.3		8.6
Upper Woodhouse Farm (W)	9.5		7.3

It can be seen that activity from the proposed quarry is predicted to fall within the 10 dBA above background limit at all receptors apart from Moorfield Farm when mobile workings are closer to the farm and at shallower depths.

The barrier effect calculations are based on the well recognised theory of Maekawa. When workings are at significant depth into the quarry, the barrier effect is considerably more than the 10 dBA approximation given in BS 5228, due to the high sides of the quarry giving a large effective barrier height.

It is possible that reflections of sound off the quarry sides may lead to a reduction in this barrier effect compared to the predictions when at 'Deep' and 'Shallow' depths. The precise effect of reflections cannot be quantified, but they are likely to be minor, especially given that the source measurements were taken on this site and include reflections of sound

around the quarry walls. This may not materially affect the overall outcome of the assessment, but is mentioned for completeness of information and minimising of uncertainty.

It remains likely that the initial requirement to not exceed 10 dBA above background will be met for much of the time at Moorfield Farm unless workings are close to the dwelling and at higher elevations above the quarry floor. This requirement is predicted to be met at other dwellings at all times of normal operation (ie. not in view at the quarry rim).

The provision of an earth bund as indicated on the proposal drawings helps to maximise noise barrier effect for the majority of the time. For those instances where quarry sound may exceed background by more than 10 dBA, there appears to be no further practicable reduction in quarry sound without placing unreasonable burden on the operator. The NPPF then advises that quarry sound should not exceed 55 dB $LA_{eq,1\ hour}$, and this requirement is predicted to be met at all times.

6.2 Phases at Quarry Rim

The quarry sides and soil mounds will provide barrier effect for the majority of the time. The possibility remains that when work is being conducted at the quarry rim, mobile machinery may have acoustic line of sight to the nearest dwellings. The predicted sound levels from the overall operation are shown in the table below for this scenario:

Sound Pressure Levels with Operations at Rim, dB LA_{eq}

Dwelling	Closest Workings		Furthest Workings
Quarry House / White Gate Rd (N)	48.1		45.7
Farm to East	48.2		46.0
Moorfield Farm (SE), No Barrier Effect	60.9		52.7
Moorfield Farm (SE), With Barrier Effect	51.3		45.6
Upper Woodhouse Farm (W)	51.0		47.4

The predicted sound levels at dwellings during these phases would be well within the temporary 70 dB LA_{eq} limit allowable for up to 8 weeks per year for exactly this type of activity.

The sound levels would be generally within the 55 dBA limit discussed in previous sections apart from at Moorfield Farm for closest workings when mobile machinery is in line of acoustic sight. As mentioned earlier in this report, cross sections show that even when at rim, it is likely that barrier effect will still exist for some of the time at Moorfield House.

7.0 **Assessment Conclusions**

It is concluded that the operations at the proposed extension to Windy Ridge Quarry will be:

- Generally be within (ie. in compliance with) the most stringent requirement to not exceed background by more than 10 dBA at all dwellings apart from some instances at Moorfield Farm when mobile workings are close to this dwelling and at greater elevation above the quarry floor.

- Quarry sound is predicted to be within the requirement to not exceed an overall 55 dBA at all receptors at all times of normal operation.

- This is based on a series of reasonable worst-case assumptions, so the actual on-site situation may be more favourable than that outlined in this report.

- During times when mobile plant and machinery is visible at the quarry rim, sound levels will comfortably within the temporary 70 dB LA_{eq} limit allowable for up to 8 weeks per year for exactly this type of activity (and still generally within the 55 dBA normal limit at most dwellings for most of the time).

APPENDIX 1

BACKGROUND SOUND LEVEL MEASUREMENTS

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
21/04/2022	14:15:00	44.5	63.7	32.7	47.4	37.0
21/04/2022	14:30:00	45.4	63.7	33.4	48.4	38.1
21/04/2022	14:45:00	46.5	63.1	34.2	49.4	38.6
21/04/2022	15:00:00	45.8	61.5	33.9	49.0	38.8
21/04/2022	15:15:00	45.9	63.1	33.4	49.1	37.8
21/04/2022	15:30:00	48.0	64.9	34.9	51.4	39.2
21/04/2022	15:45:00	48.5	65.8	34.3	51.7	40.5
21/04/2022	16:00:00	48.2	63.3	35.6	51.8	40.2
21/04/2022	16:15:00	47.9	65.5	36.0	51.2	40.4
21/04/2022	16:30:00	49.4	67.8	35.4	52.7	39.5
21/04/2022	16:45:00	47.4	63.5	33.5	50.9	39.1
21/04/2022	17:00:00	48.6	67.6	35.4	51.8	40.1
21/04/2022	17:15:00	52.3	70.5	34.5	55.7	39.5
21/04/2022	17:30:00	58.9	77.0	37.0	59.7	41.9
21/04/2022	17:45:00	47.5	65.3	34.0	50.9	39.3
21/04/2022	18:00:00	45.9	61.6	33.1	49.4	37.9
21/04/2022	18:15:00	45.9	64.5	33.3	49.0	38.0
21/04/2022	18:30:00	44.3	64.1	31.8	47.5	37.0
21/04/2022	18:45:00	44.3	63.7	32.7	47.4	37.1
21/04/2022	19:00:00	54.3	73.5	31.5	52.1	36.6
21/04/2022	19:15:00	49.0	73.5	32.6	48.3	36.6
21/04/2022	19:30:00	42.6	64.9	29.8	44.1	33.6
21/04/2022	19:45:00	43.2	69.1	30.7	46.0	35.0
21/04/2022	20:00:00	45.8	69.9	30.7	48.2	34.8
21/04/2022	20:15:00	41.2	57.9	29.1	44.3	33.3
21/04/2022	20:30:00	42.0	64.9	29.3	42.5	32.9
21/04/2022	20:45:00	36.3	59.2	28.0	37.8	30.8
21/04/2022	21:00:00	36.0	56.1	27.9	37.9	30.7
21/04/2022	21:15:00	34.8	49.7	28.4	37.4	31.0
21/04/2022	21:30:00	33.2	52.9	28.0	34.7	30.2
21/04/2022	21:45:00	35.1	61.1	28.6	35.1	30.4
21/04/2022	22:00:00	35.1	57.0	28.8	36.4	30.7
21/04/2022	22:15:00	33.4	56.4	28.0	34.5	29.8
21/04/2022	22:30:00	33.6	47.5	28.8	35.7	30.9
21/04/2022	22:45:00	33.4	45.1	29.2	34.9	31.2
21/04/2022	23:00:00	34.9	57.7	27.2	35.2	29.8
21/04/2022	23:15:00	31.3	51.1	26.6	31.9	28.7
21/04/2022	23:30:00	32.8	51.7	27.4	34.9	29.5
21/04/2022	23:45:00	34.6	50.9	27.0	36.9	29.5
22/04/2022	00:00:00	37.0	60.7	25.5	38.8	28.5
22/04/2022	00:15:00	33.5	49.1	25.6	36.5	27.9

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
22/04/2022	00:30:00	36.6	54.9	25.8	40.0	28.8
22/04/2022	00:45:00	36.9	52.9	26.6	39.9	30.0
22/04/2022	01:00:00	37.8	57.8	25.8	40.7	29.6
22/04/2022	01:15:00	34.8	52.5	25.3	38.0	28.5
22/04/2022	01:30:00	40.3	62.3	27.0	43.3	30.4
22/04/2022	01:45:00	38.9	62.8	25.7	41.5	30.8
22/04/2022	02:00:00	40.1	58.9	27.6	43.3	31.7
22/04/2022	02:15:00	40.7	59.1	27.5	43.9	32.5
22/04/2022	02:30:00	40.6	61.3	26.8	43.4	32.3
22/04/2022	02:45:00	40.8	59.6	27.6	44.0	32.1
22/04/2022	03:00:00	38.9	59.8	26.3	42.1	29.7
22/04/2022	03:15:00	36.7	59.1	26.1	39.2	28.8
22/04/2022	03:30:00	34.0	47.3	25.5	37.0	28.0
22/04/2022	03:45:00	31.5	47.2	25.6	34.1	27.5
22/04/2022	04:00:00	31.6	51.5	25.7	34.0	27.8
22/04/2022	04:15:00	29.8	41.6	25.5	31.4	27.5
22/04/2022	04:30:00	29.7	42.0	25.7	31.2	27.6
22/04/2022	04:45:00	31.4	45.8	25.1	33.7	27.5
22/04/2022	05:00:00	35.9	54.1	26.9	38.3	29.0
22/04/2022	05:15:00	36.2	51.3	27.3	39.5	30.6
22/04/2022	05:30:00	33.8	51.6	27.6	35.8	29.6
22/04/2022	05:45:00	35.5	51.8	28.6	37.8	31.3
22/04/2022	06:00:00	40.1	64.0	28.9	41.7	32.0
22/04/2022	06:15:00	68.4	88.5	30.1	68.1	35.0
22/04/2022	06:30:00	40.8	55.3	32.4	43.8	34.9
22/04/2022	06:45:00	37.6	59.7	32.1	39.3	33.9
22/04/2022	07:00:00	37.7	52.6	32.0	39.5	34.2
22/04/2022	07:15:00	40.7	56.2	32.4	42.4	34.8
22/04/2022	07:30:00	41.3	57.9	33.4	43.6	37.0
22/04/2022	07:45:00	40.7	61.1	32.2	42.5	34.7
22/04/2022	08:00:00	40.4	58.9	33.4	42.7	35.8
22/04/2022	08:15:00	43.8	64.3	33.3	46.9	36.9
22/04/2022	08:30:00	44.3	63.4	34.7	47.3	37.7
22/04/2022	08:45:00	46.6	83.0	33.9	43.8	36.6
22/04/2022	09:00:00	43.5	62.2	34.0	46.3	37.2
22/04/2022	09:15:00	45.3	65.8	34.0	47.8	37.9
22/04/2022	09:30:00	44.0	60.8	35.0	46.9	38.3
22/04/2022	09:45:00	44.7	60.7	35.7	47.6	38.6
22/04/2022	10:00:00	42.2	57.3	34.3	45.0	37.1
22/04/2022	10:15:00	45.0	60.4	35.1	47.9	38.7
22/04/2022	10:30:00	45.8	61.5	37.0	48.7	40.4
22/04/2022	10:45:00	46.2	63.3	37.2	49.1	40.3
22/04/2022	11:00:00	47.7	66.0	37.2	50.8	41.5
22/04/2022	11:15:00	48.6	65.8	36.6	51.8	40.3
22/04/2022	11:30:00	55.0	73.3	39.7	58.6	45.3
22/04/2022	11:45:00	56.2	89.0	38.5	56.5	45.2

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
22/04/2022	12:00:00	48.3	63.3	39.1	51.4	42.4
22/04/2022	12:15:00	49.6	61.7	39.5	53.2	43.0
22/04/2022	12:30:00	48.2	64.1	39.9	50.4	43.1
22/04/2022	12:45:00	49.3	66.9	40.0	52.2	43.9
22/04/2022	13:00:00	50.6	74.6	42.0	52.8	45.7
22/04/2022	13:15:00	50.5	63.4	41.4	53.3	44.9
22/04/2022	13:30:00	57.5	81.2	40.1	61.4	44.3
22/04/2022	13:45:00	56.7	89.4	38.6	58.3	44.1
22/04/2022	14:00:00	55.0	76.1	40.8	57.8	45.5
22/04/2022	14:15:00	57.5	73.1	41.4	61.1	48.1
22/04/2022	14:30:00	57.4	73.6	40.0	60.8	47.1
22/04/2022	14:45:00	60.7	82.0	41.0	63.0	48.5
22/04/2022	15:00:00	58.0	76.7	42.4	61.2	48.6
22/04/2022	15:15:00	56.6	75.3	42.8	59.7	48.5
22/04/2022	15:30:00	54.1	71.4	40.7	57.4	45.2
22/04/2022	15:45:00	56.0	74.1	41.2	59.5	46.2
22/04/2022	16:00:00	56.4	77.4	40.7	59.5	46.6
22/04/2022	16:15:00	55.3	73.4	39.5	58.6	45.9
22/04/2022	16:30:00	51.4	70.9	35.9	54.7	42.0
22/04/2022	16:45:00	52.1	71.3	37.5	55.1	42.8
22/04/2022	17:00:00	53.3	70.3	39.3	56.4	44.7
22/04/2022	17:15:00	53.4	67.8	39.6	57.2	44.0
22/04/2022	17:30:00	62.8	82.5	37.6	66.6	44.3
22/04/2022	17:45:00	60.4	89.5	36.8	57.8	41.7
22/04/2022	18:00:00	46.5	63.0	33.4	49.8	37.8
22/04/2022	18:15:00	44.1	66.3	34.1	46.7	37.3
22/04/2022	18:30:00	45.8	63.0	35.0	48.8	38.2
22/04/2022	18:45:00	47.6	65.0	33.9	50.9	39.6
22/04/2022	19:00:00	46.5	68.1	33.6	49.5	38.4
22/04/2022	19:15:00	47.3	66.9	33.3	50.3	37.5
22/04/2022	19:30:00	42.6	61.7	32.4	45.4	35.5
22/04/2022	19:45:00	44.1	63.8	33.3	47.5	36.6
22/04/2022	20:00:00	49.1	66.5	32.2	51.0	36.3
22/04/2022	20:15:00	63.1	82.2	32.7	52.3	36.5
22/04/2022	20:30:00	44.1	62.8	32.2	47.2	35.9
22/04/2022	20:45:00	43.0	62.8	30.6	45.9	35.2
22/04/2022	21:00:00	40.4	58.0	30.9	43.1	34.3
22/04/2022	21:15:00	43.3	60.7	30.6	46.5	34.5
22/04/2022	21:30:00	43.8	61.3	30.4	47.1	34.9
22/04/2022	21:45:00	42.7	59.7	30.0	45.9	34.2
22/04/2022	22:00:00	39.7	60.4	30.1	42.4	32.9
22/04/2022	22:15:00	36.7	52.3	29.0	39.7	31.3
22/04/2022	22:30:00	62.1	81.1	29.4	58.9	33.4
22/04/2022	22:45:00	41.1	60.8	29.8	43.7	32.7
22/04/2022	23:00:00	42.3	60.3	28.2	46.0	31.0
22/04/2022	23:15:00	34.9	54.5	28.0	36.8	29.9

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
22/04/2022	23:30:00	37.8	57.2	27.6	39.9	30.4
22/04/2022	23:45:00	36.0	55.9	26.3	38.7	28.9
23/04/2022	00:00:00	34.6	49.0	25.8	37.6	28.9
23/04/2022	00:15:00	42.0	60.9	27.4	44.5	31.3
23/04/2022	00:30:00	40.1	58.8	27.9	43.1	31.9
23/04/2022	00:45:00	37.6	64.3	26.5	40.3	29.5
23/04/2022	01:00:00	35.2	58.9	25.8	37.5	28.7
23/04/2022	01:15:00	34.3	52.8	25.3	37.2	28.0
23/04/2022	01:30:00	35.4	55.2	25.6	38.2	28.5
23/04/2022	01:45:00	37.2	53.9	25.1	40.3	29.1
23/04/2022	02:00:00	38.4	56.4	26.7	41.7	29.9
23/04/2022	02:15:00	36.4	53.6	26.8	39.4	29.7
23/04/2022	02:30:00	35.8	53.6	25.9	38.8	28.6
23/04/2022	02:45:00	33.2	50.8	25.2	35.8	27.7
23/04/2022	03:00:00	32.9	51.6	25.7	35.3	27.8
23/04/2022	03:15:00	32.4	52.2	24.6	33.4	26.8
23/04/2022	03:30:00	31.3	48.5	24.8	33.8	27.0
23/04/2022	03:45:00	31.5	48.3	25.6	33.6	27.4
23/04/2022	04:00:00	31.5	49.3	24.9	34.2	27.2
23/04/2022	04:15:00	31.8	45.3	24.8	34.5	27.2
23/04/2022	04:30:00	35.5	54.2	26.9	38.3	29.2
23/04/2022	04:45:00	36.8	58.7	27.1	39.6	29.9
23/04/2022	05:00:00	33.7	52.5	26.5	35.8	29.2
23/04/2022	05:15:00	34.8	50.7	27.7	37.4	30.4
23/04/2022	05:30:00	34.7	51.0	27.7	37.2	30.2
23/04/2022	05:45:00	37.2	56.3	29.0	39.7	31.4
23/04/2022	06:00:00	35.2	52.7	27.3	37.3	30.6
23/04/2022	06:15:00	37.7	54.7	28.3	40.8	30.9
23/04/2022	06:30:00	38.3	58.3	28.9	41.1	32.2
23/04/2022	06:45:00	38.2	62.0	29.4	40.6	32.2
23/04/2022	07:00:00	41.8	68.3	31.7	44.6	34.4
23/04/2022	07:15:00	42.5	62.4	31.1	45.3	34.9
23/04/2022	07:30:00	42.0	60.0	30.9	44.7	35.1
23/04/2022	07:45:00	41.1	59.6	31.4	43.6	36.7
23/04/2022	08:00:00	39.2	60.3	30.0	41.7	33.4
23/04/2022	08:15:00	41.1	58.0	31.2	44.2	35.5
23/04/2022	08:30:00	39.9	57.5	32.8	42.6	37.1
23/04/2022	08:45:00	39.9	64.6	32.6	42.3	36.7
23/04/2022	09:00:00	42.4	63.7	33.8	45.3	36.3
23/04/2022	09:15:00	43.2	72.2	32.9	44.8	35.9
23/04/2022	09:30:00	45.4	63.5	34.2	48.4	38.1
23/04/2022	09:45:00	45.9	65.8	34.0	49.1	37.0
23/04/2022	10:00:00	45.4	64.4	35.1	48.4	38.4
23/04/2022	10:15:00	46.6	63.8	35.4	49.7	39.7
23/04/2022	10:30:00	45.7	60.1	35.6	49.1	38.8
23/04/2022	10:45:00	48.6	65.8	37.7	51.7	40.9

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
23/04/2022	11:00:00	63.5	85.8	39.7	59.8	43.1
23/04/2022	11:15:00	62.1	86.3	39.1	54.5	42.1
23/04/2022	11:30:00	61.0	81.0	37.5	64.8	41.9
23/04/2022	11:45:00	49.8	72.2	37.4	52.6	41.2
23/04/2022	12:00:00	50.9	69.7	38.9	54.3	42.6
23/04/2022	12:15:00	65.8	83.4	36.0	70.0	40.0
23/04/2022	12:30:00	50.6	67.7	35.9	54.3	40.1
23/04/2022	12:45:00	45.7	64.5	35.4	48.5	38.9
23/04/2022	13:00:00	49.1	68.7	35.7	52.3	40.3
23/04/2022	13:15:00	54.3	87.0	36.6	53.1	40.7
23/04/2022	13:30:00	69.8	87.3	42.5	73.9	49.0
23/04/2022	13:45:00	55.0	77.6	39.2	57.9	45.6
23/04/2022	14:00:00	61.1	92.8	41.2	61.4	46.4
23/04/2022	14:15:00	55.5	74.4	41.2	58.5	46.4
23/04/2022	14:30:00	54.9	73.7	40.8	57.8	45.8
23/04/2022	14:45:00	54.4	71.0	41.2	57.8	46.0
23/04/2022	15:00:00	55.1	71.1	39.9	58.5	46.1
23/04/2022	15:15:00	52.7	70.1	40.1	55.6	44.2
23/04/2022	15:30:00	52.4	69.7	37.8	55.7	43.1
23/04/2022	15:45:00	51.5	71.7	38.3	54.6	43.2
23/04/2022	16:00:00	53.8	70.3	37.5	57.3	43.6
23/04/2022	16:15:00	49.5	67.0	37.5	52.5	41.3
23/04/2022	16:30:00	51.2	66.2	37.7	54.5	42.5
23/04/2022	16:45:00	51.7	70.9	39.1	55.0	43.1
23/04/2022	17:00:00	53.5	70.7	40.2	56.6	45.6
23/04/2022	17:15:00	57.3	80.3	41.2	59.9	46.3
23/04/2022	17:30:00	64.5	83.4	40.2	60.8	45.4
23/04/2022	17:45:00	68.4	83.1	43.8	69.2	51.4
23/04/2022	18:00:00	57.6	74.0	38.9	61.7	44.8
23/04/2022	18:15:00	51.3	68.4	37.3	54.9	41.0
23/04/2022	18:30:00	53.0	70.7	37.5	56.6	41.9
23/04/2022	18:45:00	54.4	70.0	37.1	58.0	41.9
23/04/2022	19:00:00	53.9	71.7	34.7	57.1	38.1
23/04/2022	19:15:00	55.2	72.1	38.0	58.5	43.5
23/04/2022	19:30:00	50.8	69.1	34.6	52.7	38.8
23/04/2022	19:45:00	51.5	67.7	35.2	54.9	40.8
23/04/2022	20:00:00	53.0	71.1	33.0	57.1	37.8
23/04/2022	20:15:00	47.7	66.3	31.8	50.4	35.8
23/04/2022	20:30:00	48.0	66.2	33.3	50.8	36.4
23/04/2022	20:45:00	47.9	63.6	33.2	51.3	36.6
23/04/2022	21:00:00	47.9	66.6	33.1	50.4	36.5
23/04/2022	21:15:00	46.3	68.7	32.4	48.9	36.7
23/04/2022	21:30:00	49.2	68.1	31.6	49.7	35.1
23/04/2022	21:45:00	47.1	66.2	30.0	49.8	36.2
23/04/2022	22:00:00	41.4	59.5	29.4	44.5	33.3
23/04/2022	22:15:00	40.2	60.1	29.7	42.8	33.0

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
23/04/2022	22:30:00	42.2	62.6	29.3	43.7	32.7
23/04/2022	22:45:00	42.3	66.2	29.6	42.4	32.1
23/04/2022	23:00:00	41.9	66.2	28.7	42.2	31.9
23/04/2022	23:15:00	43.0	65.8	29.2	43.7	32.6
23/04/2022	23:30:00	39.9	68.0	27.7	40.4	30.7
23/04/2022	23:45:00	38.3	58.3	27.7	41.2	32.2
24/04/2022	00:00:00	38.7	57.2	27.9	41.6	30.8
24/04/2022	00:15:00	37.7	54.8	28.3	40.6	31.1
24/04/2022	00:30:00	40.1	61.8	28.4	41.7	31.4
24/04/2022	00:45:00	44.5	67.4	28.6	44.9	31.5
24/04/2022	01:00:00	40.9	61.4	27.9	42.8	31.1
24/04/2022	01:15:00	36.3	53.6	26.5	39.1	29.6
24/04/2022	01:30:00	35.4	58.3	27.3	36.4	29.6
24/04/2022	01:45:00	34.6	56.0	26.2	36.9	29.6
24/04/2022	02:00:00	35.1	58.0	25.9	36.4	28.6
24/04/2022	02:15:00	36.6	55.9	27.1	37.5	29.6
24/04/2022	02:30:00	36.2	51.9	28.7	39.1	31.0
24/04/2022	02:45:00	33.3	48.2	27.2	35.8	29.6
24/04/2022	03:00:00	33.6	53.0	27.4	35.7	29.6
24/04/2022	03:15:00	34.7	57.6	27.6	36.5	30.0
24/04/2022	03:30:00	32.9	56.3	26.7	33.5	28.7
24/04/2022	03:45:00	37.6	62.3	25.7	33.9	27.8
24/04/2022	04:00:00	34.7	57.4	24.8	33.1	26.9
24/04/2022	04:15:00	35.9	61.6	25.1	34.5	27.2
24/04/2022	04:30:00	33.2	55.2	25.4	34.9	28.1
24/04/2022	04:45:00	36.9	54.9	27.5	39.6	30.9
24/04/2022	05:00:00	40.2	67.9	28.6	42.5	32.1
24/04/2022	05:15:00	39.4	62.0	28.2	41.6	31.5
24/04/2022	05:30:00	48.4	67.9	27.4	43.9	30.7
24/04/2022	05:45:00	41.1	62.4	26.6	42.1	30.0
24/04/2022	06:00:00	38.8	62.5	28.0	39.8	31.1
24/04/2022	06:15:00	39.7	60.4	29.6	41.7	33.1
24/04/2022	06:30:00	40.4	63.2	28.5	42.8	32.5
24/04/2022	06:45:00	40.2	56.2	28.0	43.3	32.6
24/04/2022	07:00:00	41.6	60.4	29.8	44.9	33.4
24/04/2022	07:15:00	45.1	70.1	30.4	47.1	35.4
24/04/2022	07:30:00	40.7	63.4	30.1	43.7	33.3
24/04/2022	07:45:00	47.3	66.2	28.9	46.5	34.0
24/04/2022	08:00:00	41.9	60.7	31.4	44.3	34.6
24/04/2022	08:15:00	42.1	67.2	30.1	43.8	34.2
24/04/2022	08:30:00	40.8	60.6	29.5	43.4	33.5
24/04/2022	08:45:00	45.5	63.4	31.7	46.2	35.2
24/04/2022	09:00:00	43.3	65.1	31.9	45.3	35.2
24/04/2022	09:15:00	50.0	71.5	32.5	48.7	37.1
24/04/2022	09:30:00	53.5	72.6	33.8	54.6	37.5
24/04/2022	09:45:00	60.6	85.0	34.0	56.2	38.6

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
24/04/2022	10:00:00	45.7	65.0	34.5	48.3	37.8
24/04/2022	10:15:00	49.1	72.4	35.7	52.0	40.6
24/04/2022	10:30:00	49.3	69.5	36.6	52.4	40.6
24/04/2022	10:45:00	75.7	113.6	37.7	58.1	43.7
24/04/2022	11:00:00	75.7	113.5	39.5	58.0	43.9
24/04/2022	11:15:00	50.7	67.3	38.2	54.1	42.7
24/04/2022	11:30:00	51.7	69.5	37.6	55.1	43.1
24/04/2022	11:45:00	50.6	69.6	36.9	54.1	41.2
24/04/2022	12:00:00	51.9	68.2	36.6	55.4	42.4
24/04/2022	12:15:00	50.5	71.3	37.0	53.5	41.5
24/04/2022	12:30:00	47.1	65.4	35.0	50.3	38.9
24/04/2022	12:45:00	48.8	65.3	35.2	52.3	38.8
24/04/2022	13:00:00	49.6	70.0	35.2	53.0	39.4
24/04/2022	13:15:00	50.6	69.7	33.5	54.1	40.2
24/04/2022	13:30:00	50.6	70.9	35.9	53.8	40.7
24/04/2022	13:45:00	54.1	76.3	34.9	57.4	38.5
24/04/2022	14:00:00	46.9	64.5	33.8	50.1	37.9
24/04/2022	14:15:00	46.1	66.9	33.7	49.5	37.0
24/04/2022	14:30:00	54.5	74.9	35.1	49.8	38.8
24/04/2022	14:45:00	48.5	65.9	36.0	51.8	40.3
24/04/2022	15:00:00	46.6	62.1	35.5	49.8	39.4
24/04/2022	15:15:00	45.1	61.2	33.7	48.4	38.0
24/04/2022	15:30:00	44.4	63.7	33.9	47.5	37.7
24/04/2022	15:45:00	47.1	70.8	34.0	49.8	38.0
24/04/2022	16:00:00	44.2	63.2	33.5	47.3	36.9
24/04/2022	16:15:00	44.8	63.5	32.6	48.3	36.5
24/04/2022	16:30:00	60.4	81.5	34.8	58.6	39.0
24/04/2022	16:45:00	44.5	71.6	31.2	46.4	35.7
24/04/2022	17:00:00	44.0	64.9	32.3	46.7	36.9
24/04/2022	17:15:00	43.1	63.2	32.7	46.0	35.9
24/04/2022	17:30:00	39.5	61.7	31.5	41.8	34.4
24/04/2022	17:45:00	41.3	58.8	30.9	44.1	34.6
24/04/2022	18:00:00	44.6	66.8	30.4	46.9	34.7
24/04/2022	18:15:00	58.5	80.5	30.6	50.8	34.8
24/04/2022	18:30:00	48.4	74.6	30.6	44.3	33.4
24/04/2022	18:45:00	39.3	55.3	29.9	42.3	33.5
24/04/2022	19:00:00	43.6	62.2	29.4	44.6	33.1
24/04/2022	19:15:00	47.2	66.7	31.5	49.4	35.4
24/04/2022	19:30:00	44.9	60.9	30.5	49.2	34.8
24/04/2022	19:45:00	45.9	61.4	31.9	49.6	36.6
24/04/2022	20:00:00	41.8	58.5	31.1	43.9	34.5
24/04/2022	20:15:00	41.5	58.7	30.3	44.2	34.5
24/04/2022	20:30:00	40.0	58.6	29.3	42.8	32.5
24/04/2022	20:45:00	38.1	56.9	28.4	40.9	31.7
24/04/2022	21:00:00	35.5	57.6	28.2	37.9	30.7
24/04/2022	21:15:00	43.8	69.4	27.9	43.1	31.2

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
24/04/2022	21:30:00	45.0	73.4	27.3	38.6	30.3
24/04/2022	21:45:00	45.3	75.8	27.2	40.7	30.0
24/04/2022	22:00:00	36.9	56.0	27.9	39.6	31.4
24/04/2022	22:15:00	35.8	55.3	27.1	38.7	29.7
24/04/2022	22:30:00	35.0	55.6	26.3	37.8	28.9
24/04/2022	22:45:00	35.9	55.1	25.6	38.4	27.6
24/04/2022	23:00:00	32.0	51.8	25.1	34.6	27.2
24/04/2022	23:15:00	31.8	47.7	25.2	34.0	27.7
24/04/2022	23:30:00	31.3	52.5	24.4	32.8	26.6
24/04/2022	23:45:00	30.2	50.9	23.4	30.5	25.1
25/04/2022	00:00:00	35.6	58.5	22.6	34.7	23.9
25/04/2022	00:15:00	25.5	35.7	22.4	27.3	23.5
25/04/2022	00:30:00	26.5	46.4	22.1	28.4	23.3
25/04/2022	00:45:00	29.0	47.4	22.3	31.0	23.8
25/04/2022	01:00:00	30.1	49.7	22.8	30.4	24.1
25/04/2022	01:15:00	27.6	48.2	22.4	28.4	23.7
25/04/2022	01:30:00	30.9	48.8	22.1	33.4	23.3
25/04/2022	01:45:00	27.7	46.2	22.6	29.7	24.1
25/04/2022	02:00:00	27.0	42.9	21.9	29.3	23.0
25/04/2022	02:15:00	25.6	43.0	22.2	27.1	23.1
25/04/2022	02:30:00	27.1	44.6	22.6	28.1	24.1
25/04/2022	02:45:00	28.1	39.1	23.8	30.2	25.6
25/04/2022	03:00:00	27.6	43.6	22.9	29.4	24.8
25/04/2022	03:15:00	27.6	39.9	23.4	29.9	24.7
25/04/2022	03:30:00	28.8	42.5	24.2	30.7	26.0
25/04/2022	03:45:00	29.1	55.0	23.6	29.8	25.1
25/04/2022	04:00:00	28.3	48.4	23.0	30.1	24.3
25/04/2022	04:15:00	30.1	49.2	23.1	32.1	25.3
25/04/2022	04:30:00	30.9	42.4	25.1	33.0	27.2
25/04/2022	04:45:00	31.3	50.8	25.7	32.6	27.6
25/04/2022	05:00:00	33.8	50.9	28.2	35.6	30.9
25/04/2022	05:15:00	33.0	44.7	28.6	34.9	30.4
25/04/2022	05:30:00	33.7	47.9	28.9	35.4	31.4
25/04/2022	05:45:00	36.5	52.0	30.6	38.9	32.9
25/04/2022	06:00:00	35.9	57.3	30.5	37.0	32.6
25/04/2022	06:15:00	43.6	72.7	31.6	44.2	34.5
25/04/2022	06:30:00	43.7	65.7	32.9	43.9	35.1
25/04/2022	06:45:00	39.9	60.9	33.1	40.3	35.2
25/04/2022	07:00:00	47.1	66.0	32.8	47.1	35.4
25/04/2022	07:15:00	37.8	57.2	33.9	38.9	35.3
25/04/2022	07:30:00	40.2	64.5	34.2	41.1	35.8
25/04/2022	07:45:00	41.1	62.7	33.3	42.7	35.2
25/04/2022	08:00:00	40.6	63.0	34.0	41.3	36.7
25/04/2022	08:15:00	40.6	57.5	36.3	41.9	38.3
25/04/2022	08:30:00	44.3	57.4	36.2	47.6	38.6
25/04/2022	08:45:00	40.4	55.5	36.0	42.0	38.1

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
25/04/2022	09:00:00	42.7	62.9	35.3	42.3	37.5
25/04/2022	09:15:00	41.5	59.3	35.3	43.5	37.3
25/04/2022	09:30:00	40.7	57.1	34.6	42.6	36.7
25/04/2022	09:45:00	39.1	54.9	34.3	40.3	36.5
25/04/2022	10:00:00	48.3	71.0	34.6	48.5	37.3
25/04/2022	10:15:00	43.5	61.4	35.1	44.6	37.6
25/04/2022	10:30:00	43.7	60.9	35.1	45.4	37.2
25/04/2022	10:45:00	42.2	61.2	34.9	43.9	37.2
25/04/2022	11:00:00	39.9	54.5	33.0	41.0	35.6
25/04/2022	11:15:00	41.8	59.8	34.3	43.2	36.3
25/04/2022	11:30:00	42.5	65.6	34.1	45.1	36.6
25/04/2022	11:45:00	41.0	58.4	33.0	43.8	36.4
25/04/2022	12:00:00	41.7	57.8	29.6	45.4	32.6
25/04/2022	12:15:00	45.9	76.3	28.7	41.0	31.2
25/04/2022	12:30:00	38.8	58.4	28.7	40.3	31.3
25/04/2022	12:45:00	40.0	62.1	28.7	42.7	31.5
25/04/2022	13:00:00	47.7	68.6	30.8	47.4	33.0
25/04/2022	13:15:00	39.9	58.6	30.3	43.1	32.8
25/04/2022	13:30:00	37.5	53.5	30.6	40.0	32.9
25/04/2022	13:45:00	40.7	61.8	30.3	42.0	32.9
25/04/2022	14:00:00	38.4	53.8	29.9	40.5	33.3
25/04/2022	14:15:00	40.4	61.9	29.9	43.4	33.4
25/04/2022	14:30:00	42.0	60.6	29.5	43.1	32.2
25/04/2022	14:45:00	39.0	55.8	30.4	42.2	33.1
25/04/2022	15:00:00	38.9	55.5	29.9	41.1	34.5
25/04/2022	15:15:00	65.0	85.7	29.6	61.3	31.9
25/04/2022	15:30:00	61.8	83.4	31.0	68.5	34.3
25/04/2022	15:45:00	40.8	58.5	33.6	42.2	36.2
25/04/2022	16:00:00	40.0	61.5	33.2	39.9	35.5
25/04/2022	16:15:00	38.6	54.4	33.0	40.2	35.4
25/04/2022	16:30:00	59.9	78.5	33.6	61.7	36.2
25/04/2022	16:45:00	58.5	82.0	31.9	52.5	35.5
25/04/2022	17:00:00	57.0	79.4	30.1	47.4	33.3
25/04/2022	17:15:00	40.6	64.8	30.6	42.9	33.2
25/04/2022	17:30:00	37.5	58.0	30.1	39.6	32.8
25/04/2022	17:45:00	40.2	63.3	30.0	42.2	33.4
25/04/2022	18:00:00	40.7	69.6	29.6	40.7	32.5
25/04/2022	18:15:00	40.0	58.8	29.5	42.5	32.7
25/04/2022	18:30:00	39.9	56.5	28.6	42.4	32.4
25/04/2022	18:45:00	38.9	55.5	29.4	41.5	32.3
25/04/2022	19:00:00	42.5	64.5	29.4	44.1	33.6
25/04/2022	19:15:00	48.9	74.0	29.5	44.2	35.5
25/04/2022	19:30:00	37.4	55.6	29.1	40.0	31.7
25/04/2022	19:45:00	37.0	53.8	27.7	39.6	30.6
25/04/2022	20:00:00	40.4	55.6	27.7	43.8	31.8
25/04/2022	20:15:00	38.1	55.0	28.1	40.9	31.7

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
25/04/2022	20:30:00	36.6	55.6	28.1	38.9	30.4
25/04/2022	20:45:00	41.9	62.5	28.2	43.2	31.1
25/04/2022	21:00:00	41.1	59.5	27.9	43.1	30.7
25/04/2022	21:15:00	37.8	62.8	26.4	36.6	29.8
25/04/2022	21:30:00	37.5	59.2	26.4	36.7	29.0
25/04/2022	21:45:00	33.8	51.0	26.2	36.2	28.4
25/04/2022	22:00:00	36.8	64.0	25.4	36.9	27.8
25/04/2022	22:15:00	31.6	54.5	25.3	33.5	26.8
25/04/2022	22:30:00	33.9	50.2	25.2	35.0	27.5
25/04/2022	22:45:00	31.7	51.7	25.0	31.9	27.1
25/04/2022	23:00:00	29.1	46.8	23.9	31.2	25.5
25/04/2022	23:15:00	31.7	46.4	24.4	34.8	26.5
25/04/2022	23:30:00	29.6	46.4	24.1	31.2	25.7
25/04/2022	23:45:00	30.6	51.1	23.4	30.6	24.5
26/04/2022	00:00:00	33.0	49.3	23.3	35.4	24.9
26/04/2022	00:15:00	29.2	53.8	22.3	29.9	23.8
26/04/2022	00:30:00	26.7	42.7	22.5	28.6	23.4
26/04/2022	00:45:00	29.1	47.7	22.1	30.6	23.1
26/04/2022	01:00:00	31.3	56.2	22.3	33.3	24.0
26/04/2022	01:15:00	28.4	56.1	21.5	30.2	23.0
26/04/2022	01:30:00	26.9	45.4	21.8	27.8	23.4
26/04/2022	01:45:00	29.1	47.0	22.0	31.0	23.1
26/04/2022	02:00:00	26.7	44.2	22.0	28.4	23.2
26/04/2022	02:15:00	28.5	50.8	21.6	31.2	22.9
26/04/2022	02:30:00	23.8	43.3	21.1	24.3	21.9
26/04/2022	02:45:00	25.8	43.7	21.6	27.2	22.8
26/04/2022	03:00:00	23.8	44.4	21.2	24.7	22.1
26/04/2022	03:15:00	23.6	44.0	21.0	25.1	21.7
26/04/2022	03:30:00	25.1	47.4	21.0	25.7	21.9
26/04/2022	03:45:00	32.4	52.6	20.8	25.4	21.6
26/04/2022	04:00:00	23.1	31.1	21.0	24.6	21.6
26/04/2022	04:15:00	23.6	34.4	21.3	25.0	22.1
26/04/2022	04:30:00	27.9	50.7	22.0	26.6	23.0
26/04/2022	04:45:00	27.6	48.4	22.7	29.4	23.9
26/04/2022	05:00:00	34.8	56.6	23.3	36.7	25.7
26/04/2022	05:15:00	30.7	56.0	23.7	31.6	26.1
26/04/2022	05:30:00	30.8	53.6	25.0	31.7	27.1
26/04/2022	05:45:00	35.0	58.0	26.8	35.2	28.8
26/04/2022	06:00:00	35.1	55.1	27.9	36.1	30.1
26/04/2022	06:15:00	37.8	61.0	27.7	35.2	30.2
26/04/2022	06:30:00	64.3	84.3	28.8	68.3	33.4
26/04/2022	06:45:00	64.9	85.0	30.7	68.0	34.0
26/04/2022	07:00:00	53.6	74.9	31.1	53.7	33.5
26/04/2022	07:15:00	42.3	62.5	31.1	40.8	33.5
26/04/2022	07:30:00	44.5	64.0	32.0	41.5	34.1
26/04/2022	07:45:00	44.6	65.9	32.0	43.9	34.2

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
26/04/2022	08:00:00	42.9	66.5	30.0	39.8	32.1
26/04/2022	08:15:00	43.7	61.3	29.4	45.5	31.4
26/04/2022	08:30:00	45.3	61.7	29.4	48.4	32.0
26/04/2022	08:45:00	44.5	62.2	31.1	47.9	33.2
26/04/2022	09:00:00	44.2	63.5	30.3	45.2	33.9
26/04/2022	09:15:00	55.1	73.3	32.6	59.1	36.5
26/04/2022	09:30:00	44.4	64.7	34.3	46.2	37.3
26/04/2022	09:45:00	44.4	62.6	34.2	42.9	36.7
26/04/2022	10:00:00	40.0	63.7	33.8	40.9	36.1
26/04/2022	10:15:00	39.3	59.6	33.4	40.8	35.7
26/04/2022	10:30:00	39.1	57.9	33.1	40.8	35.4
26/04/2022	10:45:00	42.9	62.3	33.0	44.8	35.3
26/04/2022	11:00:00	43.6	63.9	33.5	46.8	36.0
26/04/2022	11:15:00	42.9	61.6	32.4	44.1	35.0
26/04/2022	11:30:00	42.1	64.0	32.7	40.3	35.0
26/04/2022	11:45:00	40.5	61.1	33.0	40.6	35.5
26/04/2022	12:00:00	41.8	66.4	32.2	38.9	34.7
26/04/2022	12:15:00	38.6	57.4	33.7	40.0	36.1
26/04/2022	12:30:00	38.7	57.9	32.1	40.4	34.5
26/04/2022	12:45:00	44.0	67.9	27.0	44.6	30.8
26/04/2022	13:00:00	39.8	64.5	27.4	40.6	30.7
26/04/2022	13:15:00	38.5	58.9	26.9	38.6	29.3
26/04/2022	13:30:00	40.4	59.4	26.9	42.8	30.6
26/04/2022	13:45:00	40.4	59.9	33.9	41.5	36.3
26/04/2022	14:00:00	63.3	91.0	34.2	45.0	36.8
26/04/2022	14:15:00	43.2	57.7	35.8	45.4	39.3
26/04/2022	14:30:00	43.8	67.2	36.6	44.4	39.2
26/04/2022	14:45:00	46.9	65.2	35.0	49.6	37.8
26/04/2022	15:00:00	44.3	61.0	37.1	46.5	39.3
26/04/2022	15:15:00	44.4	67.3	34.4	45.9	37.7
26/04/2022	15:30:00	42.4	59.4	36.0	44.6	38.1
26/04/2022	15:45:00	55.4	75.3	35.2	58.0	38.3
26/04/2022	16:00:00	47.7	65.7	34.5	49.7	37.3
26/04/2022	16:15:00	49.8	70.7	34.3	50.8	37.6
26/04/2022	16:30:00	45.2	63.3	35.4	45.8	39.5
26/04/2022	16:45:00	43.6	66.5	30.3	43.9	34.1
26/04/2022	17:00:00	39.2	59.0	30.5	41.2	32.9
26/04/2022	17:15:00	39.4	65.1	29.0	38.6	32.1
26/04/2022	17:30:00	38.9	64.4	30.6	40.3	33.3
26/04/2022	17:45:00	42.7	60.9	31.3	45.2	35.3
26/04/2022	18:00:00	56.6	78.3	31.4	48.3	34.7
26/04/2022	18:15:00	38.6	57.5	29.7	39.9	32.5
26/04/2022	18:30:00	39.2	56.0	30.0	42.1	33.5
26/04/2022	18:45:00	44.9	66.3	32.3	46.0	36.1
26/04/2022	19:00:00	57.1	77.5	33.0	55.5	36.8
26/04/2022	19:15:00	49.7	69.8	30.2	52.9	35.9

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
26/04/2022	19:30:00	40.3	61.7	30.1	42.6	33.3
26/04/2022	19:45:00	39.5	61.9	30.0	39.9	32.5
26/04/2022	20:00:00	45.9	64.5	28.8	47.4	32.6
26/04/2022	20:15:00	39.4	61.7	30.1	39.7	32.2
26/04/2022	20:30:00	54.6	86.4	28.2	43.2	31.2
26/04/2022	20:45:00	43.2	62.4	28.7	44.7	31.7
26/04/2022	21:00:00	42.4	65.2	28.4	44.1	31.0
26/04/2022	21:15:00	45.8	69.9	28.0	47.2	30.6
26/04/2022	21:30:00	37.1	58.6	28.2	38.1	30.5
26/04/2022	21:45:00	36.4	52.4	27.5	37.3	30.0
26/04/2022	22:00:00	44.7	70.7	28.2	48.8	31.0
26/04/2022	22:15:00	45.5	66.3	28.1	47.4	30.3
26/04/2022	22:30:00	34.7	54.2	27.2	33.7	29.0
26/04/2022	22:45:00	35.1	54.9	26.8	34.5	28.4
26/04/2022	23:00:00	34.3	52.0	26.6	34.2	28.5
26/04/2022	23:15:00	35.9	51.3	26.8	38.1	28.6
26/04/2022	23:30:00	32.8	50.4	27.0	35.0	28.8
26/04/2022	23:45:00	39.7	56.4	26.9	44.0	29.3
27/04/2022	00:00:00	36.3	53.5	28.0	37.8	29.7
27/04/2022	00:15:00	33.3	49.4	26.4	34.6	27.8
27/04/2022	00:30:00	39.8	59.2	25.3	41.9	27.4
27/04/2022	00:45:00	32.6	50.0	25.4	34.8	26.9
27/04/2022	01:00:00	32.0	52.6	25.2	31.5	27.1
27/04/2022	01:15:00	36.8	53.3	24.5	38.3	26.3
27/04/2022	01:30:00	30.1	51.1	25.1	31.0	26.3
27/04/2022	01:45:00	34.4	53.7	24.9	35.3	26.7
27/04/2022	02:00:00	37.6	55.5	25.9	37.7	27.6
27/04/2022	02:15:00	38.2	54.6	24.9	41.8	26.5
27/04/2022	02:30:00	31.9	53.6	25.3	31.7	26.5
27/04/2022	02:45:00	38.8	58.0	25.1	42.2	26.6
27/04/2022	03:00:00	32.7	52.1	25.5	32.1	26.7
27/04/2022	03:15:00	32.8	50.5	26.1	33.2	27.7
27/04/2022	03:30:00	31.7	42.1	27.9	33.4	29.5
27/04/2022	03:45:00	31.3	49.9	26.6	32.7	28.3
27/04/2022	04:00:00	30.9	50.0	25.6	31.7	27.5
27/04/2022	04:15:00	31.2	48.1	26.5	33.0	28.2
27/04/2022	04:30:00	34.0	54.1	27.3	33.7	29.0
27/04/2022	04:45:00	45.5	67.3	28.1	42.7	30.1
27/04/2022	05:00:00	44.7	63.7	29.5	47.5	31.2
27/04/2022	05:15:00	41.5	61.1	29.4	41.3	31.4
27/04/2022	05:30:00	36.8	57.7	30.5	37.3	32.3
27/04/2022	05:45:00	37.1	52.8	31.0	38.5	33.5
27/04/2022	06:00:00	39.4	51.6	31.7	41.9	34.4
27/04/2022	06:15:00	39.9	62.1	32.5	41.4	35.0
27/04/2022	06:30:00	41.4	57.3	31.9	44.5	35.1
27/04/2022	06:45:00	38.5	50.0	33.4	40.1	35.8

Date	Time	LAeq	LAFmax	LAFmin	LAF10%	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]	[dB]
27/04/2022	07:00:00	42.4	56.3	35.1	46.1	37.3
27/04/2022	07:15:00	41.2	53.4	34.8	43.7	37.2
27/04/2022	07:30:00	43.8	60.4	34.3	47.9	36.3
27/04/2022	07:45:00	41.1	61.6	34.6	41.9	36.8
27/04/2022	08:00:00	46.9	70.7	34.3	48.3	36.2
27/04/2022	08:15:00	48.4	65.6	34.5	50.4	36.6
27/04/2022	08:30:00	43.7	63.0	32.8	45.7	35.5
27/04/2022	08:45:00	45.7	69.9	31.6	44.5	34.8
27/04/2022	09:00:00	54.2	73.6	31.1	51.9	33.9
27/04/2022	09:15:00	40.1	56.6	32.1	41.5	34.6
27/04/2022	09:30:00	41.1	59.8	33.9	41.4	36.6
27/04/2022	09:45:00	48.0	68.0	34.2	49.5	37.0

Attended Background Sound Measurements

White Gate Road

Start Date	Time	Stop Date	Time	LAeq	LAFmax	LAFmin	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]
27/04/2022	13:06:00	27/04/2022	13:21:00	46.4	58.3	32.6	36.0
27/04/2022	13:21:00	27/04/2022	13:36:00	44.3	62.4	33.4	35.3
27/04/2022	13:36:00	27/04/2022	13:51:00	45.3	63.3	32.1	36.4
27/04/2022	13:51:00	27/04/2022	14:06:00	45.0	60.1	32.9	35.9

Upper Woodhouse Farm (W)

Start Date	Time	Stop Date	Time	LAeq	LAFmax	LAFmin	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]
27/04/2022	14:23:00	27/04/2022	14:38:00	39.3	56.2	33.7	35.1
27/04/2022	14:38:00	27/04/2022	14:53:00	44.4	64.2	33.3	35.8
27/04/2022	14:53:00	27/04/2022	15:08:00	42.9	57.3	31.5	36.1
27/04/2022	15:08:00	27/04/2022	15:23:00	45.3	56.9	31.0	35.7

Farm to East

Start Date	Time	Stop Date	Time	LAeq	LAFmax	LAFmin	LAF90%
[YYYY-MM-DD]	[hh:mm:ss]	[YYYY-MM-DD]	[hh:mm:ss]	[dB]	[dB]	[dB]	[dB]
21/04/2022	12:10:00	21/04/2022	12:25:00	42.6	62.7	38.6	39.1
21/04/2022	12:25:00	21/04/2022	12:40:00	46.0	63.9	35.2	37.5
21/04/2022	12:40:00	21/04/2022	12:55:00	46.4	62.8	35.5	38.7
21/04/2022	12:55:00	21/04/2022	13:10:00	46.4	63.1	36.9	39.0

APPENDIX 2

EQUIPMENT AND QUALIFICATIONS

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 full member of the Institute of Acoustics since 2005 and holds an honours degree in Electronic and Computer Systems Engineering. David teaches acoustics at post graduate level on a part time basis. David sits on the ANC Communications and PR Committee.

The equipment used during the site visits is shown in the table below. The sound level meter was calibrated before and after use; no drift was apparent.

Equipment Description	Type number	Manufacturer	Date of expiration of Calibration	Calibration Certificate Number
Sound Level Meter	2260 s/n 2409281	Bruel & Kjaer	07.10.2022	147227
Preamplifier	ZC 0026	Bruel & Kjaer	07.10.2022	147227
Sound Level Meter	XL2 TA s/n A2A-10019-EO	NTi Audio	25.08.2022	145408
Microphone	MK 224 s/n 210762A	Cirrus Research	20.08.2022	145404
Microphone	MK:224 s/n 212421D	Cirrus Research Plc	06.10.2022	147221
Calibrator	4231 s/n 2564324	Bruel & Kjaer	02.03.2023	A2013

APPENDIX 3

UNCERTAINTY

Any uncertainties in calculations and/or methodology and how they have been minimised are considered in this section.

Sound data on most of the machinery has been based on measurements taken at the existing site of items to be used in the extension. Other data has been obtained from measurements taken of similar machinery at other premises and also using standard data contained in BS 5228. Where any assumptions have been made, they have been stated and chosen to represent the reasonable worst case scenario, including on times and barrier effect.

Sound levels from the processing operation were also taken at a greater distance where propagation factors such as reflections and directivity are included and distance decay according to Rathe can be applied accurately.

Background sound levels were taken as unattended measurements at the nearest and most affected dwelling, with additional attended measurements taken at the other dwellings.

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. The addition and subtraction of sound levels was done logarithmically on an energy basis, which is the correct method for decibel calculations. Attenuation from barriers and bunds has been taken from guidance in BS 5228, which is often conservative in its estimation.

It is anticipated that these methods 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.

The variances in working distances between dwellings and excavation means that in many cases, predicted sound levels vary depending on work area. For this reason, sound levels have been predicted for each dwelling with quarry working at the closest and furthest points.

All sound level measurements were taken with calibrated type 1 sound level meters, 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.

The sound level meters were calibrated before and after each survey period and no drift was apparent.

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 4 – SOUND LEVEL CALCULATIONS

HGVs on Access Road & Dump Trucks in Quarry

Sound levels from lorry movements along the access road and dump trucks within the quarry when transporting materials are predicted by the haul road equation given in BS 5228:

$LA_{eq} = L_{WA} - 33 + 10 \log Q - 10 \log V - 10 \log d + 10 \log (a/180)$ 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.
The other parameters have been determined using online mapping data.

Dump Trucks

	Quarry House / White Gate Rd (N)	Farm to East	Moorfield Farm (SE)	Upper Woodhouse Farm (W)
LWA	110	110	110	110
Q (no. movements per hour)	8	8	8	8
V, kmh	10	10	10	10
d (distance)	300	240	160	330
a (angle of view)	28	20	30	10
Shielding	10	10	10	10
LAeq	33.2	32.7	36.2	28.3

HGVs

	Quarry House / White Gate Rd (N)	Farm to East	Moorfield Farm (SE)	Upper Woodhouse Farm (W)
LWA	106	106	106	106
Q (no. movements per hour)	10	10	10	10
V, kmh	16	16	16	16
d (distance)	500	250	120	420
a (angle of view)	18	9	75	6
Shielding	10	10	10	10
LAeq	24.0	24.0	36.4	20.0

Source Levels

Third Octaves

Band [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
Processing Area																											
Quarry Rim, All Sources, 40m	68.2	77.9	70.3	70.0	63.4	65.7	68.7	68.3	71.5	72.5	62.4	64.6	64.9	64.1	63.7	62.8	62.2	60.6	60.0	59.3	56.7	55.6	53.5	49.7	45.9	40.7	34.1
Quarry Rim, All Sources, Loudest Engine Visible, 35m	64.7	75.1	68.3	73.1	68.1	66.7	70.6	69.2	72.0	76.0	69.6	70.7	69.2	67.2	69.9	71.0	68.0	64.7	64.0	63.6	61.6	58.1	56.8	52.4	48.1	43.2	38.4
Generator and Floodlights, 2m	78.3	75.9	64.9	77.4	63.7	75.5	77.3	73.1	67.7	78.4	67.5	67.7	69.6	67.3	61.4	62.3	61.0	63.4	65.4	61.5	60.2	59.0	60.4	60.4	60.0	56.3	55.7
Crusher (Red Bodywork), 10m	72.2	88.5	80.9	85.4	83.2	81.9	81.9	80.1	82.3	86.2	81.0	83.7	87.0	81.3	80.4	80.4	79.5	78.0	76.6	75.3	74.1	72.3	69.7	67.9	64.7	62.6	62.1
McCloskey S190 Screen, 10m (contribution from others)	71.4	86.1	80.0	78.9	80.7	77.5	80.8	79.6	84.8	79.4	77.0	74.9	75.5	77.0	76.8	74.8	74.2	74.2	73.5	71.5	70.5	69.3	67.6	64.5	63.2	60.0	58.3
Tracked Bucket Loader / Excavator, 10m	68.8	70.2	85.2	73.5	70.7	71.3	77.7	77.5	69.6	74.2	74.7	81.7	73.4	71.9	71.8	71.0	68.7	66.5	64.5	64.0	65.6	64.0	63.9	61.6	58.1	57.5	49.7
Mobile / Excavation																											
Tracked Bucket Loader / Excavator, 10m	68.8	70.2	85.2	73.5	70.7	71.3	77.7	77.5	69.6	74.2	74.7	81.7	73.4	71.9	71.8	71.0	68.7	66.5	64.5	64.0	65.6	64.0	63.9	61.6	58.1	57.5	49.7
Bulldozer, 10m					94.0			95.0			88.0			79.0			79.0			77.0			70.0			67.0	
Dump Truck Moving and Manoeuvre, 10m	66.8	78.2	73.0	70.8	71.4	70.8	64.9	66.1	73.4	74.0	67.4	68.3	68.0	65.4	66.1	68.5	68.9	67.4	64.2	63.5	61.1	60.2	59.7	57.9	57.3	56.7	53.4

Octaves & dBA Source Levels

Band [Hz]	31.5	63	125	250	500	1000	2000	4000	8000		dBA
Processing Area											
Quarry Rim, All Sources, 40m	79	72	74.5	73.5	69	66.7	63.7	58.3	47.3		71.8
Quarry Rim, All Sources, Loudest Engine Visible, 35m (used in assessment)	76.2	75	75.5	77.8	73.7	73.4	68	61.1	49.7		76.9
Generator and Floodlights, 2m	80.4	79.7	79	79.1	72	67.1	67.7	64.8	62.5		75.2
Crusher (Red Bodywork), 10m	87.8	87	84.8	87.4	87.2	82.7	78.7	73.6	66.6		87.7
McCloskey S190 Screen, 10m (contribution from others)	87.2	84	87.1	82.3	81.3	79.2	76.8	72.3	65.8		84.3
Tracked Bucket Loader / Excavator, 10m	85.4	76.8	80.9	83.1	77.2	73.9	69.5	68.1	61.1		80
Mobile / Excavation											
Tracked Bucket Loader / Excavator, 10m	85.4	76.8	80.9	83.1	77.2	73.9	69.5	68.1	61.1		80
Bulldozer, 10m	4.8	94	95	88	79	79	77	70	67		86
Dump Truck Moving and Manoeuvre, 10m	79.6	75.8	74.6	75.7	71.4	73.1	67.9	64.1	60.9		76.4

Calculations at Dwellings

Dwelling	Min Distance (m)	Max Distance (m)	Min & Max Distance to Processing Area	Grid Reference	Elevation (m)
Quarry House / White Gate Rd (N)	430	545	370 / 460	SE 13180 06673	298 - 305
Farm to East	400	540	420 / 430	SE 13560 06124	313
Moorfield Farm (SE)	115	270	190 / 270	SE 13198 06016	343
Upper Woodhouse Farm (W)	300	440	350 / 410	SE 12746 06279	279

Calculations are undertaken for the overall processing operation and the individual items of mobile plant at each dwelling and then added together on a logarithmic basis.

The predictions at each dwelling are shown in the tables below and overleaf for when operations are at their closest or furthest point from each dwelling.

Note that predictions are shown for various different measurements of the same items (in particular the processing plant). For calculation of the overall sound level, the worst / highest measurement of all sources taken at the quarry rim is used.

Quarry House / White Gate Road (Close)

Description	SPL LAeq		Mins used in 1 hr	Time Correction		Barrier Effect		Meas. distance	Receptor distance	Distance Decay		Specific Level at receptor
Quarry Rim, All Sources, 40m	71.8		60	0		10		40	370	22.15		39.6
Quarry Rim, All Sources, Loudest Engine Visible, 35m	76.9		60	0		10		35	370	23.60		43.3
Generator and Floodlights, 2m	75.2		60	0		10		2	370	54.68		10.5
Crusher (Red Bodywork), 10m	87.7		60	0		10		10	370	37.21		40.5
McCloskey S190 Screen, 10m (contribution from others)	84.3		60	0		10		10	370	37.21		37.1
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	370	37.21		32.8
Mobile / Excavation												
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	430	38.84		31.2
Bulldozer, 10m	86		30	3.01		10		10	430	38.84		34.2
Dump Truck Moving and Manoeuvre, 10m	76.4		15	6.02		10		10	430	38.84		21.5
Haul Road HGV												24.0
Haul Road Dump Truck												33.2

Farm to East (Close)

Description	SPL LAeq		Mins used in 1 hr	Time Correction		Barrier Effect		Meas. distance	Receptor distance	Distance Decay		Specific Level at receptor
Quarry Rim, All Sources, 40m	71.8		60	0		10		40	420	23.53		38.3
Quarry Rim, All Sources, Loudest Engine Visible, 35m	76.9		60	0		10		35	420	24.98		41.9
Generator and Floodlights, 2m	75.2		60	0		10		2	420	56.06		9.1
Crusher (Red Bodywork), 10m	87.7		60	0		10		10	420	38.58		39.1
McCloskey S190 Screen, 10m (contribution from others)	84.3		60	0		10		10	420	38.58		35.7
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	420	38.58		31.4
Mobile / Excavation												
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	400	38.05		31.9
Bulldozer, 10m	86		30	3.01		10		10	400	38.05		34.9
Dump Truck Moving and Manoeuvre, 10m	76.4		15	6.02		10		10	400	38.05		22.3
Haul Road HGV												24.0
Haul Road Dump Truck												32.7

Upper Woodhouse Farm (Close)

Description	SPL LAeq		Mins used in 1 hr	Time Correction		Barrier Effect		Meas. distance	Receptor distance	Distance Decay		Specific Level at receptor
Quarry Rim, All Sources, 40m	71.8		60	0		10		40	350	21.55		40.2
Quarry Rim, All Sources, Loudest Engine Visible, 35m	76.9		60	0		10		35	350	23.00		43.9
Generator and Floodlights, 2m	75.2		60	0		10		2	350	54.08		11.1
Crusher (Red Bodywork), 10m	87.7		60	0		10		10	350	36.60		41.1
McCloskey S190 Screen, 10m (contribution from others)	84.3		60	0		10		10	350	36.60		37.7
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	350	36.60		33.4
Mobile / Excavation												
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	300	34.93		35.1
Bulldozer, 10m	86		30	3.01		10		10	300	34.93		38.1
Dump Truck Moving and Manoeuvre, 10m	76.4		15	6.02		10		10	300	34.93		25.5
Haul Road HGV												20.0
Haul Road Dump Truck												28.3

Quarry House / White Gate Road (Far)

Description	SPL LAeq		Mins used in 1 hr	Time Correction		Barrier Effect		Meas. distance	Receptor distance	Distance Decay		Specific Level at receptor
Quarry Rim, All Sources, 40m	71.8		60	0		10		40	460	24.52		37.3
Quarry Rim, All Sources, Loudest Engine Visible, 35m	76.9		60	0		10		35	460	25.97		40.9
Generator and Floodlights, 2m	75.2		60	0		10		2	460	57.04		8.2
Crusher (Red Bodywork), 10m	87.7		60	0		10		10	460	39.57		38.1
McCloskey S190 Screen, 10m (contribution from others)	84.3		60	0		10		10	460	39.57		34.7
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	460	39.57		30.4
Mobile / Excavation												
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	545	41.41		28.6
Bulldozer, 10m	86		30	3.01		10		10	545	41.41		31.6
Dump Truck Moving and Manoeuvre, 10m	76.4		15	6.02		10		10	545	41.41		19
Haul Road HGV												24.0
Haul Road Dump Truck												33.2

Farm to East (Far)

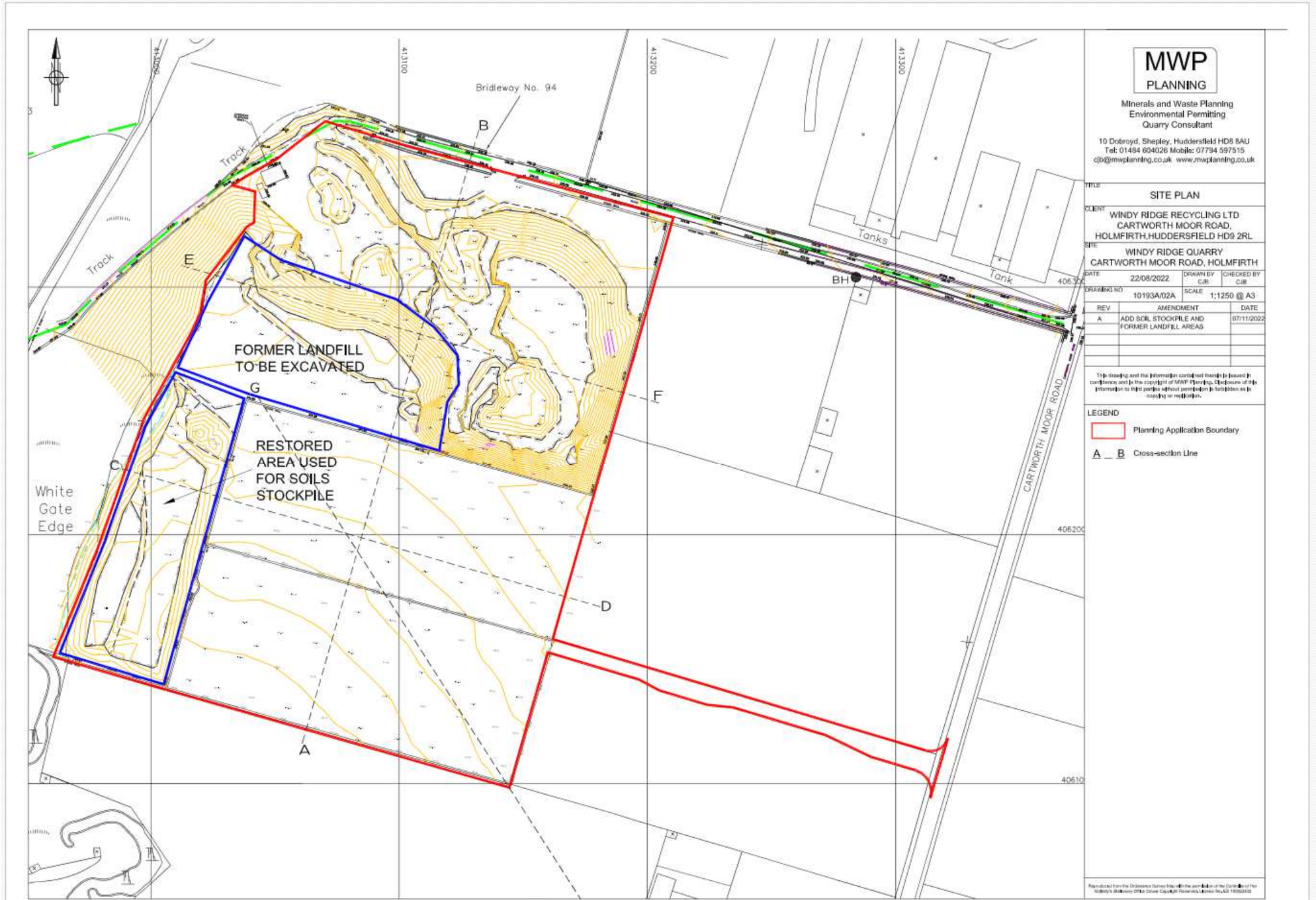
Description	SPL LAeq		Mins used in 1 hr	Time Correction		Barrier Effect		Meas. distance	Receptor distance	Distance Decay		Specific Level at receptor
Quarry Rim, All Sources, 40m	71.8		60	0		10		40	430	23.79		38
Quarry Rim, All Sources, Loudest Engine Visible, 35m	76.9		60	0		10		35	430	25.24		41.7
Generator and Floodlights, 2m	75.2		60	0		10		2	430	56.31		8.9
Crusher (Red Bodywork), 10m	87.7		60	0		10		10	430	38.84		38.9
McCloskey S190 Screen, 10m (contribution from others)	84.3		60	0		10		10	430	38.84		35.5
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	430	38.84		31.2
Mobile / Excavation												
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	540	41.31		28.7
Bulldozer, 10m	86		30	3.01		10		10	540	41.31		31.7
Dump Truck Moving and Manoeuvre, 10m	76.4		15	6.02		10		10	540	41.31		19.1
Haul Road HGV												24.0
Haul Road Dump Truck												32.7

Upper Woodhouse Farm (Far)

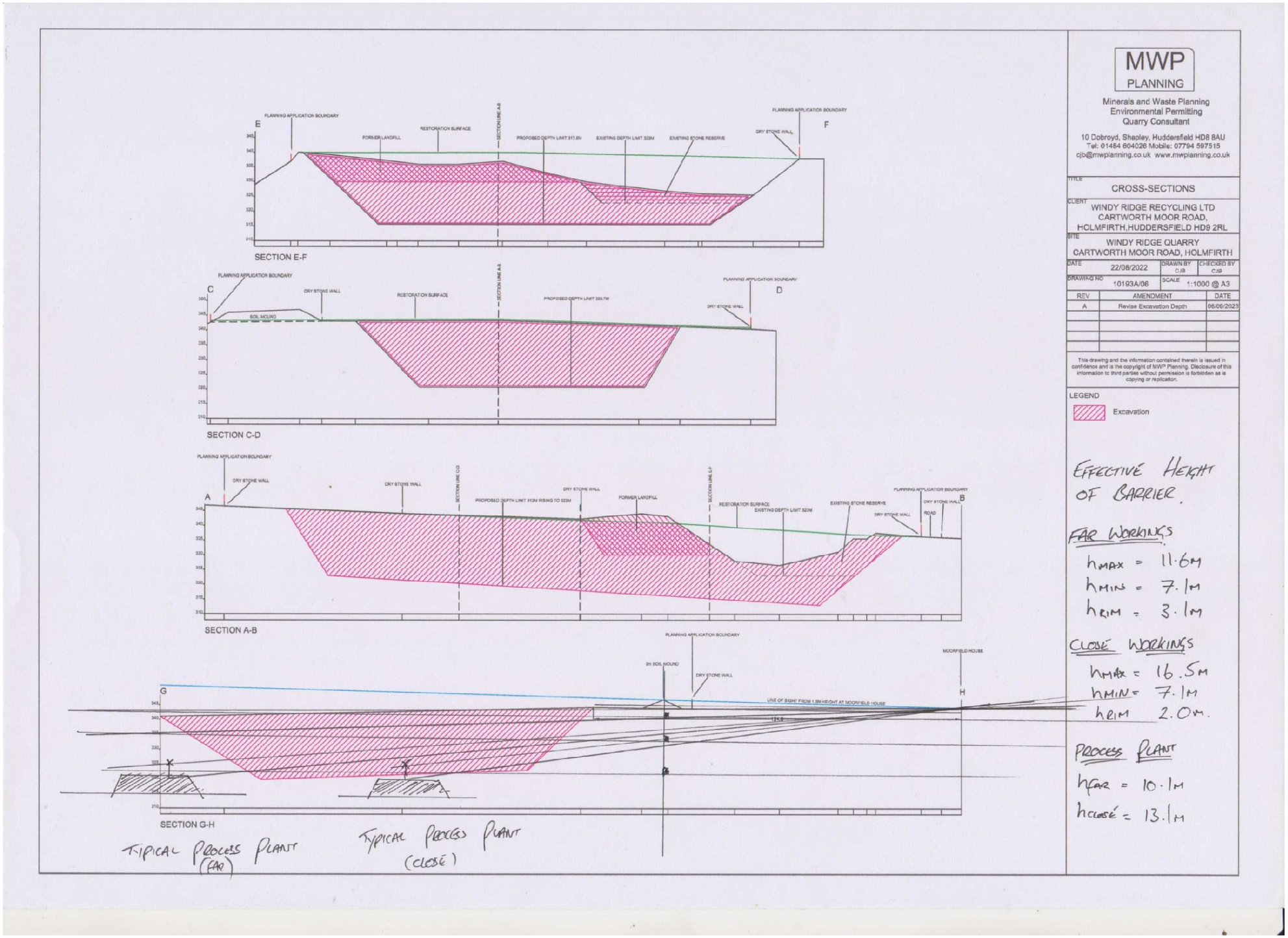
Description	SPL LAeq		Mins used in 1 hr	Time Correction		Barrier Effect		Meas. distance	Receptor distance	Distance Decay		Specific Level at receptor
Quarry Rim, All Sources, 40m	71.8		60	0		10		40	410	23.27		38.5
Quarry Rim, All Sources, Loudest Engine Visible, 35m	76.9		60	0		10		35	410	24.72		42.2
Generator and Floodlights, 2m	75.2		60	0		10		2	410	55.79		9.4
Crusher (Red Bodywork), 10m	87.7		60	0		10		10	410	38.32		39.4
McCloskey S190 Screen, 10m (contribution from others)	84.3		60	0		10		10	410	38.32		36
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	410	38.32		31.7
Mobile / Excavation												
Tracked Bucket Loader / Excavator, 10m	80		60	0		10		10	440	39.09		30.9
Bulldozer, 10m	86		30	3.01		10		10	440	39.09		33.9
Dump Truck Moving and Manoeuvre, 10m	76.4		15	6.02		10		10	440	39.09		21.3
Haul Road HGV												20.0
Haul Road Dump Truck												28.3

Moorfield Farm

Site Plan and Cross Section Identification



Cross Sections



Sources Levels

Band [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
Processing Area																											
Quarry Rim, All Sources, 40m	68.2	77.9	70.3	70.0	63.4	65.7	68.7	68.3	71.5	72.5	62.4	64.6	64.9	64.1	63.7	62.8	62.2	60.6	60.0	59.3	56.7	55.6	53.5	49.7	45.9	40.7	34.1
Quarry Rim, All Sources, Loudest Engine Visible, 35m	64.7	75.1	68.3	73.1	68.1	66.7	70.6	69.2	72.0	76.0	69.6	70.7	69.2	67.2	69.9	71.0	68.0	64.7	64.0	63.6	61.6	58.1	56.8	52.4	48.1	43.2	38.4
Generator and Floodlights, 2m	78.3	75.9	64.9	77.4	63.7	75.5	77.3	73.1	67.7	78.4	67.5	67.7	69.6	67.3	61.4	62.3	61.0	63.4	65.4	61.5	60.2	59.0	60.4	60.4	60.0	56.3	55.7
Crusher (Red Bodywork), 10m	70.7	87	79.4	83.9	81.7	80.4	80.4	78.6	80.8	84.7	79.5	82.2	85.5	79.8	78.9	78.9	78	76.5	75.1	73.8	72.6	70.8	68.2	66.4	63.2	61.1	60.6
McCloskey S190 Screen, 10m (contribution from others)	71.4	86.1	80.0	78.9	80.7	77.5	80.8	79.6	84.8	79.4	77.0	74.9	75.5	77.0	76.8	74.8	74.2	74.2	73.5	71.5	70.5	69.3	67.6	64.5	63.2	60.0	58.3
Tracked Bucket Loader / Excavator, 10m	68.8	70.2	85.2	73.5	70.7	71.3	77.7	77.5	69.6	74.2	74.7	81.7	73.4	71.9	71.8	71.0	68.7	66.5	64.5	64.0	65.6	64.0	63.9	61.6	58.1	57.5	49.7
Mobile / Excavation																											
Tracked Bucket Loader / Excavator, 10m	68.8	70.2	85.2	73.5	70.7	71.3	77.7	77.5	69.6	74.2	74.7	81.7	73.4	71.9	71.8	71.0	68.7	66.5	64.5	64.0	65.6	64.0	63.9	61.6	58.1	57.5	49.7
Bulldozer, 10m					94.0			95.0			88.0			79.0			79.0			77.0			70.0			67.0	
Dump Truck Moving and Manoeuvre, 10m	66.8	78.2	73.0	70.8	71.4	70.8	64.9	66.1	73.4	74.0	67.4	68.3	68.0	65.4	66.1	68.5	68.9	67.4	64.2	63.5	61.1	60.2	59.7	57.9	57.3	56.7	53.4

Barrier Calculations Close, Deep Quary Level

Item	Direct Path	Source to Barrier	Receiver to Barrier	Effective Height	Path Source - Barrier	Path Barrier - Receiver	Path Length	Path Difference	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250 & Above
Processing Area																										
Quarry Rim, All Sources, 40m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00
Quarry Rim, All Sources, Loudest Engine Visible, 35m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00
Generator and Floodlights, 2m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00
Crusher (Red Bodywork), 10m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00
McCloskey S190 Screen, 10m (contribution from others)	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00
Tracked Bucket Loader / Excavator, 10m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00
Mobile / Excavation																										
Tracked Bucket Loader / Excavator, 10m	125	25	100	16.5	29.95413	101.35211	131.30624	6.30624	12.91	13.86	14.86	15.81	16.81	17.84	18.81	19.77	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Bulldozer, 10m	125	25	100	16.5	29.95413	101.35211	131.30624	6.30624	12.91	13.86	14.86	15.81	16.81	17.84	18.81	19.77	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Dump Truck Moving and Manoeuvre, 10m	125	25	100	16.5	29.95413	101.35211	131.30624	6.30624	12.91	13.86	14.86	15.81	16.81	17.84	18.81	19.77	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00

Sound Levels at Farm (Close Workings, Deep Quarry Level)

Band [Hz]	dBA	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
Processing Area																												
Quarry Rim, All Sources, 40m	53.1	59.59	68.63	60.28	59.22	51.77	53.14	55.24	53.91	56.07	56.11	45.05	46.25	45.51	44.10	43.70	42.80	42.20	40.60	40.00	39.30	36.70	35.60	33.50	29.70	25.90	20.70	14.10
Quarry Rim, All Sources, Loudest Engine Visible, 35m	57.7	56.09	65.83	58.28	62.32	56.47	54.14	57.14	54.81	56.57	59.61	52.25	52.35	49.81	47.20	49.90	51.00	48.00	44.70	44.00	43.60	41.60	38.10	36.80	32.40	28.10	23.20	18.40
Generator and Floodlights, 2m	56.9	69.69	66.63	54.88	66.62	52.07	62.94	63.84	58.71	52.27	62.01	50.15	49.35	50.21	47.30	41.40	42.30	41.00	43.40	45.40	41.50	40.20	39.00	40.40	40.40	40.00	36.30	35.70
Crusher (Red Bodywork), 10m	68.5	62.09	77.73	69.38	73.12	70.07	67.84	66.94	64.21	65.37	68.31	62.15	63.85	66.11	59.80	58.90	58.90	58.00	56.50	55.10	53.80	52.60	50.80	48.20	46.40	43.20	41.10	40.60

McCloskey S190 Screen, 10m (contribution from others)	65.3	62.79	76.83	69.98	68.12	69.07	64.94	67.34	65.21	69.37	63.01	59.65	56.55	56.11	57.00	56.80	54.80	54.20	54.20	53.50	51.50	50.50	49.30	47.60	44.50	43.20	40.00	38.30
Tracked Bucket Loader / Excavator, 10m	61.5	60.19	60.93	75.18	62.72	59.07	58.74	64.24	63.11	54.17	57.81	57.35	63.35	54.01	51.90	51.80	51.00	48.70	46.50	44.50	44.00	45.60	44.00	43.90	41.60	38.10	37.50	29.70
Mobile / Excavation																												
Tracked Bucket Loader / Excavator, 10m	60.4	55.89	56.34	70.34	57.69	53.89	53.46	58.89	57.73	49.60	54.20	54.70	61.70	53.40	51.90	51.80	51.00	48.70	46.50	44.50	44.00	45.60	44.00	43.90	41.60	38.10	37.50	29.70
Bulldozer, 10m	65.8	-12.91	-13.86	-14.86	-15.81	77.19	-17.84	-18.81	75.23	-20.00	-20.00	68.00	-20.00	-20.00	59.00	-20.00	-20.00	59.00	-20.00	-20.00	57.00	-20.00	-20.00	50.00	-20.00	-20.00	47.00	-20.00
Dump Truck Moving and Manoeuvre, 10m	56.5	53.89	64.34	58.14	54.99	54.59	52.96	46.09	46.33	53.40	54.00	47.40	48.30	48.00	45.40	46.10	48.50	48.90	47.40	44.20	43.50	41.10	40.20	39.70	37.90	37.30	36.70	33.40

Specific Sound Level Calculations, Moorcroft Farm (Close Workings, Deep Quarry Level)

Description	LAeq	Mins used in 1 hr	Time Correction	Meas. distance	Receptor distance	Decay	Specific Level at receptor
Quarry Rim, All Sources, 40m	53.1	60	0	40	190	14.92	38.2
Quarry Rim, All Sources, Loudest Engine Visible, 35m	57.7	60	0	35	190	16.37	41.3
Generator and Floodlights, 2m	56.9	60	0	2	190	47.44	9.5
Crusher (Red Bodywork), 10m	68.5	60	0	10	190	29.97	38.5
McCloskey S190 Screen, 10m (contribution from others)	65.3	60	0	10	190	29.97	35.3
Tracked Bucket Loader / Excavator, 10m	61.5	60	0	10	190	29.97	31.5
Mobile / Excavation							
Tracked Bucket Loader / Excavator, 10m	60.4	60	0	10	125	25.42	35
Bulldozer, 10m	65.8	30	3.01	10	125	25.42	37.4
Dump Truck Moving and Manoeuvre, 10m	56.5	15	6.02	10	125	25.42	25.1

These calculations are repeated for shallow working levels, top/ridge working, and then all depths at further working distances from the farm. The barrier calculations are shown for each position:

Close, Shallow

Item	Direct Path	Source to Barrier	Receiver to Barrier	Effective Height	Path Source - Barrier	Path Barrier - Receiver	Path Length	Path Difference	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500 & Above
Processing Area																												
Quarry Rim, All Sources, 40m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Quarry Rim, All Sources, Loudest Engine Visible, 35m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Generator and Floodlights, 2m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Crusher (Red Bodywork), 10m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00
McCloskey S190 Screen, 10m (contribution from others)	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Tracked Bucket Loader / Excavator, 10m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Mobile / Excavation																												
Tracked Bucket Loader / Excavator, 10m	125	25	100	7.1	25.98865	100.25173	126.24038	1.24038	7.71	8.24	8.88	9.54	10.29	11.13	11.97	12.85	13.85	14.79	15.74	16.73	17.77	18.73	19.74	20.00	20.00	20.00	20.00	20.00
Bulldozer, 10m	125	25	100	7.1	25.98865	100.25173	126.24038	1.24038	7.71	8.24	8.88	9.54	10.29	11.13	11.97	12.85	13.85	14.79	15.74	16.73	17.77	18.73	19.74	20.00	20.00	20.00	20.00	20.00
Dump Truck Moving and Manoeuvre, 10m	125	25	100	7.1	25.98865	100.25173	126.24038	1.24038	7.71	8.24	8.88	9.54	10.29	11.13	11.97	12.85	13.85	14.79	15.74	16.73	17.77	18.73	19.74	20.00	20.00	20.00	20.00	20.00

Close, Top

Item	Direct Path	Source to Barrier	Receiver to Barrier	Effective Height	Path Source - Barrier	Path Barrier - Receiver	Path Length	Path Difference	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
Processing Area																													
Quarry Rim, All Sources, 40m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Quarry Rim, All Sources, Loudest Engine Visible, 35m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Generator and Floodlights, 2m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Crusher (Red Bodywork), 10m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
McCloskey S190 Screen, 10m (contribution from others)	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Tracked Bucket Loader / Excavator, 10m	190	90	100	13.1	90.94839	100.85440	191.80279	1.80279	8.61	9.27	10.02	10.78	11.63	12.56	13.46	14.39	15.43	16.39	17.35	18.35	19.39	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Mobile / Excavation																													
Tracked Bucket Loader / Excavator, 10m	125	25	100	2	25.07987	100.02000	125.09987	0.09987	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	8.89	9.58	10.36	11.15	11.99	12.97	13.88	14.82
Bulldozer, 10m	125	25	100	2	25.07987	100.02000	125.09987	0.09987	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	8.89	9.58	10.36	11.15	11.99	12.97	13.88	14.82
Dump Truck Moving and Manoeuvre, 10m	125	25	100	2	25.07987	100.02000	125.09987	0.09987	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	8.89	9.58	10.36	11.15	11.99	12.97	13.88	14.82

Far, Deep

Item	Direct Path	Source to Barrier	Receiver to Barrier	Effective Height	Path Source - Barrier	Path Barrier - Receiver	Path Length	Path Difference	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
Processing Area	1	1	0	0.1	1.00499	0.1	1.10499	0.10499	5.28	5.35	5.45	5.55	5.69	5.86	6.06	6.3	6.62	6.96	7.36	7.85	8.43	9.04	9.74	10.54	11.34	12.19	13.17	14.09	15.03
Quarry Rim, All Sources, 40m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Quarry Rim, All Sources, Loudest Engine Visible, 35m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Generator and Floodlights, 2m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Crusher (Red Bodywork), 10m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
McCloskey S190 Screen, 10m (contribution from others)	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Tracked Bucket Loader / Excavator, 10m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Mobile / Excavation	0	1	-1	0.1	1.00499	1.00499	2.00998	2.00998	8.91	9.6	10.38	11.18	12.05	12.99	13.91	14.84	15.9	16.86	17.82	18.82	19.86	20	20	20	20	20	20	20	20
Tracked Bucket Loader / Excavator, 10m	270	170	100	11.6	170.39531	100.67055	271.06586	1.06586	7.39	7.88	8.47	9.08	9.79	10.59	11.39	12.25	13.23	14.15	15.09	16.08	17.11	18.08	19.08	20	20	20	20	20	20
Bulldozer, 10m	270	170	100	11.6	170.39531	100.67055	271.06586	1.06586	7.39	7.88	8.47	9.08	9.79	10.59	11.39	12.25	13.23	14.15	15.09	16.08	17.11	18.08	19.08	20	20	20	20	20	20
Dump Truck Moving and Manoeuvre, 10m	270	170	100	11.6	170.39531	100.67055	271.06586	1.06586	7.39	7.88	8.47	9.08	9.79	10.59	11.39	12.25	13.23	14.15	15.09	16.08	17.11	18.08	19.08	20	20	20	20	20	20

Far, Shallow

Item	Direct Path	Source to Barrier	Receiver to Barrier	Effective Height	Path Source - Barrier	Path Barrier - Receiver	Path Length	Path Difference	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
Processing Area	1	1	0	0.1	1.00499	0.1	1.10499	0.10499	5.28	5.35	5.45	5.55	5.69	5.86	6.06	6.3	6.62	6.96	7.36	7.85	8.43	9.04	9.74	10.54	11.34	12.19	13.17	14.09	15.03
Quarry Rim, All Sources, 40m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Quarry Rim, All Sources, Loudest Engine Visible, 35m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Generator and Floodlights, 2m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Crusher (Red Bodywork), 10m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
McCloskey S190 Screen, 10m (contribution from others)	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Tracked Bucket Loader / Excavator, 10m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Mobile / Excavation	0	1	-1	0.1	1.00499	1.00499	2.00998	2.00998	8.91	9.6	10.38	11.18	12.05	12.99	13.91	14.84	15.9	16.86	17.82	18.82	19.86	20	20	20	20	20	20	20	20
Tracked Bucket Loader / Excavator, 10m	270	170	100	7.1	170.1482	100.25173	270.39993	0.39993	6.01	6.25	6.55	6.88	7.29	7.78	8.3	8.9	9.63	10.37	11.16	12.03	12.97	13.89	14.86	15.87	16.83	17.8	18.87	19.84	20

Bulldozer, 10m	270	170	100	7.1	170.1482	100.25173	270.39993	0.39993	6.01	6.25	6.55	6.88	7.29	7.78	8.3	8.9	9.63	10.37	11.16	12.03	12.97	13.89	14.86	15.87	16.83	17.8	18.87	19.84	20
Dump Truck Moving and Manoeuvre, 10m	270	170	100	7.1	170.1482	100.25173	270.39993	0.39993	6.01	6.25	6.55	6.88	7.29	7.78	8.3	8.9	9.63	10.37	11.16	12.03	12.97	13.89	14.86	15.87	16.83	17.8	18.87	19.84	20

Far, Top

Item	Direct Path	Source to Barrier	Receiver to Barrier	Effective Height	Path Source - Barrier	Path Barrier - Receiver	Path Length	Path Difference	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
Processing Area	1	1	0	0.1	1.00499	0.1	1.10499	0.10499	5.28	5.35	5.45	5.55	5.69	5.86	6.06	6.3	6.62	6.96	7.36	7.85	8.43	9.04	9.74	10.54	11.34	12.19	13.17	14.09	15.03
Quarry Rim, All Sources, 40m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Quarry Rim, All Sources, Loudest Engine Visible, 35m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Generator and Floodlights, 2m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Crusher (Red Bodywork), 10m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
McCloskey S190 Screen, 10m (contribution from others)	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Tracked Bucket Loader / Excavator, 10m	270	170	100	10.1	170.29977	100.50876	270.80853	0.80852	6.9	7.31	7.8	8.33	8.95	9.67	10.4	11.2	12.13	13.02	13.93	14.9	15.92	16.88	17.88	18.92	19.88	20	20	20	20
Mobile / Excavation	0	1	-1	0.1	1.00499	1.00499	2.00998	2.00998	8.91	9.6	10.38	11.18	12.05	12.99	13.91	14.84	15.9	16.86	17.82	18.82	19.86	20	20	20	20	20	20	20	20
Tracked Bucket Loader / Excavator, 10m	270	170	100	3.1	170.02826	100.04804	270.0763	0.0763	5.21	5.26	5.33	5.41	5.51	5.64	5.79	5.97	6.22	6.49	6.81	7.2	7.67	8.19	8.79	9.49	10.21	10.99	11.91	12.78	13.69
Bulldozer, 10m	270	170	100	3.1	170.02826	100.04804	270.0763	0.0763	5.21	5.26	5.33	5.41	5.51	5.64	5.79	5.97	6.22	6.49	6.81	7.2	7.67	8.19	8.79	9.49	10.21	10.99	11.91	12.78	13.69
Dump Truck Moving and Manoeuvre, 10m	270	170	100	3.1	170.02826	100.04804	270.0763	0.0763	5.21	5.26	5.33	5.41	5.51	5.64	5.79	5.97	6.22	6.49	6.81	7.2	7.67	8.19	8.79	9.49	10.21	10.99	11.91	12.78	13.69

Specific Sound Levels

Specific Sound Pressure Levels, dB LA_{eq}

Dwelling	Closest Workings		Furthest Workings
Quarry House / White Gate Rd (N)	44.4		42.3
Farm to East	43.5		42.8
Moorfield Farm (SE), Deep	44.9		43.1
Moorfield Farm (SE), Shallow	46.1		43.8
Moorfield Farm (SE), Top	51.3		45.6
Upper Woodhouse Farm (W)	45.5		43.3

Background Comparison

Dwelling	Closest Workings		Furthest Workings
Quarry House / White Gate Rd (N)	8.4		6.3
Farm to East	6.5		5.8
Moorfield Farm (SE) Deep	7.9		6.1
Moorfield Farm (SE) Shallow	9.1		6.8
Moorfield Farm (SE) Top	14.3		8.6
Upper Woodhouse Farm (W)	9.5		7.3

Background Sound Levels

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

Dwelling	Background Level
Quarry House / White Gate Rd (N)	36.0
Farm to East	37.0
Moorfield Farm (SE)	37.0
Upper Woodhouse Farm (W)	36.0